

DETERMINING THE OVERALL STRESS FACTORS FOR POLICEMEN BY AHP METHOD

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ABSTRACT

The country of Turkey has seen such mess since “Occupy Gezi Park” in 2013. This mess has included events such as terrorism attacks, suicide bomber explosions in crowded public places, war conditions both inside the country and at the borders, protests against the government and meetings that the authorities deem illegal. In almost all these situations involving disturbances, the main responsibility falls to the policemen. It is important to remember that policemen are human beings and their jobs and responsibilities place huge loads on their shoulders. While the public expects them to do their job, which is to provide public safety, one must also consider the factors that negatively affect them and make their job stressful. This research aims to order all of the stress factors of policemen hierarchically using the Analytic Hierarchy Process (AHP) method, and then suggest solutions to cope with these stressors. According to the results, “danger level” is the greatest stressor, and “age” is the least stressor.

Keywords: Police; stressors; Analytic Hierarchy Process (AHP)

1. Introduction

Throughout the literature, though there are many definitions of what stress is, because the term is multifaceted and used in many fields of science, there is still ambiguity about and little consensus on its definition (Karakaya, 2002). However, according to common characteristics of available definitions, stress is defined as a perception of a person that occurs in both the psychological and physical state when the environmental demands exceed what the person is capable of, and results in mostly negative outcomes (Michie, 2002; Kendall & Muenchberger, 2009). The reaction to these kinds of situations by an

individual is because of their wish to adapt to the circumstance (Tutar, 2004). This reaction is as normal as breathing, and stress may occur anytime and anywhere in life even during routine things at home, or on the street while waiting for the bus or at work. Work-related stress happens when the demands from the workplace and the abilities of the employee required to cope with them do not match (Blaug et al., 2007; Mkumbo, 2014). This work-related stress could be acute or sudden, post traumatic (which is mostly seen in policemen) or chronic (lasts the longest time) (Kendall et al., 2000). Every profession has situations which create an environment where stress can occur, but professions which require dealing with people like teachers and academicians have more possibilities. In one study involving 157 academicians in Sweden, stress factors were researched and time limits were found to be the most affective stressor (Lindfors et al., 2009). Another study about stressors involving 326 academicians in Tanzania showed lack of staff involvement in institutional reform, lack of necessary support systems related to their work and high workload levels were the most important stress factors (Mkumbo, 2014). Dangerous situations that involve dealing with people, such as firemen and policemen, play a significant and important role in increasing the possibility of stressors. On the one hand, the literature states that the job of a police is not stressful; on the other hand, this occupation has been cited as one the most stressful occupations because of dangers and encounters with violence as mentioned above (Berg et al., 2005; Violanti & Aron, 1995; Kuo, 2015; Newman and Rucker-Reed, 2004; Storch & Panzarella, 1996). These common reasons for the stress of a policemen's job are magnified by the situation in Turkey, and this is an important reason why policing has been chosen as a research area in this study. The security situation of the country cannot be labeled as 'good' due to civil war and border safety issues in the south east, terrorism bomb suicide attacks in the large cities and precarious encounters in meetings against government authorities. These situations are a result of the geopolitical situation of Turkey which is the bridge between Asia, Europe and Africa, and is also a host for the flow of refugees coming from Syria. All of these conditions create an extra workload for the policemen in addition to their routine work such as paperwork, protecting laws and providing security and layout of the civil public.

In a conference speech given to policemen in Turkey in 2000, the speaker said, "You are all aware of the physical danger of the occupation, but you were not all aware of the psychological danger of this work in the form of stress"; this kind of profession requires psychological bearing as well as physical durability (Birkök, 2000). The topic of stress is important because it has both positive and negative effects on people (Luthans, 1992). Positive stress, called eustress, may result in creativity and productivity, but rarely happens unless there is a controlled limit of stress (Kendall & Muenchberger, 2009). Internationally, an increasing cost trend is seen among industrial countries such as Turkey because of work-related stress. This is because when stress is present job performance decreases, and the more stress an employee feels, the more mistakes he/she makes which then results in workplace injuries (Kendall et al., 2000). Thus, the stress factors or stressors on policemen need to be analyzed and some precautions taken.

