Factors That Affect Post-traumatic Growth in Korean Police Officers, by Age Group

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Research article

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Abstract

Background: The aim of this study was to identify factors that influence PTG in South Korean police officers, according to age group.

Methods: Raw data were collected from September 26 to October 9, 2017 for 269 police officers who are employed at 10 police offices in Seoul. Multiple regression analysis was conducted on selected data by age group.

Results: Post-traumatic growth (PTG) was affected significantly by age, marital status, monthly income, and police rank in pain perception and social support variables among general characteristics. Factors that affected PTG in the '20~29' age group were resilience ($B = 0.570$) and pain perception ($B = 0.243$), but in the '30~39' age group, only Pain perception ($B = 0.249$) was significant, and in the 'over 50' age group, social support ($B = 0.448$) and pain perception ($B = 0.252$) were significant.

Conclusion: Development of mental health programs should consider the age group of the patients. Mental health care should also be continuous.

Background

Police officers are exposed to a variety of traumatic events, which can be physical or psychological. Post-Traumatic Stress Disorder (PTSD) is common. However, after experiencing trauma, not everyone experiences post-traumatic stress, and most people try to overcome trauma, and move on to a more positive direction.

Post-Traumatic Growth (PTG) is a life-threatening variety of physical, and psychological trauma, which is positive psychological change after struggle associated with traumatic circumstances[1]. This is not just a recovery of physical and psychological functions that the person had before the traumatic experience, but also a change in life awareness[2]. In the process of experiencing and overcoming trauma, the adaptive aspect of the individual and the strength of the internal strength of the individual will lead to a change in healthy life and will affect the recovery of the pre-trauma adaptation level. In recent years, research on PTG has begun, with a focus on personal aspects such as well-being, quality of life, and the therapeutic approach to psychological interventions[3]. Further studies should consider PTG by people who are in occupations that experience traumatic events in greater number and intensity than other occupations.

However, the demographic variables used have not been consistent. Some previous studies used gender as a demographic variable. For example, studies of PTG of police officers[4] and New Zealand Surf Lifesavers [5] have shown better PTG in females than in males. However, in this study, we group subjects according to demographic variables, and identify how factors that affect PTG differ among the groups. Then we use the insights to guide search for effective ways to help people to cope with stress, and to improve the job environment.

The age at which the subject experienced the trauma was considered in previous research[6], in which conflicts arising from various events lead to experiences such as peritraumatic distress, impact of event and depression. Among them, resilience has an effect on PTG. Resilience is dynamic and persistent, so it interacts with various psychological and environmental factors while the subject overcomes and adapts to adversity[7]. People with high resilience are less likely to perceive pain because they have a better ability to cope with events than those who do not have high resilience[8]. Therefore, people with a high resilience are less likely to experience psychological disturbances, and recover better than people who have low resilience. The internal confusion state can be newly restructured in a balanced state. This process can accelerate the experience of growth through the turbulent situation created by the traumatic experience and subsequent rebuilding of schemas as resistant to traumas[9]. Social support can also help subjects to cope with stressful situations, and in psychological adjustment[10], by interaction with peers. Positive feedback provided by others can help to overcome the trauma of a life-threatening attack[11]. The perception of pain also be regarded as an important variable that affects PTG. The degree of post-traumatic experience varies according to the degree of pain perception in relation to trauma experience and pain perception[12]. The degree of perception of pain is fairly subjective, and a study of the extent to which individuals experience a traumatic perception of traumatic experiences and the degree of post-traumatic experience suggests that the experience of PTG increases with increase in the perceived severity of the trauma [12]. Therefore, the goal of this study was to provide basic data for the development of a program that can confirm the clinical value by exploring various variables associated with PTG of police officers, and to promote PTG in the high-risk group.

Methods

Research subjects

The subjects of this study were regular police officers who work at the department of life safety of 10 police stations out of 31 police stations in 25 districts of Seoul, excluding G district. The purpose and method of the research were explained to the head of the department. Thirty-five subjects were selected from each of the 10 stations.

