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#### Citation

William TOV, , & LEE, Huey Woon.(2016). A closer look at the hedonics of everyday meaning and satisfaction. *Journal of Personality and Social Psychology*, 111(4), 585-609.

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A Closer Look at the Hedonics of Everyday Meaning and Satisfaction

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**Tov, W., & Lee, H. W. (*in press*). A closer look at the hedonics of everyday meaning and satisfaction. *Journal of Personality and Social Psychology*.**

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This research was supported by the Ministry of Education, Singapore, Academic Research Fund Tier 1 Grants 08-C242-SMU-020, 09-C242-SMU-019, 10-C242-SMU-023, 12-C242-SMU-004, and 13-C242-SMU-016 administered by the Office of Research at Singapore Management University. We thank Indra Alam Syah Aziz, Clara Chan, Clara Chiang, Hui Yee Diong, Johannes Judy, Hyen Yu Kwek, Ze Ling Nai, Kok Leong Ng, Adam Frederick Reynolds, and Joy Wang for their help with data collection. We also thank Wan Ching Choo, James Chua, Eoin Ee, Solomon Foo, Stephanie Foo, Si Hui Goh, Janey Lim, Hui Si Oh, Jae Hee Park, Lester Sim, Gaurav Singh, Kimberly T'ng, Noah Toh, Tracy Wong, Benny Yip, Roslina Yong, and Shuxian Zhang for coding the data.

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## Abstract

Contrasts between eudaimonic well-being and hedonic well-being often compare meaning and happiness. Less work has examined the extent to which meaning and satisfaction can be distinguished. Across five diary studies ( $N = 923$ ) and a large cross-sectional survey ( $N = 1471$ ), we examined the affective profile of meaning and satisfaction in everyday life. Using response surface methodology, both judgments were modeled as a joint function of positive (PA) and negative (NA) affect. Affective discrepancy (preponderance of PA over NA) was more strongly associated with satisfaction than meaning. In general, meaning correlated less with affect than satisfaction, but the two judgments differ more in their correlation with NA than PA. This implies that people are sometimes able to derive meaning (but not necessarily satisfaction) from negative experiences. We content-coded the events reported by participants for goal-directedness, social interactions, and their potential future impact. Interpersonal conflicts and impactful negative events were associated with less satisfaction and meaning at zero-order. However, after controlling for affect and satisfaction, these negative experiences were associated with greater meaning. This effect may reflect additional cognitive processes that enhance meaning but not satisfaction. In all studies, we also observed a positivity dominance effect: At subjectively equivalent levels, PA is weighted more than NA in judgments of meaning and satisfaction. There was no evidence of negativity bias. Results were replicated across different measures and cultural groups (Singapore and the U.S.).

*Keywords:* eudaimonia, happiness, meaning, negativity bias, response surface

In the past decade, the distinction between hedonic (HWB) and eudaimonic well-being (EWB) has become increasingly prominent. HWB focuses on pleasures and displeasures and the attainment of valued needs, goals, and desires (Ryan & Deci, 2001). The term is synonymous with *subjective well-being* which comprises frequent pleasant affect, infrequent unpleasant affect, and the judgment that life is satisfying (Diener, 1984; Kashdan, Biswas-Diener, & King, 2008). In contrast, EWB focuses on personal growth, personal expressiveness, and the fulfillment of one's true potential (Ryan & Deci, 2001; Waterman, 2008). It involves a process of discovering what one does best and pursuing it with excellence. As Waterman (1993) notes, striving toward excellence gives meaning and direction to one's life. Hence, many definitions of EWB include the perception that one's life is meaningful, that it has a purpose (Huta & Waterman, in press).

Numerous studies have emphasized the distinct correlates of HWB and EWB. For example, people high on EWB showed decreased expression of pro-inflammatory genes, which tend to be activated under stressful conditions (Fredrickson et al., 2013). In contrast, people high on HWB showed the reverse pattern (however see N. J. L. Brown, MacDonald, Samanta, Friedman, & Coyne, 2014; Cole & Fredrickson, 2014). Many studies contrast happiness and meaning specifically. Happiness is associated with projects that are likely to be successful; meaning is associated with projects that are personally expressive (McGregor & Little, 1998). Meaning and purpose also correlate more with helping others and behaving morally, whereas happiness correlates more with benefiting from the moral behavior of others (Baumeister, Vohs, Aaker, & Garbinsky, 2013; Hofmann, Wisneski, Brandt, & Skitka, 2014).

The preceding work has expanded the conception of well-being by incorporating theories of optimal functioning (Ryff & Singer, 1998). However, this work has also been critiqued on

several grounds. First, there does not appear to be a unified definition of EWB (Kashdan et al., 2008). Researchers have emphasized a range of constructs such as growth, meaning, and authenticity (Huta & Waterman, in press). By comparison, there is more consensus that HWB consists of positive affect (PA), negative affect (NA), and satisfaction (Kashdan et al., 2008). Nevertheless, HWB has also been inconsistently operationalized. Some researchers assess the affective component only (Baumeister et al., 2013; Hofmann et al., 2014; Waterman, 1993), others combine measures of both affect and satisfaction (Fredrickson et al., 2013; McGregor & Little, 1998). Another critique is the overlap between the two constructs. Measures of EWB and HWB correlate strongly with each other, with  $r_s > .60$  (Baumeister et al., 2013; Fredrickson et al., 2013; Waterman, 1993). Strong correlations are expected given that eudaimonic theories predict the experience of growth and development of one's potentials to be accompanied by pleasant affect and satisfaction (Ryan & Deci, 2001; Ryff & Singer, 1998; Waterman, 1993). However, high correlations between EWB and HWB can make it difficult to interpret the effect of one controlling for the other (e.g., Baumeister et al., 2013; Fredrickson et al., 2013). Noting this, Coyne (2013) called for more research examining the discriminant validity of the two constructs. Kashdan et al. (2008) similarly remarked that "Until issues of definition, methodology, and relatedness (where eudaimonia and hedonic well-being are concerned) are better understood, research programs attending to differences in these types of well-being will be relatively weak and difficult to interpret meaningfully" (p. 227).

Both EWB and HWB are broad constructs, each composed of theoretically distinct subcomponents. An analysis of how these components relate to each other may help clarify EWB and HWB more generally. In this article, we focus specifically on satisfaction and meaning in everyday life. First, we examine their affective profiles—how the two constructs vary as a

*joint function* of PA and NA. Not surprisingly, satisfaction and meaning are both associated with high levels of PA and low levels of NA (Lucas, Diener, & Suh, 1996; Steger, Frazier, Oishi, & Kaler, 2006). However, previous analyses have not established their precise hedonic form. For example, what are the effects of equally high (versus low) levels of PA and NA on satisfaction and meaning? Though the latter are strongly related, they may exhibit distinct profiles when PA and NA are considered jointly. Second, we examine how other features of daily experience relate to satisfaction and meaning. Meaning, in particular, is believed to be influenced by factors other than affective experience (Antonovsky, 1987; Heintzelman, Trent, & King, 2013; Machell, Kashdan, Short, & Nezlek, 2015; Waytz, Hershfield, & Tamir, 2015). Drawing on past research, we identified some of these factors and examined their effects on satisfaction and meaning.

We investigated the affective profile and non-affective correlates of daily meaning and satisfaction across six studies and two countries (Singapore and the United States). In the majority of these studies, participants completed several diary surveys over a period of three or more weeks. At each survey, they rated their affect, satisfaction, and sense of meaning; they also reported specific events they recently experienced. The richness of the data enabled us to perform a variety of analyses. To organize our exposition, we have divided our paper into two major sections. In the first, we focus on the affective profile of meaning and satisfaction. In the second, we analyze the features of everyday experience and their relation to the two constructs.

### **Part 1: The Affective Profile of Satisfaction and Meaning**

Satisfaction is a cognitive judgment based on comparing one's present state with a desired state of affairs (Campbell, 1976; Diener, Emmons, Larsen, & Griffin, 1985; Michalos, 1985). The perceived discrepancy between what is desired and what actually transpires is central to satisfaction. To the extent that this discrepancy is minimized, people are generally satisfied.

Within the subjective well-being paradigm, satisfaction and affective experience are conceptualized as distinct but related components (Diener, 1984). This distinction resonates with Kraut's (1979) definition of happiness as "the belief that one is getting the important things one wants, as well as certain pleasant affects that *normally* go along with this belief [emphasis added]" (p. 235). Although the cognitive evaluation is positive when standards are met and negative when they are not, satisfaction is not always accompanied by an affective response.

In accord with several theories, we understand meaning as a subjective experience. Frankl (1959/2006) implied that what makes life meaningful is the fulfillment of one's values. Some values may be realized through creative work or aesthetic pleasure; other values provide people with meaning when they are reaffirmed in adversity (e.g., maintaining one's dignity in the face of suffering). Working toward the realization of those values gives people a reason for living even in the worst circumstances. Antonovsky (1987) emphasized meaning as sense of coherence—that the events of one's life are comprehensible and manageable, and that the challenges posed by life events are worthy of investment. Baumeister (1991) similarly defined meaning as the extent to which life makes sense to the person. He suggested four ways that life needs to make sense. People need to perceive (a) that their present experiences have some relevance for future outcomes (purpose), (b) that their past actions were justifiable and aligned with important standards (value), (c) that environmental contingencies can be comprehended in a way that affords a sense of control (efficacy), and (d) that their own existence has value and significance for the self and others (self-worth). Wong (2012) echoes some of these aspects of meaning in his PURE model: purpose, understanding, responsible action, and (positive) evaluation of one's life.

Despite the variety of definitions of meaning proffered by theorists, there are areas of

overlap. The key areas of commonality are nicely summarized by King and colleagues (Heintzelman & King, 2014; Hicks & King, 2009), who conceptualize meaning as a subjective experience characterized by three aspects. First, meaning entails a sense of purpose—that one’s life and activities are directed toward important aims (Baumeister, 1991; Ryff & Singer, 1998; Wong, 2012). Second, meaning involves the belief that one’s existence has value or significance beyond the present moment (Baumeister, 1991; Crumbaugh & Maholick, 1964; Frankl, 1959/2006; Steger et al., 2006). Third, meaning implies coherence or comprehensibility—that life “makes sense” to the individual (Antonovsky, 1987; Baumeister, 1991; Wong, 2012). The three components of meaning are interrelated. For example, Battista and Almond (1973) suggested that important goals (purposes) provide a framework for understanding one’s life (coherence) and that the fulfillment of these goals results in a feeling of integration, relatedness, or significance.

Past work has tended to emphasize the difference between meaning and happiness instead of meaning and satisfaction (Baumeister et al., 2013; Hofmann et al., 2014; McGregor & Little, 1998). The former comparison is appealing because the distinction between EWB and HWB draws attention to the importance of functioning well and not just “feeling good” (Keyes & Annas, 2009; Ryan & Deci, 2001). Note that whereas happiness is an affective construct, meaning may implicate both cognitive and affective processes. For example, the belief that one’s life is comprehensible has been described as a cognitive assessment (Antonovsky, 1987; Heintzelman & King, 2014; Ryff & Singer, 1998). Moreover, meaningful experiences can be accompanied by feelings or *beliefs* that one’s life has purpose and significance beyond the present moment. Thus, to a certain extent, one can conceptualize meaning as a cognitive judgment. If so, some ambiguity is cast on previous research. Although differences between



meaning and happiness could reflect the distinction between EWB and HWB, they could also reflect the distinction between cognitive judgment and affective experience. As a cognitive judgment, meaning may involve processes similar to those underlying satisfaction. Standards and expectations provide a basis for judging one's satisfaction, but they also inform people about the goals that are valued in society. Several theorists have posited that meaning is enhanced when culturally valued standards and expectations are met (Baumeister et al., 2013; Heine, Proulx, & Vohs, 2006). When these are violated, one's sense of meaning may be threatened (Heine et al., 2006; Park, 2010). Thus, meeting standards may contribute to both satisfaction and meaning.

The overlap between meaning and satisfaction has implications for conceptualizing EWB and HWB. By identifying satisfaction with HWB and meaning with EWB, the assumption is that satisfaction is more closely related to affect than is meaning. This has rarely been tested. If the two constructs cannot be differentiated by their association with affect, the classification of one and not the other as "hedonic" could be questioned. Indeed, the distinction between satisfaction and meaning is often blurred. For example, Gruber, Mauss, and Tamir (2011) focused their review on affective rather than cognitive measures of happiness because of the "relative heterogeneity in the conceptualization of the cognitive component of happiness, with an emphasis on life satisfaction, meaning in life...and goal attainment" (p. 223). Widely used measures of meaning even ask respondents whether they have identified a "satisfying life purpose" (Crumbaugh & Maholick, 1964; Steger et al., 2006) or if they "feel the satisfaction of really having worked to accomplish something" (Battista & Almond, 1973). These examples highlight the considerable overlap between satisfaction and the "meaning-imbued nature of eudaimonia" (Kashdan et al., 2008, p. 224). The time is ripe for a systematic evaluation of their similarities and differences.

We examined the affective profile of meaning and satisfaction at the level of everyday experience. Thus, we measured these constructs as states instead of as “traits” (i.e., overall meaning and satisfaction with life). We emphasize this distinction because some theories conceptualize EWB and HWB in terms of one’s life as a whole (Huta & Waterman, in press; Keyes & Annas, 2009). Such theories may or may not generalize when the constructs are measured at the level of states. We focused on daily experiences for three reasons. First, we expected more variation in state-level measures than trait-level measures. Given our interest in how PA and NA jointly covary with meaning and satisfaction, it is necessary to observe a broad range of affective combinations. For instance, high levels of PA and NA in a single day—though rare—are relatively more likely than high *average* levels of both in a single person. Second, daily well-being contributes to overall well-being (Tov, 2012), and may help us understand how the latter changes over time. Third, few studies have examined everyday meaning. As Waterman (2008) notes, little is known about eudaimonic functioning at different timeframes of judgment. Notable exceptions are research on the effects of eudaimonic activity (Steger & Kashdan, 2013) and daily events (Machell et al., 2015) on daily meaning. However, these studies have not examined the joint effects of PA and NA on daily meaning. Thus more research is needed.

### **Affective Profiles as a Response Surface**

We employed response surface methodology (RSM) to explore how meaning and satisfaction covary with PA and NA in daily life. In RSM, any combination of affect can be located on a plane defined by NA (*y*-axis) and PA (*x*-axis). At each combination of affect, the level of satisfaction or meaning can be plotted on a third axis (*z*). When this is done, a response surface is formed like a blanket floating in three-dimensional space. The contours of this surface—how it rises and falls at different points along the plane—reveal how satisfaction and

meaning vary as a *joint* function of PA and NA. For technical details on how the responses surface parameters are computed, see Appendix A.

