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Post Traumatic Growth Amongst Australian Bravery Award Recipients

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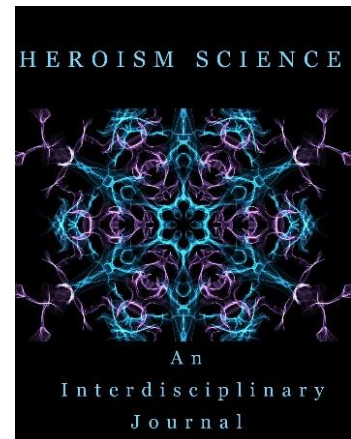
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Post Traumatic Growth Amongst Australian Bravery Award Recipients



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ABSTRACT: This study explored aspects of Post Traumatic Growth (PTG) amongst Australian Bravery Award recipients exposed to serious or life-threatening trauma. PTG is the process whereby some people experience growth following traumatic experiences. Previous PTG research has focused on specific disasters, incidents or cohorts of survivors. We explored a range of incidents in both civilian and non-civilian award recipients. Sixty-five Australian Bravery Award recipients (37 civilian and 28 non-civilian) completed the Post Traumatic Growth Inventory and provided additional demographic information about their bravery incident. Results showed that civilians experienced significantly higher growth (mean PTG score = 49.7 than non-civilians (mean PTG score = 29.5). PTG varied by gender, with female award recipients having much higher PTG scores (mean 65.9) than males (mean 29.5). Australian Bravery Award recipients involved in violent incidents reported significantly higher PTG, with civilians involved in firearm related incidents reporting a mean PTG score of 65.5 compared to non-civilians at 34.8. Not all individuals involved in traumatic incidents have PTG, however we found that 73% of civilian bravery award recipients experienced moderate to high levels of growth following serious life-threatening incidents compared with 22.1% of non-civilians.

1 POST TRAUMATIC GROWTH AMONGST AUSTRALIAN BRAVERY AWARD RECIPIENTS

Although there has been some research investigating the impact of trauma and life-threatening incidents both from the perspective of Post-Traumatic Stress Disorder (PTSD) and Post-Traumatic Growth (PTG), the focus has been on either a major disaster, an act of violence, or on a specific cohort or population such as police, emergency service workers or university students. The study reported here examined the impact of trauma and life-threatening incidents on a mixture of both civilians and non-civilians involved in a diverse range of incidents that resulted in recognition of their actions through the formal awarding of Australian Bravery Awards.

By using a cohort of bravery award recipients, we were able to review PTG scores across a broad range of life-threatening incidents (fire, firearm related, vehicle related, ocean/sea related, knife related, flood related and other), which to our knowledge has not been undertaken or reported elsewhere. With some studies showing higher levels of PTG reported amongst civilians compared to non-civilians (Police, Emergency Service Workers and Military) after exposure to life-threatening trauma and events, this study provided a unique opportunity to compare and report on levels of PTG across both groups. Given the limited number of studies which have looked at PTG in civilians, this study adds to the emerging body of evidence demonstrating differences in PTG responses between civilians and non-civilians.

2 POST TRAUMATIC GROWTH (PTG)

In their seminal paper and subsequent publication, Tedeschi and Calhoun (1996; 2004) described PTG as positive changes resulting from challenging life events and adversity. Changes may include an increased appreciation of life along with a changed sense of what is

important, closer and more meaningful relationships, a general sense of increased personal strength, openness to new possibilities including the possibility of taking a new and different path in life, and growth in spiritual and existential matters. Subsequent work by Olginska-Bulik and Kobylarczyk (2015) concurred that traumatic events may be associated with the emergence of positive changes for individuals and may indeed be transformational, leading to positive personal changes including self-perception, relationships with others, and appreciation of life resulting from coping with life crises. Tedeschi and Calhoun (2004, p. 4) defined PTG as:

“The individual has not only survived but has experienced changes that are viewed as important and that go beyond what was the previous status quo.

Posttraumatic growth is not simply a return to baseline – it is an experience of improvement that for some people is deeply profound.”

Park and Helgeson (2006) suggested that the experience of a highly traumatic event violates an individual’s basic beliefs around self and the world, and that through some cognitive, meaning making process they rebuild their beliefs and goals leading to perceived growth. According to Rendon (2015, p. 71), “the ability to abandon the old assumptive self or narrative and to develop a new one is at the heart of the process that can result in post-traumatic growth”. Similarly, Tedeschi and Blevins (2015) pointed to the disruption of one’s core belief structure as being necessary in the growth process.

