Can tragedy make people better? An exploration into whether posttraumatic growth from Nadir experiences and Peak experience related growth are important for Self-Actualization

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Can tragedy make people better? An exploration into whether posttraumatic growth from Nadir experiences and Peak experience related growth are important for Self-Actualization

ABSTRACT

This study aimed to investigate a novel idea that positive growth from both peak and nadir experiences are essential in Self-actualization and are all interrelated; in that Self-actualization can aid in posttraumatic growth and peak experience related growth.

Using a correlational survey design, the present study investigated the proposed relationship between these constructs. A total of N=240 participants were completed a questionnaire that was available online and in printed version.

A new scale to measure positive growth from peak experiences (PERGS) was tested and found to be a reliable and valid way to measure this phenomenon.

A Multiple Regression Analysis was used to investigate the effects of the variables Peak Experience Related Growth and Posttraumatic Growth; which were found to have unique predictive factors in relation to Self-actualization.

Self-actualizers were found to report more peak and nadir experiences and were better able to benefit positively from them.

Peak experience related growth and Posttraumatic growth can all be used in the prediction of Self-actualization. Recommendations for further study are made in terms of further testing of the PERGS. Other factors that play a role in these variables were social support and personality; further studies can look into the effects of these.

KEY WORDS: POSTTRAUMATIC GROWTH, PEAK EXPERIENCES, NADIR EXPERIENCES, SELF-ACTUALIZATION, TRAUMA
Introduction
Traumatic experiences can hold positive transformative power, for example, the best and most handed down stories are those that reflect life-changing responses, these themes of growth have inspiring qualities.

The focal pieces of research that influenced this study are by Abraham Maslow, best known for his theory of hierarchy of needs, Self-actualization and Peak experiences (1943, 1962); Frederick Thorne’s research into Nadir experiences (1963) and Richard Tedeschi & Lawrence Calhoun’s (1996) research into posttraumatic growth (PTG).

Peak Experience and Peak Experience-Related Growth (PERG)
Maslow (1962) defines peak experiences as intensely meaningful and highly significant moments in people’s lives, accompanied by feelings of pure joy, elation, fulfilment and wonder. They usually come on suddenly and by its very nature, can be brought on by any event, experience or moments; these triggers include nature, quiet reflection, music and art, drugs and prayer (Keutzer, 1978).

The effects of peak experiences can be short or long-lasting (Ebersole, 1970) however, although they tend to be positive, some peak experiences can have no after-effects (Maslow, 1968). The after-effects, operationally defined as Peak Experience-Related Growth (PERG), include (1) a change in the individual’s views on the world and life, (2) positive change of an individual’s view on themselves (improved self-esteem, more confidence and more self-respect). (3) The individual has a better view of and relationship with others (become more considerate, have a greater desire to reach out and feel closer to others) and (4) the individual can become more spontaneous, creative, expressive and idiosyncratic. Peak experience-related growth can be any, some or all of these after-effects can be experienced, along with other personal after-effects, due to peak experiences being a personal and subjective phenomenon (Maslow, 1962).

Another PERG is the gaining of Being Values (B-values), which allows one to see the world in its entirety (Maslow, 1968); these are, wholeness (unity, integrity, interconnectedness, etc.), perfection (seeing that everything is in its right place), completion (nothing missing or lacking), justice, aliveness, richness (nothing is unimportant), simplicity, beauty, goodness, uniqueness, effortlessness, playfulness, truth (honesty, reality) and self-sufficiency (not-requiring-anything-other-than-itself-in-order-to-be-itself). These are not mutually exclusive and overlay or fuse with each other, as they are facets, rather than parts of Being. However, there has been little research into B-values due to their transcendent and mystical nature (Maslow, 1970).

Research on peak experiences has well documented the taxonomy (Thorne, 1963), causes of (Whittaker, reported in Arkoff, 1975) and the relationship between peak experiences and psychological wellbeing (Margoeshes & Litt, 1966). However, interest in peak experiences have waned and there is a paucity of recent research;
of which the most notable examples tend to have qualitative methodology, such as Clarke-Steffen, (1998), Olsen et al., (1998) and Polyson (1985).

From the N=78 participants in Ebersole’s (1972) study, 83 Peak experiences were reported, of which 45% resulted in PERG (82% of participants reported a Peak experience); there were no reports on the increase in idiosyncrasy (4, see above) and the most reported growth was that of a change of view of self (2) (35%). A change of view of others (3) (34%) and on the outlook on life (1) (23%) was also reported.

**Nadir Experiences and Posttraumatic Growth (PTG)**

Nadir experiences are intensely meaningful, highly significant and unforgettable, in that they are the worst moment of one’s life (Thorne, 1963) and accompanied by feelings of agony, pain, trauma, sorrow, distress, embarrassment and regret. Crises and trauma are essentially nadir experience and for the purpose of this study, will be operationalized as such (Caplan, 1964).

Nadir experiences have three possible outcomes: survival (merely surviving but unable to resume their previous level of functioning), recovery (return to previous level of functioning) or thriving, moving beyond the original level of functioning and flourishing and experience growth (O'Leary & Ickovics, 1995).

