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Higher Well-Being is Related to Reduced Affective Reactivity to Positive Events in Daily Life

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Within the study of emotions, researchers have increasingly stressed the importance of studying individual differences in emotion dynamics and emotional responding and the way these relate to more stable differences in well-being. However, there is no clear picture regarding affective reactivity to positive events and how different emotional reactions relate to differences in well-being, particularly higher levels of well-being. Theoretical work and empirical findings from different lines of research (e.g., clinical studies, aging literature, positive and personality psychology) support either of 2 predictions: Higher well-being is related to an enhanced or reduced affective reactivity to positive events in daily life. Testing these opposing predictions, we examined global well-being and affective reactivity to daily positive events in 6 studies using the experience-sampling or daily diary method (*N*s = 70, 66, 95, 200, 76, and 101). Global well-being was measured with various indicators and a well-being composite score. Across the majority of studies, we found that higher global well-being was associated with reduced affective reactivity to positive events in daily life, as shown by smaller decreases in momentary negative affect. In 3 of the 6 studies, higher well-being composite scores were also associated with smaller increases in momentary positive affect. These findings seem to suggest that people with higher global well-being profit less from the joy of a positive event they experience in daily life. Instead, for people with lower well-being, positive events might be a meaningful way to brighten one's momentary mood.

Keywords: well-being, positive events, affective reactivity, emotion dynamics, experience-sampling method

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Levels of well-being differ across individuals. These differences in well-being are not only apparent in the presence or absence of psychological maladjustment, but also in different levels of positive indicators of psychological adjustment, such as positive affectivity, happiness, or life satisfaction (Houben, Van Den Noortgate, & Kuppens, 2015). Research has uncovered various psychological factors

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that are associated with well-being including, for example, personality traits (Deneve & Copper, 1998). In recent years, however, researchers have increasingly stressed the importance of investigating emotion dynamics and looking at individual differences in patterns of emotional responding over time when studying well-being. One form of emotion dynamics is affective reactivity, which can be conceptualized as the change in momentary affect in response to an external event (Sliwinski, Almeida, Smyth, & Stawski, 2009). Regarding negative events, research has revealed stronger negative reactions in people with lower levels of well-being and poorer health (e.g., Charles, Piazza, Mogle, Sliwinski, & Almeida, 2013; Piazza, Charles, Sliwinski, Mogle, & Almeida, 2013). The picture is less clear, however, for reactivity to positive events. Some studies have found a link between increased affective reactions and higher well-being (Carl, Fairholme, Gallagher, Thompson-Hollands, & Barlow, 2014). Conversely, other studies have reported decreased affective reactions to daily positive events in people with higher levels of well-being (Oishi, Diener, Choi, Kim-Prieto, & Choi, 2007). Relatedly, theoretical explanations exist for both directions of effects. Given the discrepancy in theoretical reasoning and empirical findings, the purpose of this study was to integrate the theoretical arguments and findings from the diverse lines of research (e.g., clinical, positive psychology, and aging literature) and to provide a large-scale and systematic test of whether higher global well-being is associated with enhanced affective reactivity to positive events in daily life or whether individuals with higher global well-being show decreased reactivity.

To do this, we analyzed data from six different studies that used experience-sampling and daily diary methods. In accordance with Diener and colleagues' (1999) definition of well-being, which includes both high levels of positive and low levels of negative affect, as well as life satisfaction (Diener, Suh, Lucas, & Smith, 1999), we assessed global well-being with indicators that measure cognitive and affective as well as positive and negative aspects of well-being. These indicators represent self-reported stable individual differences in how people feel and think about their lives in general. We investigated affective reactivity to positive events including reactions to both momentary positive and negative affect. The use of these two outcome variables is in accordance with the finding that positive events are associated with positive and negative affect at the within-person level (Zautra, Affleck, Tennen, Reich, & Davis, 2005). This approach is also in line with our study aim to integrate different literatures and findings from previous studies that have analyzed both ends of the valence dimension of affect as outcome variables.

Increased Reactivity to Positive Events for Individuals With Higher Global Well-Being?

There is reason to believe that the experience of intense positive emotions in everyday situations has adaptive benefits, and that intense affective reactions to daily positive events are therefore related to higher levels of global well-being. Research in the realm of positive psychology suggests that intense momentary experiences of positive emotions are linked to various beneficial outcomes such as increased global physical and subjective well-being (Lyubomirsky, King, & Diener, 2005). Specifically, positive emotions are thought to broaden people's attention and thinking in ways that enable them to build up a host of personal resources (cognitive, psychological, social, and physical). The latter eventually influence their global well-being (Fredrickson, 2001). Accordingly, it has been shown that broadened coping, thinking, and positive affect reciprocally enhance each other over a period of 5 weeks (Fredrickson & Joiner, 2002).

Another theoretical account, the savoring account, adds to this more general notion on the adaptive function of enhanced positive emotions. Savoring, defined as the capacity to attend to the joys, pleasures, and other positive feelings that we experience in our lives (Bryant, 2003; Bryant & Veroff, 2007), results in the maximization and prolonging of positive experiences, that is, the enhancement of momentary affect. This, in turn, is thought to be positively related to people's well-being more generally. Indeed, multiple studies have successfully linked the habitual use of savoring with higher levels of global well-being (Bryant, 2003; Quoidbach, Berry, Hansenne, & Mikolajczak, 2010; Smith & Hollinger-Smith, 2015). Likewise, savoring tendencies in daily life, as measured through experience-sampling and daily diary studies, have been linked to momentary and daily measures of experienced mood and positive affect (Gable, Reis, Impett, & Asher, 2004; Gentzler, Morey, Palmer, & Yi, 2013; Langston, 1994). Although savoring is mostly considered to reflect emotion regulation rather than unmodulated affective reactions, findings on the positive effects of savoring in daily life could be taken as indirect evidence for a positive link between affective reactivity and higher well-being. More specifically, savoring positive experiences enhances and prolongs momentary positive mood in daily life. This should also be reflected in enhanced affective reactions to positive events. In extension, enhanced affective reactivity to positive events, like savoring, should be related to higher levels of well-being. In line with this reasoning, one daily diary study that investigated affective reactions to positive events indeed found increased reactivity to positive events in participants with higher global positive affectivity and lower depressive symptoms (Carl et al., 2014).

Further support for a potentially positive link between global well-being and reactivity to positive events comes from research in personality psychology. Extraversion, in particular, has been linked to differences in levels of affect and affective reactions. It has been proposed, for example, that the positive correlation between extraversion and higher dispositional positive affect is due to enhanced affective reactivity to positive stimuli and events (Larsen & Ketelaar, 1991). Several laboratory studies have indeed shown increased reactivity in the context of positive mood inductions in people with higher levels of extraversion (Gross, Sutton, & Ketelaar, 1998; Larsen & Ketelaar, 1991). This link was not replicated in more naturalistic settings, however, despite the generally higher positive emotionality of extraverts (Howell & Rodzon, 2011; Lucas, Le, & Dyrenforth, 2008).