Two key parameters of the affective response surface are the slope of affective congruence and the slope of affective discrepancy. In the top-left panel of Figure 1, the line of *affective congruence* runs from Points C to A. Along this line, levels of PA and NA are equivalent. The affective congruence slope describes how judgments vary at low-level congruence (PA and NA are both 0) versus high-level congruence (both are 100). Perpendicular to affective congruence, the line of *affective discrepancy* runs from Point B (a preponderance of NA) to Point D (a preponderance of PA). The affective discrepancy slope describes how judgments vary as one type of affect becomes more prevalent than the other. Using RSM, the slopes of affective congruence and discrepancy can be computed and tested for significance. We consider how these two parameters might distinguish meaning from satisfaction.

**Affective discrepancy.** In line with past research on we expected daily satisfaction to covary with the discrepancy between PA and NA (Bradburn, 1969; Suh, Diener, Oishi, & Triandis, 1998). Affective discrepancy might reflect discrepancies between the present and desired state of affairs. Falling far below one's standards should be a largely negative experience, whereas meeting or exceeding one's standards should be a largely positive experience. Thus, satisfaction should be lowest on days with a preponderance of NA, and highest on days with a preponderance of PA. This would result in a positive slope for affective discrepancy. Meaning should also covary in a similar way with affective discrepancy. Failing to meet standards and expectations should reduce meaning as well as satisfaction. This prediction is consistent with the meaning-making model, which views discrepancies between global meaning systems and one's experience as a source of distress (Park, 2010). In contrast, consistency between experience and

global beliefs is associated with positive events and enhanced meaning (King & Hicks, 2009).

Although we expected both satisfaction and meaning to be associated with affective discrepancy, some differences were predicted. If satisfaction is a component of HWB whereas meaning is not (Huta & Waterman, in press; Ryan & Deci, 2001), the latter should covary less with affective discrepancy than the former. A number of studies suggest that it is possible to experience meaning in response to negative events (Anderson, Kay, & Fitzsimons, 2013; Baumeister, 1991; Baumeister et al., 2013). Meaningful pursuits often require a long-term perspective in which the person commits to a valued, future goal. Extreme examples include religious missionaries and guerilla revolutionaries (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; McGregor & Little, 1998). Such commitment may require one to disregard immediate affective experiences. This implies that meaning may persist despite discrepancies between the current state and desired future state. As Baumeister (1991) notes, soldiers who fight for their country can be said to have lived a meaningful life even if they die before the battle is decided. Goal attainment is not always necessary for conferring meaning on one's actions.

**Affective congruence.** Few theorists have considered how equivalent levels of affect relate to judgments of meaning and satisfaction. Nevertheless, we consider three possible models. These models are depicted in Figure 1. Note that in all models, the affective discrepancy slope (from Points B to D) is the same (+.70). The difference concerns the affective congruence slope. This is a crucial point: Even if meaning and satisfaction are similar with respect to affective discrepancy, they may differ in their covariation with affective congruence. For example, Bradburn (1969) suggested that the difference between PA and NA may be a more potent predictor of satisfaction than overall levels of either. An assumption of this *affect balance*

*model* is that when PA and NA are experienced at equivalent levels, their effects cancel each other out. In Figure 1, the affect balance model posits a congruence slope of 0.

In contrast, some have argued that people are motivated to perceive their lives as meaningful (Baumeister, 1991; Frankl, 1959/2006; Halusic & King, 2013). To protect one's sense of meaning, negative events may be viewed as isolated incidents (Baumeister, 1991). This is viable so long as one *also* experiences positive events. Indeed, a lack of meaning experienced in one domain can be compensated by positive experiences in another domain (Halusic & King, 2013; Heine et al., 2006; Hicks & King, 2008). Thus, at equivalent levels of affect, people may weight positive experiences more than negative experiences when judging meaning. We describe this as *positivity dominance*. In Figure 1, this results in a positive congruence slope (e.g., +.30), whereby the overall judgment rises from the 20-40 range to the 60-80 range.

A third model is suggested by the literature on negativity bias (Baumeister et al., 2001; Rozin & Royzman, 2001). Many psychological phenomena are affected more strongly by negative than positive stimuli. For example, when people are presented with a combination of positive and negative information about a target person, their overall impression may be more negative than the algebraic sum of each piece of information.<sup>1</sup> Rozin and Royzman (2001) referred to this as *negativity dominance*. Thus, a day in which both PA and NA are high might be appraised as worse than a day in which both are low—even though the algebraic sum is zero in both cases. In Figure 1, this results in a negative affective congruence slope (e.g., -.30) whereby the overall judgment falls from the 60-80 range to the 20-40 range. Negativity dominance may apply more to judgments of satisfaction than meaning because the latter can be experienced in

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<sup>1</sup> More specifically, Rozin and Royzman (2001) defined negativity dominance as an overall appraisal that is more negative than the algebraic sum of the *subjective values* associated with each piece of information. This is important to highlight since other forms of negativity bias are based on an objective valuation (e.g., gaining \$50 versus losing \$50). We emphasize negativity dominance because our analysis concerns subjective ratings of affective experience.

response to negative events (Anderson et al., 2013; Baumeister, 1991; Baumeister et al., 2013).

### **Overview**

We examined the affective profile of daily satisfaction and meaning in six studies. Across Studies 1 to 4, participants rated their affect using different response formats. In Study 5, we improved our measures of satisfaction and meaning. We also examined physical experiences and sampled a different cultural group (U.S. adults) from the previous studies (Singaporean university students). In Studies 1 to 5, participants rated satisfaction and meaning before rating their emotions. In Study 6, we reversed the order to determine whether the salience of emotional experience alters the judgment process. In this first half of our paper, our primary research question is the extent to which meaning and satisfaction can be differentiated with respect to affective discrepancy and congruence. Two general hypotheses were derived from extant literature. First, satisfaction should covary more strongly with affective discrepancy than meaning, given that the former is more closely related to HWB. Second, satisfaction and meaning may be characterized by distinct affective congruence slopes. The motivation to view life as meaningful implies that PA should be weighted more than NA in judgments of meaning (i.e., positivity dominance). In contrast, Bradburn's (1969) theory of satisfaction states that equivalent levels of PA and NA cancel each other out (i.e., affect balance). An alternate possibility is negativity dominance, which may characterize satisfaction more than meaning.

### **Studies 1 to 4**

We report Studies 1 to 4 together because they all employed a diary design and used similar measures of satisfaction and meaning. The studies differed in (a) the specific emotion terms and response format used to assess affect, (b) the frequency of the diary surveys, and (c) the duration of the diary period. These data were originally collected as part of several studies on

well-being, personality, and memory (Tov, 2012; Tov & Koh, 2014; Tov, Nai, & Lee, in press). The previous papers did not examine the effects of PA and NA on satisfaction and meaning.<sup>2</sup>

## Method

**Participants.** Students from Singapore Management University (SMU) were recruited for a paid diary study. Study 1 consisted of 206 participants (121 females) with a mean age of 21.59 years. Study 2 consisted of 139 participants (91 females) with a mean age of 21.27 years. Study 3 consisted of 185 participants (119 females) with a mean age of 21.63 years. Study 4 consisted of 178 participants (119 females) with a mean age of 21.60 years.

**Materials.** Participants rated their level of satisfaction, meaning, and affect during the *past day* (Studies 1 and 3) or *past few days* (Study 2 and 4). We estimated the reliability ( $\omega$ ) of each measure at the within-participant level using procedures recommended for multilevel data (Geldhof, Preacher, & Zyphur, 2013).

**Daily satisfaction.** Participants rated how satisfied they were with their life over the past day or past few days (1 = *very dissatisfied*, 7 = *very satisfied*), and how terrible or excellent the past day or past few days had been (1 = *terrible*, 7 = *excellent*; see Oishi, Diener, Choi, Kim-Prieto, & Choi, 2007). We averaged responses to the two items. Reliabilities were adequate ( $\omega$ 's = .88, .87, .85, .86 for Studies 1 to 4, respectively).

**Daily meaning.** Participants rated how meaningful the past day or past few days had been for them personally (0 = *not at all meaningful*, 6 = *extremely meaningful*).

**Daily affect.** Participants rated the affect they experienced during the past day or past few days. In Studies 1 and 2, affect was rated from 0 (*not at all*) to 6 (*extremely*). In Study 1, PA

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<sup>2</sup> In Studies 1 to 4 and Study 6, the diary surveys included a measure of satisfaction with specific domains of life. The domain satisfaction measure is not included in the present analyses because the process of judging specific areas of life may differ from judging overall satisfaction and meaning for a given period of time. Nevertheless, daily domain satisfaction correlated strongly with daily overall satisfaction ( $r_s > .52$ ) and the affective response surface is similar for both.

included *happy, pleased, proud, relaxed, and cheerful* ( $\omega = .84$ ); NA included *sad, upset, ashamed, angry, stressed, and depressed* ( $\omega = .88$ ). In Study 2, PA included *happy, pleased, relaxed, and cheerful* ( $\omega = .83$ ); NA included *sad, upset, angry, and stressed* ( $\omega = .78$ ).

In Studies 3 and 4, affect was rated from 1 (*very rarely or never*) to 5 (*very often or always*). In Study 3, PA included *happy, joyful, and contented* ( $\omega = .83$ ); NA included *sad, afraid, angry, and stressed* ( $\omega = .64$ ). In Study 4, PA included *happy, joyful, contented, positive, and calm* ( $\omega = .83$ ); NA included *sad, afraid, angry, negative, bored, and stressed* ( $\omega = .71$ ).

**Procedure.** Participants completed all diary surveys over the Internet. In parentheses, we report the mean number of surveys completed by participants. In Study 1, surveys were done at the end of the day for 21 days ( $M = 19.27$ ). In Study 2, surveys were done twice a week on Wednesdays and Sundays for 8 weeks. To test other hypotheses not relevant for the present analysis, participants rated their experience over the past few days (on Wednesdays) or the entire past week (on Sundays). We analyzed the Wednesday surveys only because the target period is closer to the daily time frame used in Study 1. Thus, Study 2 provided a maximum of eight surveys per participant ( $M = 7.39$ ). In Study 3, surveys were done at the end of each day for seven days ( $M = 6.42$ ). In Study 4, diary surveys were done twice a week (every Wednesday and Sunday) for 4 weeks, yielding a maximum of eight surveys per participant ( $M = 7.12$ ).

### **Analytic Strategy**

**Percentage of the maximum possible (POMP) scoring.** In RSM, the slopes of congruence and discrepancy are computed from unstandardized regression coefficients (see Appendix A). However, across Studies 1 to 6, affect was rated using either a 5-point or 7-point scale. To facilitate comparisons across studies, we rescaled all measures to a percentage of the maximum possible (POMP) score (P. Cohen, Cohen, Aiken, & West, 1999). POMP scoring is a



linear transformation with a range from 0 (lowest possible score) to 100 (highest possible score), with 50 representing the midpoint of the scale.

**Data analysis.** Prior to conducting response surface analysis, we examined the joint distribution of PA and NA to ensure that we actually observed cases across an adequate range of the response surface (Shanock, Baran, Gentry, Pattison, & Heggestad, 2010). For example, it was extremely rare to observe cases in which both PA and NA were maximally high (i.e., both equal to 100). However, within the range of 20 to 80 points, we observed cases at nearly every combination of PA and NA across Studies 1 to 6. In Study 5, we observed cases at nearly every combination of PA and NA within the range of 20 to 70 points. By and large, the data are sufficient for RSM. However, to avoid extrapolation, we only plot the response surface within the affective range of 20-80 in subsequent figures. In the Supplemental Materials, we provide cross-tabulations of PA and NA for all studies (Tables S1 – S8) as well as a detailed summary of their joint distribution.

For each study, we first examined how daily meaning and satisfaction correlate with daily PA and NA. All scores were centered within-participants to remove between-person variation. We also tested whether meaning and satisfaction differ significantly in their correlation with PA and NA. These significance tests were supplemented with effect size estimates. Card (2012) recommends the differential index (*di*) as an effect size measure for the difference between two dependent correlations (e.g., the correlations of PA with meaning versus satisfaction). We interpret a *di* of .10 as a small effect, .30 as medium, and .50 or greater as large.<sup>3</sup>

For all diary studies, we estimated the affective response surface of meaning and satisfaction using multilevel modeling. Diary responses were nested within participants, creating

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<sup>3</sup> Cohen (1988) suggested similar guidelines for *q*, the effect size representing the difference between two independent correlation coefficients.

two levels of variation: daily-level and person-level. Following recommended procedures for RSM (Edwards, 2002; Shanock et al., 2010), we centered daily-level affect on the scale midpoint (50) to facilitate plotting and interpretation of the response surface. At the daily level, meaning and satisfaction were modeled as a polynomial regression function with PA, NA, their squares, and their interaction as predictors. As described in Appendix A, the additional terms are needed to fully represent the contours of the response surface. We controlled for person-level effects by including as predictors: participants' average PA and NA (also centered at the midpoint), their squares, and their interaction. All models included random effects for the intercept and slopes of daily PA and NA. These reflect significant variation in average meaning and satisfaction across participants, as well as variation in the effects of PA and NA on these outcomes. A first-order autoregressive covariance structure was specified for the within-person residuals. All models were estimated using restricted maximum likelihood estimation via SAS 9.3.

The slopes for affective congruence and affective discrepancy were tested for significance as linear contrasts using the SAS PROC MIXED command. We also constructed bias-corrected bootstrap confidence intervals (CIs), following Edwards (2002) recommendation that 10,000 bootstrap replications be conducted for RSM models. With multilevel data, we could randomly sample between participants, within participants, or both. When participants provide repeated measurements, it may be preferable to sample between participants (van der Leeden, Meijer, & Busing, 2008). In diary data, responses from adjacent surveys tend to be correlated with each other. Random sampling within participants would eradicate this natural covariation. Therefore, we sampled between participants only. Once a participant was randomly selected, his or her diary responses were incorporated en bloc into the bootstrap dataset.

## **Results**

Table 1 presents means and standard deviations for all variables. Daily satisfaction and meaning were strongly correlated with each other,  $r_s = .65, .49, .68,$  and  $.67$  across Studies 1 to 4, respectively,  $ps < .001$ . Both were also strongly correlated with PA and NA (see Table 2). However, compared with satisfaction, meaning was less strongly correlated with both PA and NA, all  $|t|'s > 2.00$ , all  $ps < .05$ . Table 2 also presents effect size estimates ( $d_i$ ) for these differences. Across Studies 1 to 4,  $d_i$ 's ranged from  $.23$  to  $.46$ , indicating small to moderate differences between daily meaning and satisfaction in their correlation with daily affect.