Linley and Joseph (2004) suggested that positive changes such as PTG may occur as a result of struggling with a traumatic event and struggling with adversity. Schubert, Schmidt and Rosner (2015) identified 19 studies on growth-related psychological constructs and biological variables as part of a systematic review of PTSD and PTG, finding that trauma survivors with PTSD exhibit more PTG than those without PTSD.

This positive relationship between PTSD and PTG has been identified in many studies. For example, Seo and Lee (2020) found a positive relationship between PTSD and PTG amongst 200 Korean earthquake survivors and Wu, Xu and Sui (2016) suggested that the severity of PTSD symptoms amongst the 2008 Wenchuan earthquake survivors was positively associated with PTG. Shamia, Thabet and Vostanis (2015) also observed a significant positive relationship between PTSD and PTG among nurses in Gaza.

Tsai, El-Gabalawy, Sledge, Southwick, and Pietrzak (2014) found that US veterans who screened positive for PTSD reported at least some level of moderate growth. Tedeschi and McNally (2011) highlighted that trauma survivors who report growth also appear to report symptoms of PTSD.

Other studies identified the relationship between PTSD and PTG to be curvilinear in nature (Levine, Laufer, Hamama-Raz, Stein & Solomon, 2008). Achterhof et al. (2017) found a curvilinear relationship between post-traumatic stress symptoms (PTSS) and PTG in earthquake survivors in New Zealand finding that PTSS was positively related to PTG up to a certain point after which there was a negative relationship. Tedeschi and Blevins (2015) suggest that this curvilinear association may also be impacted by the severity of the trauma and traumatic events once a certain threshold has been reached, after which, individuals are less likely to report growth. Tsai et al. (2014, p. 165) found in their study of US veterans that an inverted 'U' shape best described the relationship between PTSD and PTG. They also concluded that "experiencing a life-threatening illness or injury and re-experiencing symptoms were most strongly associated with PTG". Leppma et al. (2016) studied police officers and the development of PTG in the aftermath of Hurricane Katrina in the USA and posited that the inverted 'U' curvilinear relationship between PTSD and PTG may suggest that moderate levels of stress promote the greatest levels of PTG.

3 MILITARY, EMERGENCY SERVICES AND POLICE AND PTG

A number of researchers have looked at PTG amongst military personnel and returned veterans. Lee, Luxton, Reger and Gahm (2010) recorded positive changes following military deployments in the Iraq and Afghanistan Wars (3537 adult active-duty soldiers) recording an overall mean PTG score of 52.0 (SD=22.98). Palmer, Graca and Occhietti (2012) similarly found some level of growth with a mean PTG score of 39.6 (SD=22.39) amongst a sample of 221 returned veterans diagnosed with PTSD who mainly served in Afghanistan and Iraq. Feder et al. (2008) explored PTG in a group of 30 male former Vietnam prisoners of war identifying a mean PTG score of 66.3 (SD=17.5) which they described as a 'moderate' level of PTG many years after their experiences.

More recently Tsai et al. (2014) in their review of the National Health and Resilience in Veterans Study in the USA found 50.1% of the 3157 veterans (current or past active military service) reported some level of growth which the researchers defined as 'moderate'. This study also identified that PTG was most strongly associated with a life-threatening illness or injury.

Growth following trauma has also been found in Emergency Service workers. Chopko (2010) undertook an empirical study of police officers in the United States, finding that post traumatic distress and PTG were significantly and positively related. Furthermore, Chopko, Palmieri and Adams (2019), in their review of PTG among US police officers in small to midsize departments, found that trauma severity was more strongly associated with PTG than trauma frequency.

In one of the first studies to look at growth in Australian ambulance personnel, Shakespeare-Finch et. al. (2003) found in their sample of 526 seasoned ambulance officers that 96.8% perceived positive personal changes which was attributed to experiencing a

traumatic event at work. Armstrong, Shakespeare-Finch and Shochet (2014) reported among a cohort of 218 Australian firefighters that PTG was most strongly associated with multiple sources of trauma and the use of self-care in coping. Additionally, this study found that organisational belongingness may promote PTG. In their review of the relationship between resiliency and PTG in a group of 80 paramedics in the Lodz region of Poland, Oginska-Bulik and Kobylarczyk (2015) found that 46.2% of paramedics experienced what the authors termed 'high' levels of PTG, with an overall PTG score for the group of 68.52 (SD=17.99).