Tedeschi & Calhoun (1996) state that there are three possible outcomes of thriving (Posttraumatic Growth), which are perceived positive changes in the self, as persons coping with nadir experiences often conclude that they are stronger for it (Affleck et al., 1985; Andreasen & Norris, 1972; Collins et al., 1990; Joseph et al., 1993; Thomas et al., 1991). Another is a changed sense of relationship with others, because people need to become more self-disclosing and need social support (Tedeschi & Calhoun, 1996), this is supported by other research (Affleck et al. 1985; Burt & Katz, 1987; Dakof & Taylor, 1990; Collins et al., 1990; Malinak et al., 1979; Verinen & Kilpatrick, 1983). A changed philosophy of life can also be experienced by people, as tragedy can alter beliefs positively (Janoff-Bulman, 1992; Taylor & Brown, 1988).

Previous research has shown that PTG can be experienced in many forms of nadir experience; such as in bereavement (Collins et al., 1990; Kessler, 1987), severe illnesses (Jaarsma et al., 2006), rape/sexual abuse (Burtz & Katz, 1987; McMillen et al., 1995), war and combat (Scannell-Desch, 1996) and natural and man-made disasters and terrorism (Joseph et al., 1993; Kahana, 1992; Riolli, Savciki & Cepani, 2002; Schexnaildre, 2007; Val & Linley, 2006). Calhoun & Tedeschi (1999) found that 40-70% of people who experience a (non-specified) traumatic event later reported some form of benefit from it; while Affleck et al. (1985) found that 60% of mothers (whose newborns were treated for severe perinatal medical problems) reported some posttraumatic growth.

Tedeschi & Calhoun's (1996) Posttraumatic Growth Inventory (PTGI) is a 21-item scale that measures positive growth resulting from Nadir experiences; it includes factors of (1) New possibilities, (2) relating to others, (3) personal strength, (4) spiritual change and (5) appreciation of life. These were selected through a principal component analysis, the five factors accounted for 60% of the variance. Participants
indicate the degree to which they experienced each outcome along a five-point Likert-type scale (0=”I did not experience this change”, 4=”I experienced this change to an extreme degree”). Each item referred to growth that pertained to participant’s nadir experience.

The PTGI has good internal consistency (α = .90), acceptable test-retest reliability (r=.71) and the responses generally unrelated to the motive to appear socially desirable. (Park et al., 1996; Tedeschi & Calhoun, 1996; Tedeschi et al., 1998). Interestingly, females reported more PTG (M=75.18, SD=21.24) than males (M=67.77, SD=22.07) [t(1,590) = 3.94, p<.001].

**Self-actualization**

Maslow preferred to study healthy people and from this, the theory of Self-Actualization (1954) came to fruition (talk about how this study looked into people who reported no trauma). He believed that humans have a natural drive to healthiness and full realization; once basic (biological and psychological) needs are met, it brings about a desire for higher levels of realization. In essence, humans have an innate drive to become the best possible version of themselves they can be and this is driven by and achieved through Self-Actualization (SA). Therefore, SA is both a process and a result. Maslow’s theory (1954) is similar to that of Goldstein’s (1940) and Roger’s concept of self-realization (1961), but is radically more developed and researched.

A person who has achieved SA is believed to have a full realisation of their own potential and what is important to them and share common characteristics (Maslow, 1954). They are, as follows; (1) they are realistic; they have a more efficient perception of reality and are comfortable with it; they are logical and efficient. (2) SA are accepting of themselves, others and the natural world. SA are (3) spontaneous in their life and unhindered by conventions and rules; their ethics autonomous, see themselves as individuals and motivated to continually grow. They are (4) problem centred, serene, devoted to duty and have a lack of worry; they focus on problems outside themselves. (5) SA are self-starters and take full responsibility for themselves and their behaviour, they are alone but not lonely (appreciation for solitude and privacy) and retain dignity amidst misfortune (Detachment). (6) SA rely on their inner-self for satisfaction (Autonomous) and (7) have a continuous appreciation for people and nature, live life in the fullest and are transcending and spiritual. Self-actualizers (8) tend to have deep interpersonal relationships with others and have (9) deep feelings of empathy, sympathy and compassion for human beings.

Shostrom’s (1963) Personal Orientation Inventory (POI) was the most-used clinical diagnostic instrument of Self-actualization, which is only available for usage by practicing clinicians.

However, Jones & Crandall (1986) created the Self-Actualization Index (SAI), as they argue, that existing scales had issues in relation to inadequate validation and their length precludes their usefulness in many research context; such as the Northridge Developmental Scale (NRDS) (Gowan, 1974), the Jones (1973) Self-Actualization Scale (JSAS), the Tennessee Self-Concept Scale (TSCS) (Fitts, 1971) and the Personal Orientation Dimensions (POD) (Shostrom, 1975).
development of the SAI was based primarily from modified items from the POI and had a significant correlation with it \((r = .67, p \leq .001)\). Test-retest reliability was acceptable at \(r = .69(p \leq .001)\).

The mean score was found to be 45.60 \((SD=5.57; N=332)\). Possible sex differences were explored and, male mean scores were 45.02 \((SD=4.95)\) and female 46.07 \((SD=4.79)\). There was no association between gender and Self-actualization \([t (338) = 1.93, p \leq .55]\).