Finally, some clinical research seems to suggest a positive link between affective reactivity to positive events and higher global well-being—because it reveals decreased reactions to positive events in individuals with low levels of well-being. More specifically, one prominent view from depression research holds that major depressive disorder attenuates affective reactions to specifically positive stimuli (Bylsma, Morris, & Rottenberg, 2008). This phenomenon, known as positive attenuation, conforms to mood-facilitation theory, which states that moods facilitate the experience of like-valenced emotions (Rosenberg, 1998). A meta-analysis provided empirical support for this phenomenon:

Affective reactions to positive stimuli in the laboratory were decreased in depressed participants, compared to healthy controls (Bylsma et al., 2008). Since depression is characterized by low overall well-being, among other things, these findings support the emerging picture of lower well-being and reduced affective reactivity. From the opposite perspective, one would expect increased reactivity to positive events in individuals with higher levels of well-being.

Decreased Reactivity to Positive Events for Individuals With Higher Global Well-Being?

Despite this support for the assumption of enhanced affective reactivity in people with higher levels of global well-being, there are theoretical considerations and empirical evidence from other fields of study that lead to opposing predictions. One such account proposes that people with higher global well-being profit less from the joy of a positive event they experience in daily life (Oishi et al., 2007). The reason for this is that people with higher levels of global well-being pay less attention to single positive events as they experience them frequently, leading to a habituation process. This idea was tested in a daily diary study, in which participants reported positive events as well as their daily satisfaction. Global well-being was measured through the Satisfaction With Life Scale (SWL; Diener, Emmons, Larsen, & Griffin, 1985). Those participants with higher life satisfaction were indeed the ones with the weakest within-person relationship between daily positive events and daily satisfaction.

Empirical studies from other lines of research further support this finding. A study on emotional development across the adult life span investigated affective reactivity to daily positive events in younger and older adults. The older participants, relative to the younger ones, showed smaller increases in positive affect and, extending previous findings, also smaller decreases in negative affect in reaction to positive events (Röcke, Li, & Smith, 2009). Even though the authors did not test whether global well-being moderates affective reactivity, older people had higher levels of well-being in this study, as indicated by significantly higher average levels of trait positive affect. Serving as indirect evidence, this may also point to lower affective reactivity to positive events for people with higher levels of global well-being. Röcke and colleagues (2009) furthermore speculated that reduced affective reactivity to daily positive events is one way for older people to keep their overall affective states more stable, which in turn would contribute to their generally higher levels of well-being (e.g., Carstensen, Pasupathi, Mayr, & Nesselroade, 2000; Riediger, Schmiedek, Wagner, & Lindenberger, 2009).

The idea that reduced affective reactivity is associated with higher well-being is in line with recent research on emotion dynamics. In fact, there is strong evidence from a recent meta-analysis that higher global well-being is associated with a less variable and more stable emotional life, characterized by less variable, less unstable, and less inert emotions (Houben et al., 2015). While the associations were stronger for negative emotions, positive emotional stability has also been associated with well-being (Gruber, Kogan, Quoidbach, & Mauss, 2013; Houben et al., 2015). Events and event-related variability in affect were not taken into account in these studies. Yet, it is reasonable to assume that the more adaptive patterns of affect dynamics should be reflected in less strong affective reactions rather than intense affective reactions to daily events. Hence, people with higher well-being should have relatively stable emotion dynamics, including reduced affective reactivity to positive events as compared to people with lower well-being.

This assumption is complemented by the literature on affect intensity, which suggests that intense positive emotions are accompanied by emotional costs. For example, the opponent-process theory posits that in order to produce intense positive reactions to a positive event, one first needs to experience intense negative affect (Solomon, 1980). Similarly, events are proposed to be appraised relatively to other events (Parducci, 1968; Smith, Diener, & Wedell, 1989). Therefore, for an event to be appraised as particularly positive, one must have experienced events that were appraised as particularly negative. The underlying rationale of these theories is that affective judgments are made relative to previous affective experiences. In line with this view, affect intensity, the strength with which individuals typically experience emotions, generalizes over emotion categories (Larsen & Diener, 1987). With regard to between-person differences in well-being, this seems to imply that enhanced affective reactions to positive events cannot be related to highest levels of well-being—because the amplification of positive feelings is partly due to the experience of negative feelings.

Propositions of the opponent-process theory can also be linked to the clinical literature. Major depressive disorder and elevated levels of depressive symptoms are associated with enhanced affective reactivity to positive events. In particular, studies have revealed stronger decreases in negative affect and stronger increases in positive affect in reaction to daily positive events in people with enhanced levels of depression (Bylsma, Taylor-Clift, & Rottenberg, 2011; Nezlek & Plesko, 2003; Peeters, Nicolson, Berkhof, Delespaul, & deVries, 2003; Thompson et al., 2012). This effect is referred to as *mood-brightening effect*, and it supports the idea of opponent-process models. More importantly, these findings seem to suggest reduced affective reactions to positive events in people with higher levels of global well-being, because they provide evidence for the opposite: increased reactions to positive events in depressed people that characteristically have low levels of well-being. Notably, these studies on affective reactions in depressed people in daily life rebut earlier findings from the laboratory that favored a mood attenuation effect in depression (see above).[1] Together, the theoretical notions and empirical findings summarized in this section would predict that people with higher levels of global well-being should be those with smaller increases in positive affect and smaller decreases in negative affect when experiencing positive events.

The Present Study

Taken together, two different pictures emerged on how affective reactivity to positive events might be related to global well-being. Theoretical arguments exist for either of the two pictures—

[1] There is further but less direct evidence for reduced reactivity to positive events in individuals with high levels of well-being (and increased reactivity in people with low levels of well-being, respectively): Bipolar disorder has been associated with increased positive emotional responsivity in the laboratory (Gruber, Johnson, Oveis, & Keltner, 2008). Moreover, frequently engaging in negative rumination, a construct associated with depression (Nolen-Hoeksema, 1991), is associated with increased emotional reactivity to daily positive events (Graf, Ramsey, Patrick, & Gentzler, 2016). On the other side, the frequent experience of positive events (Hurley & Kwon, 2013; Jose, Lim, & Bryant, 2012) and high trait reappraisal (Gunaydin, Selcuk, & Ong, 2016), two indicators positively related to well-being, were associated with decreased reactivity to daily positive events.

increased or decreased reactivity to positive events (i.e., the mood-facilitation vs. opponent-process theory). Empirically, the picture of increased reactivity in people with higher levels of global well-being is largely based on laboratory studies or studies using trait and other retrospective measures of affective reactivity and well-being (Bryant, 2003; Carl et al., 2014). Instead, the picture of decreased reactivity in people with higher levels of global well-being is to a greater extent based on studies that employed methodological approaches particularly useful for investigating affective reactivity in real life, such as the experience-sampling method (Bylsma et al., 2011; Oishi et al., 2007). Finally, studies in support of either picture differ in their use of global well-being indicators (e.g., depressive symptoms vs. life satisfaction) and their measures of momentary affect (i.e., momentary positive vs. momentary negative affect). This diversity calls for a large-scale and systematic test of the issue at stake, and this is what we aimed to do in this study.