4 CIVILIAN PTG

From a civilian perspective there have been a number of studies that have explored PTG following specific natural disasters, acts of terrorism or surviving serious illness such as cancer. Early foundational research by Tedeschi and Calhoun (1996) investigated the impact of various types of traumatic events on university students, including bereavement, injury producing accidents, separation or divorce of parents, relationship break-up, criminal victimisation, academic problems and unwanted pregnancies. They found the 21-item Post Traumatic Growth Inventory (PTGI) self-report inventory to be a valid reporting tool of growth with good internal consistency and acceptable test-retest reliability.

Kiran, Rana and Azhar (2010) in their study of 52 ordnance factory workers who were survivors of a suicide bombing in northern Pakistan reported a high mean PTG score of 72.1 (SD=11.98). This study also suggested that a high level of PTG was associated with high levels of distress and that significant disruption not only brings distress but also provides more opportunities for growth.

Elderton, Berry and Chan (2017) undertook a systematic review examining PTG and interpersonal violence, classifying violence into four categories: physical, psychological, sexual and deprivation. The types of violence considered included, child abuse, elder abuse,

violence between intimate partners and other family members, assaults by strangers and violence in institutional settings. This review examined 184 studies, with 22 studies meeting their eligibility criteria finding that 15.4% - 52% of people experience PTSD in the aftermath of interpersonal violence and that survivors of trauma involving human intent are more than twice as likely to experience PTSD, compared to survivors of non-personal related trauma, such as accidents or natural disasters. This relationship between violence related trauma and PTSD has also been reported elsewhere. For example, Straussner and Calnan (2014) suggested that PTSD is more likely to occur as a result of human actions such as assaultive violence and noted that a loss of trust in people and betrayal associated with trauma and assault leads to higher rates of PTSD.

Earlier research by Shakespeare-Finch and Copping (2006, p. 368) looking at differences in posttraumatic growth concluded that:

“Survivors of violent assault articulated more continued distress in the form of a lack of trust of others. Thus, while no qualitative difference was found in growth outcomes for type of trauma, there may be differences in ongoing distress outcomes. This concept would be interesting to investigate further.”

A number of civilian focused studies have looked at the impact of earthquakes including Jin, Xu, Liu and Liu (2014) who assessed PTSD and PTG amongst civilian adult survivors of the Wenchuan earthquake (measuring 8.0 on the Richter scale) in 2008. They found 57% of survivors experienced moderate PTG and 40.1% experienced PTSD and there was a positive association between PTG and PTSD. This earthquake caused immense devastation with around 70,000 people killed and 373,000 injured.

From the available research it is evident that since the early work of Tedeschi and Calhoun (1996) a considerable number of studies have looked at growth and PTG within the

military, emergency service workers and police. However, other than for a number of notable natural disasters, there has been very little research on growth and PTG for civilians experiencing severe life-threatening trauma. Our research explores this topic in greater detail.

5 METHOD

5.1 OVERVIEW

This study investigated levels of PTG in a cohort of Australian Bravery Award recipients (both civilian and non-civilian) exposed to extreme levels of trauma often as a result of life-threatening incidents.

5.2 STUDY DESIGN

We administered the PTGI self-assessment tool developed by Tedeschi & Calhoun (1996) to a sample of Australian Bravery Award recipients. The PTGI was used to assess Post Traumatic Growth (PTG). Participants were asked to indicate the degree to which they had experienced change, using a 6-point Likert scale ranging from 0 – 5 with 0 describing no change and 5 describing great change. In total there were 21 questions with a 6-point Likert range scale for each question ranging from 0 to 5 giving a possible total PTGI score of 105. The study used a cross-sectional survey involving Australian Bravery Award recipients exposed to life-threatening trauma, PTG and demographic variables including incident type.

5.3 RECRUITMENT

The Australian Bravery Association (ABA) supported this study and assisted by mailing 300 envelopes containing a copy of the 21-item self-report inventory (PTGI) and survey form requesting additional details to all ABA members. The ABA membership of 300

represents almost 6.1% of the 4939 Australian Bravery Awards awarded since 1975. The ABA is a not-for-profit incorporated association with the aim to maximise the support that is available to those members of the community who conduct themselves bravely to save life, property or the environment. (www.forbravery.org.au)

By completing both the PTGI self-assessment tool and completion of the demographic data survey form and submission of this information, all respondents were deemed to have given their consent to participate. All potential participants were advised that responses would be de-identified and results would only be reported on in an aggregated manner.

