

# From Life's Difficulties to Posttraumatic Growth: How Do We Get There?

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## Abstract

The concept of posttraumatic growth (PTG) suggests that the aftermath of difficult life experiences does not always pose negative consequences. In fact, there are positive outcomes, such as deepened relationships with others and a more positive self-image (Tedeschi & Calhoun, 2004). The current study assessed the relationship among difficult life experiences, mindfulness and posttraumatic growth. In order to explore the relationship among these concepts, 152 Mount Royal University students completed a battery of surveys on the current topics. Regression analyses revealed significant moderation effects for the mindfulness facets of observing, nonreacting and nonjudging. These results give some initial evidence for the life's difficulties and PTG by using mindfulness skills. The interplay between PTG and mindfulness is relevant for clinicians dealing with populations with PTSD and adds to the literature on methods for encouraging growth.

## Keywords

Mindfulness, PTSD, Posttraumatic Growth, Positive Psychology

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## 1. Introduction

In light of the ongoing refugee crisis in Syria, the catastrophic typhoon in the Philippines, and the rise in university shootings, the focus on posttraumatic stress disorder (PTSD) is at an all time high. Even though experiencing traumatic events vicariously the media is enough to develop secondary traumatization, psychological distress and PTSD symptoms (Ben-Zur, Gil, & Shamshins, 2012). These current events and many other examples of catastrophes and atrocities have produced increased occurrence of PTSD. These incidences also highlight the importance of finding connections to positive outcomes. An understanding of the ability to find the benefit in negative experiences and how this process is supported could be beneficial for trauma survivors on

the road to recovery.

First, an important outcome of experiencing trauma (PTSD) will be discussed. The relationship of PTSD to the positive psychology concept of posttraumatic growth (PTG) will be covered. A definition and a review of the literature on mindfulness will be provided, and will be connected to posttraumatic growth through the mindfulness-to-meaning theory (Garland, Farb, Goldin, & Fredrickson, 2015). Finally, the present research will be explained, including all relevant hypotheses.

### 1.1. Posttraumatic Stress Disorder

Posttraumatic stress disorder has been outlined in DSM-5 as a disorder characterized by symptoms spanning five main clusters (American Psychiatric Association, 2013). The five clusters include a stressor, intrusions, avoidance, negative alterations in cognitions and mood, alterations in arousal and reactivity (see DSM-5). The cluster of avoidance symptoms has been characterized as essential to reinforce and maintain PTSD symptoms. Specific to this disorder, experiential avoidance is the resistance to experience adverse stimuli, including thoughts, emotions and even sensations (Huffman, Sawyer, & Fang, 2010).

### 1.2. Posttraumatic Growth

Positive psychology is a relatively new field, but momentum has increased the last several decades. In particular, researchers have been interested in looking at the positive side of trauma. Tedeschi & Calhoun (1996) explain that the negative consequences of experiencing a trauma have been comprehensively studied, but the potential positive effects have been comparatively untouched. One potential outcome of experiencing a trauma has been termed posttraumatic growth (PTG) (Tedeschi & Calhoun, 1996). PTG has been defined as “positive psychological change experienced as a result of the struggle with highly challenging life circumstances” (Tedeschi & Calhoun, 2004). Evidence suggests that in addition to the negative symptoms that are commonly associated with a trauma, survivors may also experience psychological benefits or growth (Sears et al., 2003).

PTG is measured in several domains: *openness to new possibilities*, *greater appreciation of life*, *enhanced personal strength*, *spiritual development* and *relating to others* (see Tedeschi & Calhoun, 2004). In applying this concept to college students, one study found that stressful events led to personal growth (Park, Cohen, & Murch, 1996). This type of growth after a difficult life experience is considered as the essence of PTG. Another growing body of research is in the interaction between mindfulness and PTG (Garland, Farb, Goldin, & Fredrickson, 2015).

### 1.3. Mindfulness

Mindfulness was originally conceptualized in the literature by Kabat-Zinn (1982) as “paying attention in a particular way: on purpose, in the present moment, and non-judgmentally” (p. 4). The roots of mindfulness go back to Buddhist meditation, with a

focus on the two core concepts of awareness and attention (Brown, Ryan, & Creswell, 2007). These notions emphasize turning towards internal experience including thoughts, but also bodily sensations and emotions (Baer, Smith, & Allen, 2004). Mindfulness has been measured as a unitary construct (Brown & Ryan, 2003), as well as through a five-facet approach (Baer et al., 2006). In the five-factor model (FFMQ), mindfulness is conceptualized as a five dimensional process that includes *observing, describing, acting with awareness, nonjudging of inner experience*, and *nonreactivity to inner experience* (see Baer et al., 2006).

