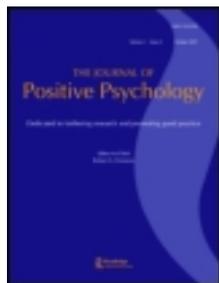


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### Gains without pains? Growth after positive events

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## Gains without pains? Growth after positive events

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While past research suggests that people experience positive psychological changes after adverse events, little is known about psychological changes that happen after positive events. Adult participants ( $N=605$ ) went online to complete a new self-report instrument measuring positive psychological changes linked to positive events, changes that I provisionally call post-ecstatic growth. Factor analysis indicated that this growth happens in four domains: deeper spirituality, increased meaning and purpose in life, improved relationships, and greater self-esteem. Participants were particularly likely to report growth after events that evoked feelings of inspiration and meaning, and events that led them to see new opportunities.

**Keywords:** post-ecstatic growth; positive events; growth; meaning; inspiration; positive emotions; exceptional experiences

The concept of strength through adversity is intuitively appealing and increasingly widespread: the slogan ‘no pain, no gain’ is emblazoned on T-shirts and sports equipment, and research on *posttraumatic growth* (PTG) is quickly accumulating in academic journals (Helgeson, Reynolds, & Tomich, 2006; Linley & Joseph, 2004; Meyerson, Grant, Carter, & Kilmer, 2011; Zoellner & Maercker, 2006). It is generally recognized that our lowest moments have the potential not only to inflict lasting damage, but also to catalyze lasting growth. Our highest moments, on the other hand, are generally ignored in their potential for growth: conventional wisdom, supported by some past empirical findings, indicates that after positive experiences, we experience a brief flash of happiness and then return to baseline levels of well-being (Brickman & Campbell, 1971; Brickman, Coates, & Janoff-Bulman, 1978). I propose that positive events are actually critical catalysts for lasting psychological growth, and can powerfully shape our character, values, and outlook. The findings presented here suggest that very positive experiences commonly lead to growth in four domains, which are similar to PTG domains.

### **Pains and gains: PTG**

Growth broadly refers to continued personal development in the direction of greater self-knowledge, effectiveness, and realized potential (Ryff & Keyes, 1995). A person may change for the better in affective, cognitive, and/or behavioral domains (Prochaska & DiClemente,

1986). Much of the literature on life events and growth focuses on the effects of adverse experiences: people often report positive psychological changes after struggling with difficult events (Hefferon, Greal, & Mutrie, 2009; Leloirain, Bonnaud-Antignac, & Florin, 2010; Linley & Joseph, 2004; Sawyer, Ayers, & Field, 2010; Shakespeare-Finch & Armstrong, 2010; Zoellner & Maercker, 2006). These changes are referred to in the research literature as *posttraumatic growth* (PTG; Tedeschi & Calhoun, 1996), *stress-related growth* (SRG; Park, Cohen, & Murch, 1996), *benefit finding* (BF; Affleck & Tennen, 1996), and *adversarial growth* (Linley & Joseph, 2004). Such growth tends to arise in particular domains – including improved relationships, greater appreciation of life, increased personal strength, a sense of new possibilities for one’s life, and deeper spiritual understanding – as shown by factor analysis of the commonly used Posttraumatic growth inventory (PTGI; Tedeschi & Calhoun, 1996). Trauma survivors’ loved ones tend to corroborate survivors’ own reports of having grown in these domains (Shakespeare-Finch & Enders, 2008), but it remains unclear whether self-perceived growth is accompanied by more objective changes (Frazier et al., 2009). Regardless, even self-perceived changes appear beneficial, as a meta-analysis of studies on PTG and well-being found that in the long run (about two years posttrauma), more PTG is linked to less depression and greater well-being (Helgeson et al., 2006).

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The literature on PTG fails to address one deceptively simple question: is adversity necessary for growth? PTG studies (by definition) typically compare events of low, moderate, and high adversity with one another, excluding positive events from the analysis. As a result, findings typically imply support for the adage ‘no pain, no gain’ in indicating that very low levels of stress lead to little growth when compared to extreme stress (Cordova, Cunningham, Carlson, & Andrykowski, 2001) or intermediate levels of stress (Lechner et al., 2003). However, because these studies exclude positive events, it is not possible to conclude that distress is necessary for growth. Instead, any important event – whether it is experienced as positive or negative – might lead to growth.

### ***Gains and more gains: the impact of positive events***

The PTG literature has been largely divorced from the growing literature on positive experiences. Research on positive events typically focuses on narrow outcomes like hedonic happiness and life satisfaction, and has excluded broader psychological changes (e.g. self-concept, meaning in life, relationships, and character). The punch line of this literature is that positive experiences like winning the lottery do not tend to make people lastingly happier (Brickman et al., 1978). Instead, we seem to be on a *hedonic treadmill*: we take both negative and positive events in stride and quickly return to a set point for happiness or satisfaction, which is heritable (Brickman & Campbell, 1971; Lykken & Tellegen, 1996). Recent research has called this dominant perspective into question, however, suggesting that there are individual differences in people’s adaptation to major events. Happiness set points can change (Diener, Lucas, & Scollon, 2006; Headey, 2010) and people who initially react very strongly to positive events still experience greater life satisfaction years later (Lucas, Clark, Georgellis, & Diener, 2003).

