

# Some Implications of Believing That Happiness Involves the Absence of Pain: Negative Hedonic Beliefs Exacerbate the Effects of Stress on Well-Being

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**Abstract** One common belief about happiness, espoused to varying degrees by both researchers and laypeople alike, is that happiness involves a lack of negative hedonic experiences. In the current investigation, we examine whether individual differences in endorsement of this belief, termed negative hedonic belief, moderate the effects of stress on happiness and several indicators of well-being. It was predicted that because stress involves the experience of negative hedonic states, increased stress would be more robustly associated with decreased happiness and well-being among those endorsing negative hedonic beliefs. Results from three studies utilizing both retrospective and prospective research designs generally support this prediction and suggest that endorsing the belief that happiness involves a lack of negative hedonic experiences is associated with more negative outcomes in response to the experience of heightened life stress.

**Keywords** Happiness · Well-being · Beliefs · Emotion · Stress

## 1 Introduction

Happiness is a key component of human well-being that is not only pleasurable in its own right, but also predictive of a number of positive outcomes in several life domains (Abel and Kruger 2010; Harker and Keltner 2001; Lyubomirsky et al. 2005). It is therefore

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unsurprising that many individuals rate achieving a state of happiness as an important personal goal (Diener 2000; Myers 2000). However, research indicates that individuals differ in their conceptualizations and definitions of happiness (Oishi 2010), suggesting that people may understand and pursue happiness in fundamentally different ways depending on their beliefs about what happiness is. In line with the many psychologists who have suggested that the investigation of personally-held beliefs is critical to a comprehensive understanding of human behavior and functioning (e.g., Kelly 1955; Piaget 1928/1964), we propose that the investigation of lay beliefs about the nature of happiness is critical to understanding how individuals evaluate, pursue, and ultimately experience happiness and positive psychological well-being. The current research focuses on examining one particular belief about the nature of happiness, namely the belief that happiness is characterized by a relative lack or absence of negative hedonic experience (hereafter referred to as negative hedonic beliefs), and investigates whether individual differences in endorsement of negative hedonic beliefs impact happiness and well-being relevant outcomes during periods of stress.

### 1.1 Negative Hedonic Beliefs

For centuries, many scholars have articulated the view that happiness, in addition to being pleasurable, is state characterized by a relative lack of negative hedonic states (McMahon 2006). For instance, Epicurus stated that happiness requires freedom from fear and an absence of pain (Honderich 1995), and Jeremy Bentham argued that that true happiness involves a preponderance of pleasure over pain (Ryan 1987). Similarly, in contemporary psychological literature happiness is often operationally defined as hedonic balance or subjective well-being (SWB; Diener 1984, 2000), constructs which include negative emotion as one of their primary components. In both operationalizations, lower levels of negative emotion are considered to be indicative of higher levels of happiness. Yet, not all scholars agree that negative hedonic states are indicative of decreased happiness. For example, Carl Jung stated that happiness would lose all meaning were it not balanced by sadness (Uchida and Kitayama 2009). In addition, many Asian philosophies take a dialectical approach to happiness, whereby negative hedonic states are not viewed as necessarily discrepant with the experience of happiness (Schimmak et al. 2002).

Empirical evidence suggests that like scientists and philosophers, lay people recognize the significance of negative hedonic states for the experience of happiness (Lu 2001; Uchida et al. 2004), but there is wide individual variability in the extent to which people endorse negative hedonic beliefs (McMahan and Estes 2011; McMahan et al. 2013). Thus, while some may agree with Schopenhauer's (1851/2000) sentiment that pain is one of the chief enemies of happiness, others view the experience of negative hedonic states as being irrelevant or, in some cases, potentially beneficial for well-being. This latter view is consistent with dialectal approaches to happiness, as described above, as well as contemporary theories of mindfulness and acceptance, where the experience and acceptance of negative emotional states is believed to contribute to positive well-being (e.g., Hayes et al. 1999; Shallcross et al. 2010).

### 1.2 Negative Hedonic Belief Functioning

As a fundamental belief about the nature of happiness, negative hedonic beliefs may influence actual happiness. Like other socially acquired belief systems which form people's schematic knowledge about the self and world (see Cervone 2004; Ross 1989),

beliefs about happiness are assumed to structure, organize, and ascribe meaning to everyday events and, in result, exert broad influence on cognition and behavior within happiness-relevant domains. Research examining the effects of other fundamental beliefs (e.g., beliefs about the malleability of human attributes; Burnette et al. 2012; Dweck 2008; Molden and Dweck 2006) on cognitive and behavioral outcomes within belief-relevant domains generally back up this assumption. Beliefs about happiness and, more specifically, negative hedonic beliefs are thus expected to influence psychological functioning and well-being. In support, initial empirical research indicates that negative hedonic beliefs are, somewhat ironically, associated with increased negative affect (McMahan and Estes 2011) and decreased subjective happiness (McMahan et al. 2013). Thus, beliefs about the nature of happiness seem to be related to actual happiness, with endorsement of negative hedonic beliefs being associated with lower, not higher, happiness.

Why and how does such an ironic effect occur? It is conceivable that those with negative hedonic beliefs try harder to avoid negative hedonic experiences than their non-negative hedonic belief counterparts, but then why do the former experience lower happiness than the latter? One possibility we are testing in the current research is that the presence of heightened life stress might constitute a more serious threat to those with strong negative hedonic beliefs than those with weak negative hedonic beliefs. Among those with strong negative hedonic beliefs, the absence of negative hedonic states (such as stress) is necessary for happiness and the standard by which happiness is judged. Since those with strong negative hedonic beliefs view negative experiences as indicative of unhappiness, any indication of stress might be more disturbing and emotionally unsettling to them. If this reasoning is valid, then we should observe a negative hedonic belief by stress interaction, such that increased stress should be associated with worse outcomes among those endorsing negative hedonic beliefs.

### 1.3 Negative Hedonic Beliefs, Stress, and Well-Being

Appraisal theories (Frijda 1986; Lazarus 1991; Lazarus and Folkman 1984; Smith and Kirby 2009) provide a useful theoretical framework for understanding how negative hedonic beliefs and stress may interact in impacting actual happiness and well-being. These theories propose that emotion and regulatory behavior result from people's evaluation of the relevance of life circumstances for goal attainment (Carver and Scheier 2011). Evaluations of happiness are likely made via appraisal-based processes which take into account individuals' current life circumstances and their beliefs about the relevance of those circumstances for happiness. For those who endorse negative hedonic beliefs, unpleasant and stressful experiences would seem to take on heightened importance because these experiences are discrepant with the experience of happiness. Thus, the experience of stress should be particularly problematic for those endorsing negative hedonic beliefs, with those endorsing this belief reporting lower levels of happiness during periods of stress.

The above suggests that individuals who endorse negative hedonic beliefs may view the experience of stress as indicative of low happiness. Appraisal models of emotion further suggest that these individuals may actually feel worse as a result of this evaluation. According to such models, the identification of a discrepancy between the current state of functioning and a desired state of functioning elicits negative emotional responses (Carver and Scheier 2011; Smith and Pope 1992). For those who endorse negative hedonic beliefs, the experience of stress indicates a discrepancy between the current state of functioning (i.e., feeling bad) and the desired happiness-related state (i.e., not feeling bad) which should then lead to increased negative affect. In contrast, for those with low negative

hedonic beliefs, the experience of stress is not discrepant with the experience of happiness, and increases in negative affect as a result of stress should therefore be more modest in magnitude. Taken together, this leads to the prediction that increased stress will be more strongly associated with increased negative affect among those who endorse negative hedonic beliefs.