Data collection

This study was approved by K University Bioethics Committee (2017-0104). The data were collected from September 26, 2017 to October 9, 2017. The researcher visited the police station and conducted the survey only with police officers who agreed to participate. The researchers explained that the results of the survey would be processed numerically. Before the subjects were asked to complete the questionnaire, the researcher explained the purpose of the research, and the method of the measurement. The questionnaire was completed after receiving the written consent of the subject.

Measurement tools

Recovery resilience

Resilience measured recovery capability [13], using analysis of 27 items. Each item was graded on a 5-point Likert scale with a score of 1 for 'not quite at all' and a score of 5 for 'strongly agree'. These items include three subfactors: controllability (9 items), affirmative (9 items) and sociality (9 items). In preliminary analysis, these results received Cronbach's $\alpha = 0.90$.

Pain perception

The evaluation of pain perception was a modified version of the method in [16], which was derived from [14] and [15]. The questionnaire consisted of five items that were rated on a 5-point Likert scale and 4 items on the from 0 ("not at all") to 5 ("frequently"), (5 items), sleep disturbance and emotional paralysis, and dissociation symptoms (5 items). The assessed perception of pain increases with increase in the score. The items had Cronbach's $\alpha = 0.97$.

Social support

The assessment of social support is derived from the revised version of the Multidimensional Scale of Perceived Social Support (MSPSS) [17], and the revised version was a modified version of [18]. This assessment consists of 12 items that measure family support (four items), friend support (four items) and meaningful support of others (four items); the assessments are rated on a 7-point Likert scale, from 1 = 'Absolutely not' to 7 = 'Absolutely agree'. The assessed degree of social support increases with increase in the score. In this study, the items had Cronbach's $\alpha = 0.95$.

PTG

The rating scheme for PTG used [19] and a revised and supplemented Korean version of the Posttraumatic Growth Inventory (K-PTGI) [20]. This scheme measures 16 sub-factors: self-perception change, new possibility change, interpersonal relationship change, spiritual change. Each item was rated on a 6-point Likert scale from 0 = "not experiencing these changes" to 5 = "very frequently experienced". Again, the assessed PTG increased with increase in this score. In this study, the items had Cronbach's $\alpha = 0.95$.

Data Analysis

In this study, the general characteristics and research variables of the subjects were analyzed using descriptive statistics. Multiple regression analysis was performed by dividing the gender into the factors that affect PTG. In addition, a radial graph of the factors was used based to determine the extent to which the age of police officers affected the PTG. Analysis was conducted using open source statistical software R 3.5.0; statistical significance was declared at $p < 0.05$.

Results

Marital status changed consistently with increase in age of the subjects. The percentage who were married was 0 in subjects who were in their twenties, 50 in subjects who were their thirties, 94.4 in subjects who were in their forties, and 98.1 in subjects who were in their fifties.

Income also increased with age. Of the subjects who were in their 20 s, 81.4% earned 2–3 million won per month; of those in their 30 s, 78.7% earned 2–3 million won per month; of those in their 40 s, 66.7% earned between 3 and 4 million won per month, and of those over 50, 61.5% earned over 4 million won per month.

The most common 'highest education level' generally with subject age. Of subjects in their 20 s, 55.9% had only finished high school (55.9%); for those in their 30 s, 62.3% had graduated from university; and for those in their 40 s, 58.3% had graduated from university.

Ranks also increased with age. Of subjects in their 20 s and 30 s, most were constables (84.7% and 45.1%, respectively); of subjects in their 40 s, 47.2% were lieutenants and 47.2% were sergeants; of subjects over 50, 98.1% were lieutenants (Table 1).

Table 1
General Characteristics of Subjects

Variable	20-29yrs	30-39yrs	40-49yrs	≥ 50yrs
Marital state				
Married	3(5.1)	61(50.0)	34(94.4)	51(98.1)
Single	56(94.9)	61(50.0)	2(5.6)	1(1.9)
Monthly income				
≥ 4 million won	0(0.0)	1(0.8)	9(25.0)	32(61.5)
3–4 million won	0(0.0)	17(13.9)	24(66.7)	19(36.5)
2–3 million won	48(81.4)	96(78.7)	3(8.3)	1(2.0)
< 2 million won	11(18.6)	8(6.6)	0(0.0)	0(0.0)
Education level				
University	23(39.0)	76(62.3)	21(58.3)	17(32.7)
College	3(5.1)	16(13.1)	8(22.2)	12(23.1)
High school	33(55.9)	30(24.6)	7(19.4)	23(44.2)
Police rank				
Lieutenant	1(1.7)	5(4.1)	17(47.2)	51(98.1)
Sergeant	1(1.7)	15(12.3)	17(47.2)	1(1.9)
Corporal	7(11.9)	14(38.5)	1(2.8)	0(0.0)
Constable	50(84.7)	55(45.1)	1(2.8)	0(0.0)
Total	59(100.0)	122(100.0)	36(100.0)	52(100.0)
* Subjects are male police officers -Unit : Frequency (%)				