#### 1.4. Mindfulness to Posttraumatic Growth

The relationship between mindfulness and life difficulties has received some attention in the literature. One important area of inquiry is in improving mindfulness skills through Mindfulness Based Stress Reduction (MBSR), a program using mindfulness techniques for populations experiencing pain and stress (Kabat-Zinn, 1990). Studies on the use of MBSR with cancer patients have shown that MBSR improves psychological functioning (Birnie, Garland, & Carlson, 2010). It has also been shown that mindfulness skills acquired through this training can mediate the relationship between MBSR and increased PTG (Labelle, Lawlor-Savage, Campbell, Faris, & Carlson, 2015). These studies also indicate that mindfulness is not only a dispositional trait, but also one that can be trained and developed through practice.

In terms of mindfulness and PTG, one study looked at both contemplative mindfulness practitioners (individuals who practice mindfulness skills such as yoga, prayer, and meditation 6 days a week), and non-practitioners (Hanley, Peterson, Canto, & Garland, 2015). Mindfulness was significantly and positively correlated to PTG for both groups with some slight differences. Specifically, it was found that for the contemplative practitioners, the mindfulness facets of *acting with awareness, nonreacting* and *nonjudging* were the most highly correlated to PTG. For non-practitioners, *observing, describing* and *nonreacting* were most highly correlated to PTG. This study suggests that mindfulness practice may aid practitioners of mindfulness and non-practitioners in differing ways.

The relationship between PTG and mindfulness facets is not always clear-cut. For example, Chopko and Shwartz (2009) in their study of first responders found that some mindfulness facets (*observe* and *describe*) were positively correlated to PTG, but they also found that *nonjudging of experience* was negatively correlated with PTG. Some therapeutic models, such as Acceptance and Commitment Therapy (ACT) rest on the notion of acceptance without judgment (Hayes, Strosahl, & Wilson, 1999), but this may not be the case for experiencing PTG. In accordance with the PTG model, cognitive appraisal, not mere acceptance, is necessary for growth (Tedeschi & Calhoun, 2004). Evidence of this relationship was seen in Linley and Joseph's (2004) review of studies of adversarial growth, which includes PTG. Findings supported the conclusion that awareness and controllability of the event, which were cognitive appraisal variables, were associated with increased PTG.

Mindfulness interventions have been applied to relieve caregiver stress in working with individuals with autism (Ruiz-Robledillo, Sariñana-González, Pérez-Blasco, González-Bono, & Moya-Albiol, 2015), to increase well-being in college students (Cole et al., 2015), to facilitate emotional regulation (Fogarty, Lu, Sollers, Krivoschekov, Booth, & Consedine, 2015). Relevant to this study, the effects of mindfulness have been used in regards to traumatic experience. Research has pointed to the fact that mindful behaviours may facilitate better adjustment in the aftermath of a trauma (Thompson, Arnkoff, & Glass, 2011). This rests on the notion that experiential avoidance is central to the exacerbation and maintenance of PTSD symptoms, therefore, a mindful orientation in the present moment may be a route to circumvent those negative symptoms and promote resiliency.

The mindfulness-to-meaning theory (Garland et al., 2015) provides a bridge from mindfulness to well-being. It is explained that, as humans, we are subject to a degree of uncertainty and experiences that challenge our worldview at every turn. This means that we have to learn to adapt to a life of indeterminacy by assembling an understanding of our world when the metaphorical rug has been pulled out from us. We are able to regain control of our lives by attempting to make meaning in the confusion around us. One way of creating meaning is through active cognitive appraisal. As a trauma unfolds, intrusive rumination can often become the default as the assumptive worldview of fundamental predictability in our lives is shattered (Tedeschi & Blevins, 2015). Intrusive ruminations occur unexpectedly, and can trigger stress responses characteristic of the PTSD symptoms previously described, such as hypervigilance. They can be thought of as the initial, but distressing attempt to understand the new, post-trauma circumstances.

Another way of interacting with thoughts in a more constructive way is deliberate rumination (Tedeschi & Blevins, 2015). Deliberate ruminations focus on cognitive reappraisal and are effortful, opposed to automatic, and occur much later in the re-building process. Through deliberate reappraisal, a mindful approach is taken in which repeated exposure to emotions and cognitions from the traumatic incident can actually decrease sensitivity and reactivity to them. It allows the individual a space in which it is possible to decenter from the traumatic experience and shift into a metacognitive stance, which can allow for positive cognitive reappraisal. This type of rumination has been associated with increased PTG and meaning making.