A small body of literature has moved beyond life satisfaction to consider a broader array of beneficial changes that happen after positive events. Researchers studying *peak experiences* (Maslow, 1968), *self-defining memories* (Blagov & Singer, 2004), and *identity-relevant events* (Thoits, 1992) have examined changes in eudaimonic well-being and character. Eudaimonic well-being encompasses meaning and self-realization, and is less closely tied to affective experience (Ryan & Deci, 2001). Because it is less affect-driven, eudaimonic well-being should be less vulnerable to adaptation than hedonic well-being is (Waterman, 2007). People’s best moments raise their eudaimonic well-being by impacting their insight, wisdom, and personal growth (Wood & Conway, 2006); values, empathic behavior, and perspective (Olson et al., 1998); personality, worldview, and spirituality (Wilson & Spencer, 1990); and meaning and purpose (Magen, 1996). Related literature on *capitalization*

suggests that when we celebrate important positive events with a significant other, we have more positive affect and well-being (Langston, 1994) and our relationships improve (Gable, Reis, Impett, & Asher, 2004). In addition, positive *turning points* (i.e. experiences that break from the past and open up new opportunities) increase individuals’ resilience in the face of future adversity (Gilligan, 2006; Rutter, 1987, 1999).

Given the gaps in this literature, we now need to address four concerns, and I do so in this study:

- (1) We need to measure broader outcomes beyond happiness and life satisfaction (e.g. meaning, mastery, self-concept, etc.).
- (2) We need to allow individuals to define which events are positive and important and why, rather than studying stereotypical events (e.g. getting married or winning the lottery).
- (3) We need to understand how individuals reacted to a positive event in the moment, because these reactions determine trajectories of growth.
- (4) We need to use rigorous, quantitative methods to measure growth. Most of the previous literature is qualitative and, therefore, provides rich information about a small number of individuals, but does not address generalizability. Research on positive events now calls for a systematic, theoretically grounded, empirical approach to measuring the positive changes associated with people’s most cherished life experiences.

### ***Theoretical framework: broadening and building, inspiring and rewiring, and the PERMA model of well-being***

Fredrickson’s (2004) *broaden-and-build* theory of positive emotion is a good framework for understanding the impact of events that induce positive states like joy, serenity, love, or gratitude. Broaden-and-build theory postulates that positive events broaden people’s attention and thought–action repertoires (i.e. tendencies to think and behave in specific ways), and stimulate creative thinking, novel behaviors, and new social bonds (Fredrickson & Branigan, 2005). This builds physical, intellectual, social, and psychological resources ‘that function as reserves that can be drawn on later to improve the odds of successful coping and survival’ (Fredrickson, 2004, p. 1357). Broadened attention is particularly important for growth after major life events: people who see new possibilities, goals, and roles after experiencing difficult events are more likely to grow (Roepke & Seligman, 2012).

In addition to Fredrickson’s theory, Haidt’s (2003) *inspire and rewire* hypothesis suggests that one subtype of positive states is especially essential for growth: the *moral emotions* including awe, elevation, gratitude, and

inspiration. Algoe and Haidt (2009) theorize that these states motivate prosocial behaviors, positive changes in relationships, and self-improvement. Similarly, Thrash and Elliot (2004) distinguish between being inspired *by* something and being inspired *to do* something. The latter (inspiration *to*) implies motivation for positive action and self-improvement. The inspire and rewire model provides further theoretical underpinning for the prediction that positive events lead to lasting changes in an individual's character, outlook, and behavior.

Finally, Seligman's (2011) Well-Being Theory provides a useful framework for identifying the types of events that can lead to growth. Seligman posits that the good life is made up of five basic components: Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment (PERMA). The PERMA constructs describe five categories of experiences that could lead to growth, but some categories may be more important for growth than others. Meaning deserves special attention. This umbrella term covers related constructs: a subjective feeling that one's life and actions have meaning, purpose, and movement toward desired goals (King, Hicks, Krull, & Del Gaiso, 2006; Klinger, 1977; Reker & Wong, 1988); a set of core beliefs, feelings, and goals that constitute *global meaning* and act as a general orienting system (Pargament, 1997; Park, 2010); *situational meaning* that involves determining the significance of a specific event (Park & Folkman, 1997); and a connection to something greater than the self (Seligman, 2011). Here, I adopt Seligman's definition for the sake of theoretical coherence, as I am using the PERMA model. Meaningful events hold great promise for promoting growth for two reasons. First, meaning is a key component of eudaimonic well-being. Previous literature suggests that positive events can impact eudaimonic well-being (Magen, 1996; Wilson & Spencer, 1990; Wood & Conway, 2006), and that people who discover meaning in their lives (but not necessarily those who search for it) have greater well-being (Steger, Frazier, Oishi, & Kaler, 2006; Steger, Kashdan, Sullivan, & Lorentz, 2008). Second, meaning is conceptually related to inspiration, elevation, and awe, which Haidt has identified as key emotions for positive change.

As a whole, then, the literature and theory on positive experiences suggests that we turn *no pain, no gain* on its head: perhaps one gain can lead to additional gains, with one positive event leading to an upward spiral of growth. The present study provides an empirical account of what form this growth takes and what makes growth more likely.

