

The Associations of Positive Emotion Regulation with Everyday Emotions: An Experience

Sampling Approach

by

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## Abstract

Objective: This study aims to examine the associations between perceived capability of savoring and frequency of responses to positive affect with everyday emotions. Method: 100 early to middle aged working adults ( $M=42.84$ ,  $SD=6.91$ ) were administered the Savoring Beliefs Inventory (savoring through reminiscing, savoring the moment, and savoring through anticipation) and Responses to Positive Affect questionnaire (emotion-focused positive rumination, self-focused positive rumination, and dampening). Participants were then instructed to report valence (positive/negative) of momentary events and positive and negative emotions five times a day over seven days. Results: Multilevel modeling revealed that perceived capability of savoring the moment and through anticipation, as well as frequency of emotion-focused and self-focused positive rumination, predicted higher positive emotions during positive events. Perceived capability of savoring the moment also predicted lower negative emotions during positive events and higher positive emotions during negative events. The positive association between valence ratings of positive events and emotions was stronger among higher levels of perceived capability of savoring through reminiscing and frequency of emotion-focused rumination. The positive association between valence ratings of negative events and negative emotions was significant only among participants with lower and medium levels of perceived capability of savoring through anticipation. Discussion: Perceived capability of savoring and frequency of positive rumination maybe important to

increase positive emotions, and to foster adaptive adjustment to stressful situations during negative events.

**Keywords:** savoring; responses to positive affect; emotion; everyday life; experience

sampling

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## List of Abbreviations

RPA	Responses to Positive Affect
ESM	Experience Sampling Method

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## Chapter 1: Introduction

The current study investigated how two models of positive emotion regulation strategies, savoring and responses to positive affect (RPA), are related to everyday emotions. Most of the previous studies about positive emotions focusing on how increasing positive emotions through emotion up-regulation strategies can be used to process stressful situations and decrease negative emotions. The current study provided insights on understanding the importance of positive emotions and positive emotion regulation in everyday life. This study could also enhance existing knowledge on the role of savoring and RPA in both positive and negative everyday emotions during positive and negative events. Emotion regulation of individuals is a possible approach in enhancing positive emotions and reducing negative emotions. The aim of this study is to investigate (1) the association between positive emotion regulation strategies and everyday emotions during positive and negative events, and (2) the moderating effect of positive emotion regulation strategies on the association between positive/ negative events and everyday emotions. 100 early to middle aged working adults ( $M=42.84$ ,  $SD=6.91$ ) in Hong Kong were investigated by experience sampling method five times a day over seven days.

This thesis is divided into four parts. The first part is literature review (chapter two). Important terms introduced in this study include positive emotions, positive emotion regulation strategies, savoring, and RPA. More specifically, two models of positive emotion

regulation strategies, namely savoring and RPA, are focused upon in this study. The reasons and importance of studying savoring and RPA are explained, as well as how these two constructs related to psychological well-being are reviewed. Furthermore, whether savoring and RPA can be the possible psychological mechanisms between daily life events and everyday emotions is discussed. The limitations of previous studies are reviewed and the aims of this study are stated.

The second part is methodology (chapter three). This chapter explains in detail the data gathering methods (i.e. experience sampling), materials, and procedures used in the research. The third part comprises the data analysis techniques and results of the findings (chapter four). The fourth part consists of discussion and conclusions (chapter five). The comparisons between results of the current study and previous research work are discussed. Conclusions are drawn based on the research findings and their implications. Limitations and future works are also discussed.

## Chapter 2: Literature Review

### 2.1 Positive Emotions

Positive emotions are conceptualized as pleasant and positivity feeling states such as joy, pride, contentment, or excitement (Ong, Mroczek, & Riffin, 2011; Soskin, Carl, Alpert, & Fava, 2012). The experience of positive emotions was associated with distinct neurobiological and physiological changes, such as increased activity in the prefrontal cortex regions (Harmon-Jones, Gable, & Price, 2011), increased cardiac vagal tone (Kok et al., 2013), and higher levels of amygdala activation (Bonnet et al., 2015). Although many previous studies have focused on negative emotions, the studies on positive emotions have increased mostly in the recent years.

Previous evidence showed that positive emotions is a crucial component of both mental health and physical health. As regards mental health, individuals with higher trait positive emotions were less likely to suffer from a variety of psychopathologies, such as depression (Gruber, Kogan, Quoidbach, & Mauss, 2013; Quoidbach et al., 2014), and social anxiety (Kashdan & Farmer, 2014; Kashdan, & Steger, 2006). In terms of physical health, positive emotions were associated with increased longevity (Park et al., 2016), decreased symptoms in chronic pain patients (Müller et al., 2016), and lower risk of diabetes and hypertension (Ma & Feng, 2015; Rozanski, Blumenthal, Davidson, Saab, & Kubzansky, 2005). Since individuals with higher abilities to regulate positive emotions were associated with better mental health

and psychological well-being (Siu, Cheung, & Lui, 2015; Tugade & Fredrickson, 2007), it is essential to regulate emotions by positive emotion regulation strategies.

## **2.2 Positive Emotion Regulation Strategies**

Fredrickson's (2001) broaden-and-build theory provides a valuable framework for understanding the significance of positive emotions. This theory suggests that the cultivation of positive emotions helps to build and mobilize psychophysiological resources to attain the desired goal, enhance positive feelings or positive states, and foster adaptive adjustment to stressful situations. In general, higher ability to up-regulate positive emotions predicted better life satisfaction, and higher levels of positive emotions and self-esteem (Quoidbach, Berry, Hansenne, & Mikolajczak, 2010; Siu et al., 2015; Wood, Heimpel, & Michela, 2003), as well as better adaptive adjustment to stress (Dockray & Steptoe, 2010). Individuals with higher ability to up-regulate positive emotions are also less vulnerable to psychological dysfunction (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Schwerdtfeger, Gaisbachgrabner, & Traunmüller, 2016). For example, up-regulating positive emotions through interpersonal interactions was associated with lower neuroticism and higher extraversion, agreeableness, conscientiousness, self-esteem, and optimism (Livingstone & Srivastava, 2012). Moreover, positive emotions promoted faster experiential and physiological recovery after the induction

of negative emotions in experimental studies (Fredrickson & Levenson, 1998; Fredrickson, Mancuso, Branigan, & Tugade, 2000).

Gross (1998) proposed the process model of emotion regulation, which provided a very comprehensive conceptual framework for understanding how emotions arise and how they are regulated. According to this emotion regulation theory, positive emotion regulation refers to different models of regulation strategies, through which individuals can maintain, increase, or decrease the nature, frequency, and duration of positive emotions (Gross, 1998; 2014). The ability to regulate positive emotions is central to positive psychosocial outcomes, such as mental health and social functioning and relationships (Garland, Farb, Goldin, & Fredrickson, 2015; Murray, 2005; Ramsey & Gentzler, 2015). Individuals usually aim to decrease negative emotions and enhance positive emotions in everyday life (English, Lee, John, & Gross, 2016).

In general, positive emotions is considered more desirable than negative emotions (Veenhoven, 2012). Higher level of positive emotions is also usually associated with better psychological functioning (Quoidbach et al., 2010). But it is possible that there are some negative values of positive emotions and positive values of negative emotions (Tamir, 2009). For example, low self-esteem individuals tend to become anxious when experiencing positive emotions (Wood et al., 2003). Although the moderate degree of positive emotions predicted better mental health, extreme high level of positive emotions predicted poorer psychological functioning and social relationship (Grant & Schwartz, 2011). In contrast, negative emotions



may also have some positive values under certain situations. For example, negative emotions would increase the blood pressure and heart rate to support vigorous and active responses to environmental challenges (Gruber, Mauss & Tamir, 2011). Furthermore, fear would bias the attention toward potential threats, and hence individuals could deal with the threats as soon as they arise (Ford et al., 2010).

Instead of a unitary construct, emotion regulation strategies come in many different forms. According to one of the meta-analyses, there are six types of emotion regulation strategies that are frequently researched in recent empirical studies, namely acceptance, avoidance, distraction, problem solving, reappraisal, and suppression (Aldao et al. 2010). These strategies proposed from the study of Aldao et al. 2010 relatively focused on understanding how individuals process negative/ stressful situations and negative emotions than how they up-regulate positive emotions. Reappraisal, for example, refers to the ability to think about a negative situation in an alternative way to change its emotional impact (Gruber, Hay, & Gross, 2014). Previous experimental studies have showed that both reappraisal and acceptance led to lower levels of stress, aversive emotions and avoidance in relation to negative emotional states elicited by film-clips (Wolgast, Lundh, & Viborg, 2011). Avoidance is defined as the tendency to avoid negative thoughts, feelings, and other internal experiences (Hinds, Jones, Gau, Forrester, & Biglan, 2015). Previous studies have showed that middle and elementary school teachers who have higher level of avoidance predicted student misbehavior and

limited social support, as well as burnout and depression (Hinds et al., 2015). Moreover, distraction could reduce the anger experience (Denson, Moulds, & Grisham, 2012) and painful feeling (Birnie et al., 2014). And higher level of suppression was positively associated with depressive symptoms (Larsen et al., 2013). Most of the previous studies about positive emotions have focused on how increasing positive emotions through emotion up-regulation strategies can be used to decrease negative emotions (Gloria, Faulk, & Steinhardt, 2013; Tugade & Fredrickson, 2004). But researchers have recognized the importance of positive emotions and positive emotion regulation in everyday life (Quoidbach, Mikolajczak, & Gross, 2015; Riskind, Kleiman, & Schafer, 2013). This study has focused on two models of positive emotion regulation strategies, namely savoring and responses to positive affect (RPA).

### **2.3 Importance of Studying Savoring and RPA**

There are more previous research studies focusing on how individuals process stressful situations and negative emotions. However, this does not discount the importance of studying positive emotion regulation. Both savoring and RPA assessed individual differences in positive emotion regulation strategies as two constructs also look into how individuals process and experience their emotions (Fairholme, Boisseau, Ellard, Ehrenreich, & Barlow, 2010). Savoring is theoretically similar to the construct of positive rumination in RPA, since both of them entail awareness of positive emotions, as well as their generation and intensification.

Moreover, both of them are active positive emotion regulation processes, which involve more active thinking about positive emotions and positive experiences (Gruber, Eidelman, Johnson, Smith, & Harvey, 2011). Furthermore, these two constructs are quite similar in terms of reactivity situations as both of them mainly capture individual differences in response tendencies to positive emotional experiences for the positive situations. These two constructs are also associated with many positive psychological outcomes. Perceived capability of savoring was positively related to psychological well-being, including state happiness, optimism, life satisfaction, and self-esteem (Bryant, 2003), while frequency of positive rumination in RPA was negatively associated with psychological distress such as depression (Feldman, Joormann, & Johnson, 2008).

## **2.4 Savoring**

### ***2.4.1 The concept of savoring***

Savoring is a broad term denoting thoughts or behaviors which could be used to maintain or increase the positive emotions (Hurley & Kwon 2013). Currently, there are still no consistent conceptualizations of savoring. For example, some studies conceptualized savoring by other similar terms such as “maximizing”, which has positive reflection on the events or positive emotions (Gentzler, Kerns, & Keener, 2010). Some other studies conceptualized savoring as “capitalizing”, which is sharing positive events with others (Pagani et al., 2015;

Reis et al., 2010). In this study, savoring is defined as individuals' perceived capability of attending to past, present, and anticipated positive experiences in order to generate, maintain, and enhance positive emotions (Bryant, 1989; Bryant & Veroff, 2007).