The distributions differed among the major variables. Resilience had a minimum (min) = 75, maximum (max) = 135, mean = 103.32, standard deviation (sd) = 10.59, skewness (skew) = 0.043, and kurtosis (kurt) = 1.597. The pain perception had min = 0, max = 85, mean = 25.27, sd = 18.60, skew = 0.581, and kurt = 2.701. Social support had min = 35, max = 85, mean = 56.53, sd = 9.90, skew = -.253, and kurt = 2.276. PTG had min = 10, maximum = 75, mean = 44.56, sd = 12.46, skew = -.504, and kurt = 2.069 (Table 2).

Table 2
Level of Descriptive statistics for Study Variables

Variable	Min-Max	M(SD)	Skewness	Kurtosis
Resilience	75–135	103.32(10.59)	.043	1.597
Pain perception	0–85	25.27(18.60)	.581	2.701
Social support	35–72	56.53(9.90)	– .253	2.276
Post-traumatic Growth	10–75	44.56(12.46)	– .504	2.069
M = Mean value, (SD) = Standard Deviation				

None of the general characteristics showed differences in resilience.

The score of pain perception increased with age, from 17.92 in the 20 s age group, 23.51 in the 30 s, 32.83 in the 40 s and 32.52 in the 50 s or older. The score was 20.84 for single subjects and 28.84 for married subjects. Monthly income also affected pain perception: it was highest (31.57) in

those who earned 4 million won per month, and the score of pain perception was the highest, compared to 18.16 in the 2–3 million income group. The score of pain perception generally increased with the rank of the police officer, and was highest in sergeants.

The score of social support decreased as age increased, from 60.83 in the 20 s to 52.88 in the 50 s or older. It was lower in married officers (55.33) than in single officers (58.03). The score of social support decreased as income increased. The rank was the highest in social support with 59.63 points in the lowest rank. The general characteristics had no significant differences on PTG (Table 3).

Table 3
Variables related to General Characteristics

Variable	Resilience		Pain perception		Social support		Post-traumatic Growth	
	M(SD)	t or F(<i>p</i>)	M(SD)	t or F(<i>p</i>)	M(SD)	t or F(<i>p</i>)	M(SD)	t or F(<i>p</i>)
Age group								
20-29yrs	105.86(9.90)	2.070(.105)	17.92(15.45)	8.760(< .001)	60.83(8.93)	7.566(< .001)	44.10(13.51)	.374(.772)
30-39yrs	103.43(10.98)		23.51(17.74)		56.83(9.83)		43.95(12.00)	
40-49yrs	101.28(10.23)		32.83(19.83)		53.75(10.37)		45.58(14.03)	
≥ 50yrs	101.60(10.31)		32.52(19.11)		52.88(8.99)		45.80(11.34)	
Marital state								
Married	102.79(10.20)	929(.354)	28.84(19.47)	3.583(< .001)	55.33(9.94)	2.237(.026)	45.66(12.23)	1.620(.106)
Single	103.99(11.06)		20.84(16.49)		58.03(9.68)		43.19(12.66)	
Monthly income								
≥ 4 million won	101.33(9.18)	.641(.589)	31.57(15.44)	6.323(< .001)	52.67(8.62)	3.663(.013)	45.12(11.98)	1.173(.321)
3–4 million won	103.30(10.75)		31.07(21.23)		55.33(10.33)		46.75(12.78)	
2–3 million won	103.26(10.58)		18.16(19.50)		58.32(11.48)		41.46(11.12)	
< 2 million won	103.91(10.92)		22.05(17.16)		57.89(9.58)		43.91(12.60)	
Education level								
University	102.28(9.84)	1.067(.346)	28.46(20.95)	.670(.513)	54.44(10.79)	1.028(.359)	45.36(12.88)	.578(.562)
College	104.25(10.97)		24.71(18.37)		56.94(9.99)		45.09(11.89)	
High school	102.40(10.31)		24.76(17.95)		56.81(9.36)		43.44(13.16)	
Police rank								
Lieutenant	102.29(11.02)	17.768(.154)	30.59(21.55)	12.331(< .001)	55.47(11.13)	6.723(< .001)	46.29(13.98)	.993(.397)
Sergeant	101.53(9.79)		33.41(18.11)		53.38(8.99)		45.74(11.66)	
Corporal	103.07(11.49)		24.91(18.48)		55.45(9.40)		42.43(11.70)	
Constable	105.04(10.38)		18.08(15.01)		59.63(9.58)		44.28(12.87)	
M = Mean value, (SD) = Standard Deviation, t = t statistics – Independent t-test, F = F statistics – ANOVA, <i>p</i> = significant level's for <i>p</i> value, reject of null hypothesis level is <i>p</i> > .05								

