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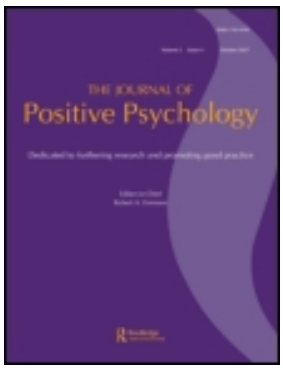

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Paul E. Jose [a] , Bee T. Lim [a] & Fred B. Bryant [b]

[a] School of Psychology, Victoria University of Wellington, Wellington 6140, P.O. Box 600, New Zealand

[b] Department of Psychology, Loyola University Chicago, Chicago, IL, USA

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Does savoring increase happiness? A daily diary study

Paul E. Jose[a]*, Bee T. Lim[a] and Fred B. Bryant[b]

[a]*School of Psychology, Victoria University of Wellington, Wellington 6140, P.O. Box 600, New Zealand;* [b]*Department of Psychology, Loyola University Chicago, Chicago, IL, USA*

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Bryant and Veroff (2007, *Savoring: A new model of positive experience*. Mahwah, NJ: Lawrence Erlbaum Associates) have proposed that savoring, namely, regulating the emotional impact of positive events by one's cognitive or behavioral responses, increases happiness. The present study was designed to determine whether and how savoring influences daily happiness. Experience sampling methodology was used with 101 participants, who provided self-reports of their momentary positive events, savoring responses, and positive affect daily over a period of 30 days. Multilevel modeling analyses verified that (a) these three constructs were positively related to each other within a given day, (b) momentary savoring both mediated and moderated the impact of daily positive events on momentary happy mood, and (c) levels of trait savoring moderated the observed mediational pattern. These results provide support for the hypothesis that savoring is an important mechanism through which people derive happiness from positive events.

Keywords: experience sampling methodology; happy mood; momentary positive events; savoring; well-being

Researchers (Bryant, 2003; Langston, 1994) have asserted that if one has the ability to enjoy and savor positive experiences in life, then one will live a richer and more enjoyable life. While there is an extensive body of knowledge on coping with negative experiences and the ills of life that befall us, empirical studies on strategies used to enhance positive experiences are lacking, and this particular question concerning the role of savoring remains to be examined in depth. With the emergence of the positive psychology movement, researchers have begun to explore ways to sustain increases in happiness and subjective well-being (Cohn & Fredrickson, 2010; Schueller, 2010; Sheldon & Lyubomirsky, 2006; Sin & Lyubomirsky, 2009). Thus, in the present study, we sought to determine whether the process of savoring positive events boosts happiness.

In the following section we first briefly review prior work on daily positive life events and consider savoring responses as potential mediators or moderators of the emotional impact of daily positive events. We then distinguish between savoring as a trait versus a state response, and we differentiate savoring responses that *amplify* positive emotions from savoring responses that *dampen* positive emotions in response to positive events. Finally, we explain the design and hypotheses of the present study, which examined the role of savoring in the relationship between daily positive events and daily happiness.

The study of daily positive life events

In an effort to explore the emotional impact of life events, research has repeatedly shown that summary scores derived from composite measures of negative life events are related to and predict ill- and well-being (e.g. Kanner, Coyne, Schaefer, & Lazarus, 1981; Seidlitz & Diener, 1993). In addition, measures of unpleasant daily life events (also known as hassles or stressors) have been found to correlate with depressed and happy mood respectively both within and across days (Kanner et al., 1981; Maybery, Jones-Ellis, Neale, & Arentz, 2006).

Most studies of daily life events have examined only negative events, and as a result, several researchers (Gable & Reis, 2010; Langston, 1994; Nezlek & Gable, 2001) have noted that empirical studies on *positive daily events* are lacking. Gable and Reis (2010) have highlighted two reasons individuals' responses to positive events are important and worth examining: First, positive daily events occur more frequently than negative daily events (Gable & Haidt, 2005) and second, positive events have important implications for mental health and well-being. For example, Zautra, Schultz, and Reich (2000) have shown that higher reports of daily positive events are significantly related to lower levels of depressive symptoms. Evidence also exists that positive life events reduce the detrimental effects of negative events on life satisfaction (Cohen & Hoberman, 2006), decrease daily depressogenic

*Corresponding author. Email: paul.jose@vuw.ac.nz

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thinking (Nezlek & Plesko, 2003; Nezlek & Allen, 2006), and boost daily self-esteem and perceived control (Nezlek & Gable, 2001; Nezlek & Plesko, 2003).

Savoring: Is it a mediator, moderator, or both?

Savoring has been proposed as a regulatory mechanism that influences the relationship between positive events and an individual's positive emotional reactions to these events. Thus, savoring is conceptualized as the set of cognitive or behavioral strategies that regulate the intensity or duration of positive feelings in reaction to positive experiences (Bryant, 1989, 2003). In particular, Bryant and Veroff (2007) define savoring as the process in which people engage 'to attend to, appreciate, and enhance the positive experiences in their lives' (p. 2). Bryant and Veroff (2007) have proposed several cognitive and behavioral savoring strategies thought to be instrumental for augmenting and prolonging positive experiences, including sharing the experience with others (seeking out people with whom to enjoy an event or telling others how much you value the moment), behavioral expression (laughing or showing affect), counting blessings (creating gratitude), self-congratulation (creating pride), memory building (purposefully trying to remember the positive event), and sensory-perceptual sharpening (focusing on the physical sensations of a pleasant experience). A construct similar to this conceptual definition of savoring is Langston's (1994) notion of 'capitalizing' described as an act of 'beneficially interpreting positive events' (p. 1112). Research has pointed to the effectiveness of savoring as a process of positive emotional regulation that sustains and intensifies positive affect (Bryant, Chadwick, & Kluwe, 2011; Bryant & Veroff, 2007; Wood, Heimpel, & Michela, 2003); however, it is as yet unknown exactly how savoring transforms everyday positive events into mood outcomes over time.