### **The present study**

In a cross-sectional online survey, I systematically examined how people grow after positive experiences, which types of positive experiences lead to growth, and how this growth occurs. I tested four hypotheses:

- (1) *People grow after positive events.* I expected participants to report lasting (self-perceived) positive changes on the Inventory of Growth after Positive Experiences (IGPE), a new instrument developed in this study. I expected this growth to arise in multiple domains related to eudaimonic well-being (as revealed by factor analysis).
- (2) *Inspiring events lead to more growth.* Based on Haidt's (2003) inspire and rewire theory, I anticipated that people would report the most growth after events that immediately evoked awe, elevation, inspiration, and connection to something greater than the self.
- (3) *Meaningful events lead to more growth.* Based on Seligman's (2011) PERMA framework, and literature on the importance of meaning for well-being, I expected that Meaning events would lead to more growth than other PERMA events.
- (4) *People who see new possibilities grow more.* I hypothesized that individuals who saw new goals, roles, and sources of meaning at the time an event occurred would be more likely to experience growth in the long run. Broadened attention to new possibilities may be the pathway by which growth arises.

## **Method**

### **Participants**

Adult participants ( $N=605$ ) were recruited online using two websites: Authentic Happiness (<http://www.authentic-happiness.org>) ( $n=375$ ) and Amazon.com's Mechanical Turk crowdsourcing platform (<http://www.mturk.com>) ( $n=230$ ). Of the 758 individuals who provided informed consent to participate, 51 cases were deleted because they entered no data at all and an additional 102 were excluded from analyses because they left the survey before completing the IGPE, the main instrument of interest in this study. The sample was generally young-to-middle-aged (with 25% aged 20–29, 19.5% aged 30–39, 21.0% aged 40–49, and 18.5% aged 50–59), and a majority were women (71%) and Caucasian (77%).

### **Materials and procedure**

Participants completed an internet-based survey at a single time point. The survey contained the following questions and measures (presented in the order listed here, and not randomized).

### **Demographics**

Participants reported their gender, race/ethnicity, and age group.

### Positive event

Participants were asked to describe the single most positive event from their lives (in a free-response text box) based on the following prompt:

What is the best experience you can remember from your life? This can be an event that lasted a moment, a day, weeks, or months. It is an experience that *you felt great about at the time that it happened*, even if your feelings about it have changed since then. Please describe this very positive experience in one sentence (or even just a few words):

Next, participants were asked to specify which one of the PERMA categories best characterized their positive event, based on brief descriptions of PERMA. Participants also reported how long ago the positive event occurred, how lasting its impact has been (rated on a six-point scale, 1 = *not at all*; 6 = *completely*), and whether they had told other people about the positive event. (It may be that discussing a positive event provides more opportunities to discover meaning and growth, so I wished to include this as a covariate in the models tested here.)

Participants also reported which positive emotions had been evoked by the event. I developed a short self-report scale of positive emotional states for this purpose, the Growth Emotions List (GEL). It contained 12 states, each rated on a four-point scale (1 = *not at all*; 4 = *very*). The scale included four states related to inspiration and meaning (*in awe, inspired, uplifted, and connected to something greater than myself*), and eight states related to the other components of well-being in the PERMA framework (*joyful, content, fascinated, lost in the moment, in love, loved, connected to other people, and proud*). This allowed me to test whether positive emotions generally predict growth, and whether emotions tied to meaning and inspiration are especially strongly linked to growth.

### *The Inventory of Growth after Positive Experiences (IGPE)*

A new instrument, the IGPE, was developed and validated in this study. To do this, I first generated items for the IGPE based on the following sources: (a) Open-ended survey questions about positive events and growth, which had been included in a previous study I conducted; (b) Three focus groups about positive events and growth, involving a total of 15 adults from the Philadelphia metropolitan area; and (c) Previous empirical and theoretical literature concerning life events and growth. This process resulted in an initial 42-item version of the IGPE. I retained 19 of these items for the final version of the IGPE after reliability and factor analyses (reported below).

### *The Doors Opening Questionnaire (DOQ)*

This measure, recently developed in the Seligman laboratory, assesses the extent to which a person saw new opportunities (new doors opening) in the aftermath of a major life event. The DOQ has demonstrated high internal consistency ( $\alpha=0.91$ ), high split-half reliability ( $r=0.86$ ), a one-factor structure, and preliminary evidence for convergent and predictive validity (Roepke & Seligman, 2012). Because the DOQ was originally developed for studies of PTG, some of the wording was slightly altered for the purposes of this study: for example, a phrase from the instructions was changed from 'during the time I was dealing with the event' (which implies coping with adversity) to 'during the time I was going through this experience' (which is broader and more neutral).

### *Validation measures*

Four measures were used in order to validate the IGPE:

*The Personal Growth Initiative Scale (PGIS)*. The PGIS (Robitschek, 1998) measures the extent to which individuals proactively strive for personal growth, and was expected to correlate at a low-to-moderate level with the IGPE: people who actively seek opportunities for personal growth are probably more likely to grow from their positive experiences.

*The Life Orientation Test*. The Life Orientation Test – Revised (LOT-R; Scheier, Carver, & Bridges, 1994) measures the extent to which individuals have generalized positive expectancies about the future. The LOT-R was expected to correlate at a low-to-moderate level with the IGPE: both of these scales reflect generalization to positive outcomes, whether in the future or in the past.

*The Marlowe-Crowne Social Desirability Scale (MC-SDS)*. The MC-SDS (Crowne & Marlowe, 1960) measures the extent to which individuals seek social approval by responding to questions in a culturally appropriate way. The MC-SDS was expected to show a small or nonsignificant correlation with the IGPE: the IGPE is designed to measure growth rather than a tendency to endorse cultural narratives about self-actualization.