Regression coefficients for daily-level and person-level models are presented in the online supplemental materials (Tables S9-S12). Table 3 presents the slopes of affective discrepancy and congruence, along with 95% bias-corrected CI's. The corresponding response surfaces are depicted in Figures 2 and 3. In all studies, the affective discrepancy slope was significantly positive for both satisfaction ( $b$ 's =  $.90$  to  $1.07$ ) and meaning ( $b$ 's =  $.39$  to  $.78$ ),  $F$ 's  $\geq 62.05$ ,  $ps < .001$ . A preponderance of PA over NA was associated with greater meaning and satisfaction. The affective congruence slope was also significantly positive for satisfaction ( $b$ 's =  $.18$  to  $.38$ ) and meaning ( $b$ 's =  $.40$  to  $.56$ ),  $F$ 's  $\geq 9.33$ ,  $ps < .003$ . At subjectively equivalent levels of affect, PA is weighted more than NA. Thus, both judgments are characterized by positivity dominance.

We also compared satisfaction and meaning by constructing a 95% bias-corrected CI around the difference in their slopes (see  $\Delta_{S-M}$  in Table 3). Across Studies 1 to 4, the difference between satisfaction and meaning in their discrepancy slopes was positive (i.e., the CI's exclude zero). This indicates that affective discrepancy had a stronger effect on satisfaction than meaning. In contrast, there was a tendency for affective congruence to covary more strongly with meaning than satisfaction, but the difference was significant in Studies 2 and 3 only.

## Discussion

Across Studies 1 to 4, satisfaction covaried more with PA, NA, and affective discrepancy, than did meaning. This supports the notion that satisfaction is more closely related to HWB than is meaning. Nevertheless, meaning also covaried significantly with affect. There was also consistent evidence that meaning and satisfaction are both characterized by positivity dominance. Contrary to the affect balance model, it appears that the effects of PA and NA on satisfaction do not cancel each other out at subjectively equivalent levels. Instead, PA receives more weight whether judging satisfaction or meaning. These results were replicated across different response formats and time frames ranging from the past day to the past few days.

The previous studies are limited in several important ways. Although the effect of affective discrepancy was consistently stronger for satisfaction than meaning, these differences could be an artifact of the measures used. Specifically, the two satisfaction items used a bipolar response format (*very dissatisfied—very satisfied* and *terrible—excellent*). In contrast, the meaning item used a unipolar response format (*not at all meaningful—extremely meaningful*). The bipolar format may have primed participants to think of both PA and NA, leading them to place more weight on affective discrepancy in their judgments. Furthermore, the single-item measure of meaning may be less reliable than the two-item measure of satisfaction. Thus, weaker effects observed for meaning could reflect attenuation caused by low reliability. The positive congruence slopes could also be artifactual. All items used in Studies 1 to 4 were keyed in the same direction. Thus an acquiescent response set in which participants consistently selected either the high or low-end of the scale could also produce a positive congruence slope.

In Study 5, we measured satisfaction and meaning using multiple items and a consistent response format (*strongly agree—strongly disagree*). We also included an even number of

positively and negatively-keyed items. Any tendency to acquiesce should therefore result in a flat slope along the line of congruence. Moreover, participants in Study 5 were adults in the United States, allowing us to evaluate the generalizability of our findings to a different cultural group.

### Study 5

We recruited U.S. participants from Amazon Mechanical Turk (MTurk) to complete a day reconstruction survey (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004). Participants recalled several episodes that happened yesterday and rated how intensely they felt emotion in each episode. In addition, they also provided overall ratings of the emotions they felt yesterday. Thus we assessed distinct aspects of affective experience. Participants also rated how intensely they felt physical pleasure and discomfort. Contrasts between HWB and EWB often emphasize that the latter involves more than “just feeling good.” For example, Ryff and Singer (1998) alluded to John Stuart Mill’s claim that it is better to be Socrates dissatisfied than a pig satisfied. Presumably, the pig—capable only of physical pleasure and pain—is unable to experience eudaimonia. Following this distinction, we expected large differences between meaning and satisfaction in their correlation with physical experiences.

### Method

**Participants.** MTurk workers ( $N = 1548$ ) completed a 30-minute online survey for USD\$1. After screening (see Results), the final sample consisted of 1471 participants (1020 females, 2 skipped). Ages ranged from 18 to 81 years old ( $M = 36.0$ ,  $SD = 12.9$ ). Participants were predominantly European American (76.2%). The majority had either graduated from college (32.4%) or had some college education (30.2%)

### Materials.

**Trait measures.** To control for dispositional happiness, we administered the Subjective

Happiness Scale (SHS; Lyubomirsky & Lepper, 1999). Participants rated four items ( $\alpha = .91$ ) such as the extent to which they consider themselves to be a happy person (1 = *not a very happy person*, 7 = *a very happy person*). To control for trait negative affect, participants completed a 10-item measure ( $\alpha = .92$ ) of neuroticism (<http://ipip.ori.org/newNEODomainsKey.htm>). Items such as “I often feel blue” were rated from 1 (*very inaccurate*) to 5 (*very accurate*).

**Satisfaction and meaning.** Participants rated their agreement (1 = *strongly agree*, 7 = *strongly disagree*) with eight statements that expressed how satisfying ( $\alpha = .90$ ) and meaningful ( $\alpha = .85$ ) yesterday was for them. Each scale consisted of four items, two of which were reverse-keyed. One reverse satisfaction item was adapted from the Satisfaction with Life Scale (Diener et al., 1985): “If I could relive yesterday, I would change almost everything.” One reverse meaning item was adapted from the Life Regard Index (Battista & Almond, 1973): “Yesterday...I spent most of the day doing things that weren’t really important to me.” See Appendix B for all items.

**Frequency of affect.** Participants rated how often they experienced affect yesterday (1 = *very rarely or never*, 5 = *very often or always*). PA included *happy, joyful, contented, positive, good, pleasant, and relaxed* ( $\alpha = .94$ ); NA included *sad, afraid, angry, negative, bad, unpleasant, bored, and stressed* ( $\alpha = .90$ ). The majority of items were taken from the Short Scale of Positive and Negative Experiences (Diener et al., 2010).

**Day reconstruction.** This portion was divided into three segments (morning, afternoon, and evening). Participants listed all the episodes they experienced yesterday from when they awoke to when they slept. For each episode, participants provided a short name, indicated the start and end time, and wrote down any feelings they had during the episode (Kahneman et al., 2004). On average, participants reported 12.56 episodes ( $SD = 4.28$ ), covering 88.3% of their waking hours. The average episode duration was 1.13 hours ( $SD = 1.07$ ).

**Intensity of affect.** For each episode, participants rated how strongly they experienced PA, NA, physical pleasure, and physical discomfort (0 = *not at all*, 6 = *very much*). PA included *happy, joyful, good, relaxed, and enthusiastic*; NA included *sad, angry, bad, bored, and worried*. We clarified that physical pleasure (discomfort) refers to pleasant (unpleasant) sensations “we may get from eating, touching, feeling, sex, temperature, movement, smell, and sound” (Chapman, Chapman, & Raulin, 1976). For each participant, we averaged the PA ( $\omega = .96$ ), NA ( $\omega = .92$ ), and single-item pleasure/discomfort ratings across all episodes. Using formulas provided by Raudenbush and Bryk (2002), we estimated the item means of physical pleasure (.87) and physical discomfort (.90) to be highly reliable.

**Procedure.** The survey began with an instructional manipulation check (Oppenheimer, Meyvis, & Davidenko, 2009) to encourage careful attention. Next, participants confirmed the day and time in their location. We used their responses to specify which day of the week *yesterday* referred to in subsequent instructions. After completing the trait measures, participants rated the satisfaction, meaning, and frequency of affect they experienced yesterday. This was followed by the day reconstruction survey. Participants rated the intensity of emotional and physical experiences for each episode they reported. As an additional attention check, we presented an item asking participants to rate how much “physical strength” they experienced, with instructions to select a specific number on the response scale. This item appeared only once during the last afternoon episode reported.

## Results

**Data screening.** Over one-third (35.5%) of the sample failed the physical strength attention check. When we examined the responses of those who failed this check, many provided valid episode descriptions; ratings also appeared consistent with the episodes listed. We suspect

that the attention check was too subtle; the item appeared before two similar items measuring physical pleasure and discomfort. Therefore, we also considered whether the participant gave the same response for *all* well-being scales or *all* episode ratings. If participants failed the attention check *and* acquiesced on any scale, we excluded their data ( $n = 9$ ). Participants were also excluded if they reported few episodes (i.e., the total duration of their episodes covered less than 50% of their waking hours;  $n = 55$ ); and if they experienced technical errors that led to missing responses ( $n = 13$ ). In total, 77 participants were excluded from analysis.

**Confirmatory factor analysis.** To evaluate whether the satisfaction and meaning items tapped distinct constructs, we conducted a confirmatory factor analysis (CFA). Because item responses were ordinal, we performed the CFA on a polychoric correlation matrix using fully weighted least squares estimation. We examined several fit indices using cut-offs for acceptable fit reported by T. A. Brown (2006): chi-square (non-significant value); root mean square error of approximation (RMSEA  $< .08$ ); comparative fit index (CFI  $> .90$ ); Tucker-Lewis index (TLI  $> .90$ ); and the Akaike Information Criteria (lower AIC values indicate better fit). We also report the p-value for close fit (pClose). High values (pClose  $> .05$ ) suggest that the RMSEA is not significantly greater than .05 (i.e., the model fits the data closely).

We first specified a two-factor model with satisfaction and meaning items loading onto different factors. This two-factor model showed acceptable fit across most indices:  $\chi^2(19) = 96.208$ ,  $p < .001$ ; RMSEA = .053; pClose = .32; CFI = .989; TLI = .984; AIC = 130.208. All items loaded above  $|.740|$  on their respective factor. However, the latent correlation between the two constructs was high ( $\psi = .85$ ). Therefore, we evaluated a one-factor model with satisfaction and meaning items loading onto a single factor. This one-factor model did not fit the data as well as the two-factor model:  $\chi^2(20) = 226.446$ ,  $p < .001$ ; RMSEA = .084; pClose  $< .001$ ; CFI = .970;



TLI = .958; AIC = 258.446. Thus, although daily satisfaction and meaning were highly correlated, they were not indistinguishable in the current dataset.

**Correlations and response surface analyses.** Satisfaction and meaning correlated with each other ( $r = .72, p < .001$ ). As in the previous studies, all affect measures (frequency, intensity, and physical) correlated more strongly with satisfaction than with meaning (Table 2). Interestingly, although satisfaction and meaning differed in their correlation with physical pleasure, the size of this difference was small ( $d_i = .06$ ).

We modeled the affective response surface of meaning and satisfaction using ordinary least-squares regression (Table 4). All models controlled for trait happiness and neuroticism. Across all measures, the affective discrepancy slope was significantly positive for satisfaction ( $b$ 's = 0.52 to 1.09) and meaning ( $b$ 's = 0.26 to 0.65),  $F$ 's > 17.82,  $ps < .001$ . However, affective discrepancy had a stronger effect on satisfaction than on meaning across all measures (Table 4).

Focusing on the frequency and intensity measures, the affective congruence slope was generally positive for satisfaction and meaning ( $b$ 's  $\geq .12$ ); however the slope was not significant in all cases. For satisfaction, the congruence slope was significant for intensity,  $F(1, 1463) = 11.04, p < .001$ , but not frequency,  $F(1, 1463) = 2.59, p = .11$ . For meaning, the congruence slope was significant for frequency,  $F(1, 1463) = 14.32, p < .001$ , but not intensity,  $F(1, 1463) = 3.01, p = .08$ . Despite the marginally significant values for some effects, the overall pattern is consistent with positivity dominance. The effects of congruence were more discrepant for physical experiences. We continued to find evidence of positivity dominance for meaning,  $F(1, 1463) = 3.41, p = .07$ . In contrast, the slope was relatively flat for satisfaction,  $F(1, 1463) = 0.12, p = .73$ . Thus the effects of physical experience on satisfaction conform to an affect balance model. Finally, for two of the measures (frequency and physical experience) affective

congruence had a stronger effect on meaning than satisfaction.

## **Discussion**

Study 5 largely replicated the previous findings (based on Singaporean college students) in a sample of U.S. adults. Compared with satisfaction, meaning correlated less with affect. Moreover, affective discrepancy was less predictive of meaning than satisfaction. These findings were consistent across measures of affect, and generalized to physical experiences. We also continued to find evidence of positivity dominance. Even with balanced keying, meaning and satisfaction were higher when PA and NA were both high than when they were both low. If participants were simply acquiescing, the affective congruence slope should equal zero. This was not the case. It is also worth noting that the slope—though sometimes marginal—was never negative. That is, we found no evidence of negativity dominance. An exception to the positivity dominance effect occurred when satisfaction was predicted from physical experience. Here, equivalent levels of pleasure and discomfort canceled each other out—consistent with the affect balance model. Positivity dominance held only for meaning. Thus, people are able to downplay the experience of discomfort in judgments of meaning, but not satisfaction. One explanation is that, although people can derive meaning from physical suffering (e.g., Frankl, 1959/2006), they typically do not *desire* and derive satisfaction from such experiences. The pursuit of important goals may require people to endure negative emotions like worry (Pomerantz, Saxon, & Oishi, 2000), but not necessarily physical suffering. Interestingly, although we expected physical pleasure to correlate much more strongly with satisfaction than with meaning, the difference was much smaller than expected. This may support Heintzelman and King's (2014) proposal that meaning can be derived from mundane sources such as daily pleasures.

## **Study 6**

We have suggested that the effect of positivity dominance on meaning reflects a motivational bias to perceive one's life as meaningful. Given that satisfaction is also characterized by positivity dominance, the findings may reflect a general preference to view one's life positively. For example, when confronted with both positive and negative information about one's experiences, people place more weight on positive information (Taylor & Brown, 1988). However, in Studies 1 to 5, meaning and satisfaction were rated before affect. It remains unclear from this procedure whether participants *consciously* value positive over negative experiences in their judgments. An alternative explanation is that people simply resist thinking about negative experiences more than positive experiences (Matlin & Stang, 1978; Taylor, 1991). As a result, positive events are more accessible and therefore more likely to inform judgments of meaning and satisfaction. Some negative events may have been recalled later, when participants rated their NA. However, because affect was rated *after* satisfaction and meaning, these events would not influence their judgment.

If affect is rated first, both positive and negative experiences would be equally salient for those along the line of congruence. In that case, the affective congruence slope could be altered. We might see evidence of negativity dominance, or perhaps a flat slope consistent with the affect balance model. Rozin and Royzman (2001) reported that when participants judged the net hedonic value of gaining *and* losing \$100, their response was typically "zero." This suggests that making both types of experiences equally salient could alter the judgment process. On the other hand, if the congruence slope remains positive, this might suggest that participants consciously place more weight on positive than negative experiences. In Study 6, we reversed the order of assessment: Affect was rated prior to judgments of satisfaction and meaning.