We tested whether higher levels of global well-being are associated with increased or decreased reactivity to positive events in daily life. We tentatively expected higher global well-being to be related to reduced affective reactivity to positive events, as indicated by most studies that used similar methodological approaches. These studies, using experience sampling and other intense longitudinal designs, generate information on affective reactivity by using online reports of feelings in ecologically valid environments. Global well-being is assessed through retrospective reports in these studies. The former captures emotional experiences in the moment, while the latter is supposed to rely on memory and more general beliefs about oneself (i.e., representing semantic knowledge; Robinson & Clore, 2002a, 2002b). Thus, these measures capture distinguishable aspects of the person and share comparatively little method variance. While experience sampling studies lack experimental control (e.g., of exposure to certain events and the report of such), they are informative on the link between well-being and momentary affective processes as they occur in real life.

To test the relationship between affective reactivity and well-being, we used data from six studies that measured positive events and momentary affect in daily life, using the experience-sampling or daily diary method. We expected the effect of major interest, the moderating effect of global well-being on affective reactivity, to be observable for both positive and negative affect as outcome variables.

Method

The data used in this study mostly come from previously published studies (central references are named below), so sample sizes were not specifically determined for this study. They were based on previous experience-sampling/daily diary studies conducted by the respective principal investigator.

Study 1

This study was conducted with a sample of 70 students (50% women), aged between 20 and 30 years (M = 25.6, SD = 2.7 years) from Berlin, Germany (see also Blanke & Brose, 2017). The experience-sampling phase was scheduled between two laboratory sessions that were used for initial instructions and questionnaires. For the entire experience-sampling phase, which was conducted throughout 9 consecutive days, participants carried smartphones (Huawei Ascend G330) with them. On each day, six beeps were scheduled semirandomly within a time frame of 12 hr. Participants responded to 54 beeps on average (SD = 3.2). They were, on average, reimbursed with a total of 65 Euros (depending on the number of beeps completed). The study was approved by the ethics committee of the Humboldt-Universität zu Berlin.

Study 2

The analyses were conducted with a sample of 66 participants (48.5% women), aged between 18 and 30 years (M = 24.9, SD = 3.8) from three different sites in Germany. The participants were part of a larger sample (N = 378) ranging from 14 to 86 years of age from the first assessment wave of the Multi-Method Ambulatory Assessment Project (see also Riediger, 2018; Riediger et al., 2009). Only a subsample of this larger sample was used in the present study in order to have a comparable age range of participants across studies. After an initial preinterview during which participants filled in questionnaires, the experience-sampling phase started with six daily assessments (scheduled semirandomly within a 12-hr time frame) on 9 days throughout 3 weeks, during which participants carried smartphones (Nokia E50). Participants responded to 55 beeps on average (SD = 4.2). They were reimbursed with a total of 100 Euros. The study was approved by the ethics committee of the Max Planck Institute for Human Development, Berlin.

Study 3

This sample consisted of 95 students (56.1% women) aged between 18 and 24 years (M = 19.1, SD = 1.3) from Leuven, Belgium. The sample was drawn from a larger participant pool (N = 439) that included participants who had been prescreened for depressive symptoms in order to ensure a wide range of well-being levels (see also Brans, Koval, Verduyn, Lim, & Kuppens, 2013). Participants came to the laboratory for an introductory session, during which they received initial instructions, filled in questionnaires, and received a palmtop computer (Tungsten E2). During the subsequent 7-day experience-sampling phase, participants could respond to a maximum of 10 beeps that were scheduled semirandomly (within a 12-hr time frame) throughout each day. Participants responded to 61 beeps on average (SD = 4.4). They were reimbursed a total of 70 Euros. The study was approved by the ethics committee of the University of Leuven.

Study 4

This study was conducted with a sample of 200 students (55% women), aged between 17 and 24 years (M = 18.3, SD = 1.0) from Leuven, Belgium. As in Study 3, participants were drawn from a larger participant pool (N = 686) that included participants who were prescreened for depressive symptoms. After an introductory session, during which participants filled in questionnaires, participants received a smartphone (Motorola Defy Plus) that they carried with them for the next 7 days, programmed to beep 10 times semirandomly throughout the day (within a time frame of 12 hr). Participants responded to 61 beeps on average (SD = 6.3). Participants were reimbursed with a total of up to 120 Euros. The study was approved by the ethics committee of the University of Leuven.

Study 5

This study was conducted with a sample of 76 students (50.7% women), aged between 20 and 25 years ($M = 21.9$, $SD = 1.6$) from Berlin, Germany. The experience-sampling phase was part of a larger study that also included a functional MRI (fMRI) session (the order of fMRI session and experience-sampling phase was counterbalanced between participants). During an introductory session, participants filled out questionnaires and received instructions for the experience-sampling phase starting the following day. Participants carried smartphones (Huawei Ascend G330) with them, which were programmed to beep semirandomly six times (within a 12-hr time window) for two periods of 5 days, separated by a break of 2 days. Participants responded to 56 beeps on average ($SD = 8.4$). Participants were reimbursed with a total of up to 90 Euros. The study was approved by the ethics committee of the Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig.

Study 6

The sample consisted of 101 participants (51.5% women) aged between 20 and 31 years ($M = 25.6$, $SD = 2.7$) from Berlin, Germany. All participants took part in a larger study, the COGITO study. Participation in this study included a microlongitudinal testing phase of an average of 101 occasions ($SD = 2.7$) with 1-hr close-to-daily testing sessions at the laboratory (the 101 occasions were spread out across 162 days, on average). Each participant also took part in an additional pre- and posttest of 2 weeks (see also Brose, Schmiedek, Lövdén, & Lindenberger, 2011). Again, only a subsample of the COGITO study was used in order to have a comparable age range across all studies. During the daily testing sessions, participants completed, among other tasks, daily diary self-reports. Participants were reimbursed with a total of 1,450 to 1,950 Euros, depending on how quickly they completed the study. The study was approved by the ethics committee of the Max Planck Institute for Human Development, Berlin.

Measures

This is a summary of the main variables assessed in all studies. For an overview of the measurement specifics for each study, see Table 1.

Momentary positive and negative affect. Affective experiences were measured at each occasion using various affect items. These were then used to calculate aggregate scores for positive affect (PA) and negative affect (NA) at each occasion (i.e., each beep/day). Importantly, Study 5 used bipolar affect items for the measurement of momentary affect. These items thus represent an overall score of momentary affect, which is reported under PA in the following.

Positive events. Positive events were assessed by one of three means: (a) event occurrence (Studies 1, 2, and 3), that is, by asking participants to report whether anything pleasant had happened since the last beep; (b) event intensity (Studies 4 and 5), that is, by asking participants to rate the intensity of the most pleasant experience they had had since the last beep; or (c) a list of event categories (Study 6), that is, by asking participants to report if they had experienced different types of events, followed by an evaluation of the valence of the events on that day. The reported positive events from the list of event categories were then dummy-coded, while event intensity was used as a continuous variable.

Global well-being. Global well-being was assessed with the following trait questionnaires: the Satisfaction With Life Scale (SWL; Diener et al., 1985); the Life Appraisal Scale (SLB; Fering, Filipp, & Schmidt, 1996), also measuring life satisfaction; the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), measuring affective well-being; and the CES-D (Radloff, 1977), measuring depressive symptoms. Individual scores for each questionnaire were calculated by averaging across each scale's scores. Additionally, aggregated PA and aggregated NA scores from the experience sampling (aggregated per person and across time) were taken as an additional indicator for global well-being. They thus represent average levels of PA and NA across each study period.