The theoretical model of savoring comprises three components: (1) reminiscing past positive experiences (i.e. savoring through reminiscing); (2) appreciating current pleasant events (i.e. savoring the moment); and (3) in anticipation of upcoming positive events (i.e. savoring through anticipation) (Bryant, 2003). Firstly, savoring through reminiscing occurs when a person generates the positive emotions that come from recollecting past positive memories or events in order to prolong or rekindle the positive feelings. For example, an individual may think that his/ her secondary school life is full of pleasant memories; when he/ she wants to up-regulate the positive emotions, he/ she would reminisce about the secondary school life or look at the photos of the period in order to have positive feelings.

Secondly, savoring the moment refers to a person generating or intensifying the positive emotions associated with the momentary positive event through specific cognitive thoughts, feelings, or behaviors. For example, an individual may have a joyful gathering with friends, and he could prolong such enjoyment to up-regulate his/ her positive emotions. An individual may congratulate themselves after receiving a good result on a test. Moreover, an individual may express positive emotions through laughter and smiling when enjoying time with friends to up-regulate his/ her positive emotions.

Finally, savoring through anticipation occurs when a person generates the positive emotions that come from looking forward to positive events anticipated to occur in the future. It is future oriented and is contemplating the future in order to enjoy and generate positive feelings at present (Bryant, 2003). For example, let us say that an individual proposes to travel with his family members next week and very much looks forward to this trip, he/ she could up-regulate the positive emotions generated by anticipation of this happy future event.

#### ***2.4.2 Savoring and psychological well-being***

Savoring importantly influences many aspects of psychological well-being. Perceived capability of savoring in general was positively associated with present happiness, self-reported optimism, life satisfaction, and self-esteem, while it was negatively associated with depression, neuroticism, and hopelessness (Bryant, 2003; Bryant, Chadwick, & Kluwe, 2011; Gentzler, Palmer, & Ramsey, 2016; Quoidbach et al., 2015). Among college students, perceived capability of savoring was positively associated with psychological well-being. For example, perceived capability of savoring was associated with higher levels of positive emotions and lower levels of negative emotions among college students (Bryant, 2003). College students who used more savoring strategies were associated with high levels of happiness and life satisfaction (Gentzler et al., 2016). Higher ability to up-regulate positive emotions also predicted better life satisfaction and higher levels of positive emotions among

adults (Quoidbach et al., 2010). Experimental studies have also shown that individuals who used more strategies in savoring were associated with higher levels of happiness (Bryant, Smart, & King, 2005), while interventional studies have shown that individuals who used more savoring strategies were associated with higher levels of positive emotions (Hurley & Kwon, 2013) and lower levels of negative emotions (Hurley & Kwon, 2012).

Perceived capability of savoring through anticipation and reminiscence were also associated with psychological well-being. Applegate, El-Deredy, and Bentall (2009) found that reduced perceived capability of savoring through anticipation and reminiscence were prospectively associated with anhedonia among 516 young adults. These studies suggested that perceived capability of savoring are important to up-regulate positive emotions (Bryant, 2003; Livingstone & Srivastava, 2012). Moreover, older adults adopted higher levels of savoring, and perceived capability of savoring was also prospectively associated with their subjective well-being, including more positive affect and higher life satisfaction (Bryant & Veroff, 2007; Smith & Hollinger-Smith, 2015). Some studies also found that when compared to younger adults, older adults were generally more likely to selectively attend on positive memories and positive stimuli, so older adults would be more likely to savor and hence demonstrated a high level of positive affect (Reed, Chan, & Mikels, 2014; Sakaki, Nga, & Mather, 2013). Therefore these studies showed that better subjective well-being among older

adults might be explained by age differences in the perceived capability of savoring to amplify positive emotions and positive experiences.

Perceived capability of savoring through reminiscence was associated with lower levels of depression symptoms and higher levels of psychological well-being (Baldwin, Biernat, & Landau, 2015; Bohlmeijer, Roemer, Phd, & Smit, 2007). Previous experimental studies found that participants who were induced to imagine positive imagery from a past event could increase their sense of meaning in life (Routledge, et al., 2011; Routledge, Wildschut, Sedikides, Juhl, & Arndt, 2012). Another experimental study finding also suggested that participants who were induced to memorize past positive social interaction events showed more feelings of social support and social connectedness when compared to the control group (Wildschut, Sedikides, & Cordaro, 2011). There was also evidence showing that perceived capability of savoring through reminiscence could predict higher levels of positive emotions. In one experimental study, participants who were instructed to reminisce positive imagery from a past event reported increased positive affect, compared to those who were simply instructed to reminisce on a past experience (Bryant et al., 2005). These findings suggested that perceived capability of savoring through reminiscing the positive past events could predict higher levels of positive emotions and psychological well-being.

Perceived capability of savoring was found to amplify the intensity and duration of positive psychological outcomes. Among these three components of savoring, perceived

capability of savoring the moment has the strongest association with psychological outcomes when compared to the other two savoring constructs (Bryant, 2003). Moreover, Bryant and Veroff (2007) suggested that there are many different ways that individuals can savor the moment and these different ways of savoring the moment have been found to have positive effects on different psychological outcomes. For example, Hurley and Kwon (2012) recruited a sample of non-clinical adults to participate in a group psycho-education intervention. During this intervention program, participants were required to learn savoring the moment skills and techniques for everyday positive events. Results indicated that participants who joined the intervention group showed higher levels of positive emotions and lower levels of depressive symptoms after the program. In a 9-week longitudinal study, perceived capability of savoring the moment predicted higher levels of positive emotions and life satisfaction and lower levels of depressive symptoms in follow-up measurements (Kiken, Lundberg, & Fredrickson, 2017).

Moreover, Jose, Lim, and Bryant (2012) investigated whether savoring influences daily positive affect over a period of 30 days. Results indicated that savoring moderated the relationship between positive daily events and positive emotions. They suggested that in response to positive events, individuals with higher levels in savoring would have greater increases in daily positive emotions. In clinical settings among Chinese cancer caregivers, perceived capability of savoring was inversely associated with caregiving burden and



caregivers' psychological symptoms, which are anxiety and depressive symptoms (Hou et al., 2016). Furthermore, fostering perceived capability of savoring was positively associated with physical and psychological functioning and inversely associated with physical symptoms and mental symptoms among cancer patients (Hou et al., 2017). These studies suggested that higher capability of savoring could amplify the benefits of positive experiences, and it would further increase the psychological well-being.

## **2.5 Responses to Positive Affect**

### **2.5.1 *The concept of RPA***

There are different regulation strategies when a person attempts to respond to the positive events and positive affective state. Feldman et al. (2008) investigated individual differences in response tendencies to positive affect and encountering of positive events by the development of Responses to Positive Affect questionnaire (RPA). In their study, they looked into how participants typically respond to positive situations and their positive emotional states by strategies that tend to enhance or dampen the positive affect. More specifically, it assesses the frequency of positive rumination and dampening (Feldman et al., 2008).

The first type of strategies measured in RPA was positive rumination, which includes two subsets of strategies. One of the strategies is frequency of self-focused positive rumination that focused on the positive self-aspects and on the personally related goals. And the other strategy

is frequency of emotion-focused positive rumination that focused on the positive emotional state and somatic experiences. For example, an individual may think that he/ she is achieving a lot in life by self-focused positive rumination. An individual may also notice how they feel full of energy by emotion-focused positive rumination in order to maximize the significance of a positive event or up-regulate the positive emotions.

Finally, another form of responding to positive affect is ‘dampening’. It refers to how individuals down-regulate their positive emotional states with regulation strategies such as reflection on negative aspects of themselves (Feldman et al., 2008). For example, where an individual initially feels happy due to a positive situation, dampening might involve minimizing the impact of the positive event and positive affect or directing attention to the less fortunate aspects of life.

### ***2.5.2 RPA and psychological well-being***

An individual’s response to positive affect has important implications in the development of psychological disorders (Gilbert, 2012; Gilbert, Nolen-Hoeksema, & Gruber, 2013; Gruber et al., 2011). Previous studies have investigated the relationship of RPA with depression (Bijttebier, Raes, Vasey, & Feldman, 2012; Raes, Smets, Nelis, & Schoofs, 2012), and anxiety disorder (Eisner, Johnson, & Carver, 2009). In general, frequency of positive rumination in

RPA predicted low levels of psychological dysfunction, while frequency of dampening predicted higher levels of psychological dysfunction.

In terms of depressive disorder, individuals diagnosed with depression were associated with increased negative affect and decreased positive affect (Rottenberg, 2017). Depression was associated with the frequency of dampening, and two models of frequency of positive rumination (Feldman et al, 2008; Raes, Daems, Feldman, Johnson, & Van Gucht, 2009). In general, previous studies have shown that depression was negatively associated with frequency of positive rumination, and positively with dampening (Feldman et al., 2008; Raes et al., 2009). But less consistent findings have been found between the positive emotions enhancing subscales (i.e. self-focused and emotion-focused positive rumination) and depressive symptoms. For example, Feldman et al. (2008) found that frequency of self-focused positive rumination was negatively associated with depressive symptoms, but they found that there is no correlation between the frequency of emotion-focused positive rumination and depressive symptoms. Conversely, Raes et al. (2009) found that frequency of emotion-focused positive rumination was negatively associated with depressive symptoms, but there is no correlation between the frequency of self-focused positive rumination and depressive symptoms. Recently, an experimental study among 60 undergraduate students revealed that both frequency of emotion-focused and self-focused positive rumination subscales were associated with higher levels of positive emotions and negatively associated with depressive symptoms among the

mood induction group (Olofsson, Wurm, & Boersma, 2016). The above studies showed that although in general depression correlates negatively with frequency of positive rumination, it remains unclear which positive rumination subscales are more associated with psychological well-being.

Frequency of dampening was more consistently found to reduce positive affect and predict greater depression level and depressive symptoms (Raes et al., 2009; Werner-Seidler et al., 2013). For example, previous studies have showed that children were more likely to experience depressive symptoms if they have higher levels of dampening (Bijttebier et al., 2012). A cross-sectional study also found that there was a positive association between frequency of dampening and depressive symptoms among college students with depressive disorder (Johnson, McKenzie, & McMurrich, 2008). Moreover, higher levels of frequency of dampening positive emotional experience were associated with higher levels of depressive symptoms among undergraduate students (Burr, Javiad, Jell, Werner-Seidler, & Dunn, 2017; Raes et al., 2009; Werner-Seidler et al., 2013). Nelis, Holmes, and Raes (2015) found that in a sample of adults in a community, frequency of dampening was associated with higher concurrent depression. They discovered that both currently and previously depressed persons tended to use dampening to regulate positive emotion. Dampening can thus be seen as a possibly important piece of the puzzle of explaining depression. A study by Raes et al. (2012) investigated two non-clinical groups and pointed out that dampening significantly predicted

the severity of depressive symptoms. Frequency of dampening was associated with lower ability to flexibly up-regulate neural reward response following a loss, thus possibly increasing vulnerability to depression among 39 healthy children (Gilbert, Luking, Pagliaccio, Luby, & Barch, 2016). The above studies clearly showed that there are still inconsistent findings for the self-focused and emotion-focused positive rumination. In contrast, frequency of dampening was more consistently and prospectively linked to depressive symptoms, and hence individuals who have higher levels of frequency of dampening of positive affect are more likely to experience higher levels of depressive symptoms.