There are additional reasons to suspect that the endorsement of negative hedonic beliefs may be associated with lower well-being in general during periods of stress. In response to the experience of heightened negative affect, individuals often attempt to down-regulate negative emotions using various regulatory strategies aimed at achieving a more optimal hedonic state (Carver and Scheier 2011; Koole et al. 2011; Larsen 2000). Intuitively, it would seem that because individuals endorsing negative hedonic beliefs are focused on the avoidance of negative hedonic experiences, they may be more likely to engage in avoidance-motivated behavior aimed at the reduction of stress-related negative affect. These attempts may backfire, however, as much empirical work indicates that avoidance-motivated behavior is associated with a host of negative psychological outcomes (e.g., Elliot and Sheldon 1998; Gross and John 2003; Hayes et al. 1999). Thus, endorsing negative hedonic beliefs and acting on these beliefs to cope with stress-related negative emotions may ironically lead to lower levels of well-being across several indicators.

#### 1.4 Dark Side of Happiness

There is a growing concern among both lay people and scholars about “dark side of happiness (Gruber et al. 2011)” or “the negative side of positive psychology (Held 2004)”. This concern has been expressed in many forms. Some argued that an extreme degree of happiness may not be adaptive and even detrimental (Held 2004; Gruber et al. 2011; Oishi et al. 2007), advocating the golden rule of too much of a good thing (Grant and Schwartz 2011) or the positivity ratio (Fredrickson and Losada 2005). Others have argued that acceptance of negative emotion can be adaptive (Gruber et al. 2011; Kashdan et al. 2009), and high social and personal expectancies to be happy may paradoxically be maladaptive (Bastian et al. 2012; Mauss et al. 2011). Some others also argued that the right type of happiness may differ across contexts and cultures (Oishi and Diener 2001; Uchida and Kitayama 2009). Although these concerns look different superficially, they share a common underlying theme: negative emotions are not always bad and are sometimes good, suggesting a need to have a balanced view about emotional experience and a more nuanced understanding of the roles of positive and negative subjective experiences in well-being (Wong 2011).

The present research may provide an opportunity to empirically test these concerns. If pursuing avoidance of negative experience too much results in an ironic effect of lowering happiness, the concern that both lay people and positive psychology alike view negativity too negatively (Held 2004) may be valid. If our predictions are borne out, the present research echoes such concerns about and warnings against the popular zeitgeist of happiness. An ideal mental state including happiness cannot be obtained by excessive pursuit of positive emotions and obsessive avoidance of negative emotions. Rather it requires a balance between positive and negative emotions, which can be obtained by an acceptance of negative emotions to a certain degree.

## 1.5 The Current Research

Across three studies, the current research addresses whether negative hedonic beliefs and life stress interact in predicting happiness and well-being relevant outcomes. In line with the rationale presented above, it was predicted that individuals endorsing negative hedonic beliefs would fare particularly poorly during periods of heightened stress, and increases in stress would be more strongly associated with negative outcomes among those endorsing these beliefs. In Study 1, we examined this prediction in a sample of undergraduate students from South Korea, with participants self-reporting their endorsement of negative hedonic beliefs, amount of perceived stress across the previous month, and current levels of happiness and well-being. Study 2 then addressed this prediction in a sample of undergraduate students from the United States, with participants reporting their endorsement of negative hedonic beliefs, amount of cumulative life stress over the previous year, and current levels of happiness, well-being, and depressive symptoms. Lastly, Study 3 examined whether preexisting individual differences in negative hedonic beliefs moderated the effects of stress on happiness and depressive symptoms across an eight-week period using a prospective design.

## 2 Study 1

The general goal of Study 1 was to address the prediction that endorsement of negative hedonic beliefs moderates associations between stress and happiness and well-being, such that stress would be more strongly associated with decreased happiness and well-being among those endorsing negative hedonic beliefs. This study provides an initial test of the above prediction using an undergraduate student sample from South Korea. Stress was assessed by having participants retrospectively report their perceived stress over the previous month. For outcomes, we assessed subjective happiness, positive and negative affect, and several other components of well-being, including satisfaction with life and psychological well-being.

### 2.1 Methods

#### 2.1.1 Participants

Participants were 180 students (84 female,  $M_{\text{age}} = 19.84$ ,  $SD_{\text{age}} = 1.75$ ) sampled from a large university in South Korea. All participants were remunerated with partial course credit for participating.

#### 2.1.2 Materials and Procedure

The general procedure of Study 1 involved survey completion. Participants completed all surveys in small groups within laboratory settings. Each of the instruments used in the survey is listed below. All English language instruments were translated into Korean using back-translation procedures (Brislin 1970).

### 2.1.3 Negative Hedonic Beliefs

Negative hedonic beliefs were measured using the Avoidance of Negative Experience subscale of the Beliefs about Well-Being Scale (BWBS-ANE; McMahan and Estes 2011; McMahan et al. 2013). The BWBS-ANE is a 4-item instrument that asks respondents to rate the degree to which a lack of negative hedonic experiences (e.g., 'not experiencing negative emotion') is a necessary and required component of the experience of well-being and the good life. Responses are recorded using a 7-point Likert-type scale (1 = *strongly disagree* through 7 = *strongly agree*).

### 2.1.4 Stress

Stress was measured using the Perceived Stress Scale (PSS; Cohen et al. 1983). This 10-item instrument requires participants to indicate perceived levels of stress during the last month (e.g., 'In the last month, how often have you been upset because of something that happened unexpectedly?') using a 5-point Likert-type scale (0 = *never* through 4 = *very often*).

### 2.1.5 Happiness and Well-Being

The Subjective Happiness Scale (SHS; Lyubomirsky and Lepper 1999) was used to measure participants' level of happiness. This 4-item scale involves a global, subjective assessment of whether or not one believes they are a happy or unhappy person. Participants respond on a 7-point Likert-type scale, where higher scores reflect higher subjective ratings of happiness.

The Positive and Negative Affective Schedule (PANAS; Watson et al. 1988) was used to measure affective components of well-being. This 20-item scale asks participants to report the degree to which they are experiencing both positive (e.g., interested, proud, alert) and negative (e.g., distressed, upset, irritable) affect on a 5-point Likert-type scale (1 = *very slightly or not at all* through 5 = *extremely*).

Satisfaction with life was measured using the Satisfaction with Life Scale (SWLS; Diener et al. 1985), a 5-item instrument measuring participants' cognitive assessments of general satisfaction with life (e.g., 'The conditions of my life are excellent'). Participants respond on a 7-point Likert-type scale (1 = *strongly disagree* through 7 = *strongly agree*), where higher scores reflect greater satisfaction with life. In addition to examining satisfaction with life, positive affect, and negative affect independently, an aggregate subjective well-being variable was created by standardizing each of the above scores and then subtracting negative affect scores from the sum of positive affect and standardized life satisfaction scores, yielding a single subjective well-being indicator score (see Brunstein 1993; Diener and Lucas 1999).

The 18-item version of the Ryff Scales of Psychological Well-Being (PWB; see Abbott et al. 2006) measures eudaimonic components of well-being and includes six subscales representing autonomy, environmental mastery, positive relations, personal growth, purpose in life, and self-acceptance. Responses are recorded on a 6-point Likert-type scale (1 = *completely disagree* through 6 = *completely agree*). A single composite PWB variable was created by averaging scores across all subscales.

## 2.2 Results

Descriptive statistics and bivariate correlations for each of the variables included in Study 1 are displayed in Table 1.