5.3.1 Demographic Data

Data obtained in this study using a purpose-built simple survey form included age, gender, civilian or non-civilian status (military, police, emergency services or civilian), time since incident, type of bravery award received, type of incident, relationship status (single, married, partnered, de-facto) at time of incident and current.

5.3.2 Post Traumatic Growth Inventory

Tedeschi and Calhoun's (1996) validated PTGI self-assessment tool was used to assess positive outcomes. Overall PTGI scores are reported as well as those specific to different participant and incident related variables. Higher PTG scores indicate high levels of positive growth.

5.4 ANALYSIS

All PTGI self-assessment tool data were analysed using STATA statistical data software and analysis of variance undertaken to identify statistically significant results ($p \leq$

0.05). Analysis was conducted by gender, civilian/non-civilian status, and occupation (Police) and incident type with Bonferroni corrections to adjust for multiple comparisons.

PTG scores were calculated for each participant. For consistency with other research looking at PTG, mean PTG scores and Standard Deviations for each group are presented. PTG scores were reviewed across a range of different variables including: gender, civilian/non-civilian status, incident type and violent versus non-violent incidents. PTG scores were also categorized as low or no growth (≤ 50), medium growth (51-74) or high growth (≥ 75) (Moshin, Rahman, Rana et al. 2016 and Oginska-Bulik and Kobylarczyck 2015).

5.5 AUSTRALIAN BRAVERY AWARD RECIPIENTS

The Australian Bravery Award scheme was introduced in 1975 and up until 31 December 2019, 4939 Bravery awards have been presented. On average this amounts to 110 Bravery awards each year. The Australian Bravery Award scheme is the civilian equivalent to the Military Gallantry Awards scheme.

Australian Bravery Awards are only awarded as a result of a significant and often life-threatening incidents involving acts of bravery. The highest of these awards is known as the Cross of Valour (CV) which is the civilian equivalent to the military Victoria Cross (VC). Since 1975 only 5 Cross of Valour's have been awarded for acts of conspicuous courage in extreme peril. The Star of Courage (SC) has only been awarded 174 times for acts of conspicuous courage in circumstances of great peril.

The Bravery Medal (BM) has been awarded 1423 times for acts of bravery in hazardous circumstances, with the Commendation for Brave Conduct having been awarded on 2184 occasions for an act of bravery that is worthy of recognition. Finally, there have been

1153 Group Bravery awards given for a collective act of bravery by a group of people in extraordinary circumstances that is worthy of recognition.

This cohort of Australian Bravery Award recipients provides a unique opportunity to investigate the impact from a growth perspective of serious or life-threatening incidents. Rather than focusing on a single event such as a disaster, our study compares a variety of incident types experienced by Australian Bravery award recipients comparing PTG scores amongst civilians and non-civilian award recipients.

6 RESULTS

6.1 ETHICS COMMITTEE APPROVAL

The Deakin University Human Research Ethics Committee approved this research on 12 July 2018 (Project number – 2018-136).

6.2 SAMPLE SIZE

Of the 300 packages sent out, 24 were returned as ‘address unknown’ leaving a total prospective sample of 276. Sixty-five completed PTGI self-assessments were returned by ABA members giving a response rate of 23.5%.

6.3 PARTICIPANT CHARACTERISTICS

Of the 65 ABA members who completed the PTGI self-assessment, 57 (88%) were male and 8 (12%) were female which is consistent with the gender make-up for all Australian Bravery Award recipients since 1975. Respondents varied in age from 30 to 80 years of age. On average the incident which resulted in a bravery award took place 21.54 years ago ($SD = 13.12$ years). Due to the validation and review process, it takes on average 3 years from

incident to confirmation of an Australian Bravery Award. We reviewed time since incident in 5-year periods and did not find any relationship or association between time since incident and PTG score. The PTGI self-assessment tool was completed by 37 (57%) civilians and 28 (43%) non-civilians. Of these 28 non-civilian respondents, 24 were completed by police officers. Of the 65 incidents 23 or 35% involved the death of at least one person.