Resilience and pain perception were inversely correlated with the main variables, and social support and PTG were positively correlated with them (Table 4).

Table 4
Correlations among Variables

Variable	Resilience <i>r</i> (<i>p</i>)	Pain Perception <i>r</i> (<i>p</i>)	Social Support <i>r</i> (<i>p</i>)	Post-traumatic Growth <i>r</i> (<i>p</i>)
Resilience	1			
Pain perception	-.318(< .001)	1		
Social support	.586(< .001)	-.280(< .001)	1	
Post-traumatic Growth	.223(< .001)	.239(< .001)	.200(< .001)	1
Pearson Correlation Coefficient Analysis, <i>r</i> = Pearson Correlation Coefficient				
<i>p</i> = significant level's for <i>p</i> value, reject of null hypothesis level is <i>p</i> > .05				

The effects of general characteristics and measured factors on PTG were analyzed using multiple regression analysis, and then expressed as radial graphs (Fig. 1–4).

The significant factors differed among the age groups. In subjects in their 20 s, resilience was the largest factor that affected PTG (*B* = 0.570), followed by pain perception (*B* = 0.243); social support did not have a significant effect. In subjects in their 30 s, only pain perception affected PTG (*B* = 0.249). In subjects in their 40 s, none of the factors had a significant effect on PTG. In subjects over 50, social support was the most significant factor for PTG (*B* = 0.488), followed by pain perception (*B* = 0.252).

Discussion

The purpose of this study is to investigate the effects of resilience, pain perception, and social support on PTG in police officers in the life-safety field, who work at the front line of crime prevention and social safety in the community. The present study detected that in subjects who were in their 20 s, resilience and pain perception affected PTG, but social support was not a factor. The strong effect of resilience on PTG in the 20 s is consistent an earlier study of [21] that showed that resilience influenced PTG promotion variables in college students in their 20 s. This agreement in conclusions suggests that people who experience traumatic events at this relatively young age can positively cope with it [22]. The likelihood of recovering to the pre-trauma adaptation level increases with increase in resilience, and the experience of trauma events can be a positive factor in adapting and overcoming difficulties in life. Therefore, police officers must consider resilience as a predictor of various crisis interventions.

In subjects in their 20 s, pain perception also affected PTG. The effects of pain on individuals are psychologically and physically subjective. In previous studies, the degree of perception of pain provided an opportunity for emotional growth[23]. The perception of suffering after the trauma event may drive attempts by the sufferer to reconstruct his or her inner beliefs and values, and to pursue the discovery of a new life path to positively understand the experience of suffering[24]. These results are consistent with previous studies[21] of the relationship between pain perception and PTG in college students in their 20 s.