Relevant to this research, Bryant and Veroff (2007) have suggested that savoring can serve as a mediator and/or moderator of the relationship between positive events and happiness. In the case of *mediation*, on the one hand, just as stressful events trigger certain coping efforts, which in turn lead to particular mood states (see Folkman & Lazarus, 1988; Quittner, Glueckauf, & Jackson, 1990), the occurrence of positive events might evoke certain savoring efforts, which in turn might lead to a sense of greater happiness (Bryant, 1989, 2003; Bryant & Veroff, 2007; Quoidbach, Berry, Hansenne, & Mikolajcza, 2010). Regarding the first link in this proposed mediational relationship, positive events seem to consistently elicit in individuals particular savoring responses, such as counting blessings and memory building (Bryant & Veroff, 2007). Regarding the second link in this mediational relationship, there is evidence that shows that some savoring responses tend to increase well-being. For example, counting blessings enhances positive affect (Emmons & McCullough, 2003), and actively building memories of positive experiences can sustain positive feelings by facilitating reminiscence and social story-telling (Bryant, Yarnold, & Morgan, 1991). Thus, consistent with this mediational model, we sought to determine whether the previously demonstrated link between positive life events and happiness could be at least partially explained by identifying an indirect path from positive life events through savoring to happiness.

In the case of *moderation*, on the other hand, savoring processes might influence the strength of the relationship between positive events and happiness. Concerning savoring as a moderator, there is evidence that some savoring responses can interact with positive experiences to influence the strength of emotional reactions. For example, communicating one's positive feelings with others in response to good events (i.e. the savoring response of 'sharing with others') boosts positive affect (Langston, 1994) and life satisfaction (Gable, Reis, Impett, & Asher, 2004), and it has been shown that emotional display (i.e. the savoring response of 'behavioral expression') can amplify affective reactions to positive stimuli (Strack, Martin, & Stepper, 1988). Consistent with this moderational model, people who react to positive events with savoring responses such as sharing with others and behavioral expression may evidence a stronger relationship between positive events and well-being compared to people who do not engage in these savoring responses.

Although previous studies have examined aspects of these proposed patterns, to our knowledge, no study has investigated whether savoring might function either as a mediator or moderator between positive life events and happiness. The current daily diary study was designed to examine these two possibilities.

Savoring as a trait versus state

It is also important to distinguish between trait savoring and momentary savoring. Supporting the notion that savoring consists of both state and trait components, Bryant and Veroff (2007) have argued that 'cognitive and behavioral savoring responses reflect not only reactions to situational characteristics of positive experiences, but also stable personality traits that predispose people to think and act in certain ways when going through positive experiences' (pp. 101–102). Accordingly, we examined both dispositional (trait) and momentary (state) savoring in this study. We operationalized 'trait savoring' as a *stable tendency* in response to positive life events and 'momentary savoring' as a *transitory contextualized*

reaction that is used in a particular situation in response to a positive event.

Types of savoring responses

In understanding the impact of savoring on positive emotions, Bryant and Veroff (2007) have suggested that different ways of savoring are likely to lead to different emotional outcomes. In this vein, Wood et al. (2003) have distinguished between 'savoring responses' that amplify positive emotions and 'dampening responses' that suppress positive emotions. Extending this framework, Quoidbach et al. (2010) have distinguished among four broad types of 'savoring' or amplifying strategies (i.e. behavioral display, attending to the moment, capitalizing, and positive mental time travel), which intensify or prolong positive experiences, and four broad types of 'dampening' strategies (i.e. suppression, fault finding, distraction, and negative mental time travel), which de-intensify, derail, or cut short positive experiences.

Similarly, Bryant and Veroff (2007) have identified both amplifying and dampening savoring responses in their measure of people's savoring strategies. For example, they have identified a savoring response called 'kill-joy thinking' (e.g. thoughts that actively inhibit enjoyment) that stifles and neutralizes positive feelings. An example item from this subscale is 'I thought about ways in which it could have been better'.

In conceptualizing savoring as a regulatory process, however, Bryant and Veroff (2007) considered both amplifying and dampening responses to be dimensions of savoring, which are proposed to have opposite effects on positive emotions. In other words, Bryant and Veroff (2007) conceived of cognitive and behavioral responses to positive events that *enhance* positive emotional reactions as 'amplifying' savoring responses, and cognitive and behavioral responses to positive events that *suppress* positive emotional reactions as 'dampening' savoring responses. Paralleling this conceptual approach in the domain of negative life events, efforts to cope with stress are conceptualized as coping responses regardless of whether they increase or decrease distress. For example, although an effort to cope with a problem by 'catastrophizing', or exaggerating the direness of one's situation, may actually amplify rather than dampen one's distress, catastrophizing is nonetheless conceptualized as a coping response (Keefe, Brown, Wallston, & Caldwell, 1989). Theorists should not restrict the conceptual definition of a process to one particular dimension of the outcome that the process regulates. Therefore, just as coping with negative events is a regulatory process regardless of whether it increases or decreases negative feelings, so is savoring positive events a regulatory process regardless of whether it amplifies or dampens positive feelings. In other words, savoring and dampening are not two separate processes, but rather amplifying and dampening are two separate forms of the same underlying process of savoring. Therefore, in this study, we focus on two broad types of trait savoring responses: (1) *amplifying* responses (e.g. sharing one's positive feelings) that we anticipated would boost the impact of positive events on happiness, and (2) *dampening* responses (e.g. kill-joy thinking) that we predicted would reduce the impact of positive events on happiness.