## **Method**

**Participants.** Students from SMU ( $N = 235$ ) were recruited for a paid diary study. We excluded participants who completed fewer than five out of 10 possible diary surveys. The final sample consisted of 215 participants (140 female) with a mean age of 21.59 years. The majority of the sample was ethnically Chinese (85.6%).

**Materials.** Participants rated their affect over the past 3 days (1=*very rarely or never*, 5=*very often or always*). PA included *happy, joyful, contented, positive, and calm* ( $\alpha = .81$ ); NA included *sad, afraid, angry, negative, bored, and stressed* ( $\alpha = .68$ ). They also rated how satisfying ( $\omega = .80$ ) and meaningful ( $\omega = .75$ ) the past three days were. Items were modified from Study 5 (see Appendix B).

**Procedure.** Participants enrolled in a larger study on memory and well-being. They attended a one-hour session completing several measures of well-being and personality. For the next 30 days, they logged into a website to complete a diary survey once every three days. At the end of the diary period, participants completed a 90-minute lab session testing their memory for events over the past month. As the current paper focuses on covariation among everyday affect, satisfaction, and meaning, only the data from the diary surveys are analyzed. On average, participants completed 8.40 out of 10 surveys.

## Results

**Confirmatory factor analysis.** We performed a CFA on the satisfaction and meaning items. Because of our interest in daily satisfaction and meaning, we centered scores within participants. Consequently, item responses were treated as continuous and models were tested using a robust maximum likelihood estimator to adjust for non-normality. We first tested a two-factor model with satisfaction and meaning items loading on separate factors. This model fit the data well:  $\chi^2(19) = 108.032$ ,  $p < .001$ ; RMSEA = .051; pClose = .41; CFI = .991; TLI = .987;

AIC = 142.083. All items loaded above  $|\lambda| \geq .510$  on their respective factor. However, the latent correlation between the two constructs was again very high ( $\psi = .90$ ). We then tested a model with satisfaction and meaning items loading onto a single factor. This model fit the data less well than the two-factor model:  $\chi^2(20) = 167.027, p < .001$ ; RMSEA = .064; pClose < .01; CFI = .986; TLI = .980; AIC = 199.027. Although the one-factor model showed acceptable fit on some indices (RMSEA, CFI, TLI), the two-factor model fit the data more closely based on the  $\chi^2$ , pClose, and AIC. Still, one could argue that the two constructs are indistinguishable. Because our goal is to evaluate the degree to which this is the case, we proceeded to compare the affective profile of satisfaction and meaning. A replication of the previous results would at least suggest a few ways in which the two may be consistently distinguished even if highly correlated.

**Correlations and response surface analyses.** Satisfaction and meaning correlated with each other ( $r = .70, p < .001$ ). Compared with satisfaction, meaning correlated less strongly with PA and NA (Table 2, last row). The affective discrepancy slope was significantly positive for satisfaction and meaning (Table 3),  $F's \geq 334.07, ps < .001$ . However, the effect was stronger for satisfaction. The affective congruence slope was also significantly positive for satisfaction and meaning ( $F's \geq 5.17, ps < .05$ ), and did not differ between the two.

## Discussion

In Study 6, participants rated affect prior to judging meaning and satisfaction. With positive and negative experiences equally salient, the affective congruence slope remained positive. To a certain extent, people may consciously place more weight on PA than NA in their judgments. This conclusion must be tempered by the observation that the congruence slopes in Study 6 are smaller than in previous studies (Table 3). Thus, additional effects of congruence may still reflect greater accessibility of positive events. That said, the positivity dominance effect

appears to be quite robust as far as self-reported affect is concerned. Although the congruence slopes were smaller, positivity dominance was not eliminated by enhancing the salience of both positive and negative experiences. The use of balance-keyed scales provides further evidence that the positive congruence slopes are not a result of an acquiescent response bias.

### **Additional Affective Analyses**

To further clarify the affective similarities and differences between daily meaning and satisfaction, we examined their response surface, controlling for each other. We also meta-analyzed the difference between meaning and satisfaction in their correlation with affect.

### **Unique Effects of Affective Discrepancy and Congruence**

The affective profiles of satisfaction and meaning are very similar. Both rise with a preponderance of PA (i.e., the discrepancy slope is positive), and both are characterized by positivity dominance (i.e., the congruence slope is also positive). Given the strong correlation between daily satisfaction and meaning ( $r_s > .49$ ), it is not surprising that their hedonic forms are similar. What is unknown is whether these affective profiles characterize both judgments independently of the other. If so, the processes underlying each judgment may be separable to a degree. If not, processes common to both meaning and satisfaction may be critical for understanding their relation to affect. For all studies, we reexamined the response surface, this time adding meaning (satisfaction) as a predictor of satisfaction (meaning). The effect of discrepancy on satisfaction was quite robust ( $b$ 's = .35 to .89,  $ps < .05$ ; Table 5). Independent of meaning, a preponderance of PA over NA was associated with greater satisfaction. However, the discrepancy slope controlling for meaning ( $b'$ ) was consistently smaller than it was *without* controlling for meaning ( $b$ ; see Tables 3 and 4). We constructed bias-corrected 95% bootstrap CIs around the difference between these two effects ( $b' - b$ ). The CI's (Table 5) indicate that the

effect of affective discrepancy on satisfaction is significantly reduced when controlling for meaning. Although people are generally satisfied on days that are largely pleasant, satisfaction is enhanced when such experiences are accompanied by a sense of meaning. In contrast, the effect of discrepancy on meaning was not significant after controlling for satisfaction in five of eight analyses. Thus meaning is not directly affected by the discrepancy between PA and NA. Instead, the cognitive judgment that current circumstances are desirable relative to one's expectations (i.e., satisfaction) may account for the relation between meaning and affective discrepancy.

The effect of affective congruence on satisfaction (meaning) was significantly reduced when controlling for meaning (satisfaction). Positivity dominance is stronger when experiences are both satisfying and meaningful. Nevertheless, the effect of congruence often remained positive for both judgments. Although meaning and satisfaction covary strongly, they are not entirely reducible to each other. To the extent that positivity dominance reflects a motivational bias, this may suggest that the desire for satisfaction and meaning are somewhat separable.

### **Meta-Analysis of Correlational Differences**

The preceding analyses indicate that affective discrepancy is uniquely related to satisfaction but not meaning. However, it is not clear whether this difference between the two judgments is due primarily to their correlation with PA, NA, or equally both. Across the six studies, we computed a weighted average effect size ( $d_{iW}$ ) for the difference between satisfaction and meaning in their correlation with NA ( $d_{iW} = .33$ ) and PA ( $d_{iW} = .27$ ).<sup>4</sup> We repeated this on 10,000 bootstrap replications and constructed a bias-corrected 95% CI around the difference between the two effect sizes ( $\Delta_{di} = .33 - .26 = .06$ ). The 95% CI [.03; .09] indicates that the  $d_{iW}$

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<sup>4</sup> Study 5 provided 12 correlations from 3 measures (frequency, intensity, physical) x 2 valences (positive, negative) x 2 judgments (meaning, satisfaction). We excluded the physical items because most of our measures concerned emotional experience. We then averaged the correlations involving the frequency and intensity measures, so that Study 5 only contributes a single estimate to each combination of judgment and valence.

for NA was larger than the  $d_{i_w}$  for PA. Thus, meaning and satisfaction differed more in their correlation with NA than PA. This suggests that the divergence between satisfaction and meaning may be more apparent in responses to negative experiences than positive experiences. In the second part of our paper, we shed light on this divergence by examining the specific features of daily experience that are uniquely related to meaning.

### **Part 2: Analysis of Events Associated with Meaning and Satisfaction**

Thus far, we have shown that meaning correlates less with affective experience than satisfaction. Although both can be viewed as cognitive judgments, satisfaction is uniquely related to affective discrepancy. This finding supports the conceptualization of satisfaction as a component of HWB (Diener, 1984; Huta & Waterman, in press; Kashdan et al., 2008). What remains unclear from this analysis are the features of experience that are uniquely related to meaning. In this section, we analyze the events reported by participants. With the exception of Study 3, these events were collected in each diary survey. Drawing on theories of meaning inside and outside the eudaimonic tradition, we coded these events for three general features (goal-directedness, social experiences, and potential future impact) believed to be related to the components of meaning (i.e., coherence, purpose, and significance).

The pursuit of goals may contribute to meaning (Frankl, 1959/2006; Hirsh, 2013; Michaels, Parkin, & Vallacher, 2013). At any given moment, we are bombarded by sensory information, potential responses to which are infinite. Goals help to organize perception and behavior around desired outcomes (Förster, Liberman, & Higgins, 2005; Hirsh, 2013), thus creating a sense of coherence and purpose. Eudaimonic perspectives specifically posit two types of goals that should contribute to meaning. First, striving for excellence provides a sense of purpose and requires a commitment that lends significance to one's actions beyond the present



moment (Huta, 2013; Waterman, 1993). Second, goals that are aligned with one's personal identity should enhance meaning through an increased sense of coherence (McGregor & Little, 1998).

Eudaimonic approaches to well-being also emphasize the importance of social relationships (Ryan & Deci, 2000; Ryff & Singer, 1998). Maslow (1962) proposed that the realization of one's potential (self-actualization) makes it easier for people to merge themselves into a larger whole. Huta (2013) similarly suggested that eudaimonic pursuits are associated with a sense of transcendence—feeling connected to a greater whole or entity. An example of this connection might be the sense of belonging that accompanies social bonding (Baumeister & Leary, 1995; Lambert et al., 2013). In addition, a commitment to others can infuse people with purpose (Ryff & Singer, 1998). Both giving and receiving support is associated with a stronger sense of meaning in life (Krause, 2007; Ryff, 2014). In contrast, negative social interactions tend to be associated with less meaning (Krause, 2007). In particular, people who are excluded or forgotten by others tend to report less meaning in life (King & Geise, 2011; Stillman et al., 2009). Social disconnection may reduce meaning by reducing either the felt significance of one's life or the purpose that comes from social commitments.

Another feature of events that may enhance meaning is their implication for one's future. Some aspects of meaning imply a connection between the present moment and future outcomes (Baumeister et al., 2013). For example, purpose provides people with important aims that guide a person's decisions across time (Kashdan & McKnight, 2009). Significance can also be understood in the temporal sense. Many events that are deemed significant (e.g., romantic breakups, career advancement) alter a person's life going forward. In this way the events are meaningful in the sense of having an impact that is "beyond the trivial or momentary" (King,

Hicks, Krull, & Del Gaiso, 2006, p. 180). The temporal aspects of meaning have only recently been investigated. The tendency to think about the future is associated with greater meaning (Baumeister et al., 2013). The effects of future-thinking may reflect the role of mental simulation more generally. For example, meaning in life is enhanced when thinking about the distant past or future, as well as spatially distant locations (Waytz et al., 2015). Mental simulation may enhance meaning by provoking thoughts about profound or significant experiences; such thoughts are more likely when focusing one's attention beyond the present moment. In daily life, one situation in which mental simulation is likely to occur is when an event has potential implications for a person's future. Such events may prompt people to speculate on future needs and outcomes.

We coded events for the key features suggested by past research. To capture goal-directed activity, we coded whether participants mentioned making progress on a goal, completing a goal, doing something well (excellence) or poorly (failure). Unfortunately, we found it difficult to infer the personal expressiveness of goals (McGregor & Little, 1998; Waterman, 1993) from the events reported. This is an important limitation. We also coded events for several types of social interactions. These included positive experiences such as help giving, help receiving, and bonding; and negative experiences such as conflicts and social exclusion. Finally, we rated events for their potential impact on the participant's future. In Study 2, participants also rated the future impact of the events they reported. We then examined how these various features of events were associated with meaning and satisfaction.

## **Method**

**Participants and Procedure.** With the exception of Study 3, the same participants from the previous studies provided the data for the current analysis. In the diary studies (Studies 1, 2, 4, 6), participants were asked to report events that they recently experienced. In Studies 1 and 2,

participants reported one positive and one negative event that occurred during the past day (Study 1) or past few days (Study 2). In Studies 4 and 6, participants reported two positive and two negative events that occurred during the past few days. Events were always elicited after participants rated the level of satisfaction, meaning, and emotion experienced during the target period. Events were then rated on various items such as valence and emotional reaction. Except for the impact ratings collected in Study 2, these data have been analyzed and reported elsewhere (Tov, 2012). Most of these items overlap conceptually with the well-being measures reported previously and are not discussed further. In Study 5, we analyzed the episodes that were collected through the day-reconstruction procedure. A total of 40,215 event descriptions<sup>5</sup> were collected with the following distribution: Study 1 (7,398), Study 2 (2,054), Study 4 (5,068), Study 5 (18,475), and Study 6 (7,220).

**Event coding.** Three teams of research assistants (RAs) coded events for goal-directed activity, social interaction quality, and potential future impact. With the exception of one coder, the RAs in each team were different and non-overlapping. One RA coded goal-directed activity in a subset of events, and the potential impact of a different subset of events.

**Goal-directed activity.** Four categories of goal-directed activity were coded. *Goal progress* consisted of events in which participants mentioned making progress on or completing part of a project or task (e.g., “completed most of the homework assignments”). *Goal completion* included events in which participants explicitly mentioned completing a task or project (e.g., “got my homework done”). *Excellence* included events in which participants positively evaluated something they did or received praise for how well they did something (e.g., “I scored great in my quiz”). *Failure* included events in which participants negatively evaluated or were criticized

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<sup>5</sup> Across studies, participants occasionally reported non-events (i.e., “nothing happened”). The proportion of non-events ranged from 1% (Study 4) to 4% (Study 1). These events were coded ‘0’ across all goal-directed activity and social experience codings. They were coded ‘1’ on all impact categories (i.e., event had minimal or no impact).

for how they did something (e.g., “cookies did not turn out well so I was annoyed”). Categories were coded in a binary manner (1= applies to event, 0 = not applicable). Each event was coded by one of four RAs. To establish interrater reliability, all RAs coded a common set of 1,205 events. The following intraclass correlation coefficients (ICCs) were obtained for a single average coder: goal progress, .64; goal completion, .66; excellence, .59; and failure, .55.