Well-being composite scores. We used principal component analyses to additionally compute well-being composite scores for each study.[2] These analyses revealed that in each study well-being had one underlying factor that accounted for at least 50% of the variance,[3] thus conforming to previous studies that used composite scores of well-being (Sheldon & Elliot, 1999). Moreover, the loadings of the different indicators were rather high and comparable in size, which means that they contributed to equal amounts of the variances in the component scores. This supports our broad conceptualization of well-being, including positive and negative indicators as well as cognitive and affective components of well-being. The composite scores were used as additional indicators of well-being, with the advantage that they provide a simplified picture of the study's central findings.

Analyses

We used multilevel modeling to account for the hierarchical data structure, that is, the nesting of occasions within participants. For our main analyses we used the following models (with PA and NA as outcome variables; equations are only provided for the example of PA):

$$PA_{ti} = \beta_{0i} + \beta_{1i} \times (time_{ti}) + \beta_{2i} \times (positive\ event_{ti}) + r_{ti} \quad \text{(Level 1)}$$

$$\beta_{0i} = \gamma_{00} + \gamma_{01} \times (well\text{-}being_i) + \mu_{0i}$$

$$\beta_{1i} = \gamma_{10} + \mu_{1i} \quad \text{(Level 2)}$$

$$\beta_{2i} = \gamma_{20} + \gamma_{21} \times (well\text{-}being_i) + \mu_{2i}$$

At Level 1, we modeled affective reactivity. In the equation, Level 1 PA of person i on occasion t is predicted by the intercept β_{0i}, the time-related change in affect β_{1i}, and the occurrence of a positive event, β_{2i}. At Level 2, we entered global well-being as a covariate. Here, β_{0i} is a function of the average initial level of PA

[2] Scores on negative indicators of well-being were reversed so that higher scores on the composite scores represent higher levels of well-being.

[3] One exception is Study 6, in which a model with two factors of well-being was superior to the model with only one factor. However, for consistency reasons, we will report the results from the single-factor model, noting that results did not change as compared to the two-factor solution.

Table 1
Overview of Measure Specifics for Each Study

Study 1 (N = 70, Germany)	Study 2 (N = 66, Germany)	Study 3 (N = 95, Belgium)	Study 4 (N = 200, Belgium)	Study 5 (N = 76, Germany)	Study 6 (N = 101, Germany)
Measurement method (state level)					
ESM	ESM	ESM	ESM	ESM	Daily diary
PA items (ESM/Daily diary)					
• Relaxed • Joyful • Content	• Joyful • Content	• Relaxed • Happy	• Relaxed • Happy	• Relaxed/Tense • Bad/Good • Well/Unwell • Tired/Awake • Agitated/Calm • Full of Energy/Without Energy	• Enthusiastic • Excited • Strong • Interested • Proud • Alert • Inspired • Determined • Attentive • Active
NA items (ESM/Daily diary)					
• Downhearted • Nervous • Distressed	• Downhearted • Disappointed • Angry • Nervous	• Sad • Depressed • Anxious • Angry	• Sad • Depressed • Anxious • Angry		• Distressed • Upset • Nervous • Jittery
Answering scale					
7-point scale from 0 (*does not apply at all*) to 6 (*applies strongly*)	7-point scale from 0 (*does not apply at all*) to 6 (*applies strongly*)	Slider scale from 0 (*not at all*) to 100 (*very much*)	Slider scale from 0 (*not at all*) to 100 (*very much*)	7-point scale from −3 (*not at all*) to +3 (*very strongly*)	8-point scale from (*does not apply at all*) to 7 (*applies very well*)
Reference frame					
Since waking up/since the last beep	Current (at the moment of the beep)	Current (at the moment of the beep)	Current (at the moment of the beep)	Current (at the moment of the beep)	Current (at the moment of the self-report)
Event occurrence (question)					
Did anything pleasant happen since the last beep?	Since the last time we asked/ waking up, have you done anything pleasurable or that made you happy, or thought about anything like this?	Think about the most positive event that has occurred since the last beep. How intense was this event?	Think about the most positive event that has occurred since the last beep. How intense was this event?	Think about the most pleasant event that has occurred since the last beep/waking up. How much did you have positive feelings from the event?	Since the last time you came to the lab or later during this day, did you or do you expect to experience the following event? Event types: argument, disagreement, overload, some event related to work, a friend, health, leisure, to finances

(*table continues*)

Table 1 (*continued*)

Study 1 (N = 70, Germany)	Study 2 (N = 66, Germany)	Study 3 (N = 95, Belgium)	Study 4 (N = 200, Belgium)	Study 5 (N = 76, Germany)	Study 6 (N = 101, Germany)
Answering scale					
Yes/No	Yes/No	Yes/No	Slider scale from 0 (*there was no event*) to 100 (*very positive*)	7-point scale from 0 (*not at all*) to 6 (*very much*)	4-point scale from: 0 *(did not occur)* to 4 *(did occur and affected me strongly)*; Valence rating*: negative, slightly negative, neutral, slightly positive, positive;* aggregated into dichotomous variable (0/1)
Global well-being (trait level)					
Life satisfaction					
SWL, 5 items	LSB, 15 items	SWL, 5 items	SWL, 5 items	SWL, 5 items	SWL, 5 items
Answering scale					
7-point scale from 1 (*completely disagree*) to 7 (*completely agree*)	7-point scale from 1 (*does not apply to me at all*) to 7 (*completely applies to me*)	7-point scale from 1 (*completely disagree*) to 7 (*completely agree*)	7-point scale from 1 (*completely disagree*) to 7 (*completely agree*)	7-point scale from 1 (*completely disagree*) to 7 (*completely agree*)	8-point scale from 0 (*not at all*) to 7 (*very often*)
Affectivity					
PANAS, 20 items + 6 additional adjectives		PANAS, 20 items	PANAS, 20 items	PANAS, 20 items	PANAS, 20 items
Answering scale					
5-point scale from 1 (*very little to never*) to 5 (*extremely*)		5-point scale from 1 (*very little to never*) to 5 (*extremely*)	5-point scale from 1 (*very little to never*) to 5 (*extremely*)	5-point scale from 1 (*very little to never*) to 5 (*extremely*)	8-point scale from 0 (*does not apply at all*) to 7 (*applies very well*)
Depressive symptoms					
CES-D, 20 items		CES-D, 20 items	CES-D, 20 items		CES-D, 20 items
Answering scale					
5-point scale from 0 (*never*) to 4 (*always*)		4-point scale from 1 *(rarely or none of the time, less than 1 day)* to 4 *(most or all of the time, 5–7 days)*	4-point scale from 1 *(rarely or none of the time, less than 1 day)* to 4 *(most or all of the time, 5–7 days)*		8-point scale from 0 (*does not apply at all*) to 7 (*applies very well*)

Note. ESM = experience sampling method; PA = positive affect; NA = negative affect; SWL = Satisfaction with Life Scale; LSB = Life Appraisal Scale; PANAS = Positive and Negative Affect Scale; CES-D = Center for Epidemiologic Studies Depression Scale.