In total 55 (84.6%) of respondents were either married or had a partner prior to their act of bravery. The combination of bravery awards is listed in Table 1 with slightly more respondents having received higher level bravery awards (Cross of Valour and Star of Courage) than within the overall Australian Bravery Award cohort. However, we believe that the participants in this study are representative of the broader group of Australian Bravery Award recipients, with a potential bias towards participants having been involved in more serious and/or life-threatening incidents.

Table 1

Australian Bravery Award – profile of awards.

Award received	Australian Bravery Awards given from 1975 - 2019	This study – 65 completed PTGI self-assessment tools
Cross of Valour	5 (0.1%)	1 (1.5%)
Star of Courage	174 (3.5%)	5 (7.7%)
Bravery Medal	1423 (28.8%)	16 (24.6%)
Commendation for Brave Conduct	2184 (44.2%)	28 (43.1%)
Group Citation for Bravery	1153 (23.3%)	8 (12.3%)
Other (previous Imperial scheme)		7 (10.8%)
Total	4939	65

6.4 RESULTS FROM 65 COMPLETED PTGI SELF-ASSESSMENT TOOLS

Analysis of participant characteristics against PTG scores was undertaken against a number of variables listed as follows:

Table 2.

Mean PTGI score, Standard Deviation and p-values – Australian Bravery Award recipients (65 participants)

Group	Descriptor	Variables	Number	Mean PTG	SD	P= value	
<u>All participants</u>	Australian Bravery Award recipients	-	65	41.0	25.36	-	
<u>Gender</u>	Mean PTGI by gender	Female	8	65.9	18.11	P=0.002	
		Male	57	37.5	24.37		
	Mean PTGI in civilians by gender	Female	8	65.9	18.11	P=0.02	
		Male	31	46.1	22.61		
<u>Status</u>	Mean PTGI by status	Civilian	37	49.7	23.6	P<0.000	
		Non-Civilian	28	29.5	23.3		
	Mean PTGI in males by status	Civilian	31	46.1	22.6		P=0.003
		Non-Civilian	26	27.4	22.3		
<u>Incident type</u>	Mean PTGI – incident versus all others	Fire	12	34.2	27.42	P=0.45	
		Firearm related	11	51.5	21.74		
		Vehicle related	8	42.5	23.04		
		Ocean/sea related	8	26.0	24.37		
		Knife related	8	39.6	27.92		
		Flood related	4	34.5	37.53		
		Other	16	47.1	47.1		
<u>Violence and non-violence incident type</u>	Mean PTGI violent versus non-violent incidents.	Violent	26	49.0	23.27	P=0.04	
		Non-violent	39	35.7	25.57		
	Mean PTGI – Non-violent related incidents	Civilian	23	43.8	23.01	P=0.02	
		Non-Civilian	16	24.0	25.16		
	Mean PTGI - Violent related incidents.	Civilian	14	59.4	21.91	P=0.01	
		Non-Civilian	12	36.9	19.13		
	Mean PTGI - Firearm related incidents.	Civilian	6	65.5	15.91	P=0.01	
		Non-Civilian	5	34.8	14.91		

	Mean PTGI – Knife related incidents.	Civilian	4	47.5	36.10	P=0.44
		Non-Civilian	3	29.0	9.54	
<u>Incidents involving a death</u>	Mean PTGI – incidents involving a death versus no deaths	Deaths	23	44.0	25.42	P=0.50
		No Deaths	42	39.4	25.50	

As a point of comparison to some other studies which have compared PTG growth rates looking at no growth, medium growth and high growth the following results were obtained comparing overall growth for civilians and non-civilians.

Table 3

PTG Scores – No growth, medium growth and high growth for civilians and non-civilians.

Group	Number	Average PTGI score	No or Low Growth ≤ 50	Medium Growth 51 - 74	High Growth ≥ 75
Civilians	37	49.7	10 (27.0%)	22 (59.5%)	5 (13.5%)
Non-Civilians	28	29.5	19 (67.9%)	7 (25.0%)	2 (7.1%)
All participants	65	41.0	29 (44.6%)	29 (44.6%)	7 (10.2%)

Most notably 73% of civilians in this study experienced medium to high levels of PTG compared to 32% of all non-civilians.