Other than depressive disorders, frequency of positive rumination and dampening were also associated with anxiety disorder. In terms of social anxiety, individuals with social anxiety have been found to experience lower levels of positive emotions (Kashdan, 2007; Kashdan & Farmer, 2014; Kashdan & Steger, 2006). Similar to social anxiety, generalized anxiety disorder is characterized as fear of positive emotions and infrequent experience of positive emotions (Goodwin, Yiend, & Hirsch, 2017; Turk, Heimberg, Luterek, Mennin & Fresco, 2005). Studies showed that frequency of dampening was positively correlated with anxiety disorders, while frequency of positive rumination was negatively correlated with these anxiety disorders among an undergraduate sample (Eisner et al., 2009). More recently, Hou and Ng (2014) revealed that emotion-focused positive rumination mediated the inverse association between the resilience level and anxiety symptoms among Chinese college students.

These studies proposed that individuals with higher frequency of positive rumination and lower level of dampening would be less likely to experience anxiety.

## **2.6. Comparisons between Savoring and RPA**

There are several theoretical differences between savoring and RPA. These two constructs are different in terms of the positive experiences that they measure. First, the measurement in savoring assessed part of individuals' self-concept. Self-concept refers to an organized knowledge structure that individuals attribute to their traits, characteristics, values and abilities (Mlinar et al., 2009; Roepke et al., 2011). Savoring is defined as individuals' perceived capability of attending to positive experiences in order to enhance positive emotions (Bryant, 1989; Bryant & Veroff, 2007). Therefore the perceived capability of savoring could represent part of the self-concept, which is individuals' perception and judgment on their ability to savor positive experiences. On the other hand, positive rumination in RPA, as a form of rumination, is a relatively pure cognitive construct as the measurement in both self-focused and emotion-focused positive rumination are more introspective. It mainly measures how individuals regulate their emotions by some imaginative events.

Second, savoring is more comprehensive in terms of time perspective. Savoring looks into how individuals process and experience their emotions based on savoring through reminiscing, savoring the moment, and savoring through anticipation (Bryant, 2003). In contrast, RPA

focuses specifically on how individuals process and experience their emotions by appreciating current states, instead of reminiscing past experiences or anticipating upcoming events (Feldman et al., 2008).

Third, savoring mainly captures how individuals regulate their emotions from the psychological aspects such as joy, pleasure and enjoyment (Bryant, 2003), while the emotion-focused rumination subscale in RPA captures not only individuals' emotion regulation strategies from the psychological experiences, but also the somatic experiences (Kok & Fredrickson, 2010). Feldman et al. (2008) proposed that emotion-focused positive rumination in RPA consisted of rumination on somatic experiences. In terms of measurement, the items in the questionnaire also include "think how strong you feel" or "notice how you feel full of energy".

Fourth, savoring only identifies different strategies that can be used to up-regulate individuals' positive emotional states (Bryant, 1989, 2003), but RPA also investigates how certain strategies can down-regulate the positive affect (i.e., dampening; Feldman et al., 2008). Although "dampening" is a subscale in RPA, it is a distinct construct with savoring and positive rumination. It is a form of behavior and cognitive strategy that individuals can use to down-regulate positive emotions by focusing on negative thoughts (Feldman et al., 2008). Dampening has been shown to consistently reduce positive emotions and predict greater depressive symptoms (Werner-Seidler, Banks, Dunn, & Moulds, 2013).

The above comparisons showed that as a model of positive emotion regulation, although both savoring and RPA shared some similarities, there are also several theoretical differences between these two constructs. It is important to compare and investigate how these two positive emotion regulation strategies are associated with everyday emotions.

## **2.7 Possible Psychological Mechanisms between Everyday Life Events and Emotions**

The positive and negative events in daily lives that occur across a variety of domains in life are often associated with our psychological well-being (Myin-Germeys et al., 2009; Poms, Fleming, & Jacobsen, 2016). For example, positive life events were significantly associated with increases in positive emotions (Maybery, Jones-Ellis, Neale, & Arentz, 2006) and higher relationship satisfaction (Pagani et al., 2015). Negative life events were significantly associated with increased physical and health symptoms (Heron, Bryan, Dougherty, & Chapman, 2013) and decreased positive emotions (Demerouti & Cropanzano, 2016). In general, positive everyday events are usually associated with higher positive emotions and better physical and mental health, while negative events would relate to poorer psychological well-being (Piazza, Charles, Sliwinski, Mogle, & Almeida, 2013). Although these studies are informative, the data about positive and negative events collected retrospectively may reflect memory bias in participants. This method also did not allow examination of how positive and negative events experienced at a particular moment are associated with everyday emotions.



Moreover, relatively little is known about how the associations between positive or negative events and psychological well-being may be amplified or prolonged through positive emotion regulation strategies. That is perceived capability of savoring and frequency of RPA may change the pathways whereby positive and negative events influence psychological outcomes by prolonging their effects. The context in which individuals occur must be considered in order to identify whether particular positive emotion regulation strategies are adaptive or not (Aldao, 2013). Individuals may respond to different extents of positive and negative events in a variety of ways in order to help regulate their emotions.

### **2.7.1 Moderator between everyday life events and emotions**

Previous studies on savoring and RPA focused relatively more on the positive events. It sounds reasonable to do this since both savoring and RPA mainly capture how individuals differ in response to positive emotional experiences. For example, Jose et al. (2012) investigated whether savoring influences daily positive affect over a period of 30 days. Results indicated that savoring moderated the relationship between positive daily events and positive emotions. They suggested that in response to positive events, individuals with higher levels in savoring would have greater increases in daily positive emotions. Moreover, Carl, Fairholme, Gallagher, Thompson-Hollands, and Barlow (2014) recruited a sample of nonclinical undergraduates to assess how individuals' change in positive emotions and emotional

responses to positive events in a 14 day daily diary study. They found that higher capability of savoring was positively associated with positive emotion reactivity and positive emotions, while higher capability of savoring was also inversely associated with negative emotions.

Gentzler, Morey, Palmer, and Yi (2013) examined how maximizing and minimizing responses to positive events were associated with sustained positive feelings about the events and adjustment among 56 young adolescents. They found that maximizing responses were associated with more intense feelings, while minimizing responses were associated with poorer adjustment. Moreover among undergraduate students, daily-diary studies showed that expressive responses and perceived control were positively associated with positive emotions after positive events (Langston, 1994). Therefore it is expected that the savoring and positive rumination may strengthen the positive associations of valence ratings with positive emotions. At the same time, it is important to extend the study by investigating how perceived capability of savoring and frequency of RPA affect the association between negative events and everyday emotions.

Although a much higher frequency of positive events than negative ones was reported on average (Winefield, Gill, Taylor, & Pilkington, 2012), the impacts of negative events should not be reduced since they tend to trigger stronger physiological and emotional responses than positive events (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001).

Previous works on other types of positive emotion regulation strategies may provide some

insights on how they affect the association between negative events and psychological well-being.

In an intervention study, Boals (2012) recruited 84 participants, who were required to nominate a negative event and then engage in the meaning making process. The results revealed that meaning making was associated with greater reductions in intrusive thoughts when participants nominated a highly distressing event. Moreover, a total of 335 university students were requested to recall a shameful experience and then were randomly assigned to write about it self-compassionately or express their feelings about it in writing. Participants in the self-compassion condition reported less experience of shame and negative emotions, as well as reductions in depressive symptoms than those in the expressive writing condition (Johnson & O'Brien, 2013). In a longitudinal study, 92 undergraduates were followed for three months including a stress period (four weeks of examinations). The findings demonstrated that participants who used more positive reappraisal showed less dysfunctional attitudes and depressive symptoms during stress period (Vanderhasselt et al., 2014). These studies seem to suggest that positive emotion regulation strategies may act as important protective factors in promoting soothing responses to negative situations or negative outcomes.

Moreover, some studies may provide some indirect evidence that perceived capability of savoring and frequency of positive rumination are also important to emotional well-being for

encountered negative events. Among young adults, a daily diary study showed that participants' perceived capability of savoring the moment was related to the number of positive experiences and positive affect (Hurley & Kwon, 2013). More specifically, participants who rated lower frequency of positive events displayed greater positive affect when they had high levels of perceived capability of savoring the moment, and hence savoring the moment is a protective factor of positive affect for participants who experience fewer positive events. This study provided the first and robust empirical finding on how savoring the moment was associated with positive emotions using the experience sampling method. In addition, among a sample of young adolescents, higher levels of positive rumination were negatively related to depressive symptoms for those who also reported higher stress level (Bijttebier et al., 2012). And daily positive and daily negative events had greater influence on subjective well-being for negative ruminators (Graf, Ramsey, Patrick, & Gentzler, 2017). Although these studies are not studying the effects of perceived capability of savoring and frequency of positive rumination on the negative events directly, they might imply that perceived capability of savoring and frequency of positive rumination serves to buffer against negative life events. Therefore it is expected that perceived capability of savoring and frequency of positive rumination could be used to enhance or promote positive feelings or positive states, and also foster adaptive adjustment to stressful situations and psychological dysfunction.

## 2.8 Research Gaps

One of the significant limitations of previous studies of these two types of positive emotion regulation strategies is the exclusive focusing on the overall psychological well-being or emotional states, but less consideration of the events (i.e. positive/ negative) that the participants encountered (e.g. Bryant, 2003; Feldman et al., 2008; Raes et al., 2009). Positive emotion regulation strategies operate, whether you are facing positive or negative events, and the effects of these strategies may not be the same in different situations. For example, problem solving was an effective and adaptive emotion regulation strategy among individuals who have higher physical and mental abilities (Blanchard-Fields, Mienaltowski, & Seay, 2007). But higher levels of acceptance predicted higher life satisfaction under low perceived control conditions (Broadbent, Quadros-Wander, & McGillivray, 2014).

Many past researchers have used a cross-sectional design, measuring all of the variables simultaneously to examine the relationships between positive emotion regulation strategies and psychological well-being and making predictions based on the results. These designs provided useful information, but methodologically there could be limited correspondence between emotional experiences assessed by retrospective self-report and the experience sampling method due to biases of memory storage and recall (Stone, Shiffman, Atienza, & Nebeling, 2007). Therefore the experience sampling method (ESM) was adopted in this study

since it is useful to address this research gap by involving the measurement of emotional states across different contexts and events. The associations between positive emotion regulation strategies and everyday emotions might change as a function of the positive/negative events encountered by individuals at a given sampling moment. It would be interesting to study how perceived capability to savoring or frequency of RPA contributes to emotional well-being across different participants who experience varying degrees of pleasant/ stressful situations.