(γ_{00}), as well as of between-person differences in global well-being (γ_{01}). The slope, β_{2i}, is a function of the average within-person relationship between the occurrence of a positive event and PA (γ_{20}), and, most importantly, person differences in well-being (γ_{21}). That is, γ_{21} reflects the moderating effect of global well-being on affective reactivity to positive events. For the time-related change in affect, $\beta_{1i,}$ we modeled an average linear slope at Level 2. All residual variances (at Level 1 and Level 2; r_{ti}, μ_{0i}, μ_{1i}, μ_{2i}) were modeled. For all Level 2 predictors (i.e., global well-being indicators), separate multilevel models were estimated. Event occurrence, the Level 1 predictor, was person-mean centered, while all well-being indicators, the Level 2 predictors, were grand-mean centered. Affective reactivity in Studies 1–3 and 6 can be interpreted as the deviation in momentary affect on occasions at which participants reported a positive event, in comparison to levels of momentary affect on occasions without a positive event. In contrast, in Studies 4 and 5, affective reactivity is the change in levels of momentary affect as a function of the change in perceived intensity of the event.

To get at metrics that are comparable across studies, other than the unstandardized regression coefficients that are commonly obtained from multilevel models, we calculated Pseudo R^2 statistics, as an approximation for the strength of the interaction. This Pseudo R^2 statistic was calculated as the change in slope variance from a baseline model (including the Level 1 and Level 2 predictors without the cross-level interaction) to the final model (including the cross-level interaction). Since the analyses resulted in a large total amount of specified models (Multiple well-being measures × Six studies), detailed results are reported in the online supplemental materials. The relevant parameters of the cross-level interactions (well-being moderating affective reactivity to positive events, γ_{21}), our main interest, are reported in detail. In order to increase comparability across studies—and in the absence of meta-analytic tools for coefficients from multilevel models—we additionally calculated correlations of well-being indicators with the person-specific reactivity slopes. For this purpose, we specified affective reactivity models without Level 2 variables (i.e., no well-being indicators) and estimated person-specific slopes. These person-specific estimates reflect each person's affective reactivity to positive events. We correlated these estimates with all global well-being indicators. These correlations give another approximation to a standardized measure of effect and were used to display our results graphically.

Results

Descriptive information (means and standard deviations) for each study and Level 2 well-being indicator is provided in Table S1 in the online supplement (due to the large amount of information). Regarding affective reactivity, participants experienced reliably higher PA and lower NA on occasions with a positive event, compared to occasions without a positive event, in Studies 1, 2, 3, and 6. In Studies 4 and 5, PA increased, and NA decreased significantly, as the perceived intensity of positive events increased (see Table S2 in online supplemental materials). Additionally, there was a main effect of global well-being. That is, higher global well-being, as indicated by either higher scores on the well-being composite scores or positive indicators (SWL, Trait PA, Aggregated PA), or lower scores on negative indicators of well-being (CES-D, Trait NA, and Aggregated NA), respectively, predicted higher levels of PA and lower NA in daily life in all studies (for a few exceptions in Study 6, see Table S2 in online supplement). Within each study, positive indicators of global well-being correlated positively with each other and negatively with negative indicators of global well-being (with a few exceptions in Studies 4 and 6; please see Table 2).

In the following, we will report in detail how the well-being composite scores moderate positive event reactivity (i.e., increases in PA and NA at occasions on which individuals reported a positive event). With this focus on the composite scores, we mean to condense and simplify the emerging pattern of moderation effects. This is followed by a brief summary of how the individual well-being indicators moderate positive event reactivity (first for positive indicators, then negative indicators). In Tables 3 and 4, we report the moderating effects for well-being on the within-person relationship between positive events and PA and NA, respectively. That is, we only report the estimates for the parameter γ_{21} that indicate the cross-level interaction (i.e., whether global well-being at Level 2 interacts with positive events at Level 1 in the prediction of PA and NA). We also report the Pseudo R^2 statistics for these cross-level interactions in Tables 3 and 4. For a complete report of all specified models, please see Table S2 in the online supplemental material.

PA as Outcome Variable; Well-Being Composite Score at Trait Level

Results for the moderation effects and PA as an outcome variable are summarized in Table 3. As shown, the well-being composite score was a significant moderator in three of the six studies (Studies 2, 3, and 4). Specifically, higher well-being composite scores were related to smaller increases in PA in reaction to positive events in these studies. Pseudo R^2 statistics indicated that the well-being composite scores, when significant, accounted for 8–25% of the individual differences in affective reactivity to positive events.

The correlations between the well-being composite scores and the person-specific estimates were in line with the cross-level interactions from the multilevel models. That is, these correlations between the well-being composite scores and the person-specific estimates of the within-person association between positive events and PA were negative (Figure 1a). Together, higher scores on these well-being composite scores were associated with decreased affective reactivity to positive events.

NA as Outcome Variable; Well-Being Composite Score at Trait Level

Results for the moderation effects and NA as an outcome variable are summarized in Table 4. For NA as an outcome variable, the well-being composite score moderated affective reactivity to positive events in four of the six studies (Studies 1, 2, 3, and 4). In these studies, higher well-being composite scores predicted smaller decreases in NA in reaction to positive events. Pseudo R^2 statistics indicated that the well-being composite scores accounted for 16–37% of the individual differences in affective reactivity to positive events in these studies.

The correlations between the well-being indicators and the person-specific estimates were in line with these results. The

Table 2
Correlations Between Global Well-Being Indicators in Each Study

	Study 1						Study 2				
WB indicator	1	2	3	4	5		1	2	3	4	5
1. SWL						1. SWL					
2. Trait PA	.51**					2. Trait PA	—				
3. CES-D	−.41**	−.37*				3. CES-D	—	—			
4. Trait NA	−.34*	−.59*	.56**			4. Trait NA	—	—	—		
5. Agg. PA	.42**	.47**	−.44**	−.38*		5. Agg. PA	.47**	—	—	—	
6. Agg. NA	−.35*	−.35*	.58**	.43**	−.46**	6. Agg. NA	−.31**	—	—	—	−.43**
	Study 3						Study 4				
WB indicator	1	2	3	4	5		1	2	3	4	5
1. SWL						1. SWL					
2. Trait PA	.55**					2. Trait PA	.42**				
3. CES-D	−.60**	−.42**				3. CES-D	−.54**	−.42**			
4. Trait NA	−.63**	.70**	.70**			4. Trait NA	−.31**	−.13	.50**		
5. Agg. PA	.53**	−.52**	−.60**	−.58**		5. Agg. PA	.39**	.32**	−.45**	−.27**	
6. Agg. NA	−.56**	.39**	.62**	.63**	−.62**	6. Agg. NA	−.29**	−.15*	.42**	.51**	−.43**
	Study 5						Study 6				
WB indicator	1	2	3	4	5		1	2	3	4	5
1. SWL						1. SWL					
2. Trait PA	.67**					2. Trait PA	.37**				
3. CES-D	—	—				3. CES-D	−.41*	−.39**			
4. Trait NA	−.46**	−.44**	—			4. Trait NA	−.32*	.04	.35**		
5. Agg. PA	.30*	.52**	−.3*			5. Agg. PA	.34**	.34**	−.24**	−.13	
6. Agg. NA	—	—	—	—	—	6. Agg. NA	−.20*	−.17*	.40*	.33**	.11

Note. WB = well-being; PA = positive affect; NA = negative affect; SWL = Satisfaction with Life Scale; CES-D = Center for Epidemiologic Studies Depression Scale; Agg. = Aggregated.
* $p < .05$. ** $p < .001$.

well-being composite score yielded positive correlations with the person-specific estimates of the within-person association between positive events and NA (Figure 1a). This again indicates that higher scores on these well-being composite scores correlate with smaller within-person associations.