**Proposed Relationship between the variables discussed ut supra**

Maslow’s (1968) study into SA had a few methodological issues, in that he only investigated the common characteristics between people he considered self-actualized (such as Albert Einstein). Life stories were not investigated, therefore, ignoring any tragedies in their lives that could have shaped their personality; Einstein had several personal tragedies in his life (Noreatoma, 2007), which may have had an effect on his attainment of Self-actualization. Had he done this, it may be that he would have proposed that Nadir experiences and PTG is an important aspect of Self-actualization.

Although Maslow (1972) originally proposed that having a peak experience is a prerequisite of Self-actualization, he later found that not all Self-actualized individuals have experienced peak moments and not all Peakers (individuals who have had peak experiences) are self-actualized. This led him to postulate that we are all capable of Peak experiences and those who are self-actualised, mature, healthy and self-fulfilled more likely to achieve such an experience.

One of the earliest studies that looked at the relationship between peak experience and psychological wellbeing was by Margoshes & Litt (1966); who asked normal and ‘psychotic’ individuals to list the life experiences they remembered ‘most vividly’, which were coded as peak or nadir experience. ‘Normals’ reported more peaks and significantly fewer nadirs than did ‘psychotics’. They argued that peak experience is an aspect of psychological health and possibly self-actualization. However, possible PTG from Nadir experiences were not taken into account or investigated.

McCain & Andrews (1969) found that Peakers (were more intelligent, imaginative, experimenting and other characteristics that could be ascribed to self-actualizers. They concluded that peakers were more self-actualizing than nonpeakers. This would suggest that there is a relationship between PERG and Self-actualization.

Along with the methodological issue of measuring Self-actualization through personality scales, this study did not take into account PTG. Mathes (1982) found that Self-actualizers were more likely to report peak experiences than less self-actualizers and that peak experiences can have a positive effect, which was consistent with Maslow’s theories (1968); further evidence for the proposed relationship between PERG and Self-actualization. In his study into Peak experience and SA, females reported more peak \((M=52.10, SD=10.96)\) than males \((M=50.15, SD=11.10)\). Scores on the peak scale correlated significantly with the number of peaks reported, Males \((r=.24, p<.05)\) and females \((r=.24, p<.05)\).
Most of the data on peak experiences suggests that there is a positive relationship between peak experiences and psychological wellbeing and that peak experiences are associated with Self-actualization (Mathes, 1982). However, as with posttraumatic growth, several studies have found that in some cases, peak experiences may have no lasting effect (Ebesole, 1970, 1972; Ravizza, 1977). The literature would suggest that there is a relationship between peak experience and peak experience related growth and self-actualization, which has not been explored. In 1970, Ebersole researched the effects of Nadir experiences as he felt that the beneficial effects of nadir experiences was largely neglected in experimental studies of positive growth. Thirty-six participants were asked to describe a peak and a nadir moment from their lives and whether these moments had 'lasting after effects'. Using two raters (with 69% agreement level), it was found that 36-44% of participants described positive after-effects of nadir moments and 39% reported that the after-effects of nadir were more potent than peak. It can be argued that the exact percentage of participants reporting positive after-effects from nadir moments is not the crucial factor; it is that some people did report it, therefore supporting Maslow’s belief that suffering can be beneficial.

Nadir experiences can affect a person negatively for their entire lives, never recovering from it, however; struggle, pain and suffering are sometimes necessary for growth (Maslow, 1962) and there is a vast amount of evidence of this occurring discussed earlier. The characteristics of a self-actualized person can be argued as resulting from posttraumatic growth and a reflection of PERG. For example, positive change in the self (Tedeschi & Calhoun, 1996) can result in characteristics 2 to 6 (see above); characteristics 7, 8 and 9 can be attributed to better relationships with others and a change in philosophy of life can result in characteristics 1 and 7. Morrill et al. (2008) found that experiences of PTG had a positive effect on quality of life. Arguably, as Self-actualization is an innate drive, better quality of life may improve one’s chances to be self-actualized.

Woodward & Joseph’s (2003) qualitative study found several themes of posttraumatic growth by interviewing people who have had nadir experiences and these themes were similar to the posttraumatic growth described and measured by Tedeschi & Calhoun (1996) PTGI and study; e.g. changes in self-perception, gaining new perspectives on life. The themes identified also correspond with characteristics of PERG and Self-actualization. Self-actualizing people may be better able to cope with nadir experiences and may have an effect on the posttraumatic growth they experience and likewise, they may benefit more from peak experiences.

In summary, the literature would suggest that there is a relationship between peak experience and PERG, nadir experience and PTG and Self-actualization, which has not been investigated altogether. This current study proposed and tested two hypotheses to this effect.

**Hypotheses**

H1 There will be a significant positive correlation between Peak experience-related growth and Self-actualization.
H2 There will be a significant positive correlation posttraumatic growth and Self-actualization.

H3 Self-Actualization will be able to be regression modelled from other variables measured (PERG, PTG).

H4 Self-actualizers will be more likely to have peak and nadir experiences.

H5 Self-actualizers will be more likely to experience growth from both peak and nadir experiences.
Method

Pilot Study
To counteract statistical analysis issues, a pilot study was completed early on. Its main findings was that of a revision of the peak scale (derived from the Hierarchical Multiple Regression Analysis that was performed). Specified findings of the Pilot Study can be found in Appendix-3.0.

Design
This correlational study used both a paper-based and internet version self-report questionnaire to collect data (the same questionnaire in two different platforms). Self-report questionnaires allowed for several scales to be used and relationships between variables to be investigated, the paper-based questionnaire allowed greater access to potential participants (who may not have access to the internet) and the internet version also enhanced access to potential participants and allowed for quicker distribution and collection of data.