*The Satisfaction with Life Scale (SWLS)*. The SWLS (Diener, Emmons, Larsen, & Griffin, 1985) measures an individual's global sense of life satisfaction, and was expected to show a small correlation with the IGPE: people who go through positive changes should be slightly more satisfied with life. (The relationship between growth and life satisfaction may be strong immediately after a positive event, but this relationship is probably attenuated as time passes because of the many other influences on life satisfaction. In this study, participants were permitted to report on important positive events that were not recent).

Table 1. Factor loadings for EFA with Promax rotation of IGPE items.

IGPE item	Meaning in life	Spiritual change	Relation-ships	Self-esteem
I have a new role in life	<b>1.02</b>	-0.03	-0.10	-0.07
There is more meaning in life	<b>0.82</b>	0.03	0.04	-0.04
I have a new purpose in life	<b>0.93</b>	-0.00	-0.09	0.05
I became more mature	<b>0.52</b>	-0.06	0.15	0.21
I see where I fit into the bigger picture	<b>0.54</b>	0.11	0.05	0.16
I have different priorities	<b>0.65</b>	0.06	0.23	-0.09
I have a better understanding of spiritual matters	0.07	<b>0.77</b>	0.12	-0.01
Spiritual faith is more important to me	0.01	<b>0.99</b>	-0.06	0.02
My spiritual faith is stronger	-0.03	<b>1.00</b>	-0.04	0.01
I have reconnected with God or a higher power	0.01	<b>0.85</b>	0.01	-0.03
I became more open	0.07	-0.09	<b>0.80</b>	-0.01
I know myself better	0.02	-0.08	<b>0.73</b>	0.15
I understand people better	0.01	0.03	<b>0.88</b>	-0.08
I am more easy-going	-0.03	0.03	<b>0.76</b>	0.05
I get along with people better	-0.06	0.16	<b>0.67</b>	0.08
I like myself more	-0.01	-0.01	0.06	<b>0.81</b>
I believe in myself more	-0.03	-0.04	0.08	<b>0.84</b>
I have more respect for myself	0.03	-0.02	-0.08	<b>0.95</b>
I have more faith in my dreams	-0.01	0.20	0.07	<b>0.56</b>

Note:  $N=605$ . Factor loadings  $>0.50$  are in boldface.

### Data analytic strategy

#### Reliability and factor analysis of IGPE

Before conducting the tests of my hypotheses, I analyzed the reliability and factor structure of the IGPE. The initial internal consistency of the 42-item draft IGPE was high (Cronbach's  $\alpha=0.98$ ). All items had adequate range (the full possible range from 1–6), and no items would improve reliability if deleted, so all 42 items were used in subsequent exploratory factor analysis (EFA). The Kaiser-Meyer-Olkin measure of sampling adequacy (0.95) and Bartlett's test of sphericity ( $\chi^2=11056.10$ ;  $p<0.0001$ ) indicated that the scale items were sufficiently intercorrelated to justify use of EFA. I conducted a series of such analyses in an iterative fashion until obtaining simple structure per Thurstone's (1947) five criteria. I eliminated items that did not load on any factors or loaded highly on multiple factors, and I monitored revised reliability estimates with the removal of these items.

Simple structure was obtained with 19 items and a four-factor solution, using Principal Axis Factoring with Promax rotation (Table 1). The scree plot showed a clear

elbow suggesting a one-factor solution, but three more factors (with eigenvalues above 1.0) were retained for two reasons: (a) They increased the explained variance by 23.19%, for a cumulative explained variance of 76.82%; (b) They were theoretically interpretable, and the conceptual domains of growth after positive events are of great interest in this study. The oblique solution was appropriate: the factors were highly correlated with one another, as seen in Table 2. The factors were also internally consistent, with Cronbach's  $\alpha$  values ranging from 0.89 to 0.95. The distributions of each individual subscale were nonnormal, but the distribution of IGPE sum scores was roughly normally distributed (skew =  $-0.16$ ,  $SE=0.10$ ).

The final 19-item IGPE retained high internal consistency ( $\alpha=0.95$ ) and high split-half reliability ( $r=0.95$ ,  $p<0.0001$ ). The correlation between the full set of 42 draft items and the final 19-item IGPE was 0.98 ( $p<0.0001$ ) indicating that the elimination of redundant, cross-loading, and nonloading items did not result in any significant loss of information. Next, I conducted correlation analyses that provided initial evidence for the convergent validity of the IGPE, suggesting that it fits in the nomological net (Cronbach & Meehl, 1955) as anticipated: the IGPE showed a medium-sized correlation with Personal Growth Initiative ( $r=0.38$ ,  $p<0.0001$ ) and a small-to-medium correlation with Optimism ( $r=0.24$ ,  $p<0.0001$ ) and Life Satisfaction ( $r=0.23$ ,  $p<0.0001$ ). The correlation with Social Desirability ( $r=0.21$ ,  $p<0.0001$ ) was slightly greater than expected, but no greater than the correlations between Social Desirability and all the well-established study instruments used here. All descriptive statistics and bivariate correlations are shown in Table 3.

Table 2. IGPE factor correlation matrix.

Domain	Meaning	Spirituality	Relationships	Self-esteem
Meaning	1.00	0.58	0.65	0.59
Spiritual	0.58	1.00	0.61	0.53
Relationships	0.65	0.61	1.00	0.73
Self-esteem	0.59	0.53	0.73	1.00

Note: Promax rotation was used in this EFA.