Hierarchical multiple regression analyses were used to address whether negative hedonic beliefs and stress interacted in predicting well-being. Stress and negative hedonic belief scores were entered in the first step of the regression model, and a product term representing the interaction of stress and negative hedonic beliefs was entered in the second step. To aid the interpretation of interactions, simple slopes analyses were used to examine associations between stress and well-being at one standard deviation above and below the mean for negative hedonic belief scores. In line with the current studies' primary prediction, stronger associations between stress and each outcome were expected at higher levels of negative hedonic beliefs compared to low levels of negative hedonic beliefs. As per recommendations by Aiken and West (1991), each predictor variable was standardized.

Results of the regression analyses are displayed in Table 2. As shown, analyses indicated negative associations between stress and subjective happiness, positive affect, satisfaction with life, subjective well-being, and psychological well-being. In addition, stress was positively associated with negative affect. Negative hedonic belief scores were negatively associated with subjective happiness, positive affect, satisfaction with life, subjective well-being, and psychological well-being. Most importantly, significant interactions of stress and negative hedonic beliefs were observed for negative affect and subjective well-being, and marginally significant<sup>1</sup> interactions of stress and negative hedonic beliefs were observed for subjective happiness and psychological well-being. In line with predictions, simple slopes analyses revealed more robust associations between stress and happiness, negative affect, subjective well-being, and psychological well-being at higher levels of negative hedonic beliefs, with more negative effects of stress being observed among those endorsing negative hedonic beliefs.

## 2.3 Discussion

The results of Study 1 suggest that negative hedonic beliefs and stress interact in predicting well-being. Among those endorsing negative hedonic beliefs, increased stress was associated with decreased happiness, higher negative affect, lower subjective well-being, and lower psychological well-being. In comparison, associations between stress and well-being were more modest in magnitude among those with low endorsement of negative hedonic beliefs. These findings thus support the primary prediction of the current research and, more generally, provide evidence that the experience of stress may be particularly problematic for those endorsing negative hedonic beliefs.

Despite finding strong initial support for predictions, the results of Study 1 are limited in several important respects. First, Study 1 included a sample from a single nation (South Korea), and it is unclear whether the current findings would emerge in other cultural contexts. Notably, beliefs regarding the nature of happiness vary between cultures (Oishi 2010; Uchida et al. 2004), with East Asian and Western cultures differing in the degree to which negative hedonic states are considered indicative of happiness (e.g., Eid and Diener 2001; Uchida and Kitayama 2009). However, the nature of these differences is unclear. Much empirical evidence suggests that the experience of negative emotions is less

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<sup>1</sup> The term marginally significant is used to denote a test statistic with a corresponding *p* value between .05 and .10.

**Table 1** Study 1: Descriptive statistics and intercorrelations for each measured variable (n = 180)

| Measure   | <i>M</i> | <i>SD</i> | $\alpha$ | 1    | 2    | 3    | 4    | 5   | 6   | 7   | 8 |
|-----------|----------|-----------|----------|------|------|------|------|-----|-----|-----|---|
| 1. Stress | 2.27     | .54       | .68      | 1    |      |      |      |     |     |     |   |
| 2. NHB    | 4.31     | 1.43      | .88      | .15  | 1    |      |      |     |     |     |   |
| 3. SHS    | 5.04     | 1.02      | .83      | -.35 | -.37 | 1    |      |     |     |     |   |
| 4. NA     | 2.39     | .47       | .81      | .28  | .02  | -.18 | 1    |     |     |     |   |
| 5. PA     | 2.95     | .51       | .87      | -.12 | -.27 | .45  | .34  | 1   |     |     |   |
| 6. SWLS   | 4.52     | 1.07      | .85      | -.23 | -.23 | .69  | -.05 | .37 | 1   |     |   |
| 7. SWB    | .00      | 1.78      | –        | -.36 | -.29 | .74  | -.40 | .58 | .80 | 1   |   |
| 8. PWB    | 6.36     | .88       | .79      | -.31 | -.36 | .64  | -.15 | .46 | .44 | .59 | 1 |

*NHB* negative hedonic beliefs, *SHS* subjective happiness, *NA* negative affect, *PA* positive affect, *SWLS* satisfaction with life, *SWB* subjective well-being, *PWB* psychological well-being

Correlation coefficients of  $\pm .15$  are significant at  $p < .05$

acceptable in Western cultures relative to East Asian cultures (Lu and Gilmour 2006; Miyamoto et al. 2010), while other research, in contrast, indicates that those from the United States emphasize negative hedonic beliefs to a lesser extent than those from South Korea (McMahan et al. 2013). These cultural differences, and in particular the mixed nature of the research findings documenting these differences, raise the question of whether the findings from Study 1 would generalize in a Western cultural context. To address this question, Study 2 used as sample from a Western culture, namely the United States.

An additional limitation of Study 1 is that stress was operationalized as self-reported perceived stress over the previous month, and it is unclear whether negative hedonic beliefs moderate the effects of stress over longer periods of time. Also, Study 1 focused almost exclusively on positive psychological outcomes (e.g., happiness, psychological well-being), and did not examine whether negative hedonic beliefs moderate the effects of stress on negative psychological outcomes. These limitations are addressed in Study 2.

### 3 Study 2

The primary goal of Study 2 was to further address the prediction that negative hedonic beliefs moderate the effects of stress on well-being using a sample from the United States. Stress was assessed by having participants retrospectively report their cumulative stress over the previous 12 months. For outcomes, we assessed subjective happiness, positive and negative affect, satisfaction with life, and psychological well-being. In addition, we assessed depressive symptoms as a measure of negative psychological functioning.

#### 3.1 Methods

##### 3.1.1 Participants

Study 2 participants were 74 students (54 female,  $M_{\text{age}} = 21.84$ ,  $SD_{\text{age}} = 7.57$ ) sampled from a mid-sized university in the Western United States. These participants were remunerated with extra course credit for participating.

**Table 2** Study 1: Associations between stress and well-being, negative hedonic beliefs and well-being, and the interaction of stress and negative hedonic beliefs on well-being (n = 180)

|                                    | B     | SE  | 95 % CI       | $\beta$           |
|------------------------------------|-------|-----|---------------|-------------------|
| Outcome: SHS                       |       |     |               |                   |
| Stress                             | -.30  | .07 | [-.43, -.17]  | -.30***           |
| NHB                                | -.32  | .07 | [-.45, -.18]  | -.31***           |
| Interaction of stress and NHB      | -.12  | .07 | [-.25, .01]   | -.12 <sup>†</sup> |
| Simple slopes at $\pm 1$ SD on NHB |       |     |               |                   |
| Low NHB                            | -.18  | .10 | [-.37, .01]   | -.18 <sup>†</sup> |
| High NHB                           | -.42  | .09 | [-.60, -.24]  | -.41***           |
| Outcome: NA                        |       |     |               |                   |
| Stress                             | 1.30  | .33 | [.65, 1.96]   | .28***            |
| NHB                                | -.28  | .33 | [-.94, .38]   | -.06              |
| Interaction of stress and NHB      | 1.13  | .32 | [.51, 1.76]   | .25***            |
| Simple slopes at $\pm 1$ SD on NHB |       |     |               |                   |
| Low NHB                            | .17   | .47 | [-.75, 1.09]  | .04               |
| High NHB                           | 2.44  | .45 | [1.55, 3.32]  | .52***            |
| Outcome: PA                        |       |     |               |                   |
| Stress                             | -.41  | .38 | [-1.15, .33]  | -.08              |
| NHB                                | -1.30 | .38 | [-2.04, -.55] | -.25***           |
| Interaction of stress and NHB      | -.22  | .36 | [-.94, .49]   | -.05              |
| Simple slopes at $\pm 1$ SD on NHB |       |     |               |                   |
| Low NHB                            | -     | -   | -             | -                 |
| High NHB                           | -     | -   | -             | -                 |
| Outcome: SWLS                      |       |     |               |                   |
| Stress                             | -.22  | .08 | [-.37, -.06]  | -.20**            |
| NHB                                | -.21  | .08 | [-.36, -.05]  | -.19**            |
| Interaction of stress and NHB      | -.07  | .07 | [-.21, .08]   | -.06              |
| Simple slopes at $\pm 1$ SD on NHB |       |     |               |                   |
| Low NHB                            | -     | -   | -             | -                 |
| High NHB                           | -     | -   | -             | -                 |
| Outcome: SWB                       |       |     |               |                   |
| Stress                             | -.56  | .12 | [-.80, -.32]  | -.32***           |
| NHB                                | -.39  | .12 | [-.62, -.15]  | -.22**            |
| Interaction of stress and NHB      | -.35  | .11 | [-.57, -.12]  | -.20**            |
| Simple slopes at $\pm 1$ SD on NHB |       |     |               |                   |
| Low NHB                            | -.21  | .17 | [-.55, .12]   | -.12              |
| High NHB                           | -.91  | .16 | [-1.23, -.59] | -.51***           |
| Outcome: PWB                       |       |     |               |                   |
| Stress                             | -.22  | .06 | [-.34, -.11]  | -.26***           |
| NHB                                | -.27  | .06 | [-.39, -.15]  | -.31***           |
| Interaction of stress and NHB      | -.10  | .06 | [-.21, .02]   | -.11 <sup>†</sup> |
| Simple slopes at $\pm 1$ SD on NHB |       |     |               |                   |