***Social experiences.*** Six types of social interactions were coded. *Help giving* and *help receiving* involved events in which the participants provided or received social support. This included acts such as giving gifts, doing small favors, and taking care of others. *Bonding* experiences were events in which the participant reconnected with others, celebrated an occasion with others, or expressed positive feelings about the time spent with others. *Conflicts* were events in which the participant mentioned a disagreement, quarrel, or expressed unhappiness with someone. *Loneliness/exclusion/rejection* (LER) events were those in which the participant expressed unhappiness about being alone (loneliness), felt left out by others (exclusion), or reached out to others but was turned down (rejection). In defining this category, we were forced to make a distinction between exclusion and separation. *Separation* refers to events in which someone the participant knows has gone away either temporarily (e.g. going on exchange for a semester) or permanently (e.g., a loved one’s passing). Unlike exclusion, separation experiences do not imply that others are avoiding or rejecting one’s presence. Therefore we treated it as a distinct category. Categories were coded in a binary manner. Each event was coded by one of three RAs. To establish reliability, all RAs coded a set of 1,232 events. The following ICCs were obtained for a single average coder: help receiving, .73; help giving, .65; bonding, .66; conflict, .65; LER, .70; and separation, .45.

**Potential future impact.** In coding the potential impact of an event, we identified four areas of concern for our (largely) college student sample: grades, social relationships, career development, and daily life (i.e., a person's ability to carry on with their daily life as normal). How much the event could affect each area was rated from 1 (*no clear effect or only a minimal effect*) to 4 (*very likely to have a major effect*). RAs were told to focus on the potential effects of an event going forward instead of its effects in the immediate present. RAs also rated how long they thought any potential effects of the event might be expected to last (effect duration) from 1 (*very minimal impact or impact limited to that day only*) to 6 (*beyond the next month*). Eight RAs coded the events with each event rated by three RAs. The following ICCs were obtained: grades, .91, social relationships, .90, career development, .86, daily life, .70, and effect duration, .76. Impact ratings for each event were averaged across the three RAs. In Study 2, participants were asked "How much do you think this event will affect your life over the next few months?" Each event was rated from 1 (*not at all*) to 7 (*a great deal*); ratings were made at each diary survey, after the events were listed.

### **Analytic Strategy**

To examine how event features correlated with daily satisfaction and meaning, we aggregated across events reported in the same diary survey. For example, in Studies 3 and 4, four events were reported in each survey. Therefore, goal-directed activity and social interaction codings were summed across the four events. Impact ratings were averaged separately for negative and positive events. This was done to follow up on our finding that satisfaction and meaning differ more in their correlation with NA than PA. Note that for goal-directed activity and social interactions, the valence of events is implied (e.g., *excellence* generally involved positive events). In Study 5, we categorized each episode as positive or negative based on

participants' affect ratings. First, responses to the positive (negative) emotion and physical pleasure (discomfort) items were averaged into an overall PA (NA) score. An episode was then classified as positive if PA exceeded NA, and negative if the reverse was true. This procedure yielded 14,317 positive and 3,656 negative events. A small percentage (2.7%) of episodes could not be classified because PA and NA were equal. These were excluded from analysis.

After aggregating the codings across events within the same survey, we examined the correlation of event features with daily meaning and satisfaction. To remove between-person variation, all variables were centered on the mean of each participant across diary surveys. This was done because our focus is on the *experiences* that are associated with daily meaning and satisfaction, rather than the *kinds of people* who tend to experience high levels of meaning and satisfaction. To summarize and provide an overall view of the results, we also meta-analyzed the correlations across the five studies following procedures outlined by Card (2012).

## Results

Event coding means and standard deviations are given in the online supplemental materials (Table S13). In discussing our results, we first describe the zero-order correlations between event features and satisfaction and meaning. We then describe partial correlations with satisfaction (meaning) controlling for PA, NA, and meaning (satisfaction). Meta-analytic correlations ( $\bar{r}_w$ ) across the five studies are also reported. Prior to averaging, correlations were weighted by the sample size of each study (i.e., total number of diary surveys): Study 1 (3,969), Study 2 (1,027), Study 4 (1,267), Study 5 (1,471), and Study 6 (1,805). Given the large number of results, we primarily discuss those effects that (a) yielded a significant  $\bar{r}_w$ , and (b) replicated in at least three out of five studies.

**Goal-directed activity.** Both goal progress and goal completion were inconsistently associated with satisfaction and meaning; overall correlations ( $\bar{r}_w$ ) were close to zero (Table 6). Excellence was associated with greater meaning and satisfaction; in contrast, failure was more consistently associated with satisfaction than meaning. After controlling for their covariation with each other and affect, we observed few consistent effects of goal-directed activity on meaning and satisfaction (see partial correlations in Table 6). This may suggest that the effects of goals on satisfaction and meaning are mediated by affective responses. However, the results may also be hampered by our failure to capture the personal value that participants attached to the goal.

**Social experiences.** Both satisfaction and meaning correlated positively with help giving and bonding, and negatively with conflicts (Table 7). LER experiences were more consistently associated with satisfaction than meaning. In contrast, separation experiences were associated with greater meaning, but were unrelated to satisfaction. Partial correlations are presented in Table 7. The effects of positive social experiences were significant in some cases but not consistently across studies. In contrast, conflict was associated with satisfaction and meaning in divergent ways. After partialing out their covariation with each other and affect, satisfaction remained negatively correlated with conflict, but meaning was positively correlated. This finding suggests that some conflict experiences may result in greater meaning even as they are associated with dissatisfaction. These effects are independent of the emotions experienced by participants. Separation experiences also remained positively associated with meaning after controlling for affect and satisfaction.

**Potential future impact.** Both satisfaction and meaning were associated with events that could positively affect one's relationship with someone going forward (Table 8). Many of these

events involved romantic relationships (e.g., a successful date, a marriage proposal, celebrating an anniversary). More generally, the perceived duration of effects was associated with greater meaning. When the potential impact of an event extends into the distant future, greater meaning is experienced. These included such events as receiving a tuition grant and becoming a legal resident of a country. Partial correlations suggest that the future impact of positive events is uniquely related to meaning but not satisfaction (Table 8). In particular, the impact of an event on relationships and daily life, as well as its perceived duration were associated with meaning even after controlling for affect and satisfaction.

The future impact of negative events was consistently associated with less satisfaction and meaning (Table 9). Example of impactful negative events included a loved one passing away, breaking-up with a romantic partner, and suffering a major injury or illness. However, the partial correlations reveal another divergence between satisfaction and meaning. After removing their covariation with affect and each other, the potential impact of negative events is associated with *less* satisfaction but *more* meaning. This is seen particularly for the potential impact on relationships, daily life, and perceived duration.

In Study 2, participants' own impact ratings yielded similar results. The perceived impact of positive events was associated with greater satisfaction ( $r = .20$ ) and meaning ( $r = .22$ ) at zero-order,  $ps < .001$ . After partialing out their covariation with affect and each other, both satisfaction ( $r = .06$ ,  $p < .05$ ) and meaning ( $r = .14$ ,  $p < .001$ ) remained correlated with potential impact. The perceived impact of negative events was associated with less satisfaction ( $r = -.19$ ,  $p < .001$ ) but was unrelated to meaning ( $r = .02$ ,  $p = .43$ ) at zero-order. After partialing out their covariation with affect and each other, satisfaction remained negatively correlated ( $r = -.08$ ,  $p = .02$ ), but meaning became positively correlated ( $r = .11$ ,  $p < .001$ ) with potential impact.



## Discussion

Excellence, helping, and bonding with others were associated with greater satisfaction and meaning. In contrast, failure, conflicts, and loneliness/exclusion/rejection were associated with lower satisfaction and meaning. These relationships are consistent with theory and research within the eudaimonic (Huta, 2013; Ryan & Deci, 2000; Ryff, 2014; Waterman, 1993) and hedonic traditions (Diener & Seligman, 2004; Lyubomirsky, King, & Diener, 2005).

Given that they covary strongly, similarities between meaning and satisfaction are not surprising. More intriguing are those experiences in which the two diverge. One situation in which this occurred was when participants experienced interpersonal conflicts. After accounting for the emotions reported by participants, the residual variation in conflict experiences was associated with dissatisfaction but greater meaning. More generally, discrepancies between meaning and satisfaction occurred when negative events had implications for the future. Intense conflicts such as romantic break-ups seem to fall into this class of events. When we controlled for the impact of negative events on relationships, conflict was no longer associated with meaning ( $\bar{r}_w = .00, p < .94, 95\% \text{ CI } [-.02; .02]$ ). In contrast, controlling for conflict did not eliminate the relation between impact and meaning ( $\bar{r}_w = .03, p = .002, 95\% \text{ CI } [.01; .05]$ ).

We have suggested that impactful events may foster meaning by provoking thoughts about the future (Baumeister et al. 2013; Waytz et al., 2015). This can occur in two ways. First, recognizing the implications of an event for one's future may lead people to appraise the experience as significant and therefore, personally meaningful. Second, such events may prompt people to generate plans of action to help them prepare for pending changes in their daily roles and responsibilities. In this way, new purposes are generated from the event and meaning is enhanced. These explanations seem to apply well to impactful positive events (e.g., getting a new

job) which were associated with greater meaning in both the zero-order and partial correlation analyses. However, they do not explain why the meaning associated with negative events is not evident in their zero-order relationship. In the General Discussion, we suggest that this enhanced meaning is the result of additional cognitive processing in response to the negative event.

Separation experiences were also uniquely related to meaning. These events included a range of separations from close others going away for an extended period of time to a loved one passing away. Though such events are also impactful, controlling for their perceived impact on social relationships did not eliminate their association with meaning ( $\bar{r}_w = .05, p < .001, 95\% \text{ CI } [.03; .07]$ ). Thus, additional factors may be at play. For instance, reminders of death can enhance the value attached to life (King, Hicks, & Abdelkhalik, 2009). Even for those whose close others went away temporarily, the perception that time is limited may enhance the meaningfulness of the time spent together prior to the separation. One limitation is that the separation codings had low reliability (.45). This is partly because such experiences were rare (Table S13), thus magnifying the effect of any discrepancies between coders. Still, effects were consistent across studies.

Some predicted effects were not observed. For example, meaning was inconsistently related to goal progress and goal completion. A major limitation of our analysis is that we were unable to infer the extent to which participants valued or identified with the goals or tasks mentioned in their events. Many goals are extrinsically motivated, and these can have negative effects on well-being (Ryan & Deci, 2000). It is primarily goals that are aligned with personal values that should contribute to meaning (McGregor & Little, 1998). This may explain why the impact of an event on participants' grades was also not associated with meaning. Some students may value their performance in one class more than another. Moreover, those that pursue good

grades may do so out of parental pressure rather than an intrinsic desire for excellence. These factors could attenuate the links between academic performance and well-being.

### **General Discussion**

Across six studies, we examined the affective profile of meaning and satisfaction. A preponderance of PA over NA (affective discrepancy) was associated with both judgments, but the effect was consistently stronger for satisfaction. Moreover, affective discrepancy was uniquely related to satisfaction but not meaning after partialing out their covariation with each other. This finding supports the inclusion of satisfaction as a component of hedonic well-being as well as the distinction of meaning from the latter. Our meta-analysis further showed that meaning and satisfaction differ more in their correlation with NA than PA. Thus, affective discrepancy is less predictive of meaning not so much because some positive experiences are *meaningless*, but because some *negative* experiences are *meaningful*. Our analysis of the events reported by participants uncovered some of these negative experiences. For example, undergoing a separation from close others was associated with greater meaning but was generally unrelated to satisfaction. More dramatically, negative events that had major implications for one's future life (including some interpersonal conflicts) were uniquely associated with lesser satisfaction but greater meaning. However, the divergent effects of impactful negative events on satisfaction and meaning were only evident after partialing out their covariation with affect and each other.

We also tested the possibility that the two constructs diverge when equivalent levels of affect are experienced. Specifically, the affect balance model (Bradburn, 1969) assumes that satisfaction is more sensitive to discrepancies between PA and NA than to their overall levels. At equivalent levels, PA and NA should cancel each other out so that the same level of satisfaction obtains whether both are equally high or low. In contrast, theories of meaning suggest that

people are motivated to experience life as meaningful (Baumeister, 1991; Frankl, 1959/2006); and studies show that positive experiences can compensate for negative experiences in the maintenance of meaning (Heine et al., 2006; Hicks & King, 2008). These accounts suggest that at equivalent levels, PA is weighted more than NA in judgments of meaning (i.e., positivity dominance). Our results showed that satisfaction and meaning covaried positively with affective congruence. In other words, both judgments are characterized positivity dominance. This result replicated when satisfaction and meaning were assessed with balance-keyed instruments (Studies 5 and 6), suggesting that positivity dominance is unlikely to be an artifact of acquiescent response bias. Even when affect was rated prior to satisfaction and meaning (Study 6), the affective congruence slope remained positive. This supports the possibility that people consciously weight positive experiences more than negative experiences when both are subjectively equivalent. These results are consistent with a motivational explanation: Given equal reasons to perceive the day as either more *or* less meaningful/satisfying, people prefer the former. The positivity dominance effect was robust across time frames ranging from a single day (Studies 1, 3, 5) to the past few days (Studies 2, 4, 6), and generalized across Singaporean (Studies 1 to 4, 6) and U.S. participants (Study 5). Next we discuss the implications of our two major findings: the divergence of meaning and satisfaction in negative experiences, and their susceptibility to positivity dominance.

### **Negative Experiences and the Divergence of Meaning from Satisfaction**

Past research has shown that thinking about the future and other forms of mental simulation are associated with greater perceived meaning in life (Baumeister et al., 2013; Waytz et al., 2015). We hypothesized that future-thinking would be triggered especially when an event has implications for one's life going forward. However, our results suggest that this process

occurs more consistently for positive events than for negative events. The impact of positive events on daily life and its perceived duration were associated with greater meaning at the zero-order, and remain significant after controlling for affect and satisfaction. This is easy to see for positive events like getting a new job or accepting a marriage proposal. Thoughts about how one's responsibilities will change going forward may forge a mental connection to the future that enhances the significance (and hence, meaningfulness) of the present experience.

In contrast, the impact of negative events was generally associated with lower levels of satisfaction and meaning at the zero-order. If impactful events trigger future-thinking, which in turn should enhance meaning, why do we not observe a positive zero-order correlation between impactful negative events and meaning? We believe the overall relation is negative because most people do not respond to such experiences with the kind of reflective, cognitive processing that facilitates meaning. On average, people tend to react to negative experiences in a self-immersed manner (Ayduk & Kross, 2010), that is they focus on the undesirability of the event for themselves and the negative emotions they suffer as a result. However, people do not always react to negative events in this self-immersed way. Sometimes they are able to process the event from a self-distanced perspective, focusing on the broader context in which it occurs. Self-distancing helps people reconstrue the experience in a way that provides insight and closure (Kross & Ayduk, 2011). In a diary study of interpersonal conflicts, Ayduk and Kross (2010) observed cases of spontaneous self-distancing, thus providing evidence that at least some people respond to negative events by taking a step back and reflecting on the situation. Self-distancing was associated with less emotional distress and greater perceived conflict resolution. We speculate that self-distancing facilitates meaning by shifting attention from the momentary unpleasantness of the event, to its broader implications. For example, the self-distancing person

may realize that further escalating the conflict would severely undermine the future of the relationship. By responding more constructively, not only is the relationship strengthened but the person may experience more personal growth *going forward*. Thus, when the conflict is resolved in a way that has positive implications for one's future relationships, meaning may be experienced (Tashiro & Frazier, 2003; Van Tongeren et al., 2015).