While self-report questionnaires can be open to response bias from participants, it was hoped that the use of the internet would avoid this, negating possible observer effects. Participants who filled in the paper version were guaranteed complete anonymity (unique identifying codes were left unread until all data had been collected), which was hoped to also negate possible observer effects. Personal growth from nadir experiences was viewed as originating from within the person, rather than the nadir experience (as recommended by Woodward & Joseph, 2003).

Materials
100 printed version of the questionnaire and a free trial to the survey website Obsurvey was used to host the questionnaire online (see Appendix-4.0). The website allowed for downloading of responses in numerical format (spreadsheet software), which was easily copied to SPSS.

Participants
A total of $N = 240$ participants were recruited using opportunistic sampling and snowball sampling via Twitter and Facebook. Social circles were utilised (including the University grounds and colleagues from Bradford Royal Infirmary and North Manchester General Hospital Park House). Therefore, participants included undergraduate students, medical and clinical professionals and other unspecified participants. This differed from the studies mentioned previously (a homogenous sample presents issues in generalising findings) (Ebersole, 1970, 1972; Jones & Crandall, 1986; Maslow, 1943; 1962; Mathes, 1982; Shostrom, 1975; Tedeschi & Calhoun, 1996).

Measures
Several scales were used to assess participants in each of the areas the study investigated. Participants were asked to provide their age and gender and a Unique Identifying Code.
The Peak Experience section provided a definition of Peak experience and asked participants to indicate the degree to which they believe they have had a peak experience on a ten-point scale from “Not at all” to “Definitely”. Participants were also asked to report how many peak experiences they believe they have had and to indicate how much time has passed since their most memorable peak experience. The Nadir experience section was a carbon copy this section but the definition and questions were changed to Nadir experiences.

The eight-item Peak Experience Related Growth Scale (PERGS) was created for the purposes of this study to assess participant’s PERG; it was based on the four possible positive outcomes of peak experiences Maslow (1962) described and the scoring system from PTGI was adapted into this scale. Participants indicated the degree to which they experienced each outcome along a five-point Likert-type scale (0=“I did not experience this change”, 4=“I experienced this change to an extreme degree”) and whether this change was permanent (Yes/No response). High scores on this scale indicate high levels of PERG.

The current study, in line with Tedeschi & Calhoun (1996) and Jones & Crandall (1986) employed a Principal Component Analysis (PCA) to assess its factorial structure. Although a pilot study was undertaken, test-retest reliability could not be carried out. PCA differs from factor analysis in that it is a psychometrically sound procedure; it is less complex than a factor analysis (Field, 2009) but still generates solution that differs little from those derived from other factor analytical technique (Guadagnoli & Velicer, 1988).

The Nadir experience section included the Posttraumatic Growth Inventory (PTGI) by Tedeschi & Calhoun (1996), which was discussed earlier. High scores on this scale indicate high levels of PTG.

The Peak and Nadir experience interplay were required to be answered by participants who felt they have had both a peak and nadir experience. It asked them to indicate the degree on a four-point scale from “Disagree” to “Agree” to which they believe “Having a peak experience affected how I dealt with nadir experiences” and vice-versa and if it affected them positively.

Jones & Crandall’s (1986) Self-Actualization Index (SAI) was used to measure Self-actualization. Participants indicated the degree to which they agreed with the fifteen statements (1=”Disagree, 4= “Agree”). Reversed-score items, according to authors’ instructions are: 2, 5, 6, 8, 9, 11, 13, 14.

Discrimination between Self-actualizers and non-Self-actualizers were achieved by asking eight Ph.D. clinical and counselling psychologists to nominate individuals in the sample size they believed to be high and low in Self-actualization. The mean for self-actualizers was 51.20 ($SD = 4.34$) (considerably higher than the mean for all participants) and 44.00 ($SD = 4.89$) for non-self-actualizers (not significantly lower than the mean for all participants). The difference between Self-actualizers and non-Self-actualizers was highly significant \(t(17) = 4.74, p<.001\).
Procedure
All of the paper-version of the questionnaire was handed out to prospective participants, of which 89 was returned.

The online version was constructed and the link was posted on Social Networking Sites (Twitter and Facebook). Due to time constraints, the link was made unavailable after three weeks, at which point over 250 participants had filled in the study; however, some participants did not complete the questionnaire and were removed, a total of 151 participants completely filled in the questionnaire online.

Ethical Considerations
Ethical approval from MMU, in accordance with BPS ethical guidelines was sought (Appendix1.0) before any research was undertaken.

Ethical considerations as per BPS (2009) is surmised as such; ‘vulnerable’ participants could not have completed the questionnaire (although due to the complete anonymity of the internet this cannot be truly assumed, but the fact that they are able to use a computer was assumed to mean they could not be classed as vulnerable), therefore informed consent was always taken.

Participants were required to provide a Unique Identifying Code should they wish to request their results or withdraw from the study at a later date.

The study did not require deception of participants (nor invasiveness, coercion or other risks to participants), however, to help avoid demand characteristics, the questionnaire did not specify the hypotheses tested.