**Table 2** continued

|          | B    | SE  | 95 % CI      | $\beta$ |
|----------|------|-----|--------------|---------|
| Low NHB  | -.13 | .08 | [-.29, .04]  | -.15    |
| High NHB | -.32 | .08 | [-.48, -.16] | -.36*** |

*SE* standard error, *CI* confidence interval, *NHB* negative hedonic beliefs, *SHS* subjective happiness, *NA* negative affect, *PA* positive affect, *SWLS* satisfaction with life, *SWB* subjective well-being, *PWB* psychological well-being

†  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

### 3.1.2 Materials and Procedure

The general procedure of Study 2 involved survey completion. Participants completed all surveys in small groups within laboratory settings. Each of the included scales are listed below.

### 3.1.3 Negative Hedonic Beliefs

Negative hedonic beliefs were again measured using the BWBS-ANE. See Study 1 for a description of this instrument.

### 3.1.4 Stress

Stress was measured using the Life Experiences Survey (LES; Sarason et al. 1978). The 45-item LES asks participants to indicate whether several potentially stressful life events (e.g., financial troubles) have occurred in the previous 12 months and the impact of any experienced events ( $-3 = \textit{extremely negative}$  through  $+3 = \textit{extremely positive}$ ). Consistent with previous research using the LES (e.g., Mauss et al. 2011), a composite stress score was computed by reverse coding and summing only negative impact events, with higher scores indicating higher cumulative stress.

### 3.1.5 Happiness and Well-Being

The SHS, PANAS, SWLS, and PWB were again used to measure well-being. See Study 1 for descriptions of these instruments. In addition, a composite subjective well-being variable was computed by combining scores on the SWLS and the PANAS.

Depressive symptoms were measured using the Inventory to Diagnose Depression (IDD; Zimmerman et al. 1986). The 22-item IDD asks participants to indicate the degree to which they have experienced various depressive symptoms (e.g., 'low mood', decreased energy', 'indecisiveness') in the last month using a 5-point Likert-type scale (1 = *Not at all* through 5 = *All the time*).

## 3.2 Results

Descriptive statistics and bivariate correlations for each of the variables included in Study 2 are displayed in Table 3.

**Table 3** Study 2: Descriptive statistics and intercorrelations for each measured variable (n = 74)

| Measure   | <i>M</i> | <i>SD</i> | $\alpha$ | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9 |
|-----------|----------|-----------|----------|------|------|------|------|------|------|------|------|---|
| 1. Stress | 13.99    | 10.17     | –        | 1    |      |      |      |      |      |      |      |   |
| 2. NHB    | 3.95     | 1.44      | .90      | .07  | 1    |      |      |      |      |      |      |   |
| 3. SHS    | 5.05     | 1.17      | .90      | –.43 | –.09 | 1    |      |      |      |      |      |   |
| 4. NA     | 2.21     | .44       | .84      | .48  | .07  | –.48 | 1    |      |      |      |      |   |
| 5. PA     | 3.32     | .63       | .78      | –.23 | .02  | .67  | –.41 | 1    |      |      |      |   |
| 6. SWLS   | 4.61     | 1.36      | .86      | –.51 | –.19 | .64  | –.47 | .60  | 1    |      |      |   |
| 7. SWB    | .00      | 1.75      | –        | –.51 | –.11 | .73  | –.75 | .81  | .88  | 1    |      |   |
| 8. PWB    | 4.66     | .66       | .82      | –.48 | –.31 | .67  | –.56 | .52  | .60  | .69  | 1    |   |
| 9. IDD    | 2.12     | .69       | .93      | .58  | .06  | –.63 | .72  | –.61 | –.60 | –.79 | –.65 | 1 |

*NHB* negative hedonic beliefs, *SHS* subjective happiness, *NA* negative affect, *PA* positive affect, *SWLS* satisfaction with life, *SWB* subjective well-being, *PWB* psychological well-being, *IDD* depressive symptoms  
Correlation coefficients of  $\pm .23$  are significant at  $p < .05$

Hierarchical multiple regression analyses were again used to address whether negative hedonic beliefs and stress interacted in predicting well-being. As before, stress and negative hedonic belief scores were entered in the first step of the regression model, and a product term representing the interaction of stress and negative hedonic beliefs was entered in the second step. Simple slopes analyses were used to examine associations between stress and well-being at one standard deviation above and below the mean for negative hedonic belief scores. Consistent with predictions, stronger associations between stress and each outcome were expected at higher levels of negative hedonic beliefs compared to low levels of negative hedonic beliefs.

Results of these analyses are displayed in Table 4. As shown, stress was positively associated with negative affect and depressive symptoms, as well as negatively associated with subjective happiness, satisfaction with life, subjective well-being, and psychological well-being. In addition, a marginally significant negative trend was observed between stress and positive affect. Negative hedonic beliefs were negatively associated with psychological well-being. Most importantly and consistent with Study 1, significant interactions of stress and negative hedonic beliefs were observed for subjective happiness, negative affect, subjective well-being, and psychological well-being, and a marginally significant interaction was observed for depressive symptoms. Simple slopes analyses indicated more robust associations between stress and happiness, negative affect, subjective well-being, psychological well-being, and depressive symptoms among those with higher endorsement of negative hedonic beliefs. Supporting predictions, these findings indicated that stress was associated with worse outcomes among those with higher endorsement of negative hedonic beliefs, relative to those with lower endorsement of negative hedonic beliefs.