Mindfulness has occupied the literature for several decades as a secular construct in psychology. Research into how mindfulness relates to other positive psychology topics such as PTG and character strengths has not yet been fully explored. Further research into this area will improve the understanding of how these topics can be used in applied settings for clinicians and individuals managing PTSD.

### **1.5. The Present Study**

The current study examines whether the association between trauma (difficult past experiences) and subsequent posttraumatic growth is moderated by a degree of trait

mindfulness. It is believed that, in accordance with previous findings, the association between mindfulness and PTG will be intricate. Specific hypotheses to be investigated in the study are:

- The mindfulness facets of *observing, describing, nonreacting* and *acting with awareness* are expected to be positively correlated, whereas *nonjudging of experience* is anticipated to be negatively correlated with PTG facets.

The relationship between PTG and posttraumatic symptoms was found to be positively correlated in the study conducted by [Morrill et al. \(2008\)](#) and in the article by [Cordova and Andrykowski \(2003\)](#), which posits that survivors of traumatic events can experience both PTG and posttraumatic symptoms concurrently. Another study found no association between PTG and PTSD symptomatology ([Salsman, Segerstrom, Brechting, Carlson, & Andrykowski, 2009](#)). According to the PTG model, distress is necessary to achieving growth, but the evidence has thus far been unclear. As such, no hypothesis is given; this ambiguous relationship will be explored in the present research.

- In addition, it is hypothesized that, overall, PTG will be positively correlated with trait mindfulness.

A student population is relevant to the current study, because previous studies have shown that students go through a variety of traumatic events, including bereavement ([Burke, 2010](#)) and elevated stress ([Hindman, Glass, Arnkoff, & Maron, 2015](#)). Due to these types of concerns, students are more vulnerable to mental health concerns ([American Psychiatric Association, 2013](#)), and as a result of academic stress are more susceptible to depression and anxiety ([Cole et al., 2015](#)). Students will often have been exposed to a variety of arduous life experiences, academic or otherwise, that may be perceived as difficult or traumatic.

## 2. Method

### 2.1. Participants

Participants consisted of 152 introductory psychology students at Mount Royal University. An advertisement was posted on SONA, which gave participants an idea of the research and what their involvement would entail. Students participating in the current research were awarded one credit towards their research participation grade for 60 minutes of their time. This study was completed online to allow ease of access for participants and to increase sample size. The sample was comprised of a mainly female population (75%), as is frequently the case in psychology undergraduate student samples. Ages of participants ranged from 18 - 60.

### 2.2. Materials

A variety of surveys were administered to participants via the Mount Royal SurveyMonkey account, which is an online survey platform often used for data collection. The surveys completed by participants in the present study included the Posttraumatic Growth Inventory (PTGI, [Tedeschi & Calhoun, 1996](#)), the Mindful Attention Aware-

ness Scale (MAAS, Brown & Ryan, 2003), the Five Facet Mindfulness Questionnaire (FFMQ, Baer et al., 2006), a revised version of the Iowa Traumatic Response Inventory (ITRI, Gootzeit, Markon, & Watson, 2015), and a Difficult Life Experiences Scale (DLES). Participants would first fill out the demographics questionnaire, which included age and gender. They would then complete the DLES to set the tone for the rest of the surveys. The order of the rest of the surveys was randomized to control for order effects.

**Posttraumatic Growth Inventory.** This inventory was created by Tedeschi & Calhoun (1996) and looks at the positive outcomes, or growth, that can result from a trauma, or difficult life experience. On a scale from 0 - 5, respondents are asked to what extent they experienced the change described as a result of their crisis (0 = *I did not experience this change*, to 5 = *I experienced this change to a very great degree*). Five different factors are assessed, including *relating to others* (7 items; e.g., “I put more effort into my relationships”), *new possibilities* (5 items; e.g., “I established a new path for my life”), *personal strength* (4 items; e.g., “know better that I can handle difficulties”), *spiritual change* (2 items; e.g., “I have a stronger religious faith”), and *appreciation of life* (3 items; e.g., “I have a greater appreciation for the value of my own life”). The coefficient alpha for this inventory was calculated at 0.92 indicating excellent internal consistency.

**Mindful Attention Awareness Scale.** The (MAAS) is a 15-item measure of dispositional mindfulness (Brown & Ryan, 2003). Items are rated on a Likert scale (1—*almost always* to 6—*almost never*) on how much the item reflects how frequently the respondent has the described experience. Examples of statements include “I do jobs or tasks automatically, without being aware of what I'm doing” and “I find it difficult to stay focused on what's happening in the present”. The score is calculated by averaging the score of all items; higher scores reflect higher dispositional mindfulness. The coefficient alpha was .87, indicating good internal consistency.