Because self-distancing constitutes a minority of reactions to daily negative events, whereas self-immersion is more common, it follows that overall, impactful negative events should be associated with less meaning. Once affect and satisfaction are partialled out, the positive relation between impactful negative events and meaning arises in part because some people reported more meaning than would be expected given the impact of the negative event. These may be situations in which people were able to process the experience in a way that resulted in positive implications for their future life moving forward (e.g., by self-distancing). Controlling for affect and satisfaction only accounts for those cases in which people were self-immersed in the negative experience, not those cases in which they were able to engage in additional reflection and cognitive processing. Controlling for affect and meaning does not alter the negative relation between impactful negative events and satisfaction. On the whole, the experience itself may still be appraised as undesirable and falling short of expectations. What may contribute to meaning are the lessons learned and the resolutions put forth going forward. To date, few studies have directly examined the links between self-distancing and meaning in everyday life. Thus, our proposed explanations await further testing.

Our findings afford an interesting perspective on the discriminant validity of satisfaction and meaning. When two constructs are highly correlated, researchers often conclude that they are the same construct. We suggest instead that meaning and satisfaction are strongly correlated

because they often arise in the same everyday situations—when desired goals, standards, and expectations are met. They are not perfectly correlated because people are sometimes able to find meaning (but not satisfaction) in spite of extremely negative experiences. Because such cases are in the minority, the correlation between satisfaction and meaning will fluctuate. Variability is expected because people do not always search for meaning following a negative event, and those that do are not always successful (Park, 2010; Silver & Updegraff, 2013). By analogy, it is not difficult to imagine a sample in which height and weight correlate at .90. This might occur in a family with six children, each born two years apart. If we increase the range of physical activity and genetic predispositions present in the sample, responses to caloric intake will vary more, causing height and weight to diverge.

### **The Implications of Positivity Dominance**

Satisfaction and meaning are both characterized by positivity dominance. The two judgments did not differ consistently in the size of the positivity dominance effect. Thus, even though meaning generally correlates less with affect than satisfaction, it is important to recognize that PA is still a significant predictor of meaning. That satisfaction is characterized by positivity dominance is also a critical finding given the popularity of relating satisfaction judgments to an affect balance (PA – NA) score (Bradburn, 1969). In cross-cultural research, affect balance has been used as a summary measure of affect (Schimmack, Radhakrishnan, Oishi, Dzokoto, & Ahadi, 2002; Suh et al., 1998). When life satisfaction correlates less with affect balance in one country versus another, the conclusion is that life satisfaction is less emotionally contingent in the former. However, smaller correlations with affect balance do not rule out the possibility that positivity dominance is stronger in the first country. If so, the more accurate conclusion is that satisfaction is more contingent on PA in that country, not that it is less related to affect overall.

The positivity dominance effect has important implications for theories of well-being and public policy. If instead we had found that NA was weighted more heavily than PA (i.e., negativity dominance), we would be tempted to conclude that the avoidance of negative experiences is more critical than the pursuit of positive experiences. Although we believe efforts at misery alleviation are important policy aims (Diener & Tov, 2012), it may be too soon to overlook the value of positive experiences. The consistency with which we observed positivity dominance may seem puzzling given the vast literature on negativity bias (Baumeister et al., 2001; Rozin & Royzman, 2001). There are several important factors to consider. First, the extent of negativity bias may depend on the outcome. For instance, negativity bias effects are particularly strong in impression formation research (Baumeister et al., 2001; Rozin & Royzman, 2001), but seem less applicable to autobiographical memory and self judgments (Matlin & Stang, 1978; Taylor & Brown, 1988) where it seems that “good is stronger than bad” (Walker, Skowronski, & Thompson, 2003). Once judgments involve the self, the motivation to view oneself or one’s life positively (Taylor & Brown, 1988) may alter the weight placed on negative versus positive information. Second, the argument that negative experiences affect outcomes more strongly than positive experiences has often been made in one of two ways. One type of argument is that negative experiences predict more outcome variables than positive experiences (e.g., Baumeister et al., 2001). Although we accept this as evidence of negativity bias in one sense, it is misleading in another. Within a single study, NA may predict more outcomes than PA, but the relative contribution of PA to a *particular* outcome may be equal to or larger than NA. Understandably then, a second type of argument is that the effect of negative experiences is larger than the effect of positive experiences for a given outcome (David, Green, Martin, & Suls, 1997; Rook, 1984). However, the difference between the two effects is not always tested



formally.

An important contribution of our response surface analyses is that we formally tested the *joint* effects of PA and NA. The test for affective congruence essentially tests whether PA and NA differ in their absolute magnitude (see Appendix A). When both effects are equal in magnitude, they cancel each other out and the congruence slope is zero. Positivity dominance implies that the effect of PA is significantly larger than the effect of NA. What our results show is that when affect is rated *subjectively*, PA is more strongly related to satisfaction and meaning than NA. A similar pattern can be observed in other studies (Lucas et al., 1996; Robinson, 2000). However, because the joint effects of PA and NA have rarely been examined in the systematic way afforded by response surface methodology, the existence of positivity dominance has been overlooked. We stress that these effects may be specific to self-report ratings of affective experience. Previous diary studies have examined positive and negative events using event checklists (David et al., 1997; Oishi et al., 2007); these studies show somewhat stronger effects for the *number* of negative events (versus positive events)—but no formal tests of congruence effects were conducted. Ultimately, future research on negativity bias and well-being will advance by more carefully attending to how the “good” and “bad” are measured, and more clearly defining the sense in which “bad” is stronger than “good” (e.g., range of outcomes predicted or relative strength of negative versus positive experiences).

### **Limitations**

Although we have identified a set of critical experiences that distinguish meaning from satisfaction, overall the partial correlations were small ( $|r|$ 's  $\leq .06$ ). These may be regarded as so small as to be negligible. However, it is important to remember Cohen's (1988) admonition that “the *meaning* of any given [effect size] is, in the final analysis, a function of the context in which

it is embedded [italics in the original]” (p. 535). The partial correlations are at the level of everyday experience. We are essentially predicting how satisfying and meaningful the past day (or past few days) have been from the two to four events reported by participants in most of our studies. These may be fairly important events, but by no means can they fully capture all the other experiences that might also affect well-being during the target period. Consider further that participants’ event descriptions were coded by research assistants, that many details and subjective meanings were likely to be lost in translation, and that reliabilities—though acceptable for most categories—were nowhere near perfect. All of these factors conspire against our finding *any* relation between events and well-being judgments. Nevertheless, we observed fairly consistent effects of potential future impact on meaning and satisfaction—across studies and across two cultural groups. That similar results were obtained when impact was rated by participants themselves (Study 2) further strengthens the validity of our finding.

What is the theoretical significance of such small correlations? Abelson (1985) noted that small effects can gain explanatory power if they represent processes that cumulate across time or individuals. According to his calculations, the batting average of a baseball player explains only 0.3% of the variation in a single at-bat. (Incidentally, this corresponds to a correlation of about .055). Yet, as indexed by Major League Baseball salaries, batting average is meaningfully related to performance. The effects of batting average on a single at-bat are miniscule, but become more substantive over the course of a season and across players on a given team. In the present paper, we have identified a class of experiences—impactful negative events—that may reduce satisfaction ( $\bar{r}_w = -.06$ ) but enhance meaning ( $\bar{r}_w = .04$ ).<sup>6</sup> These events may lead to small discrepancies between daily satisfaction and meaning. However, experiencing many such events

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<sup>6</sup> The difference between these two correlations amounts to a Cohen’s Q of -.10, which is considered small but non-negligible.

over several years could result in large discrepancies between meaning and satisfaction *with life*. The cumulation of adverse experiences across time and peoples might also contribute to large discrepancies in *societal* well-being. As Oishi and Diener (2014) observed, the poorest countries in the world simultaneously report high levels of meaning but low levels of life satisfaction. They noted that these countries also tended to be more religious. Perhaps religion provides a broader framework that helps people in poor countries self-distance and extract meaning from the adversities they face on a daily basis. However, as our studies suggest, these processes do not alter the perception that one's current circumstances are undesirable—hence, satisfaction remains low.

An important limitation of our analyses is that we have assessed meaning in a fairly broad sense, assuming that when people report high levels of meaning, they likely experienced some combination of purpose, coherence, and significance. In Studies 5 and 6, some of the items tapped purpose more specifically. Nevertheless, the other components of meaning were not assessed directly. Future research should assess each component of meaning. This might shed more light on the kind of meaning that is enhanced in response to impactful negative events. For example, participants may gain insight into themselves (coherence), resolve to improve (purpose), or reflect on how life will be different going forward (significance).

### **Conclusion**

The distinction between HWB and EWB has often been framed in terms of happiness versus meaning. However, this dichotomy pits a construct that is largely affective (happiness) against one that is somewhat more cognitive in nature (meaning). In this article, we asked a different question: given two constructs—satisfaction and meaning—that entail cognitive judgment, how well can they be differentiated by affective and non-affective processes?

Satisfaction covaries more strongly with affective discrepancy and is thus more “hedonic” than meaning. A preponderance of negative affect does not always eliminate meaning because other processes may restore it. In particular, impactful negative events—those events that could potentially alter one’s future—provoke a range of responses that contribute to the divergence between satisfaction and meaning. Although most people find such experiences unpleasant, dissatisfying, and meaningless, in a minority of cases, people reported higher levels of meaning. These cases may result from additional cognitive processes (e.g., self-distancing) that help people see the broader implications of the event for oneself and one’s future. Nevertheless, daily satisfaction and meaning correlate strongly with each other. Both judgments are characterized by positivity dominance: PA is weighted more heavily than NA. Moreover, controlling for meaning significantly reduces the relation between satisfaction and affect. Much of what makes pleasant experiences satisfying is that they also tend to be meaningful (and vice versa). In everyday life, one often experiences satisfaction *and* meaning, not satisfaction *versus* meaning. It is important that we not lose sight of this covariation.

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Table 1

*Descriptive Statistics for Studies 1 – 6*

Study	SAT		MNG		PA		NA	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
1	59.65	20.83	59.17	21.10	45.85	21.50	28.81	21.58
2	57.56	19.26	58.28	19.94	52.84	19.64	40.65	20.13
3	60.92	21.03	58.99	22.13	52.47	23.22	32.40	21.20
4	59.96	21.19	59.09	21.78	56.57	18.99	38.36	18.02
5F	66.41	24.74	62.91	23.31	61.00	23.54	26.17	21.28
5I	66.41	24.74	62.91	23.31	51.11	22.41	15.56	15.70
5P	66.41	24.74	62.91	23.31	40.00	21.71	17.47	17.94
6	62.16	19.16	63.14	17.95	58.97	16.94	38.86	16.34

*Note.* Responses were rescaled to range from 0 to 100 prior to computing the means. SAT = satisfaction; MNG = meaning; PA = positive affect; NA = Negative Affect; 5F = Study 5 frequency format; 5I = Study 5 intensity format; 5P = Study 5 physical experience.

Table 2

*Differences between Satisfaction and Meaning in their Correlation with Affect (Studies 1 – 6)*

Study	Positive Affect				Negative Affect			
	SAT	MNG	$t^a$	$di$	SAT	MNG	$t^a$	$di$
1	.67	.49	-18.13	.29	-.53	-.27	23.14	.37
2	.69	.37	-13.71	.42	-.50	-.11	14.42	.46
3	.64	.48	-8.91	.26	-.48	-.27	10.31	.30
4	.65	.51	-8.06	.23	-.55	-.38	8.86	.25
5F	.80	.67	-11.19	.29	-.77	-.58	15.08	.41
5I	.62	.55	-4.62	.12	-.60	-.43	10.83	.29
5P	.38	.34	-2.22	.06	-.32	-.17	8.13	.21
6	.62	.48	-9.75	.23	-.53	-.38	9.66	.23

*Note.* Correlations for all studies except Study 5 represent daily-level (within-person) associations; all variables were centered on the mean for each participant. All correlations are significant ( $p < .001$ ). SAT = satisfaction; MNG = meaning; 5F = Study 5 frequency format; 5I = Study 5 intensity format; 5P = Study 5 physical experience;  $di$  = differential index effect size measure for the difference between two dependent correlations.

<sup>a</sup>Significance test for the difference between two dependent correlations; all  $t$ 's were significant at  $p < .05$ .

Table 3

*Affective Response Surface Slopes for All Diary Studies*

Outcome	Affective Discrepancy			Affective Congruence		
	<i>b</i>	<i>Lower</i>	<i>Upper</i>	<i>B</i>	<i>Lower</i>	<i>Upper</i>
Study 1						
Satisfaction	1.01	0.95	1.07	0.36	0.27	0.45
Meaning	0.64	0.56	0.71	0.44	0.34	0.54
$\Delta_{S-M}$	0.37	0.29	0.46	-0.08	-0.19	0.01
Study 2						
Satisfaction	0.90	0.83	0.98	0.38	0.25	0.51
Meaning	0.39	0.24	0.51	0.56	0.41	0.72
$\Delta_{S-M}$	0.51	0.40	0.64	-0.18	-0.35	-0.01
Study 3						
Satisfaction	0.97	0.84	1.07	0.18	0.07	0.31
Meaning	0.63	0.51	0.75	0.40	0.25	0.56
$\Delta_{S-M}$	0.33	0.20	0.45	-0.21	-0.37	-0.07
Study 4						
Satisfaction	1.07	0.96	1.17	0.31	0.17	0.47
Meaning	0.78	0.67	0.89	0.40	0.23	0.57
$\Delta_{S-M}$	0.29	0.18	0.42	-0.09	-0.26	0.07
Study 6						
Satisfaction	1.09	1.00	1.19	0.18	0.07	0.29
Meaning	0.74	0.64	0.84	0.13	-0.00	0.26
$\Delta_{S-M}$	0.36	0.27	0.45	0.05	-0.05	0.15

*Note.* “Lower” and “upper” refer to the bounds of a 95% bias-corrected bootstrap confidence interval constructed from 10,000 replications.  $\Delta_{S-M}$  = difference in parameter coefficients between satisfaction and meaning.