PA as Outcome Variable; Positive and Negative Indicators of Global Well-Being at Trait Level

Results for the moderation effect of each of the global well-being indicators on affective reactivity with PA as an outcome variable can be found in Table 3. In summary, higher global well-being, as indicated by higher scores on positive indicators of global well-being (SWL and Trait PA) as well as lower scores on negative indicators of global well-being (CESD-D, Trait NA, and Aggregated NA) predicted smaller increases in PA across five of the six studies (Studies 1, 2, 3, 4, and 6) at occasions with positive events. As indicated in Table 3, twelve out of 22 of these interaction effects in these five studies reached significance. Pseudo R^2 statistics indicated that the well-being indicators, when significant, accounted for 4–26% of the individual differences in affective reactivity to positive events.

The negative and positive correlations between the reactivity estimates and the positive and negative trait measures also indicate that higher global well-being is associated with decreased affective reactivity (Figures 1b–g).

NA as Outcome Variable; Positive and Negative Indicators of Global Well-Being at Trait Level

Positive and negative indicators of global well-being also moderated affective reactivity to positive events with NA as an outcome variable, as shown in Table 4. In summary, higher global well-being, as indicated by higher scores on positive indicators of global well-being (SWL, Trait PA, and Aggregated PA) and lower scores on negative indicators of global well-being (CESD-D and Trait NA) predicted again smaller decreases in NA across four of the six studies (Studies 1, 2, 3, and 4). As indicated in Table 4, fourteen out of 17 of these interaction effects in these four studies reached significance. Trait measures in these studies accounted for 6–43% of the individual differences in affective reactivity to positive events. Again, the positive and negative correlations between the reactivity estimates and the positive and negative global well-being indicators indicate that higher global well-being correlates with smaller within-person associations.

Together, these results show that across the six studies, we found various significant moderation effects of global well-being on the affective reactivity to positive events. All significant effects showed that higher global well-being was associated with reduced affective reactivity to positive events. When looking at the pattern of the results per study, we found that in four of the six studies (Studies 1, 2, 3, and 4) the majority of the tested effects were significant, with all of them predicting reduced affective reactivity

Table 3
Cross-Level Interactions Between Global Well-Being Indicators and Within-Person Associations Between Positive Events and PA

	Study 1			Study 2			Study 3			Study 4			Study 5			Study 6		
WB indicator	L-2 × L-1	*SE*	Pseudo R^2 (%)	L-2 × L-1	*SE*	Pseudo R^2 (%)	L-2 × L-1	*SE*	Pseudo R^2 (%)	L-2 × L-1	*SE*	Pseudo R^2 (%)	L-2 × L-1	*SE*	Pseudo R^2 (%)	L-2 × L-1	*SE*	Pseudo R^2 (%)
SWL	−.08	.04	4.8	−.11*	.04	16.9	−2.24*	.69	14.0	−.02*	.01	6.3	−.02	.02	.4	−.02	.02	2.9
Trait PA	−.24*	.08	25.8	—		—	−1.83	1.57	−.1	−.02	.01	.6	−.03	.03	−1.8	−.01	.03	−1.7
CES-D	.06	.08	−1.5	—	—	—	4.02*	1.88	6.6	.05*	.02	3.9	—	—	—	.10	.07	3.7
Trait NA	.09	.07	3.5	—	—	—	4.16*	1.43	12.1	.04*	.01	5.3	.03	.03	.4	.03	.02	5.9
Agg. PA	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Agg. NA	.03	.05	−1.4	.29*	.12	14.7	.19*	.08	8.1	.003*	.00	6.9	—	—	—	.04*	.02	3.5
WB composite score	−.20	.31	1.39	−.22**	.06	25.21	−2.68**	.87	13.54	−.03**	.01	8.25	−.003	.01	−6.83	−.02	.49	.47

Note. WB = well-being; L-2 × L-1 = Level-2−Level-1 Interaction; PA = positive affect; NA = negative affect; SWL = Satisfaction with Life Scale; CES-D = Center for Epidemiologic Studies Depression Scale; Agg. = Aggregated. Aggregated PA was not included as a Level-2 predictor for momentary PA, and not included in the WB composite score, due to statistical dependence between the outcome and independent variable.
* $p < .05$. ** $p < .001$.

Table 4
Cross-Level Interactions Between Global Well-Being Indicators and Within-Person Associations Between Positive Events and NA

	Study 1			Study 2			Study 3			Study 4			Study 5			Study 6		
WB indicator	L-2 × L-1	*SE*	Pseudo R^2 (%)	L-2 × L-1	*SE*	Pseudo R^2 (%)	L-2 × L-1	*SE*	Pseudo R^2 (%)	L-2 × L-1	*SE*	Pseudo R^2 (%)	L-2 × L-1	*SE*	Pseudo R^2 (%)	L-2 × L-1	*SE*	Pseudo R^2 (%)
SWL	.14**	.04	17.5	.05	.03	3.3	1.85**	.40	26.7	.02**	.01	9.7	—	—	—	−.03	.02	−.61
Trait PA	.27**	.08	17.7	—	—	—	1.13	.94	.4	.02	.01	1.17	—	—	—	.01	.02	−3.8
CES-D	−.29**	.07	30.3	—	—	—	−4.96**	1.04	29.2	−.05**	.01	8.4	—	—	—	−.09	.07	5.4
Trait NA	−.15*	.07	5.7	—	—	—	−4.64**	.77	42.5	−.04**	.01	13.9	—	—	—	.02	.02	.68
													—	—	—	—	—	—
Agg. PA	.21**	.06	17.4	.19*	.06	23.9	.17**	.04	24.8	.002**	.002	11.2	—	—	—	−.05	.03	1.29
Agg. NA	—	—	—	—	—	—	—		—	—		—	—	—	—	—	—	—
WB composite score	.21**	.04	32.23	.11*	.05	16.22	2.69**	.49	37.39	.02**	.01	17.32				−.02	.03	−2.28

Note. WB = well-being; L-2 × L-1 = Level-2−Level-1 Interaction; PA = positive affect; NA = negative affect; SWL = Satisfaction with Life Scale; CES-D = Center for Epidemiologic Studies Depression Scale; Agg. = Aggregated. Aggregated PA was not included as a Level-2 predictor for momentary PA, and not included in the WB composite score, due to statistical dependence between the outcome and independent variable.
* $p < .05$. ** $p < .001$.