**Five Facet Mindfulness Questionnaire.** The FFMQ consists of 39-item assessing trait mindfulness on five dimensions (Baer et al., 2006). Responses are measured on a 5-point Likert scale (1—*never or very rarely true* to 5—*very often or always true*). The five dimensions are *observing* (8 items; e.g. “When I'm walking, I deliberately notice the sensations of my body moving.”), *describing* (8 items; e.g., “I can easily put my beliefs, opinions, and expectations into words.”), *acting with awareness* (8 items; e.g., “I find myself doing things without paying attention.”), *non-judging* (8 items; e.g., “I tell myself that I shouldn't be thinking the way I'm thinking.”), and *non-reactivity* (7 items; e.g., “When I have distressing thoughts or images I am able just to notice them without reacting.”). The *acting with awareness* and *non-judging* items are all reverse-scored, and several *describing* items are as well. Items from each scale are calculated as an average, with higher scores demonstrating higher levels of dispositional mindfulness on that facet. At .88, this scale demonstrated good internal consistency.

**Iowa Traumatic Response Inventory.** The ITRI is a 37-item self-report scale assessing levels of PTSD symptoms in the last month (Gootzeit, Markon, & Watson, 2015). Items are grouped on five domains: *traumatic intrusions* (8 items; e.g., “Troub-

ling images of a bad experience flooded my mind.”), *avoidance* (5 items; e.g., “I tried to stay away from anything that reminded me of a bad experience.”) *dysphoria* (8 items; e.g., “I felt nothing was very enjoyable.”), *dissociation* (8 items; e.g., “I felt like I was in a daze.”), and *hyperarousal* (8 items; e.g., “I was trembling or shaking.”). Responses were measured on a scale from A. *Not at all* to E. *Extremely*. To assess ethical concerns, the inventory was renamed the Emotional Experiences Scale. The coefficient alpha for the scale was calculated at .96, an indicator of excellent internal consistency.

**Difficult Life Experiences Scale.** The Difficult Life Experiences Scale (DLES) was used to assess objective and subjective experiences of difficult experiences. Participants were asked to rate their own life experiences and how others would view the difficulty of their experiences. Responses were measured on a scale of A—*Not difficult* to E—*Extremely difficult*. An additional response, F, was added for participants who felt they had not encountered any difficult life experiences. The DLES was a measure created by the researchers for the purpose of this study and had good internal consistency (.81)

### 2.3. Procedure

The study was conducted online through SONA, which connected the participant directly to the survey on Survey Monkey. Participants first read the consent form, and either consented or did not consent to the terms. If the participant consented by clicking the “YES” option, the surveys described above were then administered and were presented in a random order. Upon completion of the surveys, a debriefing form was presented. Participants were then automatically awarded their class credit through the SONA system.

## 3. Results

The predicted moderator included mindfulness, measured through both the MAAS and the FFMQ. Difficult life experiences from both the self and other perspective were used as the predictors, with PTG being the outcome variable.

One hundred fifty-two participants completed the surveys for this study. Two participants did not click “YES” for the consent portion, and were therefore excluded from further analyses. Missing data were treated using a mean substitution after the pattern of missing entries was found to be random and the extent of the missing data minimal. The predictors (DLES) and moderators (FFMQ and MAAS) in this analysis were centered using an aggregate function to avoid multicollinearity. Regression analyses were computed in order to assess any potential moderation effects. Bivariate correlations were also calculated to test the relationship between PTG, PTSD symptoms, and mindfulness facets. All data were analyzed using SPSS 23.0.

### 3.1. Correlations

Correlations were calculated on a number of combinations pertaining to the hypotheses. The association between PTG and PTSD symptoms (**Table 1**), and PTG and mindfulness (**Table 2**), were both assessed using bivariate correlations.

**Table 1.** Bivariate correlations between Posttraumatic Growth and the Iowa Traumatic Response Inventory.

Variable	1	2	3	4	5	6	7	8	9	10
PTG										
1-Relating to Others	-	.533**	.495**	.293**	.630**	-.006	-.066	-.063	-.171	-.024
2-New Possibilities		-	.713**	.395**	.654**	.099	-.003	.064	-.032	.061
3-Personal Strength			-	.270**	.643**	-.032	-.009	-.009	-.021	.084
4-Spiritual Change				-	.456**	.026	-.024	-.003	-.123	.034
5-Appreciation of Life					-	.034	-.047	-.019	-.112	.000
ITRI										
6-Intrusions						-	.662**	.556**	.712**	.697**
7-Hyperarousal							-	.632**	.706**	.577**
8-Dissociation								-	.676**	.422**
9-Dysphoria									-	.512**
10-Avoidance										-

\*Note. \* = Correlation is significant at the .05 level. \*\* = Correlation is significant at the .01 level.