The present study

This study was designed to examine the relationships among and between positive life events, savoring, and positive mood states (happiness). Traditionally, assessments of life events and mood have been self-report measures administered at one point, or at best several points, in time (Watson & Clark, 1997). Over the past decade, however, researchers have increasingly turned to experience sampling methodology (ESM; Csikszentmihalyi & Larson, 1987) to examine the effects of daily events on mood states. More immediate measures of experience are useful because lived experiences produce spontaneous emotional reactions that are fleeting, and once an event has passed, individuals rapidly return to baseline levels of affect, especially in the case of positive affect (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Conner, Tennen, Fleeson, & Barrett, 2009). Therefore, in this study, we employed ESM to examine pleasant daily life events, savoring responses, and positive mood, using diary measures completed at a random time each day for one month.

Given the findings of past studies and theory from Bryant and Veroff (2007), we hypothesized that

(1) Momentary reports of positive events, savoring, and happy mood would all be significantly and positively related to each other.
(2) Consistent with formulations of savoring by Bryant and Veroff (2007), we expected that momentary savoring would mediate the relationship between momentary positive events and momentary happy mood. In testing mediation, it is critical to specify the time interval that must elapse for one variable to have an effect on another (Cole & Maxwell, 2003). Given the observed association within days between stressful events and negative mood (e.g. Bolger, DeLongis, Kessler, & Schilling, 1989), we expected that positive events would have a comparable relationship with positive mood within a given day.
(3) Also consistent with Bryant and Veroff's (2007) hypothesis, we expected to find within-day

Level 1 moderation for momentary savoring on the relationship between momentary positive events and momentary happy mood. In particular, we hypothesized that momentary savoring would enhance the relationship between momentary positive events and momentary happy mood. Daily diary studies have found that expressive responses to positive events heighten the impact of these events on mood during the day on which the events occur (Gable et al., 2004; Langston, 1994). Accordingly, we used a daily time-frame as the interval within which the moderating effects of savoring on positive mood would unfold.

(4) Finally, we expected that people's characteristic (trait) styles of savoring would influence the strength of the mediating effects of daily savoring on the linkage between positive events and positive mood within days. Specifically, individuals predisposed to savor in ways that amplify positive emotions should be more likely to engage in mood-enhancing savoring responses in reaction to positive events, and these more frequent savoring responses should strengthen the indirect effect of momentary positive events on momentary happy mood. Likewise, individuals predisposed to savor in ways that dampen positive emotions should be less likely to react to momentary positive events with mood-enhancing savoring responses, thus showing a weaker indirect effect of momentary positive events on happy mood within days.

Method

Participants

One hundred and one participants (29 males and 72 females) whose ages ranged from 17 to 53 years ($M = 21.50$ years; $SD = 5.91$) participated in the study. Most of the participants were European New Zealanders, but the sample also included smaller numbers of Maori, Pacific Islander, Asian New Zealanders, and those who classified their ethnicity as 'Other'. The participants were recruited via flyers and posters around the university campus and through Student Job Search, a local recruitment agency specifically catering to students. Upon completion of the study requirements, participants were given vouchers worth NZ$50.

Mood diary measures

Momentary positive events. Three dimensions were measured for pleasant life events: frequency, intensity, and impact. The questions asked were, 'How many pleasant events happened to you in the last hour?', 'How intense were the pleasant events?', and 'How much impact did the pleasant events have?' For the frequency and impact questions, response options ranged from 0 (*none*) to 4 (*a lot*). Intensity was also measured with a five-point Likert scale, ranging from 0 (*not*) to 4 (*very*). To obtain a measure of internal consistency reliability, we computed occasion-specific Cronbach's alphas (one for each of the 30 days), and found the median alpha to be 0.913 with a minimum of 0.816 and a maximum of 0.941. The size of these reliabilities justified averaging across these three items at each time point, and subsequently in this paper we use the term 'momentary positive events' for this composite variable (although it includes frequency, intensity, and impact information).

Momentary savoring. These items were taken from three savoring subscales from Bryant and Veroff's (2007) Ways of Savoring Checklist, namely sharing with others, counting blessings, and sensory-perceptual sharpening, because these three types of savoring represent common and powerful instances of 'amplifying' savoring strategies associated with stronger positive emotional reactions to positive events. The items used were, respectively: 'I tried to share the positive aspects with another person' (sharing with others), 'I felt grateful for the pleasant event(s)' (counting blessings), and 'I tried to intensify the moment by focusing on it' (sensory-perceptual sharpening). Participants were asked to rate each of these items in terms of its accuracy in describing their responses during the past hour to the momentary positive events they had listed, on a five-point Likert scale with 0 corresponding to '*disagree*' and 4 corresponding to '*agree*'. As above with positive events, to obtain a measure of internal consistency reliability, we computed occasion-specific Cronbach's alphas for the 30 days, and obtained a median alpha of 0.756 with a minimum of 0.630 and a maximum of 0.846. The first three days yielded substandard alphas (between 0.63 and 0.70), but the remaining 27 (90%) of the daily reliabilities fell above the 0.70 threshold of acceptability. As with positive events, we averaged across these three savoring items at each time point, and in this paper we refer to this composite variable as 'momentary savoring'.