### 3.3 Discussion

The results of Study 2 provide additional evidence that negative hedonic beliefs and stress interact in predicting well-being. Among those strongly endorsing negative hedonic beliefs, increased stress was associated with lower happiness, higher negative affect, lower subjective well-being, lower psychological well-being, and higher

**Table 4** Study 2: Associations between stress and well-being, negative hedonic beliefs and well-being, and the interaction of stress and negative hedonic beliefs on well-being (n = 74)

| Model                              | B    | SE  | 95 % CI       | $\beta$          |
|------------------------------------|------|-----|---------------|------------------|
| Outcome: SHS                       |      |     |               |                  |
| Stress                             | -.50 | .12 | [-.75, -.25]  | -.43***          |
| NHB                                | -.07 | .12 | [-.32, .18]   | -.06             |
| Interaction of stress and NHB      | -.31 | .13 | [-.57, -.05]  | -.25*            |
| Simple slopes at $\pm 1$ SD on NHB |      |     |               |                  |
| Low NHB                            | -.25 | .16 | [-.57, .08]   | -.21             |
| High NHB                           | -.86 | .20 | [-1.26, -.47] | -.74***          |
| Outcome: NA                        |      |     |               |                  |
| Stress                             | .48  | .11 | [.27, .69]    | .48***           |
| NHB                                | .04  | .11 | [-.18, .25]   | .04              |
| Interaction of stress and NHB      | .28  | .11 | [.07, .50]    | .28**            |
| Simple slopes at $\pm 1$ SD on NHB |      |     |               |                  |
| Low NHB                            | .20  | .14 | [-.07, .47]   | .20              |
| High NHB                           | .88  | .16 | [.55, 1.20]   | .87***           |
| Outcome: PA                        |      |     |               |                  |
| Stress                             | -.22 | .11 | [-.45, .00]   | .23 <sup>†</sup> |
| NHB                                | .03  | .11 | [-.20, .26]   | .03              |
| Interaction of stress and NHB      | -.12 | .13 | [-.37, .13]   | -.11             |
| Simple slopes at $\pm 1$ SD on NHB |      |     |               |                  |
| Low NHB                            | -    | -   | -             | -                |
| High NHB                           | -    | -   | -             | -                |
| Outcome: SWLS                      |      |     |               |                  |
| Stress                             | -.67 | .14 | [-.94, -.40]  | -.50***          |
| NHB                                | -.22 | .14 | [-.49, .06]   | -.16             |
| Interaction of stress and NHB      | -.14 | .15 | [-.44, .16]   | -.10             |
| Simple slopes at $\pm 1$ SD on NHB |      |     |               |                  |
| Low NHB                            | -    | -   | -             | -                |
| High NHB                           | -    | -   | -             | -                |
| Outcome: SWB                       |      |     |               |                  |
| Stress                             | -.50 | .10 | [-.71, -.30]  | -.50***          |
| NHB                                | -.08 | .10 | [-.29, .12]   | -.08             |
| Interaction of stress and NHB      | -.23 | .11 | [-.44, .01]   | -.21*            |
| Simple slopes at $\pm 1$ SD on NHB |      |     |               |                  |
| Low NHB                            | -.32 | .14 | [-.59, -.05]  | -.32*            |
| High NHB                           | -.76 | .16 | [-1.09, -.43] | -.76***          |
| Outcome: PWB                       |      |     |               |                  |
| Stress                             | -.30 | .07 | [-.43, -.17]  | -.46***          |
| NHB                                | -.18 | .07 | [-.31, -.05]  | -.27**           |
| Interaction of stress and NHB      | -.15 | .07 | [-.29, -.02]  | -.22*            |
| Simple slopes at $\pm 1$ SD on NHB |      |     |               |                  |
| Low NHB                            | -.18 | .09 | [-.35, -.01]  | -.27*            |
| High NHB                           | -.48 | .10 | [-.69, -.28]  | -.74***          |

**Table 4** continued

| Model                              | B   | SE  | 95 % CI     | $\beta$          |
|------------------------------------|-----|-----|-------------|------------------|
| Outcome: IDD                       |     |     |             |                  |
| Stress                             | .40 | .07 | [.26, .53]  | .58***           |
| NHB                                | .02 | .07 | [-.12, .15] | .02              |
| Interaction of stress and NHB      | .13 | .07 | [-.01, .27] | .18 <sup>†</sup> |
| Simple slopes at $\pm 1$ SD on NHB |     |     |             |                  |
| Low NHB                            | .29 | .09 | [.11, .47]  | .42**            |
| High NHB                           | .55 | .11 | [.34, .76]  | .80***           |

*SE* standard error, *CI* confidence interval, *NHB* negative hedonic beliefs, *SHS* subjective happiness, *NA* negative affect, *PA* positive affect, *SWLS* satisfaction with life, *SWB* subjective well-being, *PWB* psychological well-being, *IDD* depressive symptoms

<sup>†</sup>  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

depressive symptoms. These findings are remarkably similar to those obtained in Study 1, providing initial evidence of cross-cultural generalizability of the found effects across South Korean and United States populations. In addition, the effects were observed using an alternative measure of stress which assessed stressful experiences over the previous year. Further, negative hedonic beliefs moderated the effects of stress on depressive symptoms, in addition to indicators of happiness and well-being, suggesting that individuals' beliefs about happiness may influence aspects of both negative and positive psychological functioning. In short, Study 2 provides further evidence that stress is associated with worse outcomes among those endorsing negative hedonic beliefs.

A limitation of both Study 1 and Study 2 is that they used retrospective correlational research designs, thus precluding any conclusions regarding causality. We have interpreted the findings as indicating that preexisting individual differences in negative hedonic beliefs impact the degree to which stress effects well-being. However, due to the correlational nature of Studies 1 and 2, alternative interpretations are possible. For example, it may be that individuals who are negatively impacted by stressful events, relative to those who are more resilient in the face of stress, are more likely to adopt negative hedonic beliefs. According to this alternative interpretation, people's responses to negative events influence their endorsement of negative hedonic beliefs, rather than, as we have predicted, endorsement of negative hedonic beliefs influencing how people respond to negative events. To address this ambiguity regarding directionality of effects, in the following study we examined associations between negative hedonic beliefs, stress, and well-being using a prospective research design.

## 4 Study 3

Study 3 used an eight-week prospective design to examine whether negative hedonic beliefs moderate the effects of stress on well-being. We also sought to replicate the findings of Studies 1 and 2 using an alternative measure of stress which specifically focused on current stress- and anxiety-related symptoms. Thus, rather than asking

participants to retrospectively self-report the amount of stress they had experienced recently, we assessed currently-experienced stress and anxiety symptoms (e.g., irritability, worrying, sleeping poorly, etc.). For outcomes, we measured subjective happiness, negative and positive affect, and depressive symptoms. Negative hedonic beliefs, stress/anxiety symptoms, and outcomes were assessed at Time 1 (T1), and stress/anxiety symptoms and outcomes were again assessed 8 weeks later at Time 2 (T2). Outcomes at T2 were then regressed on T1 negative hedonic beliefs scores, T2 stress/anxiety scores, and product term representing the interaction of T1 negative hedonic beliefs and T2 stress/anxiety. We controlled for T1 stress/anxiety and T1 outcome scores in all analyses. Interactions of T1 negative hedonic beliefs and T2 stress/anxiety on the T2 outcome measure of interest address whether negative hedonic beliefs moderated associations between stress/anxiety symptoms and the outcome measure of interest over the eight-week period. As before, we predicted that increased stress would be associated with poorer outcomes among those endorsing negative hedonic beliefs.

## 4.1 Methods

### 4.1.1 Participants

Participants at T1 were 125 students sampled from a mid-sized university in the Western United States. Seventy of these participants completed the second phase of the study at T2. Participants who completed only T1 did not differ from those who completed both phases on T1 negative hedonic beliefs, stress/anxiety, subjective happiness, positive and negative affect, and depressive symptoms (all  $t_s$  (123) < 1.65,  $p_s$  > .10). Of the 70 participants who completed T1 and T2, one did not follow instructions and was dropped from analyses. This left a final sample of 69 participants (50 female,  $M_{age} = 23.43$ ,  $SD_{age} = 6.60$ ). Participants were remunerated with partial course credit for participating.