**Table 2.** Correlations between PTG and mindfulness (FFMQ and MAAS).

Variables	1	2	3	4	5	6	7	8	9	10	11
FFMQ											
1-Observe	-	.327**	.352**	-.047	-.001	.147	.164*	.248**	.204*	.115	.246**
2-Describe		-	.201	.216**	.286**	.261**	.224**	.273**	.295**	.143	.243**
3-Nonreact			-	.236**	-.003	.094	.072	.093	.084	.060	.088
4-Nonjudging				-	.434**	.374**	.064	.002	.015	.066	.108
5-Awareness					-	.713**	.146	.134	.120	.030	.085
6-MAAS						-	.121	.041	.073	-.025	.098
PTG											
7-Relating to others							-	.533**	.495**	.293**	.630**
8-New Possibilities								-	.713**	.395**	.654**
9-Personal Strength									-	.270**	.643**
10-Spiritual Change										-	.456**
11-Appreciation of Life											-

\*Note. \* = Correlation is significant at the .05 level. \*\* = Correlation is significant at the .01 level.

The associations between PTG and PTSD symptoms (see **Table 2**) indicated that in general, there was almost no association between these two concepts, with the correlations ranging from .000 to .099, with none achieving statistical significance ( $p > .05$ ). Intercorrelations were moderate to strong for both PTG ( $r = .270 - .713$ ) and for the ITRI ( $r = .422 - .712$ ), all of which were strongly statistically significant ( $p < .01$ ).

The associations between PTG and mindfulness (FFMQ, MAAS) were more gainful (Table 2). The FFMQ facets of *observe* and *describe* seemed to show similar patterns; both were moderately significantly correlated with all PTG facets, except *spiritual growth* ( $p < .05$ ). The facets of *awareness*, *nonjudging* and *nonreacting* had weak correlations to PTG dimensions, none of which achieved statistical significance ( $p > .05$ ). The MAAS did not achieve statistical significance with any PTG facets and overall had weak correlations ( $p > .05$ ). As expected, there were intercorrelations between facets of the FFMQ that ranged from small to moderate ( $r = .216 - .434$ ). There was an exception to this, such that the associations between *observe* and *nonjudging* and *awareness*, *describe* and *nonreacting*, and *nonreacting* and *awareness*, were all weak and did not achieve statistical significance ( $p > .05$ ).

### 3.2. Moderation Analysis

In order to run moderation analyses, interaction terms had to be created to support the regression analyses. Interaction terms consisted of the predictor (difficult life events) and the proposed moderator. Out of these regressions, three were statistically significant ( $p < .05$ ). The FFMQ facets of *observe*, *nonreacting*, and *nonjudging* all had significant interactions (see Table 3 below).

### 3.3. Simple Slopes Analysis

If the interaction was significant, indicating a moderation effect had occurred (see Table 3), simple effect analyses would be conducted to understand the nature of the interaction at differing levels of the moderator (see Table 4 below). Using these three

**Table 3.** Significant regressions using mindfulness facets as moderators.

Moderator	Predictor	Outcome	$\beta$	$t$	$p$	$R^2$	$R^2_{adj}$
FFMQ facets	Difficult life events	PTG factor					
<i>Observe</i>	Other	<i>New possibilities</i>	0.437	3.184	0.002**	0.193	0.177
<i>Nonreacting</i>	Other	<i>New possibilities</i>	0.337	2.025	0.045*	0.131	0.113
<i>Nonjudging</i>	Other	<i>Appreciation of life</i>	0.241	2.219	0.028*	0.174	0.157

Note. \* = significant at the .05 level. \*\* = significant at the .01 level.

**Table 4.** Analysis of simple effects.

Moderator	Level	Slope	$t$	df	$p$
<b>FFMQ facet</b>					
1-Observe	High	0.496	4.676	1.77	.000**
	Low	0.135	1.001	1.69	.320
2-Nonreacting	High	0.415	3.893	1.88	.000**
	Low	0.214	1.498	1.58	.140
3-Nonjudging	High	0.508	4.249	1.73	.000**
	Low	0.314	2.543	1.73	.013*