Moreover, while the importance of studying positive emotion regulation strategies has been amply demonstrated in the field of responses to negative emotional states (e.g. Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008; Ruscio et al., 2015; Smith & Alloy, 2009), the study of RPA has received far less research attention. But this does not discount the importance of studying positive emotions and positive emotion regulation. Inconsistencies have also emerged in the findings for the two subscales in RPA (i.e. self-focused and emotional focused subscales) on the psychological well-being. And only a few existing daily-diary or experience sampling studies have to date investigated and compared how differential strategies for response to positive affect are associated with everyday emotions. Recently, Li, Starr, and Hershenberg (2017) recruited 157 young adults to complete 14 daily assessments of positive emotions and depressive symptoms in relation to positive rumination and dampening, and daily positive and negative events. Results indicated that a higher level of dampening was associated with higher depressive symptoms and decreased positive affect, while

dampening would weaken the positive association between daily positive events and positive affect. And higher frequency of positive rumination (i.e. emotion-focused and self-focused) was negatively associated with depressive symptoms. The negative association between positive rumination and depressive symptoms was stronger among individuals with lower level of positive experiences. Given the relatively recent development of the instrument of RPA, further investigation is needed about how individuals' frequency of positive rumination and dampening impacts everyday emotions.

Furthermore, there are relatively more previous research findings supporting the importance of positive emotion regulation strategies to psychological well-being and psychological disorders. Little is known about how positive emotion regulation strategies proposed in this study (i.e. savoring and RPA) are directly associated with everyday emotions. It also remains unclear as to how the association between positive or negative events and everyday emotions may be amplified or prolonged through positive emotion regulation strategies. Self-report emotional studies collected through retrospective assessments required participants to summarize their general emotional experiences. Retrospective recall biases can be greatly reduced with ESM adopted in this proposed study because participants report on current emotional states and events immediately. Thus, it is important to investigate how these two positive emotion regulation strategies proposed in this study related to everyday emotions in a non-clinical sample.

## 2.9 Aims of this study

To address the aforesaid in past research, the current study investigated how the two models of positive emotion regulation strategies, namely savoring and RPA, are related to everyday emotions. The aim of this study is to investigate (1) the association between positive emotion regulation strategies and everyday emotions during positive and negative events, and (2) the moderating effect of positive emotion regulation strategies on the association between positive/ negative events and everyday emotions. Based on the positive emotion regulation theories and previous empirical evidence, this study hypothesizes as follows:

*Hypothesis One:* Three savoring subscales (i.e. savoring through reminiscence, savoring the moment, and savoring through anticipation) and two of the RPA subscales (i.e. emotion-focused positive rumination and self-focused positive rumination subscales) are positively associated with positive emotions and inversely associated with negative emotions in everyday life. One of the RPA subscales (i.e. dampening subscales) are positively associated with negative emotions and inversely associated with positive emotions in everyday life.



*Hypothesis Two:* During positive events, savoring and positive ruination would strengthen and dampening would weaken the positive associations of valence ratings with positive emotions and the negative associations of valence ratings with negative emotions in everyday life. During negative events, savoring and positive ruination would weaken and dampening would strengthen the negative associations of valence ratings with positive emotions and the positive associations of valence ratings with negative emotions in everyday life.

Early to middle aged working adults were the target sample in this study. Past evidence showed that middle aged adults reported the highest stress level as they were shouldering responsibilities of both work and family (Graham & Pozuelo, 2017; Steptoe, Deaton, & Stone, 2015). When compared to young and old adults, middle aged adults also reported the lowest levels of subjective well-being (Ramsey & Gentzler, 2014). In addition, most individuals encountered major life transitions during this satge, such as changes in marital status (Brown & Lin, 2012), career (Darbonne, Uchino, & Ong, 2013), living arrangements (James, Matz-Costa, & Smyer, 2016) and physical capacities (Lachman & Agrigoroaei, 2010). Therefore it is important, both theoretically and empirically, to study how positive emotion regulation strategies would affect everyday emotions among early to middle aged working adults.

## Chapter 3: Methodology

### 3.1 Participants

This study is part of a larger research project on everyday experiences and health. The larger project contracted a research service company to recruit community-dwelling adults by stratified probability sampling from a database representative of the population (Census and Statistics Department, 2011) upon obtaining ethics committee approval from the university. Inclusion criteria were (1) Chinese ethnicity, (2) Cantonese fluency (the most commonly spoken Chinese language and the mother tongue of 90% of the population in Hong Kong), and (3) elementary education level or above. Individuals with histories of psychiatric conditions and presence of cognitive impairments were excluded from the study. This study consisted of a subsample which ranged in age between 31 and 54 years of the larger project. Based on the recruitment and assessment protocols in the larger project, the student investigator (TWM) managed participant recruitment and conducted data collection and analysis independently. TWM identified suitable people and introduced the study to them. The voluntary nature of participation and data confidentiality were emphasized. Upon obtaining potential participants' initial verbal consent, TWM confirmed their eligibility, fully apprised them of the study, and obtained their written informed consent.

The 100 participants ranged in age between 31 and 54 years ( $M=42.84$ ,  $SD=6.91$ ) and 50 of them were females. Based on a series of simulations with varying sample sizes, Maas

and Hox (2005) recommended a minimum of 30-50 participants for robust estimations of fixed effects in multilevel modeling. The present sample size could be considered sufficient for ensuring statistical power in multilevel modeling. Three received elementary education, 44 received secondary education, and 53 received tertiary education or above. Two of them reported an average monthly household income of  $\leq$ HK\$10,000, 10 \$10,001–\$20,000, 25 \$20,001–\$30,000, 29 \$30,001–\$40,000, and 34 with income  $>$ \$40,000 (US\$1 $\approx$ HK\$7.80; median household income=HK\$23,800, Census and Statistics Department, 2015). A total of 85 participants reported being full-time employed, and the remainder reported being part-time employed ( $n=8$ ), unemployed ( $n=1$ ), or housewives ( $n=6$ ). The results are summarized in Table 1.

### 3.2 Experience Sampling Method

Experience sampling method (ESM) is a research method focused on real-time data capture and is characterized by capturing events at the moment of occurrence (Stone et al., 2007). The following three major benefits are the reasons for using ESM in the current study. First of all, retrospective recall biases may be created in memory reconstruction, which can negatively bias participant responses (Smyth & Stone, 2003). Adopting the research method of ESM could effectively reduce the retrospective recall bias since participants are required to report on current states or events immediately. Secondly, participants are assessed in their

natural environments instead of the research or clinical setting, thus increasing the generalizability and ecological validity of the data since researchers are able to understand the real processes occurring in the participants' real world by random sampling. Finally, ESM adopts the multiple measurements over time for each participant, thus reliability of data would increase since participants are assessed repeatedly and intensively over time. Based on these benefits, the method of ESM was used in this study in order to capture everyday emotions of participants. The current research therefore aimed to investigate how the positive emotion-regulation strategies affect everyday emotions.

### **3.3 Procedure**

After obtaining the written informed consent, participants were interviewed at baseline measurement before the experience sampling measurement. Each interview lasted for around 20 minutes. Following the baseline interview, participants were instructed to report momentary events, and positive and negative emotions five times a day over seven days. The assessment period covered five weekdays and two weekend days, totaling seven days. Items were presented in black ink on a white background on their mobile device. Each participant received extensive individual instructions and training on the experience sampling tasks. On each sampling day, the five assessments were distributed throughout a time window of 12 hours, with the first assessment time determined by participants' awakening habits and the

remainder determined randomly with a minimum interval of 90 minutes. If participants did not respond to an assessment, they were reminded in 10 minutes and again in 20 minutes. If there was still no response, the assessment was closed temporarily after 30 minutes. The ESM period was extended for one day in case a participant responded to fewer than four assessments on a given day. The compliance rate in this study was 90.6%. Each participant received supermarket coupons that valued HK\$400 (~US\$52) for their participation.

### **3.4 Measures**

#### ***3.4.1 Baseline measurements***

*Sociodemographic characteristics.* A standardized proforma was used to obtain the demographic information of participants. Participants reported age, sex, education level (i.e., no formal education/ elementary education/ secondary education/ tertiary education or above), employment status (i.e., full-time employed/ part-time employed/ retired/ housewife/ unemployed), monthly household income (i.e., HKD10000 or below/ HKD10001-20000/ HKD20001-30000/ HKD30001-40000/ HKD40001 or above), and years of residence in Hong Kong.

*Savoring Beliefs Inventory (SBI).* This 24-item questionnaire assessed participants' perceived capability to savor positive experiences (Bryant, 2003). As only a 12-item Chinese

version savoring beliefs inventory was found to be reliable and valid among Mandarin-speaking Chinese (Lin, Chen, & Wang, 2011), the combined etic–emic approach was adopted to translate the Savoring Beliefs Inventory (Hou et al., 2016, 2017). The items were translated into Chinese by a trained bilingual translator and then back translated by a native second translator. Then the semantic and conceptual equivalence of the original and translated versions were examined (Hou et al., 2016, 2017). The scale was demonstrated to be reliable ( $\alpha > .80$ ) among Hong Kong Chinese (Hou et al., 2016, 2017). Participants responded to questions on a 7-point Likert scale ranging from 1 (strongly agree) to 7 (strongly disagree). The measure consists of three subscales, which include savoring the past, present and future strategies and each strategy with eight items: savoring through reminiscence, savoring the moment, and savoring through anticipation about past positive events. Alphas for the three subscales in Savoring Beliefs Inventory: savoring the moment = .80; savoring through anticipation = .83; and savoring through reminiscence = .87.

*Responses to Positive Affect questionnaire (RPA).* The 17-item questionnaire assessed the extent to which an individual responded to positive affect (Feldman et al., 2008). The combined etic–emic approach was adopted to translate the Responses to Positive Affect questionnaire. The items were translated into Chinese by a trained bilingual translator and then back translated by a native second translator. Participants responded to questions on a 4-point

scale ranging from 1 (almost never) to 4 (almost always). The measure consists of three subscales. The first subscale is the emotion-focused subscale, which measures an individual's positive emotional state and somatic experiences. The second subscale is the self-focused positive rumination, which measures an individual's positive self-aspects and the personally related goals. The third subscale is the dampening subscale, which measures an individual's propensity to reduce the intensity and duration of the positive affective state. Alphas for the three subscales in RPA: emotion-focused positive rumination =.92; self-focused positive rumination =.85; and dampening =.82.

### **3.4.2 Experience sampling measurements**

*Everyday life events and emotions.* The 12-item Chinese Affect Scale assessed positive emotions and negative emotions at each sampling moment (CAS; Hamid & Cheng, 1996). Six items assessed positive emotions and negative emotions, respectively (Hou, Ng, & Wan, 2015; Hou et al., 2016). The scale is linguistically and structurally equivalent to the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). Participants used a 5-point scale (0 = very slightly or not at all, 2 = moderately, 4 = very much) to indicate the extent to which they experienced each emotional state at the moment. Separate summation scores were calculated for positive and negative emotions (range=0-24). Good reliability ( $\alpha > .85$ ) was demonstrated for this scale among Hong Kong Chinese (Hou, Ng, & Wan, 2015).