No identifiable-data was stored so the Data Protection Act will not be breached. It is possible that psychological harm and distress can be brought on by this study and combating measures were in place, in that participants could contact the researcher who had a list of relevant services that could offer professional support (Appendix1.0)
Results
Data from both paper and online version of the questionnaire was entered into SPSS version 19.0 for analysis. The relevant items were reversed scored (see method). The age range of participants was from 18 to 57 ($M=25.49$, $SD=7.11$); 54.2% of participants were female ($N=130$) and 45.8% male ($N= 110$). Table 1 shows the mean and standard deviation for all the variables and scales ($N= 240$).

Reliability Analysis

Table 1

<p>| Summary Statistics for all variables and scales |</p>
<table>
<thead>
<tr>
<th>Scales and Variables</th>
<th>α</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
</table>

| Peak Experience     | PERGS | .76*** | 24.83 | 7.2  |
|----------------------|-------|--------|-------|

<table>
<thead>
<tr>
<th>Peak Experience</th>
<th>Nadir Experience</th>
<th>-</th>
<th>87.37</th>
<th>25.19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount of Nadir</td>
<td>-</td>
<td>-</td>
<td>1.95</td>
<td>.82</td>
</tr>
<tr>
<td>Time since most memorable Nadir</td>
<td>-</td>
<td>3.81</td>
<td>1.61</td>
<td></td>
</tr>
<tr>
<td>PTGI</td>
<td>.93***</td>
<td>39.75</td>
<td>18.51</td>
<td></td>
</tr>
</tbody>
</table>

| Peak and Nadir Interplay | Peak and Nadir Interplay | .75*** | 9.45  | 3.86  |
|---------------------------|--------------------------|--------|-------|

| Self-actualization       | SAI                       | .72*** | 41.93 | 6.81  |
|--------------------------|---------------------------|--------|-------|

¹ PERGS – Peak Experience Related Growth Scale. PTGI - Posttraumatic Growth Inventory. SAI - Self-Actualization Index.

² Note: F test with true value = 0.7, *p <.05. **p <.01. ***p <.001.

Reliability analysis was carried out on each scale to check internal consistency, which were all found to have a Cronbach’s alpha coefficient value over .7 (see Table 1), which is the recommended and acceptable level of internal reliability (Nunally, 1978). The F test values for all scales were significant at the p <.001 level, thus indicating high reliability for all scales.

Table 2

<table>
<thead>
<tr>
<th>Pearson Correlation Matrix between all variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PERGS</td>
</tr>
<tr>
<td>2. Nadir Experience</td>
</tr>
<tr>
<td>3. Amount of Nadir</td>
</tr>
<tr>
<td>4. Time since most memorable Nadir</td>
</tr>
<tr>
<td>5. PTGI</td>
</tr>
<tr>
<td>6. SAI</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (1-tailed).

*. Correlation is significant at the 0.05 level (1-tailed).
Relationship between Self-actualization and all other variables (H1 and H2)
As expected, due to their nature, some variables showed no significant correlation (e.g. Amount of Nadir and SAI).

Correlations, shown in Table 2, are described in line with hypothesis 1 and 2. Both PERGS \((r=.29, p=.001)\) and PTGI \((r=.29, p<.001)\) correlated positively and significantly with SAI, indicating some relationship between Self-actualization and peak-experience-related growth and posttraumatic growth; an increase in participants experienced growth (from both peak and nadir) was reflected by an increase in their Self-actualization was.

Interestingly, PERGS correlated positively and significantly with PTGI \((r=.42, p<.001)\).

Multiple Regression Analysis (H3)
All predictor variables correlated (Table 2); therefore, none of the variables were excluded from the regressions. A Multiple Regression Analysis (MRA) was carried out to investigate the ability of PERGS and PTGI to uniquely predict SAI scores (H3). Using good theoretical knowledge of the research area and the findings from Pilot Study 2 (Appendix-3.0), a MRA analysis was concluded to be the best method of analysis.

Table 3 provides a summary of this regression model. Interestingly, no outliers were found (above 3 SD).

| Table 3 |
| Summary of Multiple Regression Analysis for Variables Predicting Self-Actualization (N = 240) |

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>31.15</td>
<td>1.52</td>
<td>22.41</td>
<td>p&lt;.001</td>
<td></td>
</tr>
<tr>
<td>PERGS</td>
<td>.20</td>
<td>.06</td>
<td>.21</td>
<td>3.09</td>
<td>.002</td>
</tr>
<tr>
<td>PTGI</td>
<td>.07</td>
<td>.03</td>
<td>.20</td>
<td>1.95</td>
<td>.003</td>
</tr>
</tbody>
</table>

\[ R^2 = 0.12 \]

\[ F \text{ for change in } R^2 = 15.81 \]

Above, Table 3 shows the multiple regression model for the prediction of Self-Actualization; with PERGS and SAI accounting for 34% of the variance in criterion variable SAI, \( R^2 = .118, F=2, 237, p<.001 \). PERGS and PTGI were both significant predictors of SAI \((p<.01)\) Scatterplots for each predictor’s correlation with SAI can be seen in Appendix-5.0
Peak Experience

Table 4 shows the correlation between descriptive variables.

The average score for Peak experience was $M=80.62$ ($SD=25.74$) (Table 1) and on average, participants reported having 2.04 Peak experiences. 42.1% of participants reported that they ‘Definitely’ had a Peak experience; while only 10.8% scored 40 or less. Only two participants reported not having a Peak experience. (Note, to get the accurate mean, output for Peak Experience mean was multiplied by ten, as scoring was: a score of 50 was formatted as 5).