Momentary happy mood. Participants rated the degree to which they 'felt happy' during the past hour on a single five-point Likert scale item, with 0 = *not at all* and 4 = *a lot*.

Trait measure of savoring

Participants also completed a self-report questionnaire twice, once before the diary study commenced and then once again after the mood diary study finished.

Table 1. Items constituting two dimensions of the Ways of Savoring Checklist – Short Scale.

	Factor loadings	
	1	2
Dampening savoring (8 items, $\alpha = 0.89$)		
18. I focused on the future – on a time when this good event would be over.	0.82	
17. I reminded myself that it would be over before I knew it.	0.76	
25. I told myself how it wasn't as good as I'd hoped for.	0.71	
23. I reminded myself that nothing lasts forever.	0.70	
30. I thought about how things might never be this good again.	0.69	
3. I reminded myself how transient this moment was – I thought about it ending.	0.67	
15. I thought about ways in which it could have been better.	0.60	
8. I told myself why I didn't deserve this good thing.	0.49	
Amplifying savoring (11 items, $\alpha = 0.80$)		
27. I talked to another person about how good I felt.		0.74
9. I looked for other people to share it with.		0.64
14. I thought about what a lucky person I am that so many good things have happened to me.		0.63
1. I thought about sharing the memory of this later with other people.		0.60
29. I told myself why I deserved this good thing.		0.56
4. I jumped up and down, ran around or showed other physical expressions of energy.		0.55
11. I laughed or giggled.		0.53
16. I told myself how proud I was.		0.52
7. I reminded myself how lucky I was to have this good thing happen to me.		0.50
26. I screamed or made other verbal expressions of excitement.		0.49
6. I thought only about the present – got absorbed in the moment.		0.40

Notes: Tabled are the factor loadings obtained from an exploratory factor analysis with varimax rotation extracting two factors (intercorrelation in promax rotation = −0.008). Only items with factor loadings > 0.40 were included in forming each composite subscale, and only factor loadings >0.40 are reported above. Items that cross-loaded on both factors were excluded.

Given time constraints and the large number of additional measures, a shortened version (30 items) of the original 60-item Ways of Savoring Checklist (WOSC; Bryant & Veroff, 2007) was administered at each of these occasions. The WOSC assesses the degree to which individuals engaged in a variety of specific thoughts and behaviors in response to a recent positive event of their choosing. We derived the short version by selecting three items from each of the 10 savoring subscales developed by Bryant and Veroff (2007). In particular, we chose the three highest loading items from each WOSC subscale based on an exploratory factor analysis (with promax rotation) of the responses of 1136 college undergraduates (Bryant & Veroff, 2007, p. 50). We hypothesized that two distinct factors (amplifying and dampening) would underlie responses to the short version of the WOSC. The 30-item WOSC was subjected to a principal components analysis with varimax rotation.[1] Location of the elbow in the scree plot, the magnitude of factor loadings, as well as a Monte Carlo parallel analysis revealed two factors in the data. The eigenvalues for these two factors were 6.82 and 4.95, respectively. In scoring these two subscales, we included only items that had factor loadings greater than 0.40 and did not cross-load on both factors. Table 1 reports the items constituting the two factors and their factor loadings. We interpreted the first factor, consisting of behaviors and cognitions that diminish positive emotional reactions to positive events, as 'dampening' savoring ($\alpha = 0.90$); and the second factor, consisting of behaviors and cognitions that intensify positive emotional reactions to positive events, as 'amplifying' savoring ($\alpha = 0.80$).

To obtain a measure of dispositional (trait) savoring, participants' self-reported scores on the amplifying and dampening scales were separately averaged across pretest and posttest, to obtain a mean score for each scale. Pretest and posttest scale scores correlated 0.66 for amplifying and 0.75 for dampening ($ps < 0.001$). These strong test-retest correlations support the interpretation of the averaged pretest and posttest scores as temporally stable, trait measures of amplifying and dampening savoring responses.

Procedure

Prior to the study, participants attended an information session in which they were provided with the web addresses to access the online mood diary, as well as a compilation of questionnaires assessing positive life events, savoring, and subjective happiness. After completing the on-line battery of questionnaires, participants completed the online mood diary for 30 consecutive days. The research assistant prompted participants to fill out their mood diary with a short text message sent to their cell phones according to a

random time schedule between 8 a.m. and 8 p.m. once a day. The online mood diary recorded the date and time participants provided their responses, and this informed us whether the participants entered their data in a timely fashion. No participant had to be eliminated because of simultaneously entering data from multiple days. The response rates were 92.6% (2805 diary entries were completed out of a possible 3030), and on average, participants completed 27.8 out of 30 diary entries. At the end of the 30 days of daily diary entry, participants filled out the same battery of self-report items examining life events, savoring, and subjective happiness as at the pretest. They were then compensated for their time of participation.

Results

Multilevel regressions

Due to the nested two-level nature of the diary data (i.e. repeated measures nested within individuals), we conducted multilevel random coefficient models (MRCM) using Raudenbush, Bryk, and Congdon's (2004) Hierarchical Linear Modeling software (HLM Version 6.06). HLM addresses both levels in a hierarchically nested dataset (i.e. in this case, days nested within persons) simultaneously, and it provides independent estimates of the relationship among constructs at the lower level (within persons) and models them at the higher level (between persons) as a random effect using maximum likelihood estimation.