Table 3. Summary of intercorrelations, means, and standard deviations for IGPE, questionnaires used for IGPE validation, and predictor variables.

Measure	<i>N</i>	1	2	3	4	5	6	7	8
1. IGPE	604	1.00	0.38**	0.24**	0.23**	0.21**	0.62**	0.40**	0.43**
2. PGIS	597		1.00	0.53**	0.56**	0.31**	0.32**	0.20**	0.25**
3. LOT-R	597			1.00	0.55**	0.30**	0.17**	0.17**	0.23**
4. SLS	605				1.00	0.26**	0.22**	0.17**	0.20**
5. MC-SDS	589					1.00	0.15**	0.09**	0.12**
6. DOQ	341						1.00	0.35**	0.40**
7. Pos. emotions	605							1.00	0.83**
8. M. emotions	605								1.00
<i>M</i>		51.65	29.75	14.91	23.02	16.50	33.56	39.69	13.15
<i>SD</i>		23.88	8.20	4.96	7.04	5.78	6.61	7.11	3.00

Note: IGPE = Inventory of Growth after Positive Experiences; PGIS = Personal Growth Initiative Scale; LOT-R = Life Orientation Test – Revised; SLS = Satisfaction with Life Scale; MC-SDS = Marlowe-Crowne Social Desirability Scale; DOQ = Doors Opening Questionnaire; Pos. emotions = sum of all positive emotion items; M. emotions = sum of four emotions/states related to meaning (inspiration, elevation, awe, connection to something greater than the self).

\* $p < 0.05$ ; \*\* $p < 0.01$ .

### Regression and ANOVA

Once all these analyses of the IGPE were complete, I used IBM SPSS statistics software version 20 to test the remaining hypotheses:

- (1) To test whether inspiring events lead to more growth, I conducted a multiple regression predicting IGPE score based on participants' continuous ratings of different positive emotions.
- (2) To test whether meaningful events lead to more growth, I conducted a one-way ANOVA predicting IGPE score based on the PERMA category that best described each participant's positive event (Meaning events, Accomplishment events, Relationship events, etc.).
- (3) To test whether events that made people see new possibilities lead to more growth, I conducted a multiple regression predicting IGPE score based on DOQ score (and additional covariates).

## Results

### Positive events

Participants reported a diverse array of positive experiences, many of which served as catalysts for growth. The vast majority of participants' events concerned Accomplishments ( $n = 175$ ), Relationships ( $n = 166$ ), or Meaning ( $n = 165$ ). Participants categorized fewer events as hedonic Positive Emotion experiences ( $n = 56$ ) or Engagement experiences ( $n = 32$ ). Only 10 participants reported that their positive experiences could not be categorized with the PERMA framework. Table 4 shows representative events from each PERMA category. About half of these positive events (53.2%) happened within the last 5 years. A substantial portion of the sample (23.3%) reported an event that happened over 15 years ago.

### Growth after positive events

Participants saw beneficial changes in themselves after important positive events. A majority of participants (80.30%) reported at least a small amount of growth (an IGPE score of 28 or greater, within the possible range of 0–95). The typical participant experienced a moderate amount of change: the mean IGPE score of 51.65 ( $SE = 0.97$ ) falls slightly above the mathematical midpoint of 47.5 and is equivalent to endorsing *moderate amount of change* on most IGPE items. The distribution of IGPE scores had only slight negative skew ( $-0.16$ ,  $SE = 0.10$ ) suggesting that, in this sample, growth is not an unusual phenomenon restricted to a few individuals.

These findings support Hypothesis 1: people do in fact feel they have grown after positive events.

There are four distinct types of growth that people experience after positive events, according to factor analysis: (a) new meaning and purpose in life, (b) spiritual transformation, (c) increased self-esteem, and (d) more harmonious relationships (Table 2). These domains overlap conceptually with PTG, which also includes spiritual transformation and improved relationships. The meaning/purpose and self-esteem domains are slightly more specific to growth following positive events.

### Inspiration, meaning, and growth

#### Inspiration

Participants reported more growth if a positive experience had evoked feelings of awe, inspiration, elevation, and connection to something greater than the self (at the time it occurred). Representative inspiring events (as rated by participants) included the following:

- *Watching my son being born.*
- *When I graduated from a yearlong Christian discipleship program.*

Table 4. Examples of representative events for each PERMA category.

PERMA category	Examples
Positive Emotion (P)	I was invited by a close friend to attend the Academy Awards ceremony Losing my virginity <sup>a</sup> I ran away from a wretched boyfriend, rented a car, explored the other side of Florida, had a FANTASTIC TIME and went out with 3 men! <sup>a</sup>
Engagement (E)	I saw a beautiful, inspiring art/music display then all of the audience walked out of the park together and everyone seemed just as absorbed by the moment as I was Taking my first solo vacation and learning to surf Was extremely inspired/blown away by my 100th skydive
Relationships (R)	The first time I nursed my eldest daughter alone and she tickled and rubbed my side When I married my wife. It was honestly so amazing to have her forever Falling in love for the first time
Meaning (M)	The day I got saved/baptized Recruited and joined a non-profit providing hands-on outreach to ADD/LD community. I loved it. Waking from a dream in which a loved one who had died spoke to me of his peace and happiness and told me to move on with my life
Accomplishment (A)	Writing the final words of the first draft of my first, yet-to-be-sold novel The moment I crossed the finish line at a Half Ironman Race (70.3 miles) for the first time I accomplished my degree when I was more than 50 years old in a language which is my second language

Note: The participant and the author agreed on the PERMA category for each event unless otherwise noted.