In the current administration, alphas were .95 and .91 for positive and negative emotions subscales, respectively. Participants were then instructed to determine the valence of the event at the sampling moment (i.e., “*how would you regard the event(s) that you experienced since waking/previous alert?*” Answer=positive/negative) and rate the extent to which the event is positive or negative on a 7-point scale (0 = *not at all*, 3 = *moderately*, 6 = *very much*), i.e., “*how would you rate the positivity/negativity of the events you experienced since waking/previous alert?*” More specifically, if participants rated event as "positive," they only received a scale to rate the item on positivity instead of rating the event on negativity. And the rating of this 7-point scale represents the valence ratings in the analysis. Participants were arranged to rate their positive and negative emotions before valence of events in order to minimize response bias on emotions.

## **Chapter 4: Data Analysis and Results**

### **4.1 Analysis Plan**

Data analysis consisted of the following steps. Correlation analyses were used to examine any associations between baseline demographic variables (i.e., age, gender, education level, employment status, and monthly household income) and experience sampling measures (i.e. positive and negative emotions). Demographic variables that yielded significant effects were included in subsequent analyses as control variables.



Then, hierarchical linear modeling analyses (HLM) were used to test all the hypotheses in the study (Raudenbush & Bryk, 2002). HLM is a statistical method suitable for this study because there are 35 measurements (Level 1) nested within each of the 100 participants (Level 2). Multilevel modeling was conducted using HLM 7.0 (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2011). This technique allows for investigation of within-person (i.e. emotional states and valence ratings in level 1) and between-persons effects (i.e. positive emotion regulation strategies level 2). In each of the models in this study, all level 1 variables were centered on individuals' means by group mean centered, while all level 2 variables were centered on overall means by grand mean centered (Bolger & Laurenceau, 2013).

To address the hypothesis, two models were constructed to test the associations of the three subscales of savoring (i.e. savoring through reminiscence, savoring the moment, and savoring through anticipation) as well as three subscales in RPA (i.e. emotion-focused rumination, self-focused rumination, and dampening) with everyday positive and negative emotions. These three savoring strategies and three subscales of RPA were entered as Level 2 predictors.  $\gamma_{ti}$  was positive or negative emotions in general for individual  $i$  at time  $t$ ,  $\pi_{0i}$  was a random coefficient representing the within-person averaged levels of emotions, and  $\epsilon_{ti}$  was the level 1 (within-person) random effect.  $\beta_{00}$  was a fixed coefficient of averaged positive/negative emotions across all individuals, and  $\beta_{01}$  -  $\beta_{06}$  were fixed coefficients of

savoring through reminiscence, savoring the moment, savoring through anticipation, and emotion-focused, self-focused, and dampening representatively.

Level-1 model:  $\gamma_{ti} = \pi_{0i} + \epsilon_{ti}$

Level-2 model:  $\pi_{0i} = \beta_{00} + \beta_{01}$  (savoring through reminiscence) +  $\beta_{02}$  (savoring the moment) +  $\beta_{03}$  (savoring through anticipation) +  $\beta_{04}$  (emotion-focused) +  $\beta_{05}$  (self-focused) +  $\beta_{06}$  (dampening) +  $r_{0i}$

Four models were constructed to test the associations of savoring with positive and negative emotions specifically during positive or negative events. Valence rating was added as Level-1 predictor, while three savoring strategies and three subscales of RPA were entered as Level 2 predictors. The cross-level interaction terms appeared in the combined equation as a result of the valence ratings as predictor in level-1 and positive emotion regulation strategies in level-2. Simple slope tests were used for the significant interaction terms to identify the associations of valence ratings on everyday emotions among different levels of perceived capability of savoring and RPA. Scores at one SD above and below the mean indicated higher and lower levels of perceived capability of savoring/ RPA, whereas scores within one SD of the mean indicated medium levels.

Level-1 model:  $\gamma_{ti} = \pi_{0i} + \pi_{1i}$  (valence ratings) +  $\epsilon_{ti}$

Level-2 model:  $\pi_{0i} = \beta_{00} + \beta_{01}$  (savoring through reminiscence) +  $\beta_{02}$  (savoring the moment) +  $\beta_{03}$  (savoring through anticipation) +  $\beta_{04}$  (emotion-focused) +  $\beta_{05}$  (self-focused) +  $\beta_{06}$  (dampening) +  $r_{0i}$

$\pi_{1i} = \beta_{10} + \beta_{11}$  (savoring through reminiscence) +  $\beta_{12}$  (savoring the moment) +  $\beta_{13}$  (savoring through anticipation) +  $\beta_{14}$  (emotion-focused) +  $\beta_{15}$  (self-focused) +  $\beta_{16}$  (dampening) +  $r_{1i}$

## 4.2 Results

### 4.2.1 Identification of sociodemographic covariates

Correlations of positive and negative emotions with sociodemographic characteristics are summarized in Table 2. Age, gender, education level, employment status, and household income were not associated with positive and negative emotions ( $r = -.15$  to  $.16$ ,  $p = .12$  to  $.89$ ).

### 4.2.2 Main effect of valence ratings

Valence ratings on positivity of positive events was positively associated with positive emotions (estimate= $1.93$ ,  $SE=.13$ ,  $p<.001$ ) and negatively associated with negative emotions (estimate= $-.62$ ,  $SE=.08$ ,  $p <.001$ ). Valence ratings on negativity of negative events was negatively associated with positive emotions (estimate= $-.92$ ,  $SE=.35$ ,  $p =.01$ ) and positively

associated with negative emotions (estimate=1.39,  $SE=.37$ ,  $p < .001$ ). The results are summarized in Table 3.

#### **4.2.3 Main effect of savoring and RPA**

Overall, savoring the moment (estimate=.22,  $SE=.06$ ,  $p < .001$ ) and through anticipation (estimate=.16,  $SE=.06$ ,  $p=.01$ ), and emotion-focused (estimate=.28,  $SE=.08$ ,  $p < .001$ ) and self-focused (estimate=.44,  $SE=.13$ ,  $p < .001$ ) positive rumination were positively associated with positive emotions. Savoring the moment (estimate=-.13,  $SE=.05$ ,  $p < .01$ ) was also negatively associated predicted negative emotions.

During positive events, savoring the moment (estimate=.18,  $SE=.06$ ,  $p < .01$ ) and through anticipation (estimate=.17,  $SE=.06$ ,  $p < .01$ ), and emotion-focused (estimate=.31,  $SE=.08$ ,  $p < .001$ ) and self-focused (estimate=.45,  $SE=.13$ ,  $p < .001$ ) positive rumination were positively associated with positive emotions. Savoring the moment (estimate=-.09,  $SE=.05$ ,  $p=.03$ ) was also negatively associated with lower negative emotions during positive events.

During negative events, savoring the moment (estimate=.29,  $SE=.10$ ,  $p < .01$ ) was positively associated with positive emotions. The results are summarized in Table 3.

#### **4.2.4 Moderation between valence ratings and emotions in everyday life**

For the associations between valence ratings of positive events and everyday emotions,

both savoring through reminiscing (estimate=.05,  $SE=.02$ ,  $p<.01$ ) and emotion-focused positive rumination (estimate=.09,  $SE=.04$ ,  $p=.01$ ) moderated the positive association between valence ratings of positive events and positive emotions. To estimate simple slopes, predicted values were calculated for participants with 1 SD above the mean, within 1 SD, and 1 SD below the mean on baseline savoring through reminiscing and emotion-focused positive rumination. Simple slope tests revealed that the positive association being significant for both participants with 1 SD above the mean, within 1 SD, and 1 SD below the mean on savoring through reminiscing and emotion-focused positive rumination. For savoring, the positive associations are significant among higher level (estimate =2.40,  $t =11.92$ ,  $p<0.01$ ), medium level (estimate =1.93,  $t =14.80$ ,  $p<0.01$ ), and lower level savoring through reminiscing (estimate =1.46,  $t =6.97$ ,  $p<0.01$ ). And the positive association is the strongest among higher level and the least strong among lower level savoring through reminiscing. For RPA, the positive associations are significant among higher level (estimate =2.28,  $t =12.11$ ,  $p<0.01$ ), medium level (estimate =1.93,  $t =14.80$ ,  $p<0.01$ ), and lower level emotion-focused positive rumination (estimate =1.58,  $t =8.27$ ,  $p<0.01$ ). And the positive association is the strongest among higher level and the least strong among lower level emotion-focused positive rumination. The plots are shown in Figure 1-2.

Emotion-focused positive rumination moderated the negative association between valence ratings of positive events and negative emotions (estimate=-.05,  $SE=.02$ ,  $p=.05$ ).

Simple slope tests revealed the negative association being significant in participants with 1 SD above the mean, within 1 SD, and 1 SD below the mean on emotion-focused positive rumination. The negative associations are significant among higher level (estimate =-.79,  $t = -6.62$ ,  $p < 0.01$ ), medium level (estimate =-0.62,  $t = -7.36$ ,  $p < 0.01$ ), and lower level emotion-focused positive rumination (estimate =-.45,  $t = -3.68$ ,  $p < 0.01$ ). And the negative association is the strongest among higher level and the least strong among lower level emotion-focused positive rumination. The plot is shown in Figure 3.

For the associations between valence ratings of negative events and everyday emotions, savoring through anticipation moderated the positive association between valence ratings of negative events and negative emotions (estimate=-.18,  $SE=.07$ ,  $p=.02$ ). Simple slope tests revealed that valence ratings of negative events was positively associated with negative emotions at the lower level of savoring through anticipation (estimate =2.73,  $t = 3.93$ ,  $p < 0.01$ ) and medium level of savoring through anticipation (estimate =1.39,  $t = 3.71$ ,  $p < 0.01$ ), but not significant at the higher level of savoring through anticipation (estimate =.05,  $t = .08$ ,  $p=.94$ ). The plot is shown in Figure 4.

Savoring and RPA did not moderate other associations between valence ratings and positive or negative emotions in respect of positive or negative events (estimate=-.92 to .16,  $SE=.01$  to .37,  $p=.10$  to .87). The results are summarized in Table 3.

## Chapter 5: Discussion and Conclusions

The findings of this experience sampling study partially supported the study hypotheses.

Across positive and negative events and specifically during positive events, perceived capability of savoring the moment and through anticipation, as well as frequency of emotion-focused and self-focused positive rumination were positively associated with positive emotions, while perceived capability of savoring the moment was negatively associated with negative emotions. Specifically during negative events, perceived capability of savoring the moment was positively associated with positive emotions (*Hypothesis 1*).

Addressing *Hypothesis 2*, the positive association between valence ratings of positive events and positive emotions was progressively stronger from the lower level to the higher level perceived capability of savoring through reminiscing and emotion-focused rumination. The negative association between valence ratings of positive events and negative emotions was progressively stronger from the lower level to the higher level of emotion-focused across positive events. Valence rating of negative events was positively associated with negative emotions across negative events only among the low and medium level of perceived capability of savoring through anticipation.