We constructed a series of HLM equations to test our hypotheses. Below we describe these models and analyses, adopting the nomenclature and terminology used in multilevel modeling. Our primary analyses were two-level models. The daily measures were nested within participants, and for each participant, coefficients were estimated representing the day-to-day associations between life events, savoring, and mood. See Nezlek (2001) for a comprehensive description of MRCM for diary data.

Descriptive statistics and reliabilities of mood diary measures

Table 2 presents descriptive statistics and reliability coefficients (i.e. intra-class correlations, or the ratio of the true to total variance of each effect) for all diary variables. These statistics were generated by an unconditional (intercept-only) model of each variable, meaning no terms other than intercepts are included in the model (Nezlek, 2001). The basic Level 1 equation used was

$$\text{Level 1: } Y_{ij} = \beta_{0j} + r_{ij}$$

In this basic model, β_{0j} is a random coefficient representing the mean of y (in the context of this study, momentary positive events, momentary savoring, or momentary happy mood) for person j across the i days that each person provided data; r_{ij} represents the error associated with each measure, and the variance of r_{ij} makes up the Level 1 (day-level) random variance. The basic Level 2 equation is as follows:

$$\text{Level 2 : } \beta_{0j} = \gamma_{00} + u_{0j}$$

In this model, γ_{00} refers to the grand mean of the person-level means from Level 1, u_{0j} refers to the error of β_{0j}, and the variance of u_{0j} represents the Level 2 residual variance.

As shown in Table 2, most of the variance derived from variability within days, suggesting that ESM successfully captured the momentary changes in positive events, savoring, and happy mood across these 30 days.

Hypothesis 1: On a within-person level, momentary positive events, savoring, and happy mood will all be significantly related within a given day.

The three random intercept and random slope models were constructed:

$$\mathbf{HappyMood}_{ij} = \beta_{0j} + \beta_{1j}(\text{PosEv}) + r_{ij}$$

$$\mathbf{Savor}_{ij} = \beta_{0j} + \beta_{1j}(\text{PosEv}) + r_{ij}$$

$$\mathbf{HappyMood}_{ij} = \beta_{0j} + \beta_{1j}(\text{Savor}) + r_{ij}$$

For these equations, β_{0j} refers to the random coefficient, also known as the intercept, representing an individual's mean of happy mood (or savoring) on a given day, β_{1j} represents the maximum likelihood estimate of the population slope relating the independent variable to the dependent variable, r_{ij} represents the error associated with the outcome measure, and the variance of r_{ij} constitutes the day-level residual variance. To eliminate Level 2 differences in predictors, all the Level 1 predictors were group-mean centered (see Enders & Tofighi, 2007, for a detailed discussion of centering). For each of these models, random slopes were specified at Level 2 as well:

$$\beta_{0j} = \gamma_{00} + u_{0j}$$
$$\beta_{1j} = \gamma_{10} + u_{1j}$$

As predicted, the multilevel analyses showed that the slope of the variable of momentary positive events was significantly and positively associated with momentary happy mood, the slope of momentary savoring was found to be significantly associated with momentary happy mood, and the slope of the variable of momentary positive events was found to be significantly associated with momentary savoring (see Table 3), suggesting that all three variables covaried significantly on a daily basis. In addition, an inspection

Table 2. Multilevel descriptive statistics of daily measures.

	Mood diary measures			
	Mean	Within-person variance	Between-person variance	Intra-class correlation
Momentary positive events	1.23	0.82	0.30	0.27
Momentary savoring	7.05	9.79	2.81	0.22
Momentary happy mood	3.30	1.25	0.61	0.33

Notes: Intra-class correlation = proportion of the total variance accounted for by between-individual differences (i.e. Level 2 variance). It is calculated by using the formula: Level 2 variance/(Level 1 variance + Level 2 variance).

Table 3. Multilevel analyses for Hypothesis 1: Level 1 variables predicting each other.

Predictor variable	Predicted variable	Slope coefficient	Standard error	Significance (*p*-value)	Intercept coefficient	Standard error	Significance
Positive events	Savoring	2.49	0.08	0.001	7.11	0.11	0.001
Positive events	Happy mood	0.78	0.03	0.001	3.33	0.07	0.001
Savoring	Happy mood	0.23	0.01	0.001	3.35	0.06	0.001

		Residual variances			
Predictor variable	Predicted variable	Variance of intercept	Significance	Variance of slope	Significance
Positive events	Savoring	1.05	0.001	0.41	0.001
Positive events	Happy mood	0.39	0.001	0.08	0.001
Savoring	Happy mood	0.33	0.001	0.01	0.001

of the Bayes estimates for each individual's slope coefficients revealed that all of the individual slope coefficients for a, b, and c′ paths were estimated to be positive. In addition, significant variability was obtained in the intercepts, and residual variance estimates indicated that significant variance remained to be explained after the single Level 1 predictor was added in each case. Thus, we have evidence to claim that (1) the predicted positive relationships between the three variables were confirmed (positive mean slope coefficients were obtained in the three analyses), (2) individuals significantly differed in these within-persons relationships (variances of residuals of slopes were significantly different from zero), and (3) the form of the random slopes showed that individuals differed only in the strength of the relationships, but not in the direction of the relationships.