### 4.1.2 Materials and Procedure

The general procedure of Study 3 involved survey completion. Participants completed T1 and T2 surveys in small groups within laboratory settings. Each of the instruments included in the survey are listed below.

### 4.1.3 Negative Hedonic Beliefs

Negative hedonic beliefs at T1 were measured using the BWBS-ANE. See Study 1 for a description of this instrument.

### 4.1.4 Stress/Anxiety Symptoms

Stress and anxiety symptoms were measured at T1 and T2 using the Goldberg Anxiety Scale (GAS; Goldberg et al. 1988). The GAS asks participants to indicate whether they are currently experiencing nine different stress- and anxiety-related symptoms (e.g., 'Have you had difficulty relaxing?', 'Have you felt keyed up, on edge?') using a yes/no response format. In the current study, 'yes' responses were coded '1', and 'no' responses were coded '0'. Responses were then summed to provide a total stress/anxiety symptom score.

### 4.1.5 Happiness and Well-Being Outcomes

Outcomes at T1 and T2 were happiness, positive and negative affect, and depressive symptoms. See Studies 1 and 2 for descriptions of the instruments used to measure these outcomes.

## 4.2 Results and Discussion

Descriptive statistics and bivariate correlations for each of the variables included in the current study are displayed in Table 5.

Hierarchical multiple regression analyses were used to address whether associations between T2 stress/anxiety and T2 outcomes were moderated by T1 negative hedonic beliefs, while controlling for T1 stress/anxiety and baseline T1 scores on the relevant outcome. Stress/anxiety and outcomes at T1 were entered into the first step of the regression models. Time 2 Stress/anxiety and T1 negative hedonic belief scores were then entered in the second step of the regression models. A product term representing the interaction of T2 stress/anxiety and T1 negative hedonic beliefs was entered in the third step of the regression models. Simple slopes analyses were used to examine associations between T2 stress/anxiety and T2 outcomes at one standard deviation above and below the mean for T1 negative hedonic belief scores. In line with the current study's predictions, stronger associations between T2 stress/anxiety and each T2 outcome were expected at higher levels of T1 negative hedonic beliefs compared to low levels of T1 negative hedonic beliefs.

The results of the regression analyses are displayed in Table 6. As shown, a marginally significant positive association was observed between T1 negative hedonic beliefs and T2 depressive symptoms. Stress/anxiety scores at T2 were negatively associated with T2 happiness and positive affect, and T2 stress/anxiety was positively associated with T2 negative affect and depressive symptoms. Contrary to predictions, no interactions of T1 negative hedonic beliefs and T2 stress/anxiety on T2 subjective happiness and positive affect were observed. However, a marginally significant interaction of T1 negative hedonic beliefs and T2 stress/anxiety on T2 negative affect was observed, and findings further indicated a significant interaction of T1 negative hedonic beliefs and T2 stress/anxiety on T2 depressive symptoms (see Fig. 1). Simple slopes analyses indicated a significant positive association between T2 stress/anxiety scores and T2 negative affect at higher, but not lower, levels of T1 negative hedonic beliefs. Similarly, a significant positive association between T2 stress/anxiety symptoms and T2 depressive symptoms was observed at higher, but not lower, levels of negative hedonic beliefs.

Taken as a whole, the above findings provide further, albeit partial, support for the prediction that endorsement of negative hedonic beliefs moderates the effects of stress on well-being. Consistent with predictions, stress was associated with higher negative affect and higher depressive symptoms among those endorsing negative hedonic beliefs. Contrary to predictions, negative hedonic beliefs did not influence associations between stress and subjective happiness or positive affect, a point which we will address later.

## 5 General Discussion

In recent years, a large volume of research has documented the effects of personally-held beliefs on various aspects of psychological functioning (see Burnette et al. 2013), yet relatively little research has addressed how individuals' beliefs about the nature of happiness may impact actual happiness and well-being. This is a curious omission in the

**Table 5** Study 3: Descriptive statistics and intercorrelations for each measured variable (n = 69)

| Measure    | M    | SD   | $\alpha$ | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10  | 11 |
|------------|------|------|----------|------|------|------|------|------|------|------|------|------|-----|----|
| 1. T1 NHB  | 3.83 | 1.33 | .88      | 1    |      |      |      |      |      |      |      |      |     |    |
| 2. T1 GAS  | 4.48 | 2.47 | -        | .12  | 1    |      |      |      |      |      |      |      |     |    |
| 3. T2 GAS  | 4.09 | 2.30 | -        | .14  | .75  | 1    |      |      |      |      |      |      |     |    |
| 4. T1 SHS  | 5.34 | .86  | .78      | -.20 | -.48 | -.22 | 1    |      |      |      |      |      |     |    |
| 5. T2 SHS  | 5.31 | .91  | .82      | -.21 | -.39 | -.34 | .73  | 1    |      |      |      |      |     |    |
| 6. T1 NA   | 2.31 | .61  | .79      | .20  | .50  | .42  | -.45 | -.35 | 1    |      |      |      |     |    |
| 7. T2 NA   | 2.26 | .72  | .76      | .24  | .44  | .54  | -.26 | -.29 | .58  | 1    |      |      |     |    |
| 8. T1 PA   | 3.12 | .66  | .77      | -.06 | -.23 | -.11 | .46  | .39  | -.37 | -.11 | 1    |      |     |    |
| 9. T2 PA   | 3.10 | .67  | .76      | -.02 | -.12 | -.21 | .29  | .48  | -.09 | -.13 | .58  | 1    |     |    |
| 10. T1 IDD | 1.92 | .46  | .85      | .21  | .74  | .63  | -.53 | -.55 | .63  | .53  | -.30 | -.22 | 1   |    |
| 11. T2 IDD | 1.84 | .52  | .89      | .30  | .56  | .70  | -.26 | -.41 | .48  | .62  | -.20 | -.35 | .75 | 1  |

T1 time 1, T2 time 2, NHB negative hedonic beliefs, GAS stress/anxiety symptoms, SHS subjective happiness, NA negative affect, PA positive affect, IDD depressive symptoms

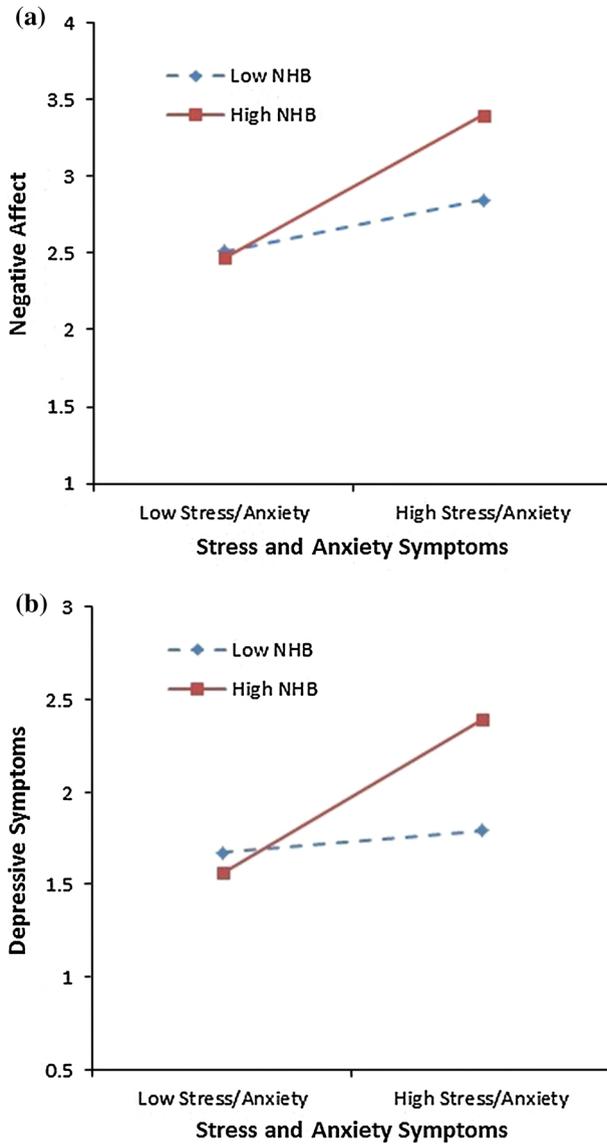
Correlation coefficients of  $\pm .24$  are significant at  $p < .05$