<sup>a</sup>Author coded this event as *Other/Unable to Code*.

- *I made it to Everest Base Camp, intact and feeling good after months of training and wanting to go there for years.*
- *I helped a dear friend die well.*

I conducted a simultaneous multiple linear regression to predict IGPE scores using different positive emotional states participants experienced during their positive events. The GEL yields five continuous scores, reflecting the extent to which a participant had experienced five different types of positive states. These five types of states correspond to the five PERMA components: hedonic Positive Emotion (P), Engagement (E), Relationships (R), Meaning (M), and Accomplishment (A). (The meaning list was made up of inspiration and related states.)

Table 5. Prediction of growth using PERMA-related emotions and DOQ.

	<i>B</i>	SE	$\beta$
Constant	-31.01	12.12	
P emotions	-3.00**	1.73	-0.09
E emotions	-1.93	1.50	-0.07
R emotions	1.93	1.44	0.08
M emotions	3.89*	1.95	0.12
A emotions	1.12	1.22	0.04
DOQ score	1.59***	0.18	0.44

Note: This regression controlled for 13 other variables: PGIS score, LOT-R score, MC-SDS score, SLS score, event category (as coded by participant and as coded by author), time elapsed since the event, how surprising the event was, how impactful the event felt at the time it occurred, whether the participant had ever disclosed this event, age, race, and gender.

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

The regression used these five GEL scores to predict growth, controlling for age, gender, race/ethnicity, event characteristics (how long ago it happened, how impactful it has been in the long run, if it was ever disclosed), the event's PERMA category, Satisfaction with Life, Personal Growth Initiative, Optimism, Social Desirability, and DOQ score. The overall model was significant,  $F(19, 305) = 16.14$ ,  $p < 0.0001$ , and the Meaning/Inspiration emotions were the only ones to predict greater growth ( $\beta = 0.12$ ,  $p = 0.047$ ), as seen in Table 5. In contrast, the more hedonic positive emotions (e.g. *joyful*) actually predicted lower levels of growth ( $\beta = -0.09$ ,  $p = 0.01$ ). The remaining emotion groupings showed no statistically significant connection to growth.

### Meaning

Participants reported more growth when their positive experiences were mostly grounded in Meaning, rather than the other PERMA constructs. All participants had indicated which one of the five PERMA components best characterized their own events. In addition, a trained research assistant and I categorized each event using the PERMA framework (blind to the participants' own categorization). The research assistant and I achieved good interrater reliability ( $\kappa = 0.73$ ;  $p < 0.0001$ ). In contrast, I did not reliably categorize events the same way participants did ( $\kappa = 0.39$ ;  $p < 0.0001$ ). This is probably because my coding relied on brief, factual descriptions of events (e.g. *the birth of my first child*) while participants could draw on context and internal experiences. Because of these differences in perspective, I conducted two one-

Table 6. One-way ANOVA using participants' own coding of positive events (with the PERMA framework) to predict growth.

	<i>n</i>	<i>M</i>	SE	95% Confidence interval	
				Lower	Upper
Positive Emotion	56	41.71	3.28	35.15	48.28
Engagement	32	43.31	4.17	34.80	51.82
Relationships	166	51.51	1.84	47.88	55.15
Meaning	165	62.25	1.62	59.06	65.44
Accomplishment	175	46.51	1.74	43.07	49.96
Other	10	51.10	8.40	32.10	70.10

Note: *N* = 604.

Table 7. One-way ANOVA using author's coding of positive events (with the PERMA framework) to predict growth.

	<i>n</i>	<i>M</i>	SE	95% Confidence interval	
				Lower	Upper
Positive Emotion	20	42.95	5.83	30.74	55.16
Engagement	10	44.40	8.59	24.98	63.82
Relationships	283	53.57	1.36	50.90	56.24
Meaning	55	61.36	3.08	55.19	67.54
Accomplishment	154	46.37	1.85	42.70	50.03
Other	82	51.40	2.90	45.64	57.17

Note: *N* = 604.

way ANOVAs to predict growth based on (a) participants' categorization and (b) my coding.

As hypothesized, different PERMA event categories were associated with differing levels of growth,  $F(5, 598) = 11.82$ ,  $p < 0.0001$ . Meaning events were associated with the most growth: Tukey's multiple comparisons confirmed that Meaning events (as coded by the participant) predicted significantly more growth than events from all other PERMA categories at the  $p < 0.0001$  level, as seen in Table 6. When using my coding of events, PERMA event categories were again associated with differing levels of growth,  $F(5, 598) = 4.54$ ,  $p < 0.0001$ . Meaning events still predicted the most growth (as seen in Table 7), but only a subset of the Tukey's comparisons was significant: Meaning events predicted significantly more growth than Positive Emotion events or Accomplishment events, but the other mean difference confidence intervals included zero. The discrepancy between these two ANOVAs (using participants' coding vs. external coding) underscores the need to understand individuals' subjective experiences and to be cautious in imposing an objective framework.

Taken together, these findings on inspiration and meaning support Hypothesis 2 and Haidt's inspire and rewire theory: events that are inspiring and that connect people to something greater than the self are linked to the greatest growth.