Hypothesis 2: Momentary savoring will function as a mediator between momentary positive events and momentary happy mood on a daily basis.

When one examines mediational relationships among three variables all residing at Level 1 (termed a 1 – 1 – 1 mediation model), causal effects can all be random rather than fixed. Kenny, Korchmaros, and Bolger (2003) and Bauer, Preacher, and Gil (2006) have proposed ways to analyze this particular type of configuration of variables, and we have adopted the latter authors' proposal in the present context because it is designed to handle random effects at Level 1. The first step was to determine that these three Level 1 variables were significantly and positively related to each other, and separate regressions verified that this was true: see the results reported above under Hypothesis 1.

Similar to other mediation approaches, the method proposed by Bauer et al. (2006) estimates the size of the indirect effect (i.e. the path from the IV through the mediator to the DV), and it is estimated by multiplying the coefficient of *a* (the path from the IV to the mediator, see Figure 2) by the coefficient of *b* (the path from the mediator to the DV). The *c*′ path depicted in Figure 2 refers to the direct effect (total effect minus the indirect effect). Using a macro file for implementing Bauer et al.'s (2006) analyses (see http://www.unc.edu/~dbauer/publications.html), we obtained a random indirect effect estimate of 0.97, standard error = 0.33, and a random total effect estimate of 2.09, standard error = 0.68. Supporting Hypothesis 2, the 95% confidence interval for the indirect effect did not encompass the value of zero (CI 95% 0.79 to 1.18, standard error = 0.06), providing evidence of the statistical significance of momentary savoring as a

Table 4. Analysis of momentary savoring as a mediator between momentary positive events and momentary happy mood at Level 1.

Effect	Estimate	SE	95% Confidence limits Lower	Upper	
		Fixed (average effects)			
Intercept (Momentary savoring)	4.05	0.13	3.79	4.31	
Intercept (Momentary happy mood)	5.49	0.31	4.87	6.10	
a	2.48	0.08	2.32	2.64	
b	0.39	0.09	0.34	0.44	
c′	1.22	0.03	1.04	1.40	
		Covariance/correlation matrix of random effects			
	1	2	3	4	5
1. Momentary savoring	1.26	1.62	−0.35	−0.38	−0.05
2. Momentary happy mood	1.62	8.59	−0.34	−0.83	−0.37
3. a_j	−0.35	−0.34	0.42	0.03	0.03
4. b_j	−0.38	−0.83	0.03	0.37	−0.02
5. c'_j	−0.05	−0.37	0.03	−0.02	0.03

Notes: In the covariance/correlation matrix of random effects, the variances of the random effects are tabled on the diagonal, the covariances of the random effects are tabled below the diagonal, and the correlations among the random effects are tabled above the diagonal.

mediator of the impact of momentary positive events on momentary happy mood. A result of this size and type can be classified as strong, given that the confidence interval was distant from the value of zero. Table 4 reports supporting statistical results, including that the a_j (momentary positive events predicting momentary savoring), b_j (momentary savoring predicting momentary happy mood), and c'_j (momentary positive events predicting momentary happy mood) paths were all found to be positive in valence as predicted. Two conclusions emerge here: 1) the proposed mediation was statistically significant; and 2) the size of the indirect effect was almost half of the total effect (one can conclude this because both estimated effects are scaled in the same metric). Thus, Hypothesis 3 was supported: daily savoring was found to mediate between positive daily events and happy mood.

Hypothesis 3: Momentary savoring will moderate the relationship between momentary positive events and momentary happy mood on a given day.

We wished to test Bryant and Veroff's (2007) hypothesis that the impact of momentary positive events on momentary happy mood would be stronger at moments at which momentary savoring is higher. In this instance, we used HLM to examine moderation entirely with Level 1 variables.

We constructed the following HLM equation to address the question:

$$\mathbf{HapMood}_{ij} = \beta_{0j} + \beta_{1j}(\text{PosEv}) + \beta_{2j}(\text{Savor}) + \beta_3 j(\text{PosEv} \times \text{Savor}) + r_{ij}$$

In explaining the variance in momentary happy mood, we found significant main effects for momentary positive events, $b = 0.47$, $se = 0.05$, $p < 0.001$, and momentary savoring, $b = 0.46$, $se = 0.03$, $p < 0.001$, and the interaction between momentary positive events and momentary savoring also proved to be significant, $b = -0.11$, $se = 0.03$, $p < 0.001$. Graphing this interaction using Modgraph (Jose, 2008), we obtained simple slope statistics for three conditions: low savoring, slope = 0.58, $t(94) = 8.36$, $p < 0.001$; medium savoring, slope = 0.47, $t(94) = 10.00$, $p < 0.001$; and high savoring, slope = 0.35, $t(94) = 9.47$, $p < 0.001$. These slopes (see Figure 1) show that the relationship between positive daily life events and happy mood was positive and significant under all conditions of savoring. However, this result did not conform to the classic moderational pattern that was expected. We had predicted that high levels of momentary savoring would manifest the steepest slope of the three moderation groupings. Instead, however, we see in Figure 1 that momentary happiness showed the greatest rate of change as a function of momentary positive events with low levels of momentary savoring.