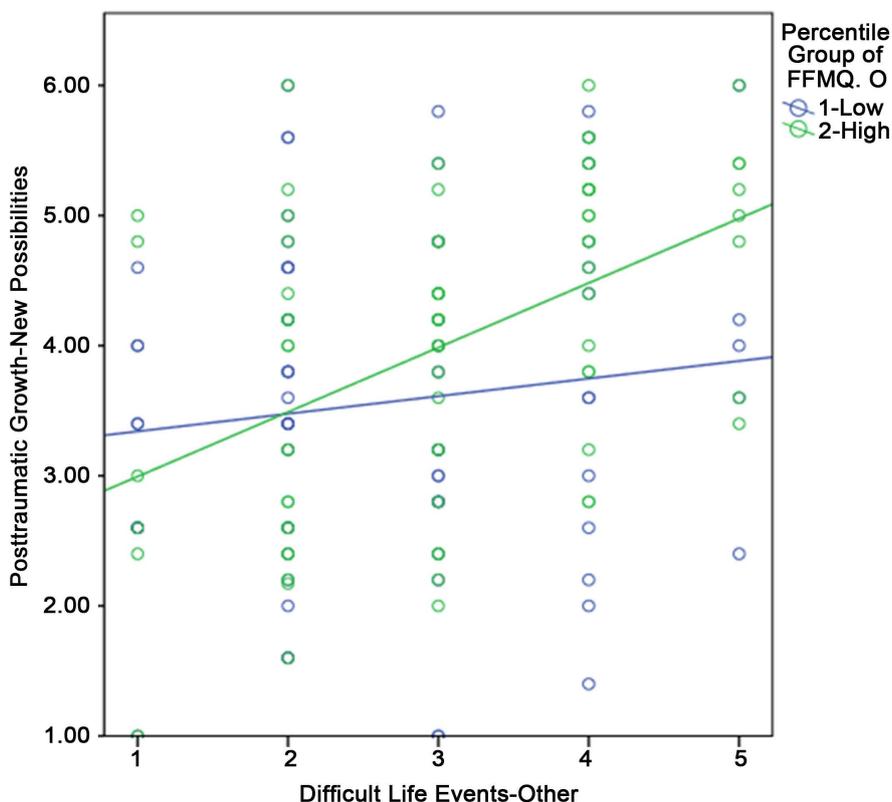
Note. \* = Significant at the .05 level. \*\* = Significant at the .01 level.

significant regressions, participants were split into two groups of high and low based on a mean split for that moderator. Then, two additional regressions at the high and low level were run to further understand the interaction and were plotted graphically (see **Figures 1-3** to see the results of the simple effects analyses). The patterns of significance for simple effects can be grouped into two trends: 1) significant at the high but not the low level, 2) significant at both the high and low level. *Observe* (other) and *non-reacting* (other) fit trend one, and *nonjudging* (other) fit trend two.

For the FFMQ mindfulness facet of *observe*, those who were high on this ability found increasing levels of the PTG dimension of *new possibilities* as perceived life difficulties from the “other” perspective increased (**Figure 1**). At the lower level, which was not significant, there was a slightly similar upward tendency.

For those high on the mindfulness facet of *non-reacting*, the trend seems to indicate that as life difficulties from the “other” perspective increases, the growth dimension of *new possibilities* increases as well (**Figure 2**). This is also the case for those low on *nonreacting*, which was not significant, but they may experience growth in *new possibilities* to a lesser extent.

*Nonjudging* was found to be significant at both the high and low levels. Both individuals high and low on the FFMQ facet of *nonjudging* appeared to have increasing *appreciation of life* as life difficulties from the “other” perspective increased, but with higher levels of growth for those at the high level of *non-judging* (**Figure 3**).