### 5.1 The Effects of Savoring and RPA on Everyday Emotions

The current findings demonstrated that the perceived capability of savoring and frequency of positive rumination of positive experiences was related to greater positive emotions across positive events. These findings were consistent with Fredrickson's (2001) broaden-and-build theory of positive emotions, according to which the cultivation of positive emotions could build psychophysiological resources to enhance positive feelings or positive states. Participants who have higher ability to savor positive experiences may also be better to build psychophysiological resources, and hence reported more positive emotions. While the results of this study were consistent with past research on the association between savoring/positive rumination and subjective well-being, it also expanded current literature in different ways. The measure of perceived capability of savoring focused on all the three types of savoring strategies (savoring the moment, savoring through reminiscence, and anticipation), and this comprehensive measurement of savoring is valuable as there are different findings for each measure. Moreover, while most previous studies investigated how perceived capability of savoring is associated with positive psychological outcomes (e.g. Hurley & Kwon, 2013; Quoidbach et al., 2015), only a few of them examined the impact of savoring on negative emotions. This study found that the perceived capability of savoring the moment was negatively associated with negative emotions across positive events and positively associated with positive emotions across negative events.



In addition, most of the previous studies of these two types of positive emotion regulation strategies have used a cross-sectional design. These studies measured all of the variables simultaneously to examine the relationship between positive emotion regulation strategies and psychological outcomes but less consideration of the events (i.e. positive/ negative) that participants encountered. For example, perceived capability of savoring was positively associated with happiness, life satisfaction, and self-esteem, while it was negatively associated with depression, neuroticism, and hopelessness (Bryant, 2003). Feldman et al. (2008) found that frequency of self-focused positive rumination was prospectively associated with a lower level of depressive symptoms. Given its longitudinal nature, the current study is one of the important studies that speak of the protective properties of perceived capability of savoring and frequency of positive rumination on everyday emotions in different contexts (i.e. positive/ negative events).

Among these three components of savoring, perceived capability of savoring the moment has the strongest association with everyday emotions when compared to the other two savoring constructs. Perceived capability of savoring the moment might divert individuals' attention to positive information, and thus uplift positive emotions during positive events, counteracting negative emotions (Smith & Hollinger-Smith, 2015). It was also possible that when compared to other two savoring constructs, perceived capability of savoring the moment could be more a reactive process of attending to and being fully

engaged in positive experiences. A recent study among older adults also showed that greater perceived capability of savoring the moment at baseline predicted better perceived health on follow-up (Geiger, Morey, & Segerstrom, 2017). Perceived capability of savoring the moment was important to promote higher positive emotions in both positive and negative events in everyday life.

Although perceived capability of savoring the moment has been focused upon in the previous studies due to its stronger impact, perceived capability of savoring through anticipation was also associated with everyday positive emotions across positive events in the current study. It was consistent with some evidence proposing that anticipation of a good future is important to psychological well-being. For example, Fredrickson, Cohn, Coffey, Pek, and Finkel (2008) indicated that loving-kindness meditation increased the ability to savor the future, and hence significantly increased positive emotions when compared to the control group. Individuals who think about the good future (i.e. perceived capability of savoring through anticipation) may have a positive impact on the positive experiences, and hence up-regulate the positive emotions (Bryant, Chadwick, & Kluwe, 2011; Gentzler, Palmer, & Ramsey, 2016; Quoidbach et al., 2015; Van Boven & Ashworth, 2007). Therefore based on the results obtained here, perceived capability of savoring the moment and savoring through anticipation were associated with positive emotions in response to positive events. At the same time, individuals with higher levels of perceived capability of savoring the moment may

have higher ability to increase positive emotions, and hence foster adaptive adjustment to stressful situations during negative events.

Other than savoring, frequency of positive rumination is one of the important positive emotion regulation strategies that captured individual differences in response to the positive events and experiences. Research studies in the past focused more on responses to negative emotional states (Nolen-Hoeksema et al., 2008; Smith & Alloy, 2009), but the study of positive emotional states has received far less research attention. Our results were in conformity with prior cross-sectional research (Feldman et al., 2008; Raes et al., 2009), suggesting that both frequency of emotion-focused and self-focused positive rumination was positively associated with everyday positive emotions in the positive events. It also added new directions to the current literature by studying positive emotion and positive emotion regulation over and above research on response to negative emotions. Our results were also consistent with the finding of a current daily diary study that higher positive rumination was positively associated with positive emotions and negatively associated with depressive symptoms among 157 young adults (Li et al., 2017). Hence, our findings further underscore the importance of frequency of positive rumination to positive experiences in understanding and explaining everyday emotions. Specifically, it implied that both emotion-focused and self-focused positive rumination may also act as important strategies to up-regulate positive emotions in everyday life.

Our results were consistent with past research and indicated that perceived capacity of savoring and positive rumination were associated with higher levels of positive emotions. And our findings further suggested that perceived capability of savoring the moment was associated with positive emotions across positive and negative events. Meanwhile, frequency of emotion-focused and self-focused positive rumination were associated with positive emotions during positive events only, but they did not predict positive emotions during negative events and negative emotions during positive events. Savoring and RPA also capture individuals' response tendencies to positive emotional experiences. But positive rumination is a relatively pure cognitive construct and tends to be more introspective, it is hence possible that it is only effective in uplifting positive emotions during positive events.

Meanwhile, perceived capability of savoring the moment might be a more reactive process of attending to the positive experiences. It implied that generating the positive emotions associated with the momentary positive event is important in promoting positive emotions, and hence has the power of counteracting the impact of stressful situations (Gloria, Faulk, & Steinhardt, 2013; Tugade & Fredrickson, 2004). The results here showed that the perceived capability of savoring the moment could up-regulate everyday positive emotions during positive events, and also down-regulate everyday negative emotions and up-regulate everyday positive emotions during negative events. Therefore instead of positive events,

perceived capability of savoring the moment may also be a protective factor in stressful situations and negative emotions.

## **5.2 Moderation Effects of Savoring and RPA on Daily Life Events**

In general, positive everyday events are usually associated with higher positive emotions and better physical and mental health, while negative events relate to poorer psychological well-being (Piazza et al., 2013). Fewer studies have investigated how positive and negative events experienced at a particular moment are associated with everyday emotions, and therefore ESM was adopted in this study by involving the measurement of everyday emotions across different events. The results of this study were consistent with past research, finding that when individuals rated the positivity of the events more, they would experience high levels of positive emotions and lower levels of negative emotions. When individuals rated the negativity of the events more, they would experience high levels of negative emotions and lower levels of positive emotions. Meanwhile, individuals may respond to different extents of positive and negative events in a variety of ways in order to help regulate their emotions (Aldao, 2013). For example, past evidence showed that daily positive and daily negative events had greater influence on subjective well-being for negative ruminators (Graf, Ramsey, Patrick, & Gentzler, 2017). Therefore the current study added new directions to the current

literature by assessing whether positive emotion regulation strategies moderated the effects of both positive and negative life events on everyday emotions.

The relationship between positive daily life events and positive emotions was stronger for participants with higher perceived capability of savoring through reminiscing and emotion-focused positive rumination in the current study. Previous research found that perceived capability of savoring was associated with positive outcomes including happiness, positive affect, and life satisfaction for individuals who have lower numbers of positive experiences (Hurley & Kwon, 2013; Jose et al., 2012). Recently, among 304 young people, individuals with higher trait positive affect were more likely to engage in positive rumination, and hence predicted greater positive interpersonal events (Hamilton et al., 2017). Along the lines of these previous research studies, our findings added to the current literature by demonstrating the moderating role of perceived capability of savoring through reminiscing and emotion-focused positive rumination in the association between life events and everyday emotions. Perceived capability of savoring can be facilitated by increasing individuals' ability to aware positive events that have happened. For example, Seligman and colleagues (2005) have developed the "three good things intervention" that individuals are encouraged to remember the good things which happened in the past. Compared to a control condition, writing about positive events was more effective at improving follow-up happiness levels after one month, three months, and six months. The same intervention has been replicated with

general adults (Bahník, Vranka, & Dlouhá, 2015) and individuals with mental illness samples (Slade, 2010). The findings in this study were consistent with these previous studies, and further suggested that perceived capability of savoring the past positive experiences could facilitate the relationship between positive life events and everyday positive emotions.

In addition, the positive association between valence ratings of positive events and positive emotions and the negative association with negative emotions are stronger for individuals with higher levels of emotion-focused positive rumination. It is possible that the act of attending to and focusing on positive experiences in an individual's life results in higher levels of positive affect, which can guard against the development of negative emotions (Garland et al., 2010). Past researchers have suggested that diverting attention away from negative stimuli to something more positive could serve as an effective positive emotion regulatory strategy (Tugade & Fredrickson, 2007). And the frequency of positive rumination predicted better psychological functioning and well-being (Bijttebier et al., 2012; Johnson et al., 2008; Raes et al., 2012). Our results expanded these previous findings by providing evidence that the positive rumination amplifies the relationship between valence ratings of positive events and everyday emotions. Higher valence ratings of positive events could predict higher levels of positive emotions and low levels of negative emotions for individuals with higher levels of emotion-focused positive rumination.

This study also examined whether and how perceived capability of savoring and frequency of positive rumination and dampening influence the association between negative events and everyday emotions. Hurley and Kwon (2013) found that participants who experience fewer positive events reported greater positive emotions when they had high levels of perceived capability of savoring the moment. Our findings further suggested that perceived capability of savoring through anticipation could be one of the protective factors buffering the adverse effect of negative everyday life events on negative emotions. When individuals have high perceived capability of savoring through anticipation, more negatively events would not predict increased negative emotions. The results showed that the level of stress predicted increases in negative emotions as one would expect, but this association was also moderated by the perceived capability of savoring through anticipation. The obtained findings support previous research, which found that expecting positive future outcomes can actually enhance one's psychological well-being. Starr and Hershenberg (2017) found that dysphoric individuals experienced greater reductions in depressed mood when they anticipate positive experiences. In the clinical settings, MDD patients estimated the higher probability of experiencing adverse life events and showed a more pessimistic attitude towards the future when compared to healthy controls. (Korn, Sharot, Walter, Heekeren, & Dolan, 2014). In the non-clinical setting, Quoidbach, Wood, and Hansenne (2009) asked participants to imagine positive events that might reasonably happen the next day. Participants showed higher levels



of positive emotions than those asked to imagine negative or neutral things after this activity.

These findings suggested that anticipation is important in explaining how negative life events are associated with psychopathological outcomes.

Our results offered important insights into how negative life events affect everyday negative emotions. Specifically, negative life events predicted greater levels of negative emotions only among individuals with lower or medium perceived capability of savoring through anticipation. It implied that the perceived capability to savor future positive experiences could protect individuals from the negative aspects of events. There are several psychological mechanisms that may account for this moderation effect. Higher perceived capability of savoring may enable individuals to better handle negative events by enhancing the duration of positive feelings (Ong, Zautra, & Reid, 2015). This may weaken the positive relationship between the negative daily life events and negative emotions. In addition, individuals with higher perceived capability of savoring through anticipation maybe more aware of positive experiences, and hence they may be more appreciative of future positive experiences that others may not have noticed (Bryant & Smith, 2015; Garland et al., 2015). Previous research has also found that perceived capability of savoring is related to higher levels of positive emotions, self-esteem, and optimism (Bryant, 2003; Smith & Hollinger-Smith, 2015). This study further implied that the perceived capability of savoring through anticipation may weaken the association between negative events and negative

emotions through those potential mechanisms. The challenges of negative events in the life could weaken the attention focus and alter cognitive perspective, and hence make individuals more difficult to notice or attend to positive experiences (Garland et al., 2015). But savoring may play an important role in expanding perceptual awareness and facilitating positive reappraisal, and hence help individuals to appreciate positive aspects of the negative events.