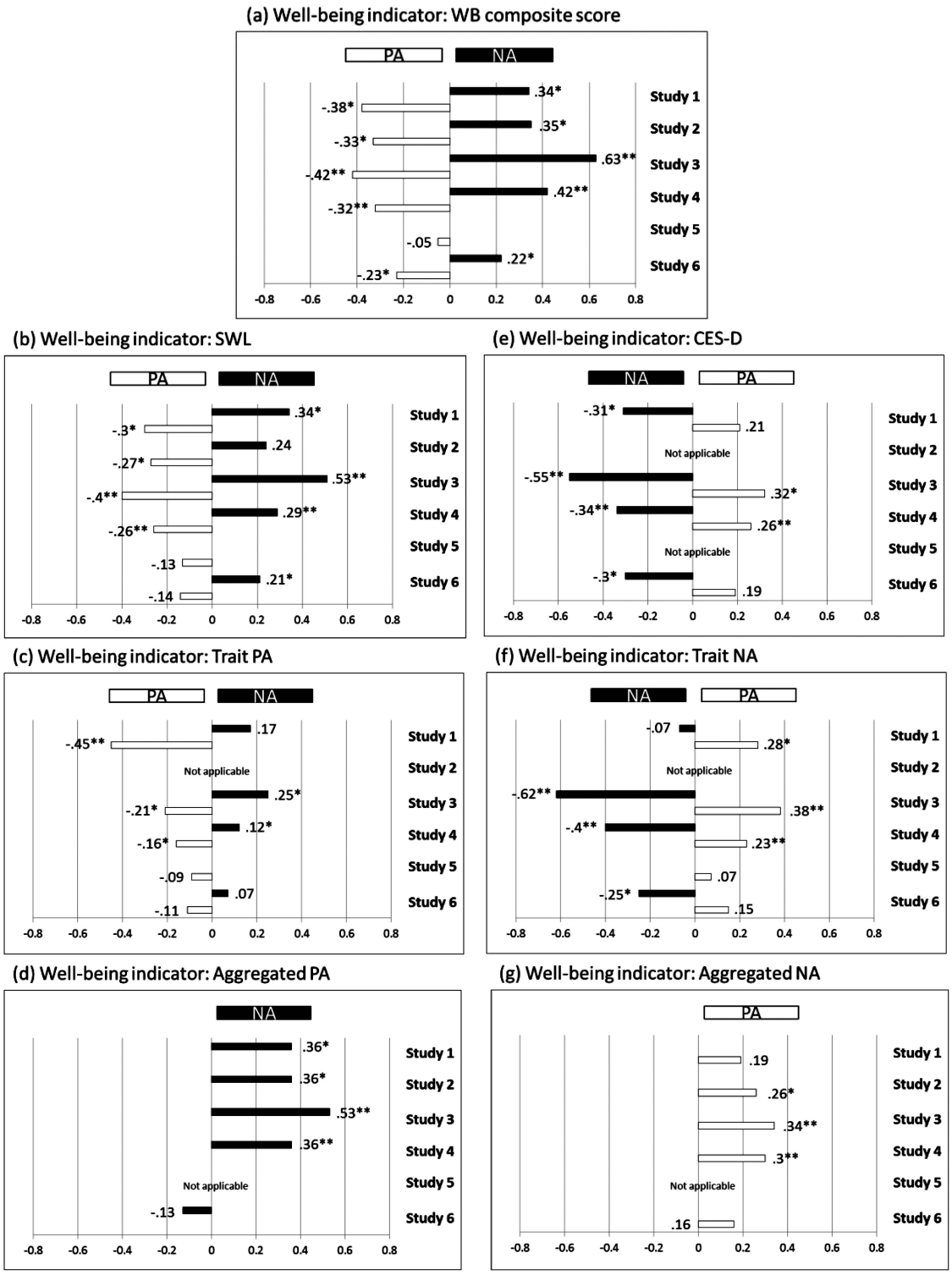

Figure 1. Correlations between global well-being indicators and person-specific reactivity slopes. Higher scores on positive indicators of well-being (SWL, Trait PA, Aggregated PA, and WB composite score) yield negative and positive correlations with the PA and NA slopes (a–d), while lower scores on negative indicators of well-being (CES-D, Trait NA, Aggregated NA) yield positive and negative correlations with the PA and NA slopes (e–g). These correlations thus indicate a lower affective reactivity to positive events. WB = well-being; PA = positive affect; NA = negative affect; SWL = Satisfaction With Life Scale; CES-D = Center for Epidemiologic Studies Depression Scale. * $p < .05$. ** $p < .001$.

to positive events for higher global well-being. Two studies (Studies 5 and 6) do not follow this pattern, with few to no significant effects.

Discussion

The central aim of the present study was to test whether higher levels of global well-being are associated with enhanced or reduced affective reactivity to positive events in daily life, the latter being in line with recent research on emotion dynamics and well-being. We found that individuals with higher levels of global well-being are characterized by decreased reactivity to positive events. More specifically, in four of six studies we found that in the majority of the tested effects individuals with higher global well-being showed smaller decreases in momentary negative affect and in some instances also smaller increases in momentary positive affect in reaction to positive events. We found these effects for positive and negative indicators of global well-being, as well as well-being composite scores. The inclusion of these various global well-being indicators and two different outcome variables (positive and negative affect) across six studies is a major extension of previous research. Moreover, the significant moderation effects we found for the well-being composite scores nicely summarize the overall picture that was gained from the analyses with the individual well-being indicators, and in one study they even show the moderation effect more clearly (Study 2). As the well-being composite scores encompass both positive and negative well-being indicators, they add to the strength and generalizability of our results and underline the importance of global well-being as a moderator of the within-person relationship between positive events and momentary affective experiences.

Reduced Affective Reactivity for Both Positive and Negative Affect

In the present study we found reduced affective reactivity to positive events for individuals with higher global well-being. This effect became apparent in smaller decreases in negative affect, and additionally, though only in some of the studies, in smaller increases in positive affect in light of positive events. The relatively consistent pattern of findings for negative affect as an outcome variable is in line with results from clinical studies. Here, individuals with lower well-being (one major characteristic of those with major depressive disorder or depressive symptoms) showed greater decreases in negative affect in reaction to positive events (Bylsma et al., 2011; Peeters et al., 2003). Specifically, the greater decreases in negative affect suggest that positive events not only bring joy into our lives. They might just as well ameliorate our negative affect. This might be of particular importance for individuals with lower levels of global well-being that have higher baseline levels of negative affect. Contrary, individuals with higher global well-being might not have the same need to improve their levels of negative affect, potentially explaining their comparatively small decreases in negative affect in response to positive events in our study. The idea that positive events may be used to dampen negative affect also fits in with the idea that positive emotions may accelerate recovery from negative emotions (Fredrickson & Levenson, 1998). It is also in line with different studies that stress the adaptive function of positive emotions in times of stress (e.g., Ong, Bergeman, Bisconti, & Wallace, 2006).

Other than expected, well-being did not moderate affective reactivity in Study 5, and the evidence for moderation was scarce in Study 6. There are some methodological differences between these and the other studies that might explain the differences in findings. First, in Study 5, bipolar affect items, representing overall momentary affect, were used instead of distinct measures of positive or negative affect. This less differentiated measurement of affect might have blunted an effect on either of the two affect valences. Second, Study 6 clearly diverges with respect to the time scale covered. The time interval between occasions was days and not hours as in the other studies. As a consequence it might be that other negative events occurred during the day and had interfered with the reactivity to positive events investigated in this study.