7 DISCUSSION

The results of this study suggest that civilian Australian Bravery award recipients experience higher levels of PTG than non-civilian recipients. Civilian female recipients experienced the highest level of PTG with a mean PTG score of 65.9. Civilians exposed to violence, including guns/firearms, scored higher PTG scores with a mean PTG score of 59.4, compared to other non-violent incidents involving civilians such as fires, vehicle accidents, ocean/sea related incidents, floods, aircraft, trains, cliff rescues, and animal related incidents with a mean PTG score of 49.0. Our results are consistent with other studies which have

reported PTG in other cohorts and populations, with the overall mean PTG score for our 65 participants reported as 41.0, placing the level of growth as moderate compared to other studies.

7.1 GENDER AND PTG

The highest levels of PTG in this study were reported by civilian female bravery award recipients with a mean PTG score of 65.9. This result comparing PTGI scores by gender was highly significant. The eight (8) female participants in this study represent 12.5% of the total sample which is similar to the overall proportion of female Australian Bravery Award recipients. All female bravery award recipients in this study were civilians. As a contrast the mean PTG score for all 57 males in this study was 37.5 with civilian males having a higher mean PTG score of 46.1 compared to non-civilian males having a mean PTG score of 27.4.

Other researchers have also reported much higher levels of PTG in female participants than males. Helgeson, Reynolds and Tomich (2006), in their meta-analytical review of benefit finding and growth, looked at 87 cross sectional studies and found a modest association between gender and PTG with women reporting slightly more growth than men. The authors noted that in comparing various studies of PTG, many comprised either 100% male or 100% female participants.

Vishnevsky, Cann, Calhoun, Tedeschi and Demakis (2010) conducted a meta-analysis looking at gender differences and PTG finding a moderate relationship between gender and PTG, with women reporting more PTG than men. In a subsequent study, Jin, Xu, Liu and Liu (2014) looked into the relationships around PTSD, PTG and gender difference and found that women were most affected by PTSD and subsequently experienced more PTG. The authors of both studies noted a gap in the research into PTG and gender and the

differences between how men and women process trauma.

Studies involving both male and female participants where results by gender were reported, consistently show female participants report higher PTG levels. McCanlies, Mnatsakanova, Andrew, Burchfiel and Violanti (2014) explored the impact of Hurricane Katrina on various mental health and well-being measures in a sample of 114 police officers and reported that levels of PTG appeared to be higher in female (mean PTG score of 55.3) compared to male (mean PTG score of 39.1) officers. Leppma et al. (2016) also found much higher mean rates of PTG in female at 55.3 compared to male police officers at 38.9, post Hurricane Katrina. Whilst our sample of eight (8) female participants is small, our study adds to the growing body of evidence suggesting that females report higher mean PTG scores than males following traumatic events.

7.2 CIVILIAN VERSUS NON-CIVILIAN PTG SCORES

In looking at PTG amongst non-civilians there are a number of studies which have looked at police officers or paramedics. Leppma et al. (2016) found a mean PTG score of 42.5 among police officers post Hurricane Katrina. Chopko, Palmieri and Adams (2019) undertook a review of PTG scores across 193 police officers based in small to midsize departments in a Midwestern U.S. state finding an average PTG score of 36.7 in police officers undertaking their normal day to day activities, concluding that trauma severity and PTSD symptoms were the strongest predictors of PTG. This study also suggested that more frequent exposure to trauma (as encountered by police officers and emergency service workers) potentially reduced the salutogenic benefits of PTG.

Generally speaking, previous literature suggests that police officers involved in various types of incidents report lower levels of PTG (range 30 – 40) similar to the mean PTG score of 32.2 reported in our study for police officers who were Australian Bravery Award recipients. In our study, all 24 police officers who completed the PTGI were male with mean PTG scores very similar to that reported by McCanlies et al. (2014) for male police officers of 39.1 and Leppma, et al. (2016) scoring 38.9 for male police officers.

Other research looking at PTG scores for non-civilian cohorts such as ambulance personnel and firefighters found PTG levels were higher than for police officers.

Shakespeare-Finch, Smith et al. (2003) reported mean PTG scores of 49.1 for experienced Australian ambulance officers and 42.4 for new recruits. Armstrong Shakespeare-Finch and Shochet (2014) studied 218 Australian firefighters who had experienced a traumatic event through their work and found an average PTG score of 42.7 which they reported as being consistent with other PTG research of emergency service personnel. Jurisova (2016) looked at a group of 62 Slovakian paramedics, 30 men and 32 women, and reported a mean PTG score of 55.9. The higher number of female participants may have contributed to what appears to be much higher levels of PTG reported for emergency service workers in their study compared to other studies.