Some aspects of the current findings were not consistent with previous studies. Previous research has suggested that dampening is related to lower levels of subjective well-being and higher levels of psychological disorders such as depression (Burr et al., 2017; Feldman et al., 2008; Gilbert et al., 2016). However, the present findings showed that dampening has no main effect on everyday emotions and also no moderation effect on the relationship between life events and everyday emotions. Importantly, the dialectical beliefs about positive emotions such as being too happy lead to negative consequences (or being midway is desirable) played an important role in emotion regulation in Chinese/Eastern Asian culture (Miyamoto & Ma, 2011). And Chinese/Eastern Asians were more likely to dampen positive affect, whereas European Americans were more likely to savor it (Hechtman, Raila, Chiao, & Gruber, 2013; Joshanloo & Weijers, 2014). Chinese/Eastern Asians regarded positive and negative emotions as moderately desirable and undesirable, and emotional well-being is a balance between positivity and negativity achieved through moderation instead of maximization (Miyamoto & Ma, 2011; Sims et al., 2015). People might dampen their

positive emotions because attaining positive emotions might create the feeling of unworthy and guilty (Joshanloo & Weijers, 2014). Furthermore, Ricard (2011) suggested that the desire for positive emotions could make a person become more selfish and thereby have negative effects on the well-being of others. Therefore it is possible that the frequency of dampening could not predict the positive or negative emotions on the adults in the current study, which were influenced by both Eastern and Western culture.

### **5.3 Limitations**

There are several limitations in the current study. First, this study was conducted with a sample of Chinese middle aged adults. Representativeness and generalizability of the findings should be tested among adults with different socio-demographic backgrounds. One study on aging investigated the motivation to enhance, maintain, or dampen emotions among 378 individuals aged between 14 and 86 (Riediger, Schmiedek, Wagner, & Lindenberger, 2009). Compared to younger adults, older adults were more willing to maintain their positive emotions or dampen their negative emotions. Meanwhile, middle adulthood often reported lowered subjective well-being due to the stress of competing demands from work and family (Graham & Pozuelo, 2017). Most individuals encountered most of the major life transitions during this stage, such as those involving changes in marital status (Brown & Lin, 2012), career (Darbonne, Uchino, & Ong, 2013), living arrangements (James, Matz-Costa, & Smyer,

2016) and physical capacities (Lachman & Agrigoroaei, 2010). Therefore previous studies in general reported that middle aged adults reported lower levels of positive emotions and higher levels of negative emotions when compared to younger and older adults (Graham & Pozuelo, 2017; Ramsey & Gentzler, 2014; Steptoe et al., 2015).

Next, this study provided an important evidence base for the associations between positive or negative events and everyday emotions were amplified through positive emotion regulation strategies. But the moderating effects of savoring through reminiscing and emotion-focused positive rumination on everyday emotions were not strong. It implied that the positivity/ negativity of the events were strongly associated with everyday emotions. Future work may assess the types of activities such as work or leisure that participants encounter. It might be not the positivity/ negativity of the events per se that affects everyday emotions, but the types of activities that matter. For example, the positive relationship between employees' positive affectivity and job performance was stronger among higher levels of perceived capability of savoring (Lin et al., 2011). Therefore it is possible that the perceived capability of savoring or frequency of RPA only moderated the association between certain types of events on everyday emotions. Moreover, there are some theoretical similarities between savoring and other constructs such as mindfulness and positive reappraisal (Bryant & Smith, 2015). Future work may also assess these constructs that might

co-occur with savoring in order to investigate whether they maybe third variables account for the findings here.

Finally, this study did not examine both positive and negative valences of the events. Instead, participants chose the valence, either positive or negative, of the event at each sampling moment. Some events might be more mixed, such as negative but with some positive aspect. For example, a three-week longitudinal field study assessed both positive and negative events at each sampling moment, and found that positive events and negative events independently contributed to physical and mental health (Bono, Glomb, Shen, Kim, & Koch, 2013). Therefore it might be examined whether both positive and negative events independently influence everyday emotions at each sampling moment in the future, and it is also possible that positive events act as a buffer against the effects of negative events at the sampling moment.

#### **5.4 Conclusions and Implications**

Notwithstanding the above limitations, the current study provided insights on understanding the importance of positive emotions and positive emotion regulation in everyday life (Riskind et al., 2013). There is relatively more research studies focused on how increasing positive emotions by emotion up-regulation strategies can be used to process stressful situations and decrease negative emotions. This study could enhance existing

knowledge on the role of perceived capability of savoring and frequency of RPA in both positive and negative everyday emotions. The associations between the positive/negative events encountered by individuals at a given sampling moment and everyday emotions might change as a function of positive emotion regulation strategies. This study also investigated how perceived capability of savoring or frequency of RPA contributes to emotional well-being across different participants who experience varying degrees of pleasant/ stressful situations. Emotion regulation of individuals is a possible approach in enhancing positive emotions and reducing negative emotions. Previous studies suggested that middle aged adults reported the highest stress level and lowest subjective well-being as they were shouldering responsibilities of both work and family (Graham & Pozuelo, 2017). This study implied that the up-regulation of positive emotions also helps to attain the desired goal and enhance positive feelings among the middle aged working adults. Although students were not the target sample in the current study, it also provided insights that positive emotion regulation maybe important in the education field. For example, higher levels of positive emotions among students were associated with better academic achievements (Valiente, Swanson, & Eisenberg, 2012). Therefore intervention research studies might incorporate the components of positive emotion regulation strategies including savoring and positive rumination in the future. For example, participants who have higher perceived capability of savoring after

intervention may have higher ability to increase positive emotions, and hence foster adaptive adjustment to stressful situations during negative events.

Finally, there are several suggestions for the future directions. Future research might focus on evaluating savoring and positive rumination as a specific type of positive emotion regulation strategy that may promote positive well-being and buffer against the stressful situations and negative emotions. It could provide an in-depth look into how savoring and positive rumination may help individuals to build cognitive resources and other intrapersonal strengths known to buffer against negative affect, like resilience. Moreover, the findings in the current study provided an important evidence base for investigating the associations of savoring and positive rumination with emotions in everyday life. Ramsey and Gentzler (2014) found the positive correlation between perceived capability of savoring as measured by the Savoring Beliefs Inventory (SBI) and actual savoring strategies used during a recent enjoyable vacation. They suggested that both the perceived capability of savoring and actual savoring strategies were positively correlated with subjective well-being. Researchers could implement experience sampling designs to investigate momentary savoring and RPA and their associations with everyday emotions in the future. Such more powerful longitudinal designs are useful to determine if the momentary positive emotion regulation strategies affect everyday emotions. Further studies should also investigate both positive and negative valences of the events at the same sampling moment since some daily life events might be

mixed. Therefore there would be sufficient data to investigate whether individuals with low, medium, or high levels of savoring/ RPA differ when the valence ratings of positive or negative events is very high or very low. Further studies may also investigate whether positive emotion regulation is associated with better psychological functioning among special group of participants such as students with special educational needs or students who are facing public examination.



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Table 1. Sociodemographic of the participants.

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Mean age ( <i>SD</i> )	42.84 (6.91)
Range	31-54
Sex (female)	50
Education level	
Primary education or below	3
Secondary education	44
Tertiary education or above	53
Employment status	
Full-time employed	85
Part-time employed	8
Unemployed	1
Housewife	6
Monthly household income	
≤ HKD10000	2
HKD10001-20000	10
HKD20001-30000	25
HKD30001-40000	29
≥ HKD40001	34

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Table 2. Correlations of sociodemographic characteristics with and positive and negative emotion

	Positive Emotions	Negative Emotions
Age	-.02	-.14
Gender	.11	.07
Education level	-.10	.16
Employment status	.07	-.15
Household income	.14	.02

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$



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Table 3. Main effect and moderating effect of positive emotion regulation strategies in the associations between valence ratings and emotions.

	Overall		Positive events		Negative events	
	Est. ( <i>SE</i> )	Est. ( <i>SE</i> )	Est. ( <i>SE</i> )	Est. ( <i>SE</i> )	Est. ( <i>SE</i> )	Est. ( <i>SE</i> )
	PA	NA	PA	NA	PA	NA
Intercept	13.06 (.28)***	2.37 (.24)***	13.42 (.28)***	2.07 (.23)***	6.30 (.58)***	8.58 (.79)***
Valence Ratings	Nil	Nil	1.93 (.13)***	-.62 (.08)***	-.93 (.35)*	1.39 (.37)***
Anticipation	.16 (.06)*	-.05 (.05)	.17 (.06)**	-.05 (.05)	-.03 (.11)	-.02 (.15)
Moment	.22 (.06)***	-.13 (.05)**	.18 (.06)**	-.10 (.05)*	.29 (.10)**	-.07 (.14)
Reminiscing	-.03 (.04)	-.02 (.03)	-.01 (.04)	-.03 (.03)	-.07 (.09)	-.07 (.12)
Emotion	.28 (.08)***	.06 (.07)	.31 (.08)***	.03 (.06)	-.07 (.15)	.36 (.21)
Dampening	.09 (.13)	.04 (.11)	.07 (.13)	.07 (.10)	.04 (.23)	.11 (.31)
Self	.44 (.13)***	.20 (.11)	.45 (.13)***	.18 (.10)	.35 (.20)	.48 (.28)



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Anticipation*Rating	Nil	Nil	-.03 (.03)	-.01 (.02)	-.03 (.07)	-.18 (.07)*
Moment*Rating	Nil	Nil	-.02 (.03)	.02 (.02)	-.02 (.05)	.04 (.06)
Reminiscing*Rating	Nil	Nil	.05 (.02)**	.00 (.01)	.10 (.06)	.09 (.07)
Emotion*Rating	Nil	Nil	.09 (.04)*	-.05 (.02)*	.07 (.10)	.05 (.11)
Dampening*Rating	Nil	Nil	-.10 (.06)	.02 (.04)	.07 (.15)	.16 (.16)
Self*Rating	Nil	Nil	.02 (.06)	-.06 (.04)	-.02 (.13)	-.08 (.14)

---

PA = positive emotions; NA = negative emotions; Reminiscing = savoring through reminiscing, Moment = savoring the moment, Anticipation = savoring through anticipation, Emotion = emotion-focused positive rumination, Self = self-focused positive rumination; \* $p < .05$ . \*\* $p < .01$ .