**Figure 1.** Interaction for FFMQ facet of observe.

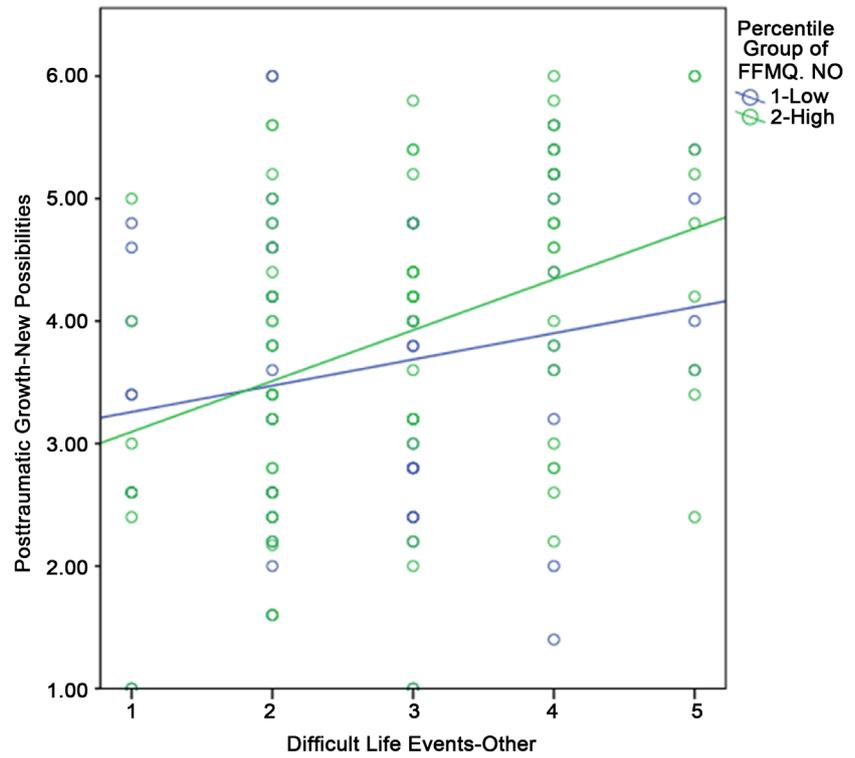


Figure 2. Interaction for FFMQ facet of nonreacting.

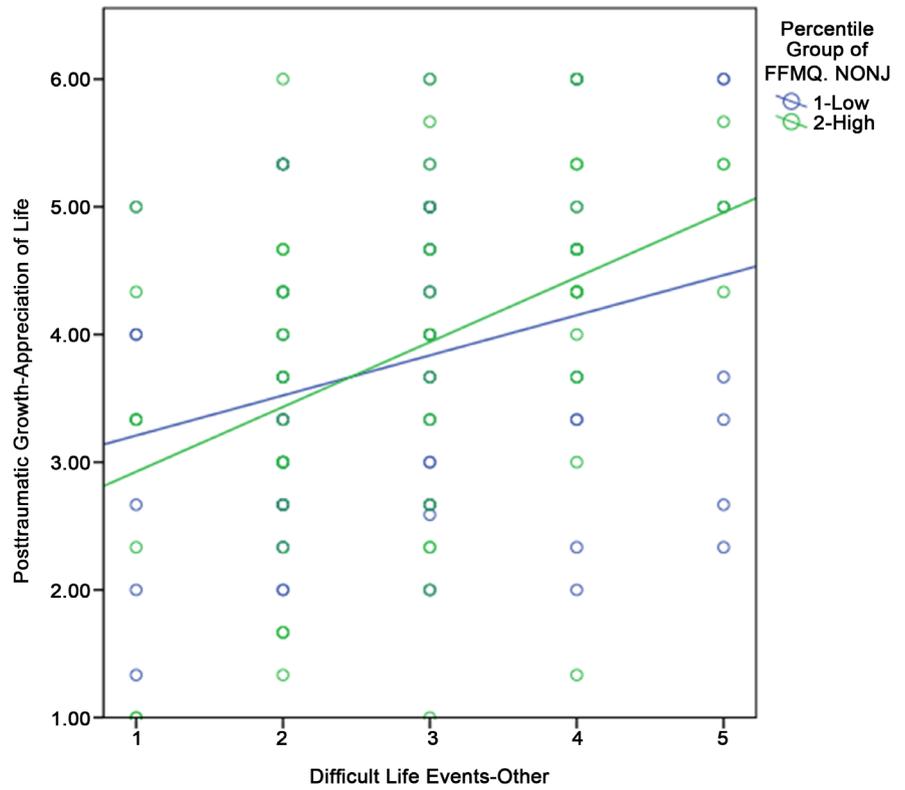


Figure 3. Interaction for FFMQ facet of nonjudging.

## 4. Discussion

### 4.1. PTG and PTSD

PTG and PTSD seem to be polar opposites upon first glance. The relationship is actually more complex than it would appear. PTSD and PTG seem to occur together as responses to an initial traumatic incident (Salsman et al., 2009). After an event of this nature, it is typical for ruminations, characteristic of PTSD, to follow. This will occur as the individual attempts to understand and move through the traumatic experience. These ruminations may not have entirely negative consequences though; a sense of cognitive reappraisal may be required to allow the individual to re-work some initial assumptions and beliefs about their world that are facilitated by these ruminations. This type of cognitive processing is how individuals can move towards the outcomes encompassed in PTG, such as a change in the sense of identity and deepened social support connections.

As Laufer and Solomon (2006) suggest, the relationship between PTG and PTSD has not been so straightforward. Some research has found a positive relationship, others a negative one and others still, none at all. The present study was not able to clarify the debate on this subject. It was found that the correlations between PTSD and PTG were both weak and negligible. It is unclear if a lack of statistical power was not able to detect differences, or if in fact, no real association exists. This is not to suggest that those who experience PTSD will continue to experience symptoms with no hope of achieving growth from their troubles. Huta & Hawley (2010) suggest that these constructs are not opposite ends of a continuum, but rather they may be independent of one another. The present research supports this understanding of growth and distress.