Present Findings and Emotional Stability

The present results are in line with various theoretical accounts and prior empirical findings. One such finding is that higher emotional stability of negative and, to a lesser extent, also positive affect is related to higher levels of well-being (Houben et al., 2015). Yet, these authors' meta-analysis did not consider affective reactivity in their study of emotional stability. Thus, our findings seem to complement these prior insights on emotional stability and well-being, perhaps even in a way that may initially seem counterintuitive: Even in the presence of positive events, emotional stability—in the sense of decreased responding—is related to higher levels of well-being. That is, less fluctuation in momentary positive and negative affect, reflected in various indicators including affective reactivity, seems to be a pervasive characteristic of people with higher levels of well-being. However, while our results suggest that reduced affective reactivity is characteristic of individuals with higher levels of well-being, we do not assume that individuals have reached such higher levels of well-being because of their reduced reactivity—an issue that we will discuss below.

Even though our results align with the importance of emotional stability for global well-being, they somewhat contradict the idea that responding flexibly to changing emotional contexts is linked to adaptive functioning and psychological health (Kashdan & Rottenberg, 2010). For example, flexibly adjusting one's emotional responses to changing emotional stimuli in the laboratory is associated with higher trait resilience (Waugh, Thompson, & Gotlib, 2011), an indicator related to higher global well-being. Relatedly, inflexible responding may be indicative of some manifestations of psychopathology, such as context insensitivity in major depressive disorder (Rottenberg, 2005). Therefore, responding to positive events in daily life would be deemed an adaptive response according to the flexibility view. At first glance, this seems to contradict the present findings. However, one needs to be careful when drawing such conclusions. As we investigated affective reactivity to real-life events through the experience-sampling and daily diary method, we cannot control for the type of events reported, making it difficult to define the level of appropriateness or inappropriateness of an emotional response. It would therefore be possible that the observed smaller affective reactions in individuals with higher well-being reflect more adjusted responses. Furthermore, it could be that people with higher levels of well-being respond more flexibly to changes in the valence of emotional significant events. Thus, a higher flexibility might not become

apparent in stronger reactions, but rather in a quicker adaptation to variations in positive and negative events in daily life.

No Evidence for Enhanced Affective Reactivity

None of the associations in our study were in in favor of the proposition of enhanced affective reactivity to positive events in people with higher global well-being. One explanation for this may be that further increases in positive and decreases in negative affect when something positive occurs are merely more difficult to accomplish, as these individuals with higher global well-being already have high levels of positive and low levels of negative affect, respectively. That is, the potency of positive events seems to diminish toward highest levels of well-being. Importantly, those individuals with highest levels of well-being neither reached the ceiling of the scale measuring positive affect, nor did they reach the floor of the scale measuring negative affect. Furthermore, many observations go into the estimation of affective reactivity as measured in individuals with different levels of global well-being (i.e., the number of occasions in each study). This diminishes the biasing effects of extreme scores on the reactivity estimates (i.e., the error components in the reactivity estimates should be low). This, in turn, reduces the likelihood that the observed results are due to regression to the mean.

When viewed from the perspective of the savoring proposition, the findings of our study are indeed surprising. One possible explanation might be that individuals with higher well-being derive greater benefits in terms of well-being by savoring greater life events rather than small everyday events. For example, reminiscing about the past (one of multiple savoring strategies; Bryant, 2003) might prolong the positive emotional experience of these events, by keeping the memory of such events alive. Future studies with a focus on savoring positive life events would be able to shed light on this possibility.

The present findings also diverged from other research in favor of enhanced affective reactivity in people with higher levels of well-being; in particular, personality and clinical research (e.g., Bylsma et al., 2008; Gross et al., 1998). Notably, findings from both bodies of research were mainly based on laboratory studies, which could partly explain the difference in findings. For example, people with lower levels of well-being (e.g., depressed people) are potentially less motivated to attend to the standardized stimuli that are usually used in laboratory settings, while in daily life the greater emotional relevance might foster their motivation to attend to the events they experience. However, to disentangle such context effects, future studies need to investigate affective reactivity in the laboratory and in daily life within the same individuals (see Koval et al., 2015, for such multimethod approaches).

Limitations and Future Directions

While one strength of the present study is the investigation of affective reactivity to positive events and global well-being across several studies and with various global well-being indicators, one noteworthy limitation is that to our knowledge there is no established procedure for meta-analyzing cross-level interaction effects from multilevel analyses. We tried to confront this shortcoming by computing well-being composite scores through principal-component analyses, and by including these as well-being moderator variables in our analyses. Nevertheless, such a meta-analytic approach would have enhanced claims about reliability and the size of the found effects. Establishing such a procedure would be highly valuable for future studies dealing with similar data.

Our results suggest that individuals with higher well-being are characterized by reduced affective reactivity to positive events. This relationship, as investigated in the current study, is purely correlational and does not allow for any conclusions regarding the direction of the effects. If we were to speculate about causal relationships among the different variables and about their potential developmental trajectories, the following more long-term dynamics seem possible. In periods of lower well-being—for example, after the experience of a negative life event or during recovery from a depressive episode—daily positive events may gain in importance in the sense of brightening one's mood. Such enhanced affective reactivity in periods of lower well-being may, in the longer term, even lead to increases in well-being. The more one generally recovers from a negative life event or a depressive episode, the more positive events lose importance for general well-being—a decoupling occurs and well-being is no longer as contingent on positive events as it was during the recovery period. Recent findings on the long-term coupling of neuroticism and affective reactivity to negative events could be interpreted as being in accordance with this view (Howland, Armeli, Feinn, & Tennen, 2017). Here, the strength of affective reactions to negative events as approached with experience sampling varied from year to year, and it became stronger as neuroticism and overall stress increased. That is, affective reactivity was also dynamic across a longer time scale in this study, and it was also related to global individual difference variables.

Another limitation pertains to the assessment of our positive event variable. Positive events were measured differently in two of our studies, namely using intensity ratings (Studies 4 and 5) instead of dichotomous items. Decreased reactivity for individuals with higher global well-being as found in Study 4 yields a slightly different interpretation in comparison to the studies with dichotomous event variables. While affective reactions generally increased as a function of stimulus intensity in this study as to be expected from the literature (see Table S2 in the online supplemental material; cf. Larsen & Diener, 1987), individuals with higher global well-being actually show less such proportional increase. On the one hand, this reduces comparability across studies, but on the other hand, it shows that the observed differences in affective reactivity cannot be ascribed to differences in event intensity.

Finally, as each study involves the reanalysis of existing data, it was not possible to do a priori power analyses to determine sample sizes needed to appropriately power the present research question. Nevertheless, we observed comparable effects in the study with the smallest (Study 1, $N = 70$, number of occasions = 54) and the largest sample (Study 4, $N = 200$, number of occasions = 61). It thus seems that the different studies had sufficient power to observe the effects under investigation.

Conclusions

In summary, in the majority of our studies we found that higher levels of global well-being were associated with reduced affective reactivity to positive events, in line with recent research on emotion dynamics and well-being. These results show that, even in the

presence of positive events, less fluctuation in the experiences of positive and negative affect seem to be a defining characteristic of people with higher global well-being. Nevertheless, everyday positive events are part of daily life, and especially for individuals with lower global well-being, they seem to be a meaningful way to brighten one's momentary mood.

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