Another way to interpret the obtained pattern is to focus on the fan effect on the left-hand side of the figure. In particular, it seems that levels of momentary savoring made the greatest difference in daily happy mood when the number of pleasant events was low. On balance, we thus consider Hypothesis 4 to be partially supported because the interaction showed that savoring enhanced happiness most under the condition of low positive life events. In other words, in the context of few daily positive life events, individuals who savor more, report higher levels of momentary

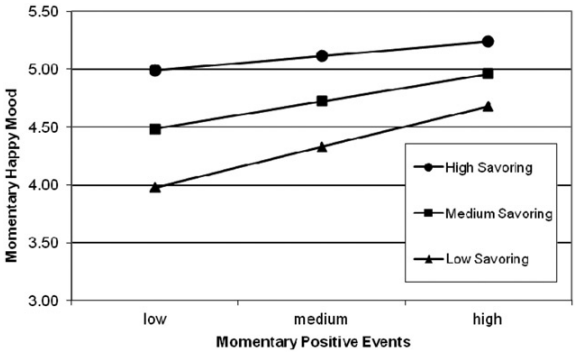

Figure 1. Momentary happy mood as a function of momentary positive daily life events and momentary savoring.

happiness than individuals who savor less. Thus, momentary savoring responses matter most in predicting momentary happiness when the frequency of daily positive events is low.

Hypothesis 4: Trait savoring at Level 2 will moderate the mediated relationship between positive life events, savoring, and happy mood at Level 1.

As noted earlier, the measure of trait savoring was found to yield a two-factor solution: amplifying savoring, featuring maximizing strategies such as sharing with others, behavioral expression, and thanksgiving; and dampening savoring, featuring minimizing strategies such as kill-joy thinking and perceiving time as too fleeting. Since the measure of momentary savoring focused on similar dynamics (i.e. sharing with others, counting blessings, and sensory-perceptual sharpening) to those included in the trait measure of amplifying savoring, we reasoned that one's trait level of amplifying savoring would moderate the previously identified Level 1 mediation pattern. In particular, we expected trait amplifying savoring to enhance these Level 1 relationships. In contrast, we expected one's trait level of dampening savoring, which serves to depress or reduce positive emotions, to have the opposite effect on the Level 1 mediation pattern. These hypotheses constitute 'moderated mediation', or instances in which the strength of an indirect effect depends on the level of a moderator variable (James & Brett, 1984; Preacher, Rucker, & Hayes, 2007).

As with Hypothesis 3, we used the method proposed by Bauer et al. (2006) to test whether moderated mediation would be obtained across the two levels of data.

Since we found evidence of significant random effects for the mediation at Level 1, we sought to add two Level 2 factors to the model to explain this variability (see Figure 2). Bauer et al. have stated that significant prediction of either a_j or b_j by a Level 2 moderator represents a case of moderated mediation, in which the strength of the indirect effect of the Level 1 predictor depends on the Level 2 predictor. Accordingly, we added trait amplifying and dampening savoring to the model to test Level 1 mediation. Supporting our hypotheses, we found that both types of Level 2 savoring yielded a main effect on the intercept of the outcome variable, happy mood; and both moderated the a_j component of the mediation result as well, but in opposite directions (see Figure 2).

In the first instance, the main effect of trait amplifying savoring was a higher level of happy mood, $b = 0.97$, $p = 0.05$, and the main effect of trait dampening savoring was a lower level of happy mood, $b = -1.00$, $p = 0.003$. In the third instance, trait amplifying savoring moderated the a_j component, $b = -0.09$, $p = 0.023$, and trait dampening savoring moderated the same term, $b = 0.07$, $p = 0.009$. Simple effects analyses of the two latter effects indicated that the unstandardized value of the a_j component of the mediation pattern was strengthened under conditions of higher levels of trait amplifying savoring (low = 1.10, $se = 0.12$; medium = 1.21, $se = 0.09$; high = 1.31, $se = 0.13$), but the a_j component was weakened under conditions of higher levels of trait dampening savoring (low = 1.23, $se = 0.13$; medium = 1.20, $se = 0.10$; high = 1.16, $se = 0.14$). Congruent with Hypothesis 5, the mediational effect at Level 1 was stronger for individuals who reported higher dispositional levels of amplifying savoring, but weaker for individuals who reported higher dispositional levels of dampening savoring.

Discussion

The goal of the present study was to determine whether savoring responses serve to enhance the impact of daily positive events and lead to a momentary sense of subjective happiness. We assessed the associations among daily positive events, momentary savoring responses, and happy mood, and consistent with past findings (David, Green, Martin, & Suls, 1997; Gable, Reis, & Elliot, 2000; Maybery et al., 2006; Nezlek & Plesko, 2003; Suh, Diener, & Fujita, 1996), we found significant relationships between positive events and mood – more specifically, momentary positive events were positively related to momentary happy mood. In addition, as hypothesized, we also found that momentary positive events were positively related to momentary savoring, and momentary savoring responses, in turn, were positively related to momentary happy mood. Thus, it seems that these three constructs are significantly related to each other at a given moment in time.