Peak experience correlated with Amount of Peak ($r=.482$, $p<.001$) (Table 4). The majority of participants reported between 2-5 Peak experiences (55.4%) and only 2.5% reported no peak experience ($N=6$). Little gender effects were observed between Males ($M=82.55$, $SD=23.44$; $N=110$) and females ($M=79.54$, $SD=24.49$, $N=130$).

Peak Experience Related Growth Scale (PERGS)

PERGS was found to have internal consistency (see above). Average score was $M=24.83$ ($SD=7.02$). It was intended that a score of ≥21 signified high Peak-experience-related growth of which 77.9% of participants achieved. Little gender differences were found between Males ($M=25.52$, $SD=6.65$) and Females ($M=11.16$, $SD=4.80$). Appendix-5.5.

Amount of Peak was not expected to show a significant correlation with any of the variables due to its descriptive nature. All other variables showed a positive significant correlation with each other, indicating some relationship between them and is a testament that the scale is measuring one factor. Each main sub factor also showed a positive significant correlation with its permanence question.

Worthwhile was reported by 45.4% of participants, Confidence 48%, Closer 41% and Idiosyncrasy 33.7% of participants. 46.3% of participants reported that the changes they experienced was permanent.

Principle Component Analysis (PCA) of PERGS

Table 5 below displays the Pearson Correlation Matrix between all variables in PERGS, which was required for the PCA.
## Table 5
Pearson Correlation Matrix between all variables

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Peak experience</td>
<td>-</td>
<td>.48**</td>
<td>.08</td>
<td>.36**</td>
<td>.22**</td>
<td>.36**</td>
<td>.30**</td>
<td>.37**</td>
<td>.23**</td>
<td>.25**</td>
<td>.25**</td>
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<tr>
<td>2. Amount Peak</td>
<td>-</td>
<td>.02</td>
<td>.19**</td>
<td>.18**</td>
<td>.22**</td>
<td>.31**</td>
<td>.27**</td>
<td>.23**</td>
<td>.94</td>
<td>.14*</td>
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</tr>
<tr>
<td>3. Peak Time</td>
<td>-</td>
<td>.27**</td>
<td>.02</td>
<td>.22**</td>
<td>.08</td>
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<td>4. Worthwhile</td>
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<td>.71**</td>
<td>.93**</td>
<td>.54**</td>
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<td>.51**</td>
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<td>5. Permanent</td>
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<td>.62**</td>
<td>.26**</td>
<td>.42**</td>
<td>.21**</td>
<td>.39**</td>
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<tr>
<td>6. Confidence</td>
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<td>.36**</td>
<td>.60**</td>
<td>.35**</td>
<td>.49**</td>
<td>.31**</td>
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<tr>
<td>7. Permanent</td>
<td>-</td>
<td>.32**</td>
<td>.49**</td>
<td>.20**</td>
<td>.39**</td>
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<td>.</td>
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<tr>
<td>8. Closer</td>
<td>-</td>
<td>.41**</td>
<td>.52**</td>
<td>.24**</td>
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<tr>
<td>9. Permanent</td>
<td>-</td>
<td>.13*</td>
<td>.44**</td>
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<td>10. Idiosyncrasy</td>
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<tr>
<td>11. Permanent</td>
<td>-</td>
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<td>.</td>
<td>.</td>
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</tbody>
</table>

**. Correlation is significant at the 0.01 level (1-tailed).
*. Correlation is significant at the 0.05 level (1-tailed).
Factor analysis
A Principal Component Analysis (PCA) was conducted (Table 5 below) on the six items with oblique rotation (Direct Oblimin). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .80 ('good' according to Field, 2009) and all KMO values for individual items were ≥ 7.4, which is well above the acceptable limit of .5 (Field, 2009). Bartlett’s test of sphericity χ²(55) = 939.544, p < .001, indicated that correlations between items were sufficiently large for PCA. An initial analysis was run to obtain eigenvalues for each component in the data. Three components had eigenvalues over Kaiser’s criterion of 1 and in combination explained 62.09% of the variance. The scree plot (Figure 1, see below) was ambiguous and showed inflexions that would justify retaining component 5, 6, 7, 9 and 11. However, only component 1 to 3 were retained; which accounted for 39.05%, 12.36% and 10.66% (62.09% overall) of the variance respectively.
Figure 1
<table>
<thead>
<tr>
<th>Factor item and number</th>
<th>Communalities</th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
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<tr>
<td>1a Peak Experience</td>
<td>.68</td>
<td>.56</td>
<td>.10</td>
<td>.60</td>
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<tr>
<td>1b Amount of Peak</td>
<td>.76</td>
<td>.42</td>
<td>.32</td>
<td>.69</td>
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<tr>
<td>2 Peak Time</td>
<td>.34</td>
<td>.31</td>
<td>-.47</td>
<td>-.15</td>
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<td>Change in individual's view on the world and life</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3a. i Life worthwhile</td>
<td>.69</td>
<td>.79</td>
<td>-.24</td>
<td>-.06</td>
</tr>
<tr>
<td>3a. ii Permanent</td>
<td>.69</td>
<td>.63</td>
<td>.44</td>
<td>-.31</td>
</tr>
<tr>
<td>Change in individual's view on themselves</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3b. i Confidence</td>
<td>.67</td>
<td>.77</td>
<td>-.28</td>
<td>.03</td>
</tr>
<tr>
<td>3b. ii Permanent</td>
<td>.71</td>
<td>.67</td>
<td>.49</td>
<td>-.15</td>
</tr>
<tr>
<td>Better view of and relationships with others</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3c. i Closer</td>
<td>.66</td>
<td>.72</td>
<td>-.33</td>
<td>.16</td>
</tr>
<tr>
<td>3c. ii Permanent</td>
<td>.55</td>
<td>.63</td>
<td>.32</td>
<td>-.23</td>
</tr>
<tr>
<td>Change in Spontaneity, creativity, expressiveness and idiosyncrasy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3d. i Idiosyncrasy</td>
<td>.60</td>
<td>.60</td>
<td>-.48</td>
<td>-.06</td>
</tr>
<tr>
<td>3d. ii Permanent</td>
<td>.48</td>
<td>.60</td>
<td>.13</td>
<td>-.33</td>
</tr>
</tbody>
</table>