### Engagement with new possibilities

When positive events helped participants see new possibilities in their lives, these participants experienced more growth. Higher DOQ scores predicted higher IGPE scores in a simultaneous regression controlling for age, gender, race, PERMA category, event characteristics (time elapsed since event, disclosure, how lasting the impact has been), Personal Growth Initiative, Optimism, Social Desirability, Life Satisfaction, and the positive emotions evoked by the event. The overall model explained significant variance in IGPE scores,  $F(19, 305) = 19.49$ ,  $R^2 = 0.49$ ,  $p < 0.0001$ . DOQ scores explained a unique 13.47% of this variance ( $\beta = 0.46$ ,  $p < 0.0001$ ), as seen in Table 5. As hypothesized, engagement with new possibilities can be a pathway to growth.

### Discussion

We know much about the growth that arises from our worst experiences and little about the growth that emerges from our best experiences. Positive events can, in fact, catalyze growth. Although hedonic happiness levels tend to return to baseline after positive events, important changes in eudaimonic well-being and in worldview may remain. Four domains of growth are particularly important after positive events: (a) new meaning and purpose in life; (b) higher self-esteem; (c) spiritual development; and (d) better relationships.

These overlap with the five domains of PTG: (a) appreciation of life; (b) sense of new possibilities; (c) personal strength; (d) spiritual change; and (e) closer relationships (Tedeschi & Calhoun, 1996). The strongest parallels are spiritual change and improved relationships, types of growth that emerge after both negative and positive events. Similar changes in self-concept can also emerge after negative and positive events: after trauma, people may find a greater sense of personal strength, and after good events, people may gain a more positive outlook on their own worth and their ability to achieve their goals. The other domains of growth are not necessarily parallel after bad and good events: the PTGI includes two more factors (representing appreciation of life and a sense of new possibilities), while the IGPE includes only one additional factor (representing newfound meaning/purpose).

Why the difference in the number and nature of factors? Methodological decisions play a role. This EFA was driven by the data and not by a priori decisions (i.e. I did not impose a five-factor structure). I began with a unique pool of items, derived from focus groups and from previous literature, and these items did not completely overlap with the PTGI items. This helps explain why the factor structures do not completely overlap, either. There could also be substantive reasons why the factor structures differ: perhaps positive events really do provide people with a clearer connection to something

greater than the self. This is a question for future research. In the meantime, we should take note of meaningful similarities in item content, even when factors differ: at the item level, we once again see similar themes in the types of growth that arise after negative and positive events. The IGPE's meaning/purpose factor includes items like 'I have a new purpose in life,' which is similar to the PTGI's new possibilities factor. Likewise, the IGPE's meaning/purpose factor includes items like 'I have different priorities,' which could be related to PTGI items about appreciating what really matters in life. On the whole, then, there is substantial overlap between the positive changes people report after the worst and best experiences of their lives.

People could experience valuable positive changes in outlook, self-concept, and spirituality without necessarily becoming any happier. The present findings about growth are compatible with past literature on hedonic adaptation (Brickman & Campbell, 1971). My aim is not to argue that positive experiences improve hedonic well-being, but rather to broaden our focus and explore how positive experiences impact eudaimonic well-being and worldview. This refocusing can reconcile the knowledge that we revert to happiness set points and the intuitive sense that the best moments in our lives must matter and leave a lasting mark on us. This mark need not have anything to do with mood or even with life satisfaction. People who experience PTG may be lastingly sadder, and still meaningfully benefit from their struggle with adversity. Likewise, after positive experiences people may not be lastingly happier, but still change for the better. Happiness is not enough: to find growth, we need to study meaningful events rather than merely happy ones, and we need to measure broad eudaimonic outcomes rather than narrow hedonic ones.

Some positive experiences are more likely to lead to (self-perceived) growth than others. First, events that evoke stronger positive emotions are more closely linked to growth. This is consistent with Fredrickson's (2004) broaden-and-build theory: positive events can provide opportunities to expand one's thought-action repertoire, and this expansion can be perceived as growth. Indeed, participants who reported that a positive experience opened their eyes to new opportunities, goals, roles, and values also felt they had grown more. Seeing new doors open may be critical for growth. Walking through these doors (i.e. making objective behavioral changes) may also be vital. The measures used in this study only tapped into cognitive/attentional shifts and not behavioral changes, however, so this is a question for further research.

Not all positive emotions have the same relationship with growth. Inspiration, awe, and elevation are especially important positive emotions for growth: the more a person experiences these during an important event, the more growth they see in themselves. This finding supports Haidt's (2003) inspire and rewire hypothesis: inspiration impacts an individual's self-concept, values,

and approach to relationships. In contrast, more hedonic positive emotion (e.g. feeling joyful and content) predicts *less* growth. If this surprising and counterintuitive finding is replicated in other samples, it could mean that some positive emotions actually discourage reflection and cognitive processing whereas other positive emotions encourage these processes (which probably facilitate growth). This much is clear: all positive emotions do not function in the same way, and it is crucial to specify which emotions matter for certain outcomes, and why.