### 4.2. PTG and Mindfulness

Previous research into PTG and mindfulness in bereaved students found significant negative correlations between mindfulness, assessed with the MAAS, and the PTGI-*personal strength* and *new possibilities* scales (Burke, 2010: p. 149). After closeness to the deceased and distress from grief was taken into account, these relationships lost their significance. The present research found an opposing trend. The MAAS was weakly positively correlated with all the variables with the exception of *spiritual growth*, but is similar to Burke's work in the fact that none of these associations were ultimately significant.

The mindfulness facets of *observing*, *describing*, *nonreacting* and *acting with awareness* were expected to be positively correlated, whereas *nonjudging of experience* was anticipated to be negatively correlated with PTG facets. This hypothesis was partially supported. All correlations between the FFMQ and PTG scales were positively correlated, but the items for *nonjudging* and *acting with awareness* did not achieve statistical significance (Table 3). For *observe* and *describe*, all correlations were positively and significantly correlated to PTG items, with the exception of *spiritual change*. This dimension did not have any significant relation to any mindfulness construct assessed through either the FFMQ or the MAAS. Other works done in this area include only

Chopko's (2009) study on first responders. This work was looking at the relation between PTG and mindfulness. Mindfulness in this study was assessed by using the Kentucky Inventory of Mindfulness, which assessed mindfulness skills, as opposed to the trait qualities of mindfulness measured in the present study. As such, comparisons would not be completely logical as the two have theoretical differences and a vastly different sample to which they were applied, as discussed in Burke (2010: p. 150).

### 4.3. Interpretation of Moderation Effects Mindfulness

**Observe.** The trend for this facet is that those who are high on the ability to *observe* experience higher levels of growth in *new possibilities* as level of perceived difficulty increased than the group low on *observe* (Figure 1). This may mean that those who are high on the ability to *observe* thoughts without intervening in them are able to more fully grasp and appreciate the extent of the possibilities that are truly available to them every day as life events become more difficult.

**Nonreacting.** Similarly to the trend seen in the *observe* facet, nonreacting at the high level was significant and showed that increasing levels of life difficulty led to increases in the growth dimension of *new possibilities* (Figure 2). The low level of *nonreacting* also had this trend, but to a lesser extent was not statistically significant. The ability to not react automatically and to make decisions that have been carefully thought out may open the door to *new possibilities*.

**Nonjudging.** At both the high and low level, there seems to be a trend towards increasing growth in *appreciation of life* as perceived level of life difficulty increases (Figure 3). Those higher on *nonjudging* appear to gain slightly more *appreciation of life* at higher levels of life difficulty than the low group. Generally, it appears that individuals with any level of the ability to withhold judgment in the present moment may have an increased *appreciation of life* as life difficulties increase.

### 4.4. Strengths

These results offer a preliminary analysis on a fertile combination of positive psychology topics. To the authors' knowledge, no studies have yet looked at the interactions between these concepts. This research adds to the existing body of knowledge in the area of growth stemming from life's difficulties and how a mindful orientation may offer a pathway for individuals to experience the psychological benefits of growth. The present study lays the foundation for future studies that may result in further understanding of this proposed pathway. It may also be of use to clinicians working with populations who have been exposed to traumatic experiences to encourage growth through mindfulness practice.

### 4.5. Limitations and Future Directions

These results should be taken with caution because the high number of comparisons may have led to Type I error. Future studies should utilize a Bonferroni correction and a priori hypotheses to strengthen statistical analyses. The results of this study should be validated in future research considering these topics.

These results are limited by a measure of life's difficulties that lacked depth. A more in-depth measure of the types of traumas experienced by participants could reveal more specific results as to which mindfulness facets are central to achieve PTG. Only two questions were given to participants to assess the essence of the traumatic event. More specifically, the question asked the difficulty of one's life events in general, whereas the essence to achieve PTG is in the extent to which the basis of the assumptive world is challenged (Tedeschi & Calhoun, 2004). This was not assessed in the present study; therefore future studies should use measures that tap this construct more fully. Small sample size is a clear limitation of this research, which should be corrected in future replications.

The problem of self-report is another limitation, which is common to psychological literature. Behavioural methods should play increasing importance in future research, such as through mindfulness trainings. In terms of PTG, some researchers have questioned whether self-reporting PTG reflects true change in the individual's life (Frazier et al., 2009). For example, it is noted that the PTGI does not capture life satisfaction, which may be more reflective of actual growth than any other dimension in the inventory. Moving away from cross sectional designs will also help future research to understand how PTG develops, and how mindfulness may change from before to after difficult life experiences.

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