| Eigenvalues | 4.30 | 1.36 | 1.17 |
| % of variance | 39.05 | 12.39 | 10.66 |
Nadir Experience
The average score for Nadir experience was $M = 87.37$ ($SD = 25.19$) (Table 1) and on average, participants reported having 1.95 Nadir experiences. Also, when taking into account gender as Mathes (1982) did, in Males ($M=83.36$, $SD=28.58$; $N=110$) and females ($M=90.76$, $SD=21.44$, $N=130$), a significant positive correlation was found, ($r=.490$, $p<.001$) and ($r=.310$, $p<.001$) respectively.

67.9% of participants reported that they ‘Definitely’ had a Nadir experience, while only 8.3% scored 40 or less.

The majority of participants reported between 2-5 Nadir experiences (47.1%) and only 4.2% reported having no Nadir experiences ($N = 10$). Amount of Nadir experience correlated with Nadir experience ($r=.425$, $p<.001$) (Table 3).

Posttraumatic Growth Inventory
Average score was $M=39.75$ ($SD=18.51$) (Table 1). Little gender differences were found between Males ($M=39.98$, $SD=39.55$) and Females ($M=39.55$, $SD=17.82$).

Self-actualization Scale
Average score was $M=41.93$ ($SD=6.81$) (Table 1). Little gender differences were found between Males ($M=43.35$, $SD=7.42$) and Females ($M=40.73$, $SD=6.02$).

By using Jones & Crandall (Year) method $N=19$ Self-actualizers and $N=98$ non-Self-actualizers were identified. Self-actualizers score for PERGS ($M=27.89$, $SD=6.78$) and PTGI ($M=48.84$, $SD=19.20$) were considerably higher than for all participants (see above).

57.9% of Self-actualizers reported that they have definitely had a Peak experience, which was considerably higher compared to the rest of the participants (40.7%). There was a minute difference between Self-actualizers (86.64%) and others (87.42%) report of nadir experiences.

Peak and Nadir Interplay
17.9% of participants stated that having a Peak experience affected how they dealt with a Nadir experience and 29.6% ‘Somewhat agreed’ ($N=114$). 43.9% of these participants stated that it had a positive effect, while 37.7% ‘Somewhat agreed’.

21.3 % of participants stated that having a Nadir experience affected how they dealt with a Peak experience and 30% ‘Somewhat agreed’ ($N=123$). 31.7% of these participants stated that it had a positive effect, while 37.4% ‘Somewhat agreed’.
Discussion

The present study aimed to articulate and test a structural framework between Peak and Nadir experiences, Peak-experience-related Growth (PERG) and Posttraumatic Growth (PTG) in the frame of Self-actualization (SA). The findings substantiated all five hypotheses, which are discussed in detail below. Additionally, a scale that measures peak-experience-related growth was also created and tested, which is discussed later below.

The results showed support for the first hypothesis, peak-experience-related growth correlated significantly with Self-actualization. The correlation was positive, the more peak-experience-related growth was reflected by an increase in SAI scores. This is supported by previous studies (Mathes, 1982; Margoshes & Litt, 1966; McCain & Andrews, 1969). Peak-experience related growth could therefore be considered a factor in Self-actualization.

Consistent with previous findings (Ebersole, 1970, 1972; Morrill et al., Tedeschi & Calhoun, 1999), posttraumatic growth correlated significantly with Self-actualization (H2). The correlation was positive; the more posttraumatic growth was reflected by an increase in SAI scores. Posttraumatic growth could therefore be considered a factor in Self-actualization. The findings of this study is supported by qualitative investigation into PTG (Woodward & Joseph, 2003) in that the themes of posttraumatic growth identified through their thematic analysis was similar to that of the present study’s findings; positive change in self-perception was also the most reported change in their study. All these findings may indicate that experiencing PTG can help in the quest of Self-actualization.

The finding that PERG and PTG are significantly correlated with SA is supported by previous research.

This present study found that not only is peak and nadir related growth correlated with Self-actualization (which supports previous research), it lends credibility to the idea that they can also predict SA. This was a previously untested and novel idea, which this author suggests further research on.

The correlations between the variables may indicate that the relationship between them is reciprocal, in that a more self-actualized person may benefit more from having peak and nadir experiences.