In this study, we proposed that momentary savoring would mediate the relationship between

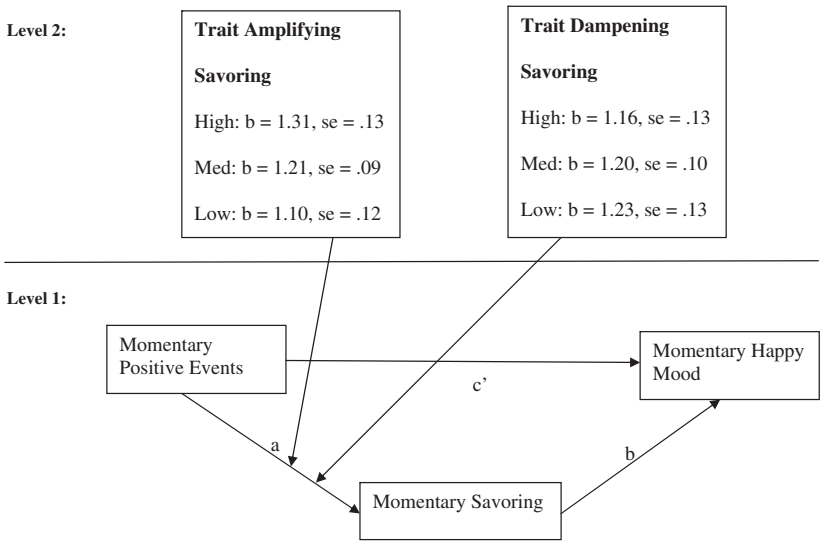

Figure 2. Trait savoring at Level 2 moderated the mediated relationship between momentary positive events, savoring, and happy mood at Level 1 (i.e. moderated mediation).

momentary positive events and happy mood, consistent with the hypothesis proposed by Bryant and Veroff (2007). In support of this hypothesis, we found evidence of significant mediation at Level 1 in our daily data. Based on this result, we conclude that individuals who savor positive events in their daily life evidence a greater boost in happy mood as a result.

We also tested Bryant and Veroff's (2007) moderation hypothesis, namely that day-level savoring would moderate positive mood responses to daily events. Consistent with this prediction, we found significant moderation for day-level savoring, although results diverged from the predicted pattern. In particular, we found that high levels of momentary savoring maintained high levels of happiness regardless of the number of positive daily events, whereas for individuals who reported low levels of momentary savoring, levels of daily mood were more dependent on the number of positive daily events experienced. These results suggest that the impact of savoring on happy mood depends on the number of daily events people experience. When pleasant daily events were frequent, higher levels of momentary savoring did not enhance positive mood compared to lower levels of momentary savoring. But when pleasant daily events were rare, higher levels of momentary savoring enhanced positive mood more than did lower levels of momentary savoring.

This finding suggests that savoring operates to 'broaden and build' positive affect by fostering additional positive affect and the development of personal and interpersonal resources, as Fredrickson (2004) has theorized. Consistent with this interpretation, our results demonstrate that 'habitual' savorers are more likely to maintain happy mood in the absence of discrete positive life events, compared to people who do not consistently savor positive daily events. Thus, savoring helps people 'make the most of the least' in finding happiness.

Although numerous studies have examined the trait-level moderation of within-person relationships between daily events and mood outcomes (Longua, DeHart, Tennen, & Armeli, 2009), this work has chiefly focused on the negative domain. This study, in contrast, examined levels of trait savoring (i.e. amplifying and dampening savoring) as potential moderators of the degree to which momentary savoring mediates the impact of daily positive events on positive mood within individuals. At the main effect level, as predicted, trait amplifying savoring was associated with higher levels of daily happy mood, whereas trait dampening savoring was associated with lower levels of daily happy mood. In addition, both trait savoring variables functioned as significant moderators of the daily mediation pattern: People who routinely engaged in amplifying savoring evidenced a stronger role of savoring as a mediator at the daily level, and people who routinely engaged in dampening savoring evidenced a weaker role of savoring as a mediator at the daily level. Since the measure of daily savoring was composed of what we would consider to be examples of amplifying savoring (e.g. sharing with others, counting blessings), this pattern of results makes sense.

Although this study advances knowledge about daily events, savoring, and happy mood, we acknowledge a number of limitations. First, because our participants were recruited via convenience sampling and were relatively homogenous (i.e. mostly Caucasian

undergraduates), it remains to be shown whether our findings can be generalized to older adults and individuals of other ethnicities. Second, the demands of conducting ESM meant that self-selection biases (Scollon, Kim-Prieto, & Diener, 2003) likely skewed our sample toward more well-functioning, healthy individuals. Third, since we did not experimentally manipulate positive events or savoring efforts, we cannot unequivocally conclude that the relationships observed in our data are causal in nature.

Bryant and Veroff (2007) have argued that savoring promotes general happiness and positive adaptation. We view Fredrickson's (2004) broaden-and-build theory as congruent with this view in that positive emotions are essential elements of optimal functioning that broaden mindsets, scaffold physical, intellectual, social, and psychological resources, and promote human flourishing. Fredrickson has proposed an important prescription of cultivating positive emotions in one's own life and in the lives of others – a recommendation consistent with Bryant and Veroff's perspective on the critical role of savoring in everyday life.

The present findings lend empirical support for the theorized positive impact of savoring on positive mood outcomes. Further, the present findings suggest that momentary savoring responses are an important mechanism by which individuals transmute the raw stuff of daily life into positive affect. Important goals of future research include further explicating the unique contributions of the various subtypes of savoring responses, as well as examining their relationships with other psychological variables such as characteristic explanatory style, coping, mindfulness, life satisfaction, and the discovery of personal meaning.

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Note

1. We also conducted a factor analysis with oblique (i.e. promax rotation), given that we expected some correlations between the two savoring factors (see Costello & Osborne, 2005, for best practices in exploratory factor analysis. The orthogonal (i.e. varimax) and oblique (i.e. promax) rotation produced identical results, and the correlation between the two factors was found to be −0.008. Hence, a varimax rotation was justified.

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