**Table 6** Study 3: Associations between anxiety symptoms and well-being, negative hedonic beliefs and well-being, and the interaction of anxiety symptoms and negative hedonic beliefs on well-being (n = 69)

|                                       | B    | SE  | 95 % CI      | $\beta$          |
|---------------------------------------|------|-----|--------------|------------------|
| Outcome: T2 SHS                       |      |     |              |                  |
| T1 GAS                                | -.06 | .08 | [-.23, .12]  | -.06             |
| T1 SHS                                | .75  | .10 | [.55, .95]   | -.70***          |
| T1 NHB                                | -.03 | .07 | [-.18, .12]  | -.03             |
| T2 GAS                                | -.33 | .12 | [-.58, -.08] | -.33*            |
| T1 NHB $\times$ T2 GAS                | -.06 | .08 | [-.22, .10]  | -.07             |
| Simple slopes at $\pm 1$ SD on T1 NHB |      |     |              |                  |
| Low NHB                               | -    | -   | -            | -                |
| High NHB                              | -    | -   | -            | -                |
| Outcome: T2 NA                        |      |     |              |                  |
| T1 GAS                                | .16  | .09 | [-.02, .34]  | .20 <sup>†</sup> |
| T1 NA                                 | .38  | .09 | [.20, .55]   | .49***           |
| T1 NHB                                | .08  | .07 | [-.06, .22]  | .10              |
| T2 GAS                                | .37  | .12 | [.13, .60]   | .43**            |
| T1 NHB $\times$ T2 GAS                | .14  | .08 | [-.02, .28]  | .17 <sup>†</sup> |
| Simple slopes at $\pm 1$ SD on T1 NHB |      |     |              |                  |
| Low NHB                               | .19  | .16 | [-.12, .51]  | .23              |
| High NHB                              | .46  | .13 | [.20, .71]   | .54**            |
| Outcome: T2 PA                        |      |     |              |                  |
| T1 GAS                                | .01  | .09 | [-.16, .18]  | .01              |
| T1 PA                                 | .51  | .09 | [.33, .69]   | .59***           |
| T1 NHB                                | .03  | .08 | [-.12, .19]  | .04              |
| T2 GAS                                | -.32 | .13 | [-.58, -.05] | -.35*            |
| T1 NHB $\times$ T2 GAS                | -.11 | .09 | [-.28, .07]  | -.13             |
| Simple slopes at $\pm 1$ SD on T1 NHB |      |     |              |                  |
| Low NHB                               | -    | -   | -            | -                |
| High NHB                              | -    | -   | -            | -                |
| Outcome: T2 IDD                       |      |     |              |                  |
| T1 GAS                                | .01  | .07 | [-.13, .13]  | .01              |
| T1 IDD                                | .47  | .08 | [.32, .62]   | .75***           |
| T1 NHB                                | .07  | .04 | [-.01, .14]  | .13 <sup>†</sup> |
| T2 GAS                                | .29  | .06 | [.17, .41]   | .52***           |
| T1 NHB $\times$ T2 GAS                | .17  | .03 | [.11, .24]   | .33***           |
| Simple slopes at $\pm 1$ SD on T1 NHB |      |     |              |                  |
| Low NHB                               | .06  | .07 | [-.07, .20]  | .11              |
| High NHB                              | .42  | .06 | [.31, .53]   | .75***           |

*SE* standard error, *CI* confidence interval, *T1* time 1, *T2* time 2, *NHB* negative hedonic beliefs, *GAS* stress/anxiety symptoms, *SHS* subjective happiness, *NA* negative affect, *PA* positive affect, *IDD* depressive symptoms

<sup>†</sup>  $p < .10$ ; \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$



**Fig. 1** Study 3: The association between T2 stress/anxiety symptoms and T2 **a** negative affect and **b** depressive symptoms as a function of T1 negative hedonic beliefs ( $n = 69$ ). Stress and anxiety symptoms are plotted at  $\pm 1$  SD about the mean. Lines represent negative hedonic beliefs at  $\pm 1$  SD about the mean

existing literature, considering that a great deal of human behavior is motivated by the pursuit of happiness (Diener 2000; Myers 2000). The limited existing research on this topic suggests that beliefs about the nature of happiness are associated with several aspects of experienced well-being, yet up to this point, research had not addressed how beliefs about the nature of happiness interact with experienced life conditions to predict well-being. To address this limitation, the current set of studies examined whether negative hedonic beliefs about happiness influenced associations between experienced life stress and several

indices of well-being. As described in detail below, results generally indicated that endorsement of negative hedonic beliefs interacts with experienced stress in predicting happiness and well-being, such that stress was associated with more negative outcomes among those endorsing negative hedonic beliefs.

## 5.1 Primary Findings and Implications

Studies 1 and 2 examined whether endorsement of negative hedonic beliefs moderated associations between recently experienced stress and well-being in samples from the United States and South Korea. Across both studies, increased stress was associated with decreases in subjective happiness, subjective well-being, and psychological well-being among those endorsing negative hedonic beliefs. Additionally, increased stress was more strongly associated with increased negative affect and depressive symptoms among those endorsing negative hedonic beliefs. Similar findings were observed in both studies, suggesting that effects observed here may generalize across cultures. Of particular interest was the finding that while negative hedonic beliefs moderated the effect of stress on the majority of well-being indices included in Studies 1 and 2, these beliefs did not influence associations between stress and satisfaction with life or positive affect in either sample. The consistency of this finding strongly suggests that negative hedonic beliefs may have specific effects on the well-being relevant outcomes of stress.

A limitation of Studies 1 and 2 was that they were correlational and used retrospective designs, thus precluding firm conclusions regarding the causal direction of the found associations. To address this limitation, Study 3 used a prospective design to examine whether preexisting individual differences in negative hedonic beliefs influenced associations between stress and well-being across an eight-week period. To this end, Study 3 found that negative hedonic beliefs prospectively moderated associations between stress and negative affect and depressive symptoms, providing additional evidence that endorsement of negative hedonic beliefs is associated with poorer outcomes in response to stress. Negative hedonic beliefs did not moderate associations between stress and subjective happiness or positive affect in Study 3. Concerning happiness, the lack of significant findings is potentially due to a methodological issue related to the use of the subjective happiness scale (Lyubomirsky and Lepper 1999). This scale assesses dispositional happiness and is thus unlikely to capture the relatively short-term fluctuations in happiness that were predicted in Study 3. Future research should address this issue by using an instrument that is more sensitive to short-term changes in happiness.