\*\*\* $p < .001$

Figure 1. Plot of the moderating effect of savoring through reminiscing on the association between valence ratings of positive events and positive emotions

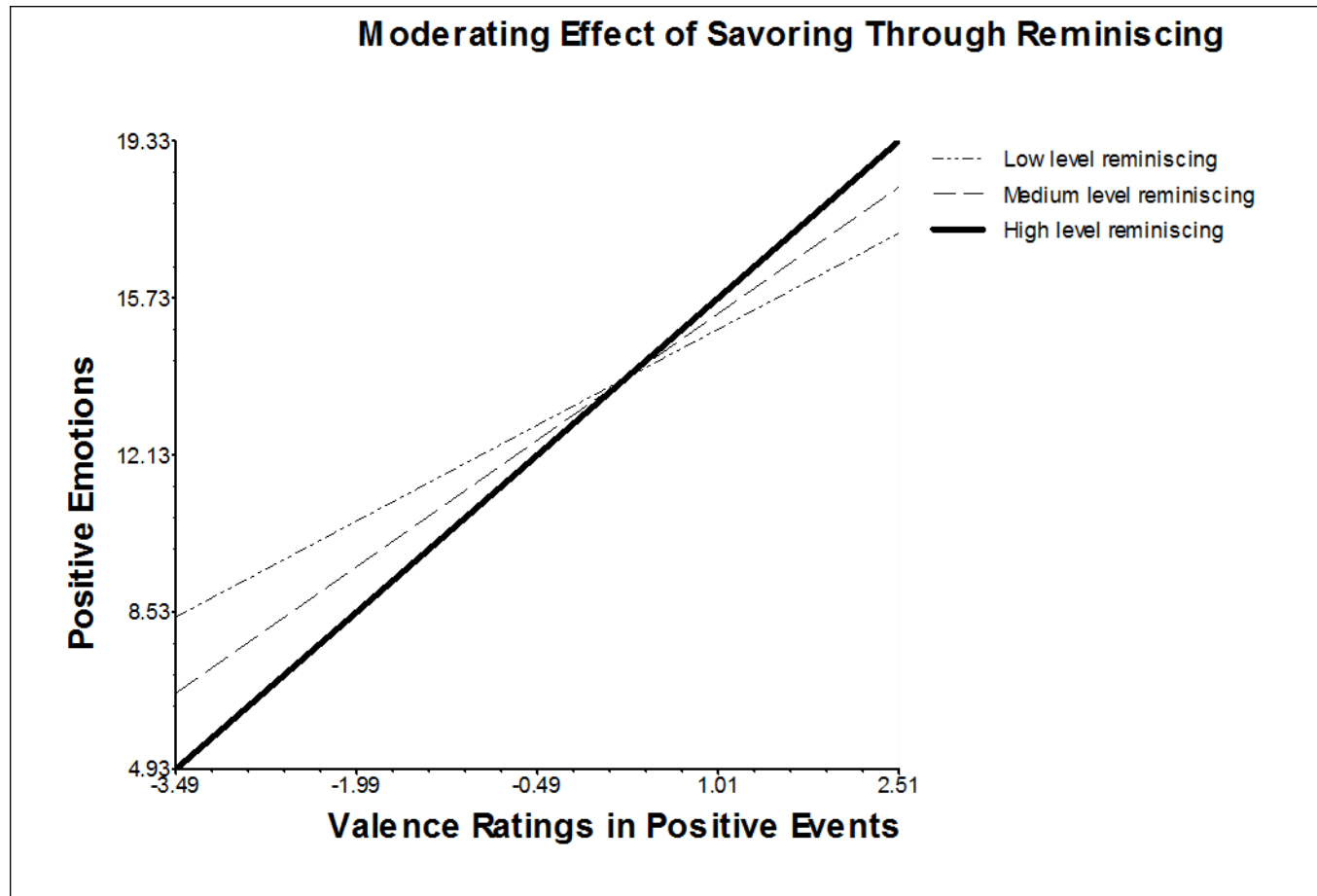


Figure 2. Plot of the moderating effect of emotion-focused positive rumination on the association between valence ratings of positive events and positive emotions

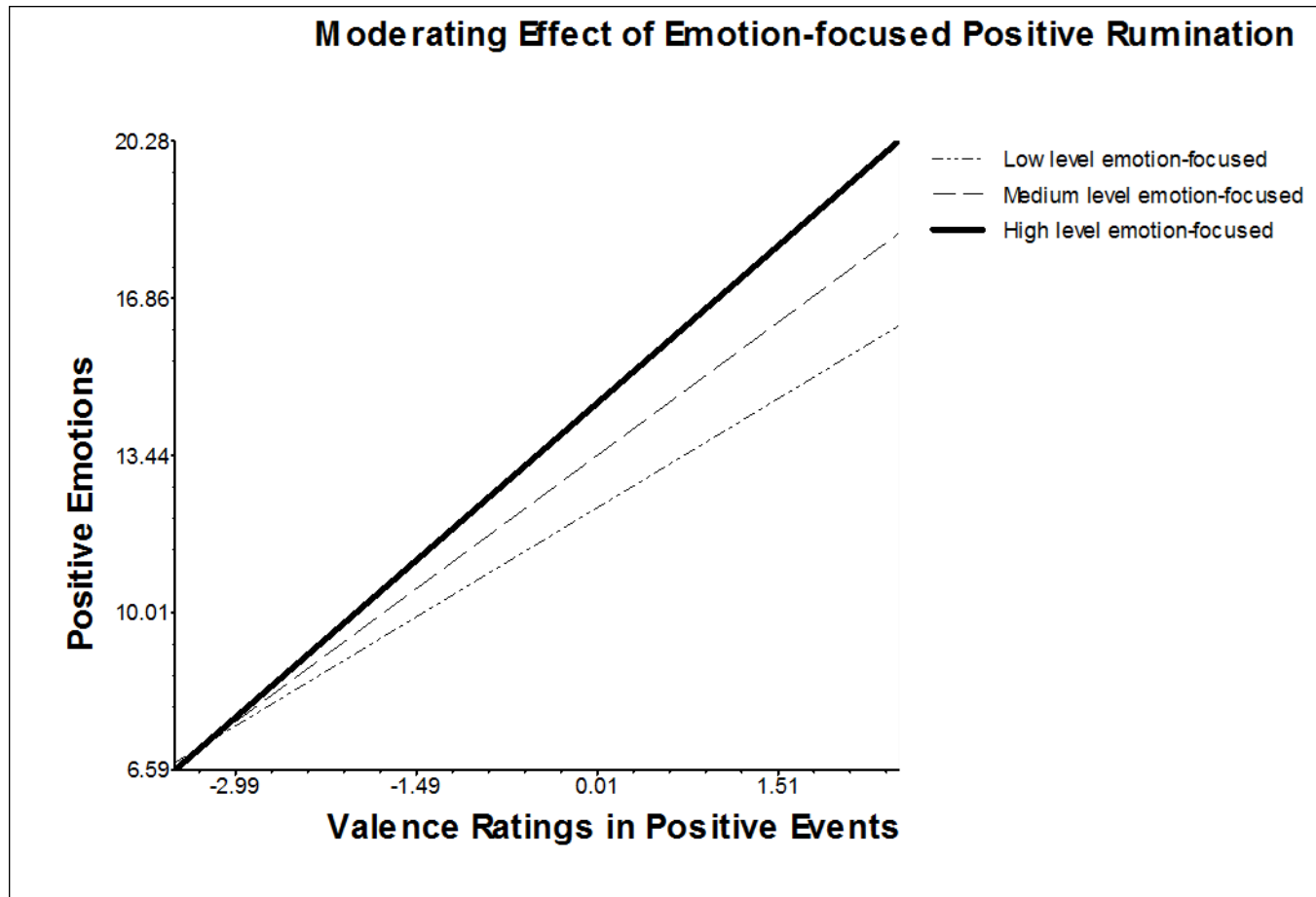


Figure 3. Plot of the moderating effect of emotion-focused positive rumination on the association between valence ratings of positive events and negative emotions

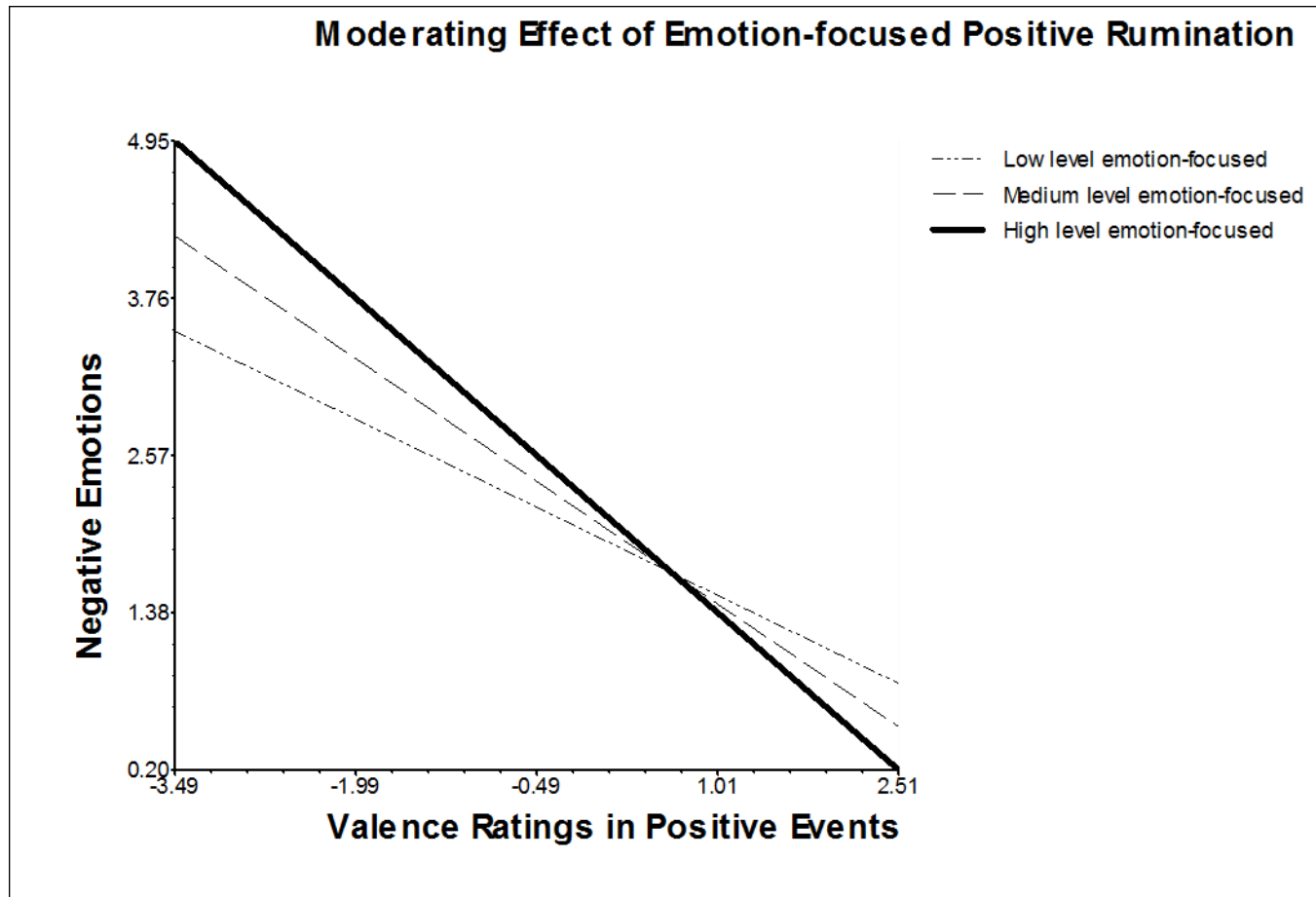


Figure 4. Plot of the moderating effect of savoring through anticipation on the association between valence ratings of negative events and negative emotions