Table 4

*Affective Response Slopes for Study 5*

Outcome	<u>Affective Discrepancy</u>			<u>Affective Congruence</u>		
	<i>b</i>	<i>Lower</i>	<i>Upper</i>	<i>B</i>	<i>Lower</i>	<i>Upper</i>
Frequency Format						
Satisfaction	1.09	1.03	1.15	0.12	-0.06	0.30
Meaning	0.65	0.56	0.74	0.37	0.16	0.60
$\Delta_{S-M}$	0.43	0.34	0.53	-0.25	-0.48	-0.02
Intensity Format						
Satisfaction	0.66	0.53	0.83	0.46	0.18	0.77
Meaning	0.34	0.17	0.51	0.26	-0.04	0.54
$\Delta_{S-M}$	0.32	0.14	0.54	0.20	-0.09	0.52
Pleasure/Discomfort						
Satisfaction	0.52	0.36	0.67	-0.04	-0.31	0.21
Meaning	0.26	0.12	0.40	0.23	0.01	0.45
$\Delta_{S-M}$	0.25	0.14	0.38	-0.27	-0.52	-0.04

*Note.* “Lower” and “upper” refer to the bounds of a 95% bias-corrected bootstrap confidence interval constructed from 10,000 replications.  $\Delta_{S-M}$  = difference in parameter coefficients between satisfaction and meaning.

Table 5

*Effects of Congruence and Discrepancy on Satisfaction (Meaning) Controlling for Meaning (Satisfaction)*

Study	<u>Affective Discrepancy</u>		<u>Affective Congruence</u>	
	<i>b'</i>	95% CI ( <i>b' - b</i> )	<i>b'</i>	95% CI ( <i>b' - b</i> )
Effects on Satisfaction Controlling for Meaning				
1	.74**	(-.31; -.23)	.17**	(-.24, -.14)
2	.76**	(-.19; -.09)	.19**	(-.25, -.13)
3	.67**	(-.37; -.23)	.02	(-.24, -.09)
4	.75**	(-.39; -.26)	.13**	(-.26, -.10)
5F	.89**	(-.23; -.15)	.01	(-.18, -.05)
5I	.50**	(-.25; -.08)	.34**	-.26, .02
5P	.35**	(-.25; -.08)	-.18*	(-.28, -.01)
6	.68**	(-.49; -.35)	.10**	(-.16, -.01)
Effects on Meaning Controlling for Satisfaction				
1	-.01	(-.71; -.58)	.19**	(-.31, -.19)
2	-.11*	(-.60; -.40)	.36**	(-.29, -.12)
3	-.06	(-.82; -.56)	.27**	(-.22, -.04)
4	.14**	(-.76; -.55)	.21**	(-.30, -.09)
5F	.11**	(-.62; -.46)	.31**	-.15, .03
5I	-.04	(-.49; -.30)	.00	(-.45, -.10)
5P	-.06	(-.42; -.23)	.25**	-.13, .19
6	.08**	(-.75; -.58)	.04	(-.16, -.02)

*Note.* Confidence intervals that appear in parentheses do not include zero. 5F = Study 5 frequency format; 5I = Study 5 intensity format; 5P = Study 5 physical experience; (*b' - b*) = the change in the effect on satisfaction (meaning) when meaning (satisfaction) is controlled versus when it is not; 95% CI = 95% bias-corrected bootstrapped confidence interval.

\*  $p < .10$ . \*\*  $p < .05$ .

Table 6

*Correlations among Daily Goal-Directed Activity, Satisfaction, and Meaning*

Goal-relevant feature	Study					$\bar{r}_w$	95% CI
	1 N = 3969	2 N = 1027	4 N = 1267	5 N = 1471	6 N = 1805		
Zero-Order Correlations with Satisfaction							
Goal Progress	.02	-.01	-.03	.10**	-.02	.01	-.01, .03
Goal Completion	-.04**	-.01	-.01	.15**	-.06**	-.01	-.03, .01
Excellence	.04**	.03	.01	.13**	.05**	.05**	.03, .07
Failure	-.05**	-.02	-.03	-.11**	-.05*	-.05**	-.07, -.03
Zero-Order Correlations with Meaning							
Goal Progress	.02	-.04	-.04	.09**	.04	.02*	.00, .04
Goal Completion	-.01	-.02	-.02	.14**	-.04*	.00	-.02, .02
Excellence	.03**	.06*	.01	.15**	.04	.05**	.03, .07
Failure	-.02	-.07**	-.02	-.08**	-.01	-.03**	-.05, -.01
Partial Correlations with Satisfaction							
Goal Progress	.03**	-.00	.00	.03	-.06**	.01	-.01, .03
Goal Completion	-.00	-.02	.04	.05*	-.02	.01	-.01, .03
Excellence	.02	.04	.02	.01	.03	.02**	.00, .04
Failure	-.03*	.02	-.04	-.02	-.07**	-.03**	-.05, -.01
Partial Correlations with Meaning							
Goal Progress	.01	-.04	-.02	.04	.08**	.02*	-.00, .04
Goal Completion	.02	-.02	-.01	.05*	.00	.01	-.01, .03
Excellence	.01	.04	.00	.07**	.00	.02*	-.00, .04
Failure	.01	-.06**	.00	.00	.03	.00	-.02, .03

*Note.* Partial correlations with satisfaction (meaning) control for affect and meaning (satisfaction). Study 5 partial correlations also control for trait happiness and neuroticism.  $\bar{r}_w$  = weighted mean correlation across studies; 95% CI = 95% confidence interval around  $\bar{r}_w$ .  
\*  $p < .10$ . \*\*  $p < .05$ .

Table 7

*Correlations among Daily Social Experiences, Satisfaction, and Meaning*

Social Experience	Study					$\bar{r}_w$	95% CI
	1 N = 3969	2 N = 1027	4 N = 1267	5 N = 1471	6 N = 1805		
Zero-Order Correlations with Satisfaction							
Help Receiving	.01	.04	-.07**	-.03	-.02	-.01	-.03, .01
Help Giving	.04**	-.03	.05*	.00	.08**	.03**	.01, .05
Bonding	.10**	.08**	.06**	.22**	.11**	.11**	.09, .13
Conflicts	-.11**	-.09**	-.11**	-.26**	-.07**	-.12**	-.14, -.10
LER	-.03**	-.05	-.10**	-.19**	-.01	-.06**	-.08, -.04
Separation	-.01	.02	-.04	.02	.05**	.00	-.02, .02
Zero-Order Correlations with Meaning							
Help Receiving	.02	.10**	-.05*	.04	-.01	.02*	-.00, .04
Help Giving	.04**	-.01	.05*	.06**	.06**	.04**	.03, .07
Bonding	.12**	.06*	.07**	.16**	.11**	.11**	.09, .13
Conflicts	-.05**	.04	-.06**	-.13**	.00	-.05**	-.07, -.03
LER	-.01	-.03	-.06**	-.14**	.01	-.03**	-.05, -.01
Separation	.03**	.11**	-.03	.05*	.08**	.05**	.03, .07
Partial Correlations with Satisfaction							
Help Receiving	.01	-.00	-.04	-.03	-.01	-.01	-.03, .01
Help Giving	.00	-.01	-.00	-.01	.04	.01	-.01, .03
Bonding	.00	-.02	.01	.09**	.04*	.02**	.00, .04
Conflicts	-.04**	-.06**	-.02	-.13**	-.07**	-.06**	-.08, -.04
LER	-.01	.02	-.04	-.08**	-.01	-.02**	-.04, -.01
Separation	-.03*	-.03	-.02	.01	-.01	-.02	-.04, .00
Partial Correlations with Meaning							
Help Receiving	.01	.10**	-.01	.07**	.00	.03**	.01, .05
Help Giving	.02	-.01	.02	.09**	.01	.02**	.00, .05
Bonding	.06**	.02	.02	-.01	.05*	.04**	.02, .06
Conflicts	.00	.08**	.02	.07**	.07**	.04**	.02, .06
LER	.01	-.02	.01	.00	.02	.01	-.01, .03
Separation	.05**	.11**	.01	.05*	.07**	.05**	.04, .07

*Note.* Partial correlations with satisfaction (meaning) control for affect and meaning (satisfaction). Study 5 partial correlations also control for trait happiness and neuroticism.  $\bar{r}_w$  = weighted mean correlation across studies; 95% CI = 95% confidence interval around  $\bar{r}_w$ . LER = loneliness / exclusion / rejection.

\*  $p < .10$ . \*\*  $p < .05$ .



Table 8

*Future Impact of Daily Positive Events and their Correlation with Daily Satisfaction and Meaning*

Impact Rating	Study					$\bar{r}_w$	95% CI
	1 <i>N</i> = 3969	2 <i>N</i> = 1027	4 <i>N</i> = 1267	5 <i>N</i> = 1471	6 <i>N</i> = 1805		
Zero-Order Correlations with Satisfaction							
Grades	-.01	.01	-.06**	.02	-.05**	-.02	-.04, .00
Career	.05**	.03	.02	.03	.04*	.04**	.02, .06
Relationships	.12**	.03	.07**	-.02	.10**	.08**	.06, .10
Daily Life	.01	.06**	.03	-.15**	-.01	-.01	-.03, .01
Effect Duration	.04**	.07**	.02	-.15**	.02	.01	-.01, .03
Zero-Order Correlations with Meaning							
Grades	.01	-.03	-.08**	.04	-.04	-.01	-.03, .01
Career	.06**	.02	.03	.03	.07**	.05**	.03, .07
Relationships	.15**	.06**	.08**	.00	.09**	.09**	.08, .11
Daily Life	.04**	.04	.09**	-.07**	.03	.03**	.01, .05
Effect Duration	.08**	.05	.08**	-.07**	.07**	.05**	.03, .07
Partial Correlations with Satisfaction							
Grades	.02	.08**	.02	-.00	-.03	.01	-.01, .03
Career	-.01	.01	.01	-.01	-.00	-.01	-.03, .01
Relationships	-.01	-.03	.00	-.01	.03	.00	-.02, .02
Daily Life	-.01	.05	-.04	-.06**	-.05**	-.02**	-.04, -.00
Effect Duration	-.00	.08**	-.02	-.07**	-.03	-.01	-.03, .01
Partial Correlations with Meaning							
Grades	.02	-.04	-.04	.04	-.00	.00	-.02, .02
Career	.04**	-.01	.03	.01	.05**	.03**	.01, .05
Relationships	.08**	.04	.03	.01	.02	.05**	.03, .07
Daily Life	.05**	-.00	.09**	.05*	.06**	.05**	.03, .07
Effect Duration	.07**	-.00	.08**	.06**	.07**	.06**	.04, .08

*Note.* Partial correlations with satisfaction (meaning) control for affect and meaning (satisfaction). Study 5 partial correlations also control for trait happiness and neuroticism.  $\bar{r}_w$  = weighted mean effect size across studies; 95% CI = 95% confidence interval around  $\bar{r}_w$ .  
\*  $p < .10$ . \*\*  $p < .05$ .

Table 9

*Future Impact of Daily Negative Events and their Correlation with Daily Satisfaction and Meaning*

Impact Rating	Study					$\bar{r}_w$	95% CI
	1 N = 3969	2 N = 1027	4 N = 1267	5 N = 1471	6 N = 1805		
Zero-Order Correlations with Satisfaction							
Grades	-.06**	-.02	-.05*	-.03	-.07**	-.05**	-.07, -.03
Career	-.04**	-.05	-.01	-.13**	-.02	-.05**	-.07, -.03
Relationships	-.10**	-.10**	-.14**	-.20**	-.03	-.11**	-.13, -.09
Daily Life	-.07**	-.15**	-.11**	-.37**	.00	-.12**	-.14, -.10
Effect Duration	-.12**	-.17**	-.18**	-.37**	-.05*	-.16**	-.18, -.14
Zero-Order Correlations with Meaning							
Grades	-.05**	-.04	-.04	-.02	-.06**	-.04**	-.06, -.02
Career	.00	-.04	-.02	-.17**	-.04*	-.04**	-.06, -.02
Relationships	-.04**	.09**	-.07**	-.09**	.04	-.02**	-.04, -.00
Daily Life	-.05**	.04	-.03	-.23**	.00	-.06**	-.08, -.04
Effect Duration	-.08**	.06*	-.08**	-.21**	.00	-.07**	-.09, -.05
Partial Correlations with Satisfaction							
Grades	.01	.05	-.05*	-.02	-.03	-.00	-.02, .02
Career	-.03	-.02	.01	.04	.01	-.00	-.02, .02
Relationships	-.05**	-.08**	-.05*	-.10**	-.03	-.06**	-.08, -.04
Daily Life	-.01	-.11**	-.09**	-.10**	.00	-.04**	-.06, -.02
Effect Duration	-.02	-.12**	-.10**	-.12**	-.05**	-.06**	-.08, -.04
Partial Correlations with Meaning							
Grades	-.01	-.02	-.01	.01	-.01	-.01	-.03, .01
Career	.03	-.02	-.02	-.09**	-.04*	-.02	-.04, .01
Relationships	.02	.14**	.04	.07**	.07**	.05**	.03, .07
Daily Life	-.01	.14**	.06**	.05**	-.00	.03**	.01, .05
Effect Duration	-.00	.17**	.06**	.07**	.05*	.04**	.02, .06

*Note.* Partial correlations with satisfaction (meaning) control for affect and meaning (satisfaction). Study 5 partial correlations also control for trait happiness and neuroticism.  $\bar{r}_w$  = weighted mean effect size across studies; 95% CI = 95% confidence interval around  $\bar{r}_w$ .  
\*  $p < .10$ . \*\*  $p < .05$ .