Concerning positive affect, the absence of a significant interaction is consistent with the findings of Studies 1 and 2 and provides additional evidence that negative hedonic beliefs have little, if any, impact on associations between stress and positive affect. Although this outcome was not anticipated, the lack of effect on positive affect is consistent with theoretical models concerning the affective consequences of goal pursuit that distinguish the different conditions under which positive and negative affect are elicited (see Carver and Scheier 2011). From this theoretical perspective, goal states are viewed as standards for positive functioning. Negative affect results from operating below one's standards (i.e., not achieving a goal or making insufficient progress towards goal achievement), whereas positive affect results from exceeding one's standards. For those endorsing negative hedonic beliefs, the experience of stress indicates that one is not meeting their standard for happiness, and increased stress should therefore be associated with increased negative affect, as found in the current research. However, because a complete lack of negative hedonic states is the standard by which individuals who endorse negative hedonic beliefs

judge their happiness, one can only meet, yet never exceed, the standard. In other words, one can never do better than a complete lack of negative hedonic states. Accordingly, one can never feel good when pursuing an absence of negative hedonic states. Rather, one can only feel less bad when stress is low and, at best, affectively neutral when stress is absent. If this reasoning is valid, associations between stress and positive affect should not vary as a function of negative hedonic beliefs.

The current investigation found that one specific type of belief, namely negative hedonic beliefs, and one specific component of everyday experience, namely the experience of stress, interact in predicting happiness and well-being. However, consistent with the idea that appraisal processes play a critical role in evaluations of happiness, these findings more broadly suggest that experienced happiness is influenced both by current circumstances and the degree to which those circumstances are considered to be important for happiness. This notion fits well with the various philosophical and psychological approaches to happiness which emphasize that happiness is highly subjective and based on personalized cognitive assessments that one is living under favorable life circumstances (e.g., Brulde 2007; Sumner 1996; Veenhoven 1984). From this perspective, happiness is experienced when individuals' current life conditions are in line with their beliefs about what happiness is, whatever those beliefs may be. Therefore, it may be that those who believe, for example, that the experience of pleasure is indicative of happiness may actually feel happier than those who do not hold this belief when engaged in highly pleasurable experiences, such as eating a delectable cake, watching a funny movie, or having sex. Similarly, those who believe that happiness is found in personal growth and self-development may feel happier than those who don't hold this belief when involved in activities that promote self-development, such as being engaged in a challenging task or studying for an important exam. Future research should address these possibilities by examining whether other beliefs about happiness interact with belief-relevant life conditions in predicting happiness and well-being.

## 5.2 Culture and Beliefs About Happiness

A great deal of research has documented culture-related differences in how people approach happiness (Kitayama et al. 2006; Lu and Gilmour 2004; Uchida and Kitayama 2009), yet a dearth of research exists that examines how beliefs about happiness function within different cultural contexts. Although the current research did not directly examine whether culture moderates associations between negative hedonic beliefs, stress, and well-being, the pattern of associations observed among these variables was remarkably similar in samples from South Korea (Study 1) and the United States (Studies 2 and 3). This similarity provides initial evidence that endorsing negative hedonic beliefs may exacerbate the negative effects of stress regardless of the culture that one is from.

Considering the aforementioned findings indicating cross-cultural differences in beliefs about happiness (e.g., Lu and Gilmour 2004, 2006; Uchida and Kitayama 2009), the similarity in findings observed in South Korean and United States samples in the current study may seem peculiar at first glance. However, this similarity fits well with appraisal theories of emotion (Lazarus 1991; Lazarus and Folkman 1984). From this theoretical perspective, stress and other negative hedonic states are discrepant with the experience of happiness for those who personally endorse negative hedonic beliefs, regardless of the surrounding cultural context, and should therefore lead to increased negative affect. Thus, although mean-level differences in the degree to which individuals endorse negative hedonic beliefs may exist across cultures, these beliefs likely function similarly within

cultures. This interpretation is consistent with previous research by McMahan et al. (2013), where despite finding several culture-level differences in various beliefs about happiness (e.g., negative hedonic beliefs), associations between happiness beliefs and well-being indicators did not differ between cultures.

### 5.3 Limitations and Future Directions

The current findings should be considered with the following limitations in mind. First, our samples were composed entirely of undergraduate students, and the current study's findings may not generalize to other populations. Future research should thus attempt to address the current findings in larger, non-student populations. Second, participants self-selected to participate in each of the studies, increasing the probability of sampling bias. Future research should therefore address the generalizability of the current results using, for example, probability sampling techniques. Third, although we used both retrospective and prospective research designs, each of the studies included in the current investigation were correlational in nature, and future research should attempt to corroborate the current findings using experimental approaches that directly address issues of causality. Notably, a great deal of previous research has established that fundamental beliefs can be temporarily changed through experimental manipulation, and corresponding effects within belief-relevant domains have been observed as a result of these manipulations (e.g., Blackwell et al. 2007; Burnette 2010; Hong et al. 1999). Similarly, beliefs about happiness may be amenable to experimental manipulation, and future research addressing whether experimentally-induced changes in beliefs about happiness produce effects similar to those found in the current investigation should be a priority.

A final limitation of the current investigation is that it did not examine any behavioral mechanisms that may account, at least in part, for the associations found here. Strongly believing that happiness involves a lack of negative hedonic experiences likely has behavioral consequences, particularly within those situations that are most relevant to this belief (i.e., unpleasant and/or stressful situations). As stated previously, individuals often engage various regulatory and coping processes to reduce the negative emotional responses elicited during stressful encounters (Carver and Scheier 2011; Koole et al. 2011), and it would seem likely that those endorsing negative hedonic beliefs may be particularly prone to engage belief-consistent avoidance-based processes that may further exacerbate the negative effects of stress. In addition, it could be that those with negative hedonic beliefs are less likely to frame negative experience positively and get benefits from it (i.e., benefit finding; Nolen-Hoeksema and Davis 2002; Tennen and Affleck 2002). Or, these individuals may be less likely to engage in seemingly negative experiences which eventually result in good outcomes such as growth, meaning, gratitude (Tedeschi and Calhoun 1995; Tedeschi et al. 1998), and the building of resources which promote resilience in the face of stress. Addressing these possibilities, as well as the other above-listed limitations, will likely lead to additional fruitful inquiry concerning the impact of individuals' beliefs about happiness on actual psychological functioning.

## 6 Conclusion

The current findings are meaningful in that they provide empirical support for the warning against a particular type of happiness, that is, happiness as a wholly positive state. There is little doubt about the benefits of positive affect (Lyubomirsky et al. 2005). Yet, in recent

years there has been increased recognition that flourishing involves the dynamic interplay of both the positive and the negative (Wong 2011), reflecting a more nuanced understanding of the nature of well-being. Moreover, determinations of what is positive versus negative are fundamentally context-dependent (McNulty and Fincham 2011), and seemingly positive experiences or behaviors may at times be detrimental to well-being while typically negative experiences or behaviors may at times be beneficial (see Lomas and Ivtzan 2015). Consistent with this notion, the present research demonstrates that the excessive pursuit of a positive hedonic state through the avoidance of negative emotion may result in an ironic effect of lowering one's well-being, particularly during times of stress. It is noteworthy that this finding was obtained not only in the United States, in which the pursuit of happiness is highly valued, but also in East Asia, where a dialectical balance between positive and negative emotions is highly valued (Lu and Gilmour 2006; Miyamoto et al. 2010), suggesting that it is culturally universal that endorsing negative hedonic beliefs may result in negative outcomes. Thus, despite the possibility that happiness may conceptually involve a lack of negative emotion, it would seem that it benefits people not to believe so.

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#### Compliance with Ethical Standards

**Conflict of interest** We declare no conflict of interest with respect to the research, authorship, and/or publication of this article.

**Human Rights and Informed Consent** The current research was conducted in compliance with ethical standards for research involving human participants. All participants in the current research provided informed consent prior to participating.

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