The experience of pain perception helps to maintain and promote PTG. The experience of suffering in the 20 s is a continual review of the meaning of the event, and may yield an attempt to overcome the negative emotions more positively, rather than developing the perception of pain as post-traumatic stress. Few studies have considered the effects of pain perception on PTG according to age, so this possibility cannot yet be generalized. However, a study of PTG in adults in their 20 s showed a significant correlation between PTG and aggressive coping strategies. A young person may be more likely than an old person to positively sublimate the perception of pain according to the trauma event. The results of this study suggest the variables that affect PTG should be identified using a multi-dimensional approach that considers various demographic variables such as age and sex.

In subjects who were in their 30 s, pain perception affected PTG, but resilience and social support did not. This result suggests that the level of growth depends on subjective perception level. The police officers in their 30 s are as likely to experience pain perception as they did as in their 20 s. The individuals may not be trying to overcome the pain by returning to the trauma experience but rather to seek the meaning and help obtained from the pain perception, and to control the pain, and pursue a positive level of change[25].

In this study, social support and pain perception affected the PTG, with social support having the greatest effect. A previous study[26] found that PTG was better perceived by those who had experienced trauma and good social support; i.e., that active interaction with the outside world may help a person to develop psychological strategies to cope with the trauma, and thereby overcome the painful situation and develop their life positively[27, 28]. Therefore, social support can be regarded as a significant factor in PTG.

Finally, in subjects who were 50 or older, pain perception affected PTG, as it did for subjects in their 20 s and 30 s. This result may occur because the perception of pain caused by traumatic experiences is not overcome with time, but rather promotes an improved level of growth by seeking new meanings and positive thinking about trauma events[29]. Therefore, pain perception can be regarded as an important parameter for PTG.

This study has detected that resilience and pain perception have important effects on PTG in police officers in their 20 s, and that pain perception has effects in their 30 s. In officers who were in their 40 s, none of the factors tested influenced PTG.

The results of this study suggest that study of PTG should consider a wide range of variables. For example, such a study might reveal factors that other than resilience, pain perception, and social support that affect PTG in subjects who are in their the 40 s. The approach should be multifaceted and consider the demographic characteristics, occupational, and environmental characteristics of each age group.

Conclusion

The Commission selected male police officers who work in the life safety department of 10 police stations in Seoul and used them to analyze 269 data out of a total of 300. Resilience, pain perception, and social support were selected as independent variables and PTG as a dependent variable. The results of this study showed that resilience in the 20 s, pain perception in the 30 s, and social support in the 50 s have the greatest effect on PTG, and none of the factors tested affected PTG in the 40 s.

The results of this study show the necessity of considering the factors that affect PTG of police officers, and to consider various demographic characteristics. The development of various intervention programs and counseling and customized case management for high-risk could reduce the negative stress response of police officers, and improve PTG.

Abbreviations

PTSD: Post Traumatic Stress Disorder; PTG: Post-Traumatic Growth.

Declarations

Ethics approval and consent to participate

The subject was asked to agree on the survey before the study began.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

MG performed statistical analyses and drafted the manuscript. SW contributed to the conception and design of the study as well as statistical analyses. SW and MG critically revised and reviewed the manuscript. All authors read and approved the final manuscript.

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Figures

Figure 1

Resilience and pain perception are influential variables for police officers in their 20s. $F = 4.916$ $p = .004$, $R^2 = .211$, $\text{Adj } R^2 = .168$ Fig 1. 20-29yrs :a

Figure 1

Resilience and pain perception are influential variables for police officers in their 20s. $F=4.916$ $p=.004$, $R^2=.211$, Adj $R^2=.168$ Fig 1. 20-29yrs :a

Figure 2

Pain perception is an influential variable for police officers in their 30s. $F=7.527$ $p<.001$, $R^2=.161$, Adj $R^2=.139$ Fig 2. 30-39yrs :b

Figure 2

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Figure 3

No variables were significantly influential for police officers in their 40s. F =.792 p =.507, R^2 =.069, Adj R^2 =.018 Fig 3. 40-49yrs :c

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Figure 4

Social support and Pain perception were influential variables for police officers their 50s and older. $F=9.070$ $p<.001$, $R^2=.362$, Adj $R^2=.322$ Fig 4. ≥ 50 yrs :d

Figure 4

Social support and Pain perception were influential variables for police officers their 50s and older. $F=9.070$ $p<.001$, $R^2=.362$, Adj $R^2=.322$ Fig 4. ≥ 50 yrs :d