Inspiration is related to meaning, a sense of connection to something greater than the self. Meaning, like inspiration, is closely tied to growth: meaningful experiences are associated with more growth than experiences of accomplishment, engagement, relationship, and hedonic positive emotion. This is consistent with previous research showing that discovering meaning (rather than just searching for it) is tied to higher well-being (Steger et al., 2006, 2008). Importantly, a wide range of events can connect people to something greater than the self. Meaningfulness depends more on how an individual construes an event, and less on objective features of the event: for instance, I could not accurately code for meaningfulness based on factual descriptions of events, and needed to rely on participants' own ratings of meaningfulness. People transcend the self and connect to something greater in different ways, probably because they have different goals and values. This underscores the importance of analyzing positive events in fine grain, accounting for variation in individuals' experiences, and not just studying stereotypical positive events (like winning the lottery). We need to understand why a particular event felt positive for a particular person to predict and understand growth. Seligman's (2011) PERMA framework is useful for doing this, as it describes five different qualities that could make an event feel positive: hedonic Positive Emotion, Engagement, Relationship, Meaning, and Accomplishment.

Our best moments can inspire us, connect us to something greater than ourselves, and open our eyes to new possibilities, ultimately giving rise to growth. This growth is an important phenomenon and it needs a name. Given what we know about the phenomenon so far, post-ecstatic growth (PEG) is a useful provisional term for two reasons. First, *ecstasy* means 'a state of overwhelming emotion,' (Merriam-Webster.com, 2012), and growth is more likely when a positive event evokes powerful emotions like inspiration and elevation. Second, ecstasy suggests a state of being outside the normal self (from Greek *ex* – out and *stasis* – stand), and growth tends to arise from events that make us feel connected to something bigger than ourselves. Although the connotations of ecstasy link it to pleasure and to spiritual experience, neither of these is necessary for growth; I provisionally use PEG as a general term covering positive changes that result from a diverse range of positive experiences. As we learn more about the

nature of this phenomenon, a more apt term may emerge.

Limitations of this study constrain the conclusions we can draw. First, this study is based only on cross-sectional, retrospective self-reports. This is a beginning, but longitudinal work is needed to confirm the relationships found here and to establish directionality and causality. Second, two of the instruments used here (the DOQ and the IGPE) need further validation, although preliminary evidence for validity is promising. Further validation efforts should check the correlation between the IGPE and other relevant measures like Ryff's (1989) Psychological Well-Being Scales, and also corroborate people's reports of growth by measuring behavioral changes and checking whether a participant's loved ones agree that he/she has grown. The GEL should also be refined for further use: although there is a face-valid connection between the five emotion groupings and their corresponding PERMA components, these groupings should be explored and revised using factor analysis to better understand specific emotions and growth.

Future research about positive events and growth should address a crucial question: To what extent are people's positive events completely positive? Are many of our highest moments actually a complex mixture of positive emotion and meaning on one hand and strain and anxiety on the other? Commonly cited positive experiences like marriage, childbirth, and professional accomplishments probably involve hard work, pain, and uncertainty. People are certainly capable of experiencing mixed emotions in complex situations (Larsen, McGraw, & Cacioppo, 2001), and meaningful events can evoke both happiness and sadness (Ersner-Hershfield, Mikels, Sullivan, & Carstensen, 2008), a combination known as poignancy (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000). Important personal events are also linked to greater *integrative complexity*, the differentiation and integration of multiple perspectives or evaluations of a stimulus (Suedfeld & Bluck, 1993). People's highest and lowest moments in life, then, may overlap. Challenge might be important for growth: events that mix positive and negative emotions could create growth by fostering mastery. There may even be an optimal ratio (of positive to negative emotions) for growth, just as there is 2.9:1 ratio that acts as a threshold between flourishing and languishing (Fredrickson & Losada, 2005). Alternatively, the sequencing of positive and negative experiences may drive growth: positive events might impact us the most when they follow adversity. It may be this stark contrast of life's darkest and brightest times that moves us, as a psychological *chiaroscuro* that shifts perspective and inspires change.

These findings open the door for revising our theories of growth. By understanding the benefits that come from both positive and negative experiences, we might create a unified theory of growth after major life events. Current theories of growth can be categorized as developmental theories that emphasize successful passage

through graded normative transitions (Erikson, 1963) or *catastrophe models* that emphasize the transformative power of trauma (Wethington, 2003). Many growth experiences cannot be easily placed into such a framework: for example, a sudden spiritual epiphany is neither a normative developmental event nor a catastrophe.

We need a more comprehensive framework for growth experiences, and we might borrow a metaphor from evolutionary theory to help us conceptualize growth processes. There are two main models of the evolution of species: the *gradualist model (evolution by creeps)* posits that species evolve in a smooth incremental process, while the *punctuated equilibrium model (evolution by jerks)* contends that periods of rapid change interrupt an otherwise uneventful stasis (Eldredge & Gould, 1972). Similarly, the psychological evolution of an individual probably progresses by creeps (incrementally) or by jerks (suddenly) at different points. Sudden change can be sparked not only by catastrophes but also by positive events.

In a punctuated equilibrium model of growth, major positive and negative events cause a similar process to unfold. First, the major event evokes feelings of terror (if the event is traumatic) or awe (if the event is inspiring). Terror and awe are two sides of the same conceptual coin: both of these emotions occur when people feel small and humbled by a huge event that forces accommodation. These major events challenge people's beliefs and inspire reflection (Janoff-Bulman, 2006; Lindstrom, Cann, Calhoun, & Tedeschi, 2011). As people cognitively accommodate to major events, they can explore new possibilities and ask questions like 'What do I want now?' and 'Who will I become now?' By seeing and moving toward new goals and roles, people change their identities, relationships, spirituality, outlook, and priorities. This is the growth we see in ourselves after the highest and lowest moments of our lives.

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