In contrast to those lower PTG scores recorded for non-civilians, some researchers have reported higher PTG scores for civilians ranging from 36.6 to 72.1. Within our study, civilians reported a significantly higher mean PTG score of 49.7 compared to non-civilians with a mean PTG score of 29.5. Kiran, Rana and Azhar (2010), reported high levels of PTG amongst 52 male workers/survivors following a suicide bombing attack on an ordnance factory in northern Pakistan, noting that the PTG score of 72.0 appeared to be higher than that reported in other PTG studies. The authors speculated that the type of trauma, the dose and

the intensity of the trauma might play a part in determining the level of growth following a traumatic event.

In a study looking at 2080 adult civilian survivors of the Wenchuan earthquake (Jin et al., 2014) the prevalence of moderate PTG (PTG scores ≥ 57) was reported as 51.1%. The authors concluded that growth is related to PTSD, with moderate PTSD leading to higher growth. Similar results were also reported by Wu, Xu and Sui (2015), adding that female survivors had significantly higher PTG scores than males. In our study (Table 3), we found that 73% of civilian Australian Bravery Award recipients reported a PTG score of 51 or greater (moderate to high growth) compared to only 32.1% of non-civilian recipients.

The results from our research have highlighted the significant difference in mean PTG scores between civilians (49.7) and non-civilians (29.5). Generally, it would appear that civilians report higher levels of PTG than non-civilians. It may be that non-civilians (police, ambulance officers and emergency service workers) have more frequent contact with trauma and life-threatening incidents which may lessen the impact of such trauma leading to lower PTG scores.

7.3 VIOLENT INCIDENTS AND PTG

Although there were no significant PTG differences reported by incident types, the literature suggests that those involved in violence related incidents appear to score higher PTSD levels and in turn higher levels of PTG. Whilst the overall PTG score for civilian Australian Bravery Award recipients was 49.7, analysis of PTG scores across different incident types identified an emerging pattern. As highlighted previously (Table 2), this study is unique in that we were able to identify the types of incidents that each of the 65 respondents who completed the PTGI self-assessment tool were involved in. Unlike most

other research which focused on an individual incident, or a specific cohort of individuals exposed to a specific trauma, our research enabled us to compare a range of different life-threatening incident types. Violence related incidents were those which involved a physical threat to the Bravery Award recipients and included those involved in firearm related incidents, knife related incidents, assaults, a bombing and a kidnapping.

This study found a significant difference between all participants (civilian and non-civilian) involved in violent incidents, who recorded a mean PTG score of 49.0, compared to those involved in non-violent incidents where the mean PTG score was 35.7. This research also identified a significant and much higher mean PTG score of 59.4 for civilians involved in violence related incidents compared to non-civilians involved in violence related incidents with a mean PTG score of 36.9.

Broken down even further, civilians involved in firearm related incidents recorded a significant ($p=0.01$) mean PTG score of 65.5 compared to non-civilians involved in firearm related incidents with a mean PTG score of 34.8. This mean PTG score of 65.5 was the second highest PTG score recorded within this study. Incidents involving human action, and in particular assaultive violence, appear to lead to higher levels of PTG compared to non-violent incidents. As three (3) of the six (6) civilians involved in firearm related incidents in our study were female, it is possible that this will have contributed to the higher PTG score for this cohort and some caution is recommended in the interpretation of this result.

Review of the literature found little research that looked at PTG rates across different incident types, particularly comparing violent and non-violent incidents. However, some research has explored the impact of violence and violent injury and its relationship with PTSD, but not with PTG. Some researchers have identified a strong positive relationship between PTSD and PTG and others have identified a curvilinear relationship between PTSD

and PTG. However, it has been consistently reported that the impact of trauma leading to PTSD or some level of distress also leads to higher levels of PTG.

Kleim and Ehlers (2009, p. 50) in their study of PTG, Posttrauma, depression and PTSD in assault survivors found a curvilinear association between PTG and PTSD. They concluded that PTG may be most relevant to trauma survivors “who attach enduring significance to the trauma for their lives and show initial distress.” Importantly this study found that almost 60% of the 250 assault survivor participants, reported some level of positive change since their assault.

Morris (2015) as well as Straussner and Calnan (2014) suggested that if our belief in others and the goodness of humanity is challenged or threatened then it is likely that ongoing issues associated with trust and hope for the future will be impacted. In contrast natural disasters such as tsunamis, hurricanes, earthquakes, floods and fires and other ‘Acts of God’ are more readily accepted by survivors with much lower reported levels of PTSD.