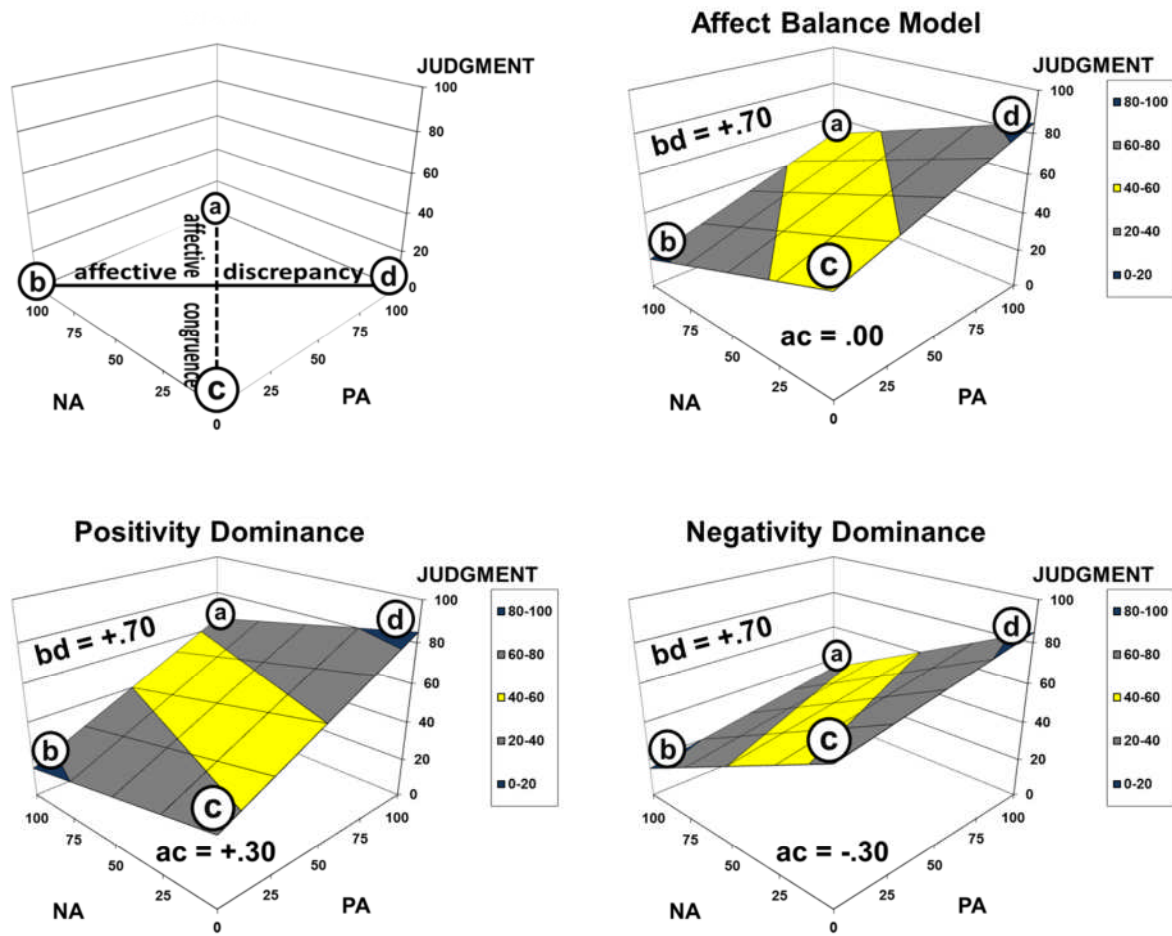
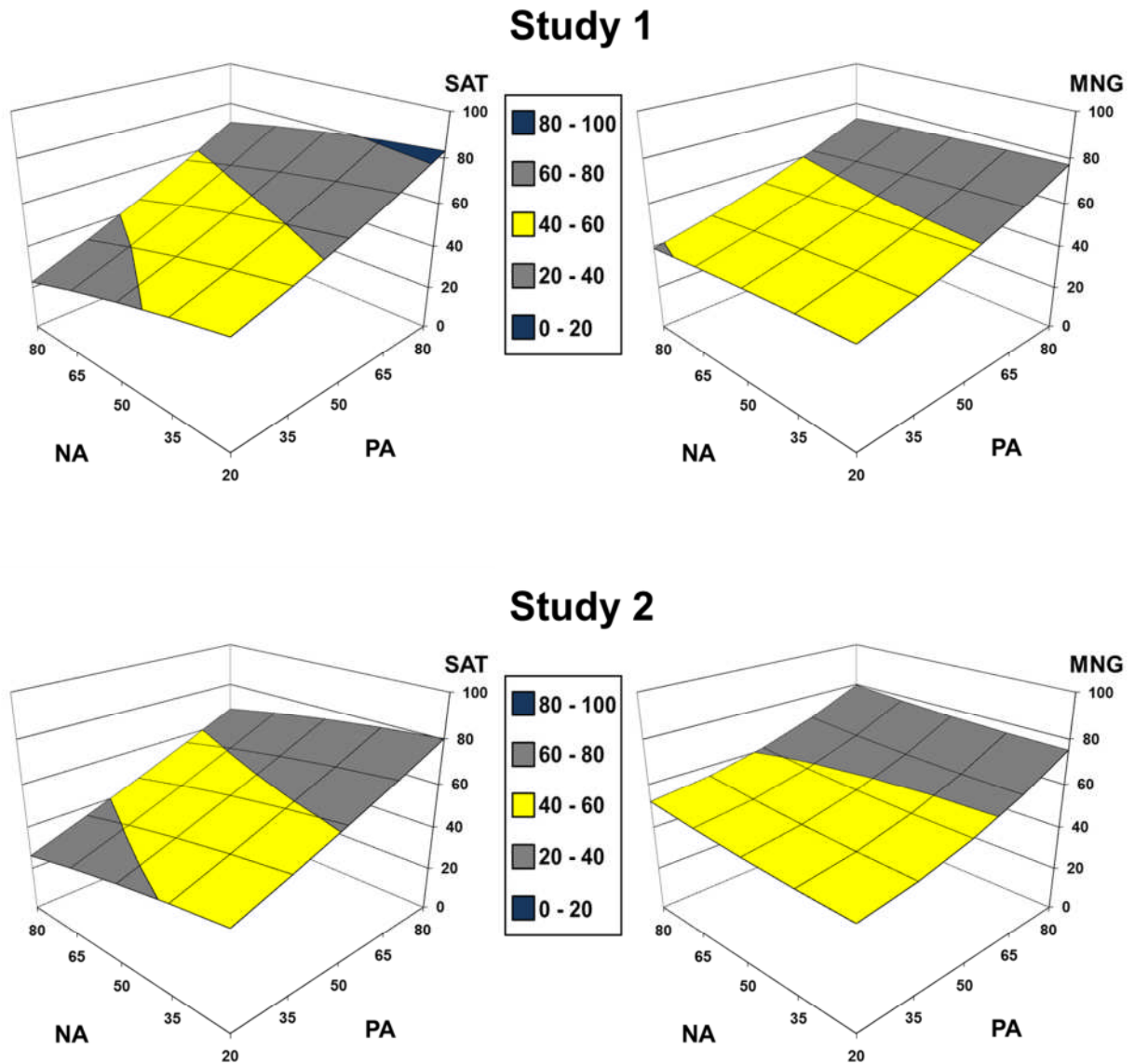
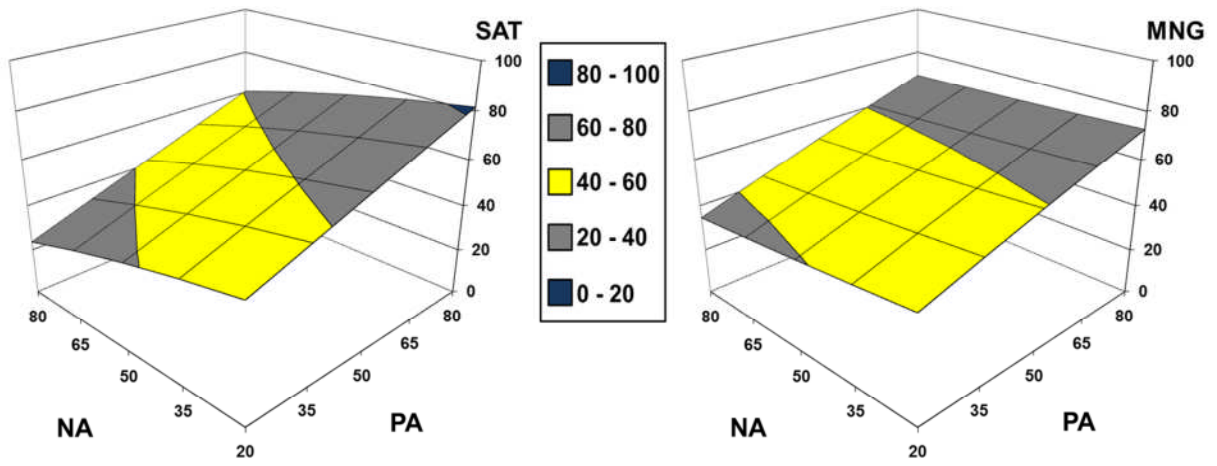


Figure 1. Theoretical affective profiles of satisfaction and meaning judgments. NA = negative affect; PA = positive affect; ac = affective congruence slope; bd = affective discrepancy slope.

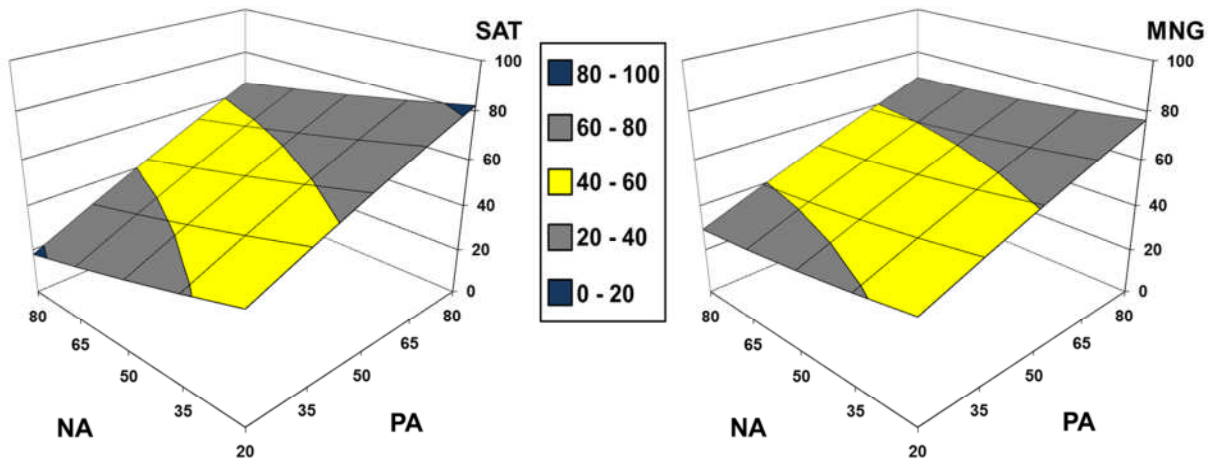


*Figure 2.* Response surface models of satisfaction and meaning as a joint function of positive and negative affect (Studies 1 and 2). SAT = satisfaction; MNG = meaning; NA = negative affect; PA = positive affect.

**Study 3**



**Study 4**



*Figure 3.* Response surface models of satisfaction and meaning as a joint function of positive and negative affect (Studies 3 and 4). SAT = satisfaction; MNG = meaning; NA = negative affect; PA = positive affect.

## Appendix A

## Modeling the Affective Response Surface of Meaning and Satisfaction

In response surface methodology (RSM), the outcome measure is often modeled as a second-order polynomial regression function (Edwards, 2002; Shanock, Baran, Gentry, Pattison, & Heggestad, 2010):

$$Z = b_0 + b_1PA + b_2NA + b_3PA^2 + b_4PA*NA + b_5NA^2$$

where  $Z$  is the outcome measure (satisfaction or meaning),  $b_0$  is the intercept,  $b_1$  is the effect of positive affect, and  $b_2$  is the effect of negative affect. The contours of the response surface are modeled by three additional terms. If the effects of PA and NA are non-linear, the response surface may curve up (if  $b_3$  or  $b_5$  are positive) or down (if  $b_3$  or  $b_5$  are negative). PA and NA could also interact ( $b_4$ ), causing the response surface to twist at certain parts of the plane.

Using RSM, the slope of affective congruence is computed as  $b_1 + b_2$  (i.e., the sum of the effects of PA and NA). The significance of this slope can be tested by specifying the appropriate linear contrast in SAS PROC MIXED. Perpendicular to the line of affective congruence is the line of *affective discrepancy* (Figure 1). The slope of affective discrepancy is computed as  $b_1 - b_2$ . Its significance can also be tested as a linear contrast (i.e., the difference in the effects of PA and NA). In addition, curvature in both slopes was also tested. Curvature in the affective congruence slope is computed as  $b_3 + b_4 + b_5$ . Curvature in the affective discrepancy slope is computed as  $b_3 - b_4 + b_5$ . We generally found weak or inconsistent effects of curvature for both satisfaction and meaning. These are not reported in the paper but can be computed from Tables S9-S12 in the online supplemental materials.

For all diary studies, the affective response surface of meaning and satisfaction was specified in a multilevel model. Because diary responses were nested within participants, variation occurs at both the daily level and person level. In the daily-level model,

$$Y_{ij} = \beta_{0j} + \beta_{1j}(PA_{ij}) + \beta_{2j}(NA_{ij}) + \beta_{3j}(PA_{ij}^2) + \beta_{4j}(PA_{ij} * NA_{ij}) + \beta_{5j}(NA_{ij}^2) + r_{ij} \quad (1)$$

where  $Y_{ij}$  refers to meaning or satisfaction on day  $i$  for person  $j$ ;  $PA_{ij}$  and  $NA_{ij}$  refer to positive and negative affect, respectively, on day  $i$ ; and  $r_{ij}$  captures residual variation in meaning or satisfaction on day  $i$ .

In the person-level model, the intercept and daily-level response surface parameters are modeled as a function of their average estimate in the sample (i.e.,  $\gamma$  coefficients). The prediction of daily satisfaction and meaning controls for the person-level response surface by including  $\overline{PA}_j$ ,  $\overline{NA}_j$ , their squares and their interaction in the equation for the intercept (Equation 2). In addition, random effects ( $u$ ) are estimated in Equations 2-4 to account for significant variation across participants in mean-level meaning/satisfaction, as well as the effects of PA and NA.

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\overline{PA}_j) + \gamma_{02}(\overline{NA}_j) + \gamma_{03}(\overline{PA}_j^2) + \gamma_{04}(\overline{PA}_j * \overline{NA}_j) + \gamma_{05}(\overline{NA}_j^2) + u_{0j} \quad (2)$$

$$\beta_{1j} = \gamma_{10} + u_{1j} \quad (3)$$

$$\beta_{2j} = \gamma_{20} + u_{2j} \quad (4)$$

$$\beta_{3j} = \gamma_{30} \quad (5)$$

$$\beta_{4j} = \gamma_{40} \quad (6)$$

$$\beta_{5j} = \gamma_{50} \quad (7)$$

## Appendix B

## Daily Satisfaction and Meaning Scales

## Items Used in Study 5

## Satisfaction Scale

Yesterday...I was satisfied with my day.

Yesterday was an excellent day.

\*If I could relive yesterday...I would change almost everything.

\*Yesterday...I felt very dissatisfied.

## Meaning Scale

Yesterday was... personally meaningful to me.

Yesterday...I felt a strong sense of purpose.

\*Yesterday...I spent most of the day doing things that weren't really important to me.

\*Yesterday was a pointless, meaningless day.

## Items Used in Study 6

## Satisfaction Scale

Over the past 3 days...I was satisfied with life.

The past 3 days were excellent.

\*If I could relive the past three days...I would change almost everything.

\*Over the past 3 days...I felt very dissatisfied.

## Meaning Scale

The past 3 days were... personally meaningful to me.

Over the past 3 days...I felt a strong sense of purpose.

\*Over the past 3 days...I spent most of my time doing things that weren't really important to me.

\*The past 3 days were pointless and meaningless

\*Reverse item.