Maslow found conflicting reports on the effects of peak experience on Self-actualization(1942, 1962, 1972); however, later research supported Maslow's original idea in that peak experience has an effect (Mathes, 1982; McCain & Andrews, 1969). This present study supports the latter in that a correlation was found between the two; however, no causal or predictor effect can be assumed.

The PERG scale was found to reliably and accurately reflect peak-experience related growth. The PCA showed that it has three components that accounted for 62.09% of the variance. Further research is suggested to further improve this scale. For example, by using Cronbach’s alpha as a criterion for item selection, the internal consistency of the scale could be improved.
Similar numbers of Self-actualizers were found to that of Jones & Crandall (1987) in this study. Interestingly, Self-actualizers were found to report peak experiences more but were similar (but not completely) in reporting of Nadir experiences. Self-actualizers were more likely to benefit positively from peak and nadir experiences. One conclusion that can be drawn from this is that while PTG is very important, peak-experience-related growth is of equal importance. Therefore, hypotheses 4 and 5 are supported by the findings; which also supports previous research into self-actualizers (Margoeshes & Litt, 1966; Maslow, 1962; Mathes, 1982; McCain & Andrews, 1969).

Although Maslow (1972) originally proposed that peak experiences are a necessity and exclusive to Self-actualization, his life’s work led him to revise this. This current study supports current evidence for the widespread occurrence of Peak experiences, but also that Self-actualized persons tend to have more peak experiences. Although the amount of participants who reported a peak experience in this study was significantly lower than in previous studies (Ebersole, 1972), the fact that a larger, non-homogenous sample was used may indicate that this better reflects the true nature of Peak experiences. For example, the majority of participants were non-students and professionals, who tended to be of older age, which may mean they have had more chances to have a peak experience.

In the types of PERG reported, the study lends support to previous research in that change in view of self, others and outlook on life was reported. However, an increase in idiosyncrasy was found, which differed from Ebersole (1972). This may be due to the fact that the PERG gave a thorough definition of the possible growth. This may also help explain the high internal consistency of the scale and the high significant correlations between each variable in the scale.

The reliability analysis for the PTGI in this study was higher than in Tedeschi & Calhoun (1996) study, a commendation to the scale. This suggest that the PTGI is a valid way to measure posttraumatic growth.

Previous research have highlighted the fact that having a nadir experience can have positive effects (e.g. Calhoun & Tedeschi, 1999), which this current study lends support for. The fact that some people report PTG is a testament to the need for further research into this area, so that it can be better understood and clinical practise can be improved to enable more people who have experienced trauma to benefit from it in some way.

Previous studies have shown that gender may have an effect on PTG (Tedeschi & Calhoun, 1996). However the lack of gender effect observed in this study may indicate that we do not completely understand this phenomenon; for example, past research suggest that women receive more emotional support than men (Liebler & Sandefur, 2001) and support has been shown to have protective effects on nadir experiences (Tedeschi et al. 2006). Due to constraints imposed on the researcher, the effects of social support could not have been investigated.

In relation to Morrill et al. (2008) finding that PTG can have a positive effect on quality of life, the present study found overwhelming support for this.
A sizeable minority of participants reported that having a peak experience had positive effects on how they later dealt with a nadir experience. Likewise, posttraumatic growth was observed to have positive effects on a later peak experience. One example of this may be that greater appreciation for life (resulting from PTG) may mean that a peak experience is even more appreciated.

Limitations and future directions
It is important to note that due to the correlational nature of the design, the findings of this present study cannot assume causal effects of the variables investigated. The HMR analysis was performed to partially control for this drawback. This did not change the nature of the design but enhanced variances explanations between the variables. Experimental designs could benefit from utilising the structural framework tested in this study as a basis for further exploration between peak and nadir, PERG and PTG and Self-actualization.

The data collection method only allowed for partial control on who were completing the questionnaire; as the online version resides in the public domain, anyone could complete it. Although there was no control over the age of participants, however, the mean age was high enough to justify the method.

Due to the relatively low variance effects of PERGS and PTGI on Self-actualization, the author argues that these are not the only factors that play a role in SA. There is evidence to support that while Self-actualization is a process and an outcome (Maslow, 1962), it can also be a personality dimension (Pufal-Struzik, 1999)

It is unclear why some individuals experience PTG and others do not (O’Leary et al., 1998). Drawing on existing literature, personal characteristics (discussed below) and perceived social support (Schaefer & Moos, 1992) have been separately shown to be important factors in influencing the outcomes of nadir experiences.

This present study was an altered version of the one proposed; originally, a sequential explanatory mixed method was going to be employed in evaluating the role of, not only, peak and nadir experience, PERG and PTG on SAI, but also the role of social support and personality factors in posttraumatic growth. Further research should use, or be inspired by, the proposed study in order to improve their research.

Implications of findings and conclusion
In conclusion, the findings of the current research enhanced knowledge of possible effects of the best and worst experiences and the role they play in attaining Self-actualization (which can be summed up as being the best person one can be). From extensive literature research, the hypothesis that Peak-experience-related growth and posttraumatic growth from nadir experiences can positively affect Self-actualization was proposed and rigorously tested. The findings of this study shows support for the novel idea that both peak and nadir experience and positive growth from them improves the person through self-actualization.
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References