This contrast in PTSD rates between human caused incidents and natural disasters was also reported by Arnberg, Johannesson and Michel (2013) six years after a natural disaster who also found much higher rates of PTSD in human caused incidents. In a similar manner Norris, Friedman and Watson (2002) found that mass shootings in the USA and/or mass violent incidents were more likely to lead to PTSD and that natural disasters were less likely to lead to PTSD. Chopko (2010) in his review of police officers and PTG noted that involvement in a shooting was the strongest predictor of PTG.

There is no doubt that violent incidents and the randomness of violent incidents are likely to be more threatening to an individual compared to natural disasters or ‘Acts of God’ which are more readily explained and accepted. It appears that violent incidents also result in high levels of PTSD and that the positive relationship between PTSD and PTG is more

profoundly demonstrated through acts of violence, which may often be life-threatening. Why there is a significant difference in growth between civilians and non-civilians is not clear, but it has been suggested that frequent exposure to trauma as experienced by police officers and emergency service workers may ultimately reduce growth (Chopko, Palmieri & Adams, 2019). Another possible explanation has been offered by Chopko (2010) who suggested that the greater the threat to life, the greater the likelihood of distress and ultimately growth. Wortman (2004, p. 85) also observed that “Across all disasters, people who thought that they were going to die were most likely to report personal growth as a result of their experience.”

8 CONCLUSION

The trends in PTG scores recorded in this study for both civilian and non-civilian Australian Bravery Award recipients are consistent with the findings of some other researchers. Female civilian bravery award recipients recorded the highest levels of growth with a PTG score of 65.9 which is consistent with some other research that compared levels of growth in females and males. While some researchers identified smaller differences in PTG scores between males and females, this study identified a highly significant difference adding to the growing evidence base supporting differences in PTG scores across gender.

It appears that PTG scores for police officers who are Australian Bravery Award recipients are much lower than recorded elsewhere for police officers which is worthy of further investigation. Overall, the mean PTG score for all civilian Australian Bravery Award recipients of 49.2 falls around the mid-point of PTG scores reported in other studies that looked at PTG scores for civilians following incidents such as a bombing, life-threatening trauma, earthquakes and hurricanes.

Australian Bravery Awards are only given for acts of conspicuous courage and bravery therefore the cohort in this study have often been exposed to severe and/or extreme

trauma frequently involving life-threatening incidents with some involving fatalities. When comparing incident types and PTG, (a unique aspect of this study), we found that civilians involved in violent incidents with a mean PTG score of 59.4 and in particular firearm related incidents with a mean PTG score of 65.5 reported some of the highest levels of PTG both within this study and compared to other research and studies.

Finally, this study highlighted a significant difference in PTG scores and responses when comparing civilians (mean PTG score of 49.7) and non-civilians (mean PTG score of 29.5). In looking at incident types, this study also identified that violent incidents and firearm related incidents elicited the highest levels of growth (PTG) amongst civilians compared to non-civilians, which is a result not reported elsewhere. As a result, we believe from a public health perspective that further research comparing civilian and non-civilian responses to life-threatening trauma should be undertaken.

8.1 LIMITATIONS AND FUTURE RESEARCH

This study's aim was to explore PTG levels amongst Australian Bravery Award recipients comparing results for civilians and non-civilians. A limitation of this research is its sample size which may have affected the overall results. The cross-sectional nature of this study also lacks the ability to identify causal mechanisms. A further study limitation relates to the study cohort who are recipients of bravery awards who have elected to join the Australian Bravery Association. The establishment of an organisation such as the Australian Bravery Association provides one point of access to award recipients, however membership of the Association may lead to a bias as those most withdrawn and affected by trauma may be less likely to seek out help and/or membership of such a group. Just over 6% of all Australian Bravery Award recipients are members of the Australian Bravery Association and individuals

who have conducted acts of bravery that were not recognised by an award are not represented therefore generalisability of results is limited.

A further bias may result amongst Bravery Award recipients who have been presented with bravery awards, with some viewing their incident and actions in a more positive manner post-incident due to the recognition afforded to them.

The results of this study support future research into this area focusing on acts of bravery and PTG with an emphasis on gender differences, civilian versus non-civilian growth following trauma and further exploration as to why civilians, in particular report higher levels of PTG following violent incidents, especially those involving guns or firearms.

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10 CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.