In the literature, there is research which investigated stressors on policemen. In one study involving 103 police officers in the U.S. for stressors, killing someone in the line of duty ranked as the highest stressor (Violanti & Aron, 1995). In another study involving 79 police officers in the U.S., administrative matters and relationship with non-police have

been found as primary stressors (Storch & Panzarella, 1996). Following this, another study was performed with deputies in the same organization in the U.S., but different factors were found as the highest stressors such as illnesses related with job, injury on duty and closeness to retirement (Newman & Rucker-Reed, 2004). Similar studies were done in the European Union. The first, took place in Norway with 3272 police officers and like the previous research, work injuries was the primary stress factor (Berg et al., 2005). In France, a survey with 617 policemen, found surprisingly that not job related but personal characteristics was the greatest stressor (Deschamps et al., 2003). All of those studies mentioned above were performed in developed Western countries, which are not like Turkey with its war conditions that require more security forces than ever. Also, all those studies investigated mostly work-related factors, but in this research overall stressors are examined. The method this study uses is another difference. All other studies involving this topic used questionnaires, but in this research, to be more realistic and rational, and in order to find pioneering solutions based on the results, and in the light of the purpose of this study, the stressors were first grouped as private life related, job related and organizational and then hierarchically ordered by the AHP method.

2. Method

In this research, the aim is to gather all significant stress factors, not only job related ones, but also organizational and personal factors, through a literature review on policemen. There are three main factors, and they are job related, private life related and organizational and each of them has its own sub-factors. The job related sub-factors are workload, unbalanced work shifts, job characteristics and danger level. Within the organizational factors, the sub-factors are poor interpersonal communication, the role in the organization, career development problems, organizational structure and organizational climate and culture. Finally, in the private life related factors, the sub-factors are age, family problems, personal characteristics, socio-economic conditions and physical & psychological health conditions. In order to accomplish the goal of the study, the factors were first ordered hierarchically by the Analytic Hierarchy Process so as to determine which factor or factors are primarily affecting policemen due to stress and then suggest solutions according to these results.

2.1 Job related factors

The factors caused by the nature of being a policemen are listed below as gathered from the literature.

2.1.1 Workload

If the amount of work to do is more than is possible, which can especially happen in extreme situations, this may cause stress. The physical and mental labor and effort that is required in the work may be an overcapacity for the employee (Eren, 2014). The feeling of stress at work as a result of an overloading of duties which require more caution because of dealing with criminals, violence and providing the safety of innocent civilians can cause severe results.

2.1.2 Unbalanced work shifts

Sometimes rotating night shifts may lead to inadequate sleep for policemen and this decreases their resistance to stress physiologically (Violanti & Aron, 1995). Insufficient sleep may also cause the loss of focus which results in accidents, decreasing the quality and efficiency of the work and worse health conditions all of which causes stress (Eren, 2014). There is also the issue of perception of fairness in assigning the rotating shifts that may affect the employee badly, and dwelling on this issue can create a stressful environment.

2.1.3 Job characteristics

The natural work activities of this occupation include periodic risks, threat, and violence and the ever present reality of using a gun which causes injuries and even death (Kuo, 2015). Dealing with frequent injuries can make a person have a negative view of life (Violanti & Aron, 1995). High voltage jobs, monotony, insufficient physical conditions, and death in the line of duty are also job characteristics (Tutar, 2004). Characteristics of the job of a policemen also include routine paperwork which may cause boredom and make police officers feel useless and be stressful (Violanti & Aron, 1995).

2.1.4 Danger level

The danger mentioned here may change from one situation to another. It may occur when stopping a vehicle or entering a building, chasing after a thief with a gun, providing border security, standing against an angry group of people who are in a meeting, or assaulting a suicide bomber's house (Violanti & Aron, 1995).

2.2 Organizational factors

Police officers mostly perceive the organization as unsupportive and not responsive to their needs (Violanti & Aron, 1995). The factors caused by the organization of police headquarters, though showing similar characteristics which may change from one organization to another, are listed below as gathered from the literature.

2.2.1 Poor interpersonal communication

People understand each other by communication. In organizations, for the work to be done effectively, human interaction is needed. There are times that a person cannot do the job alone and team work may be required. Quality relations and effective communications with supervisors and colleagues are two important aspects in the police profession which require teamwork. Difficulty working with superiors, inadequate support from supervisors and poorly motivated co-workers may cause stress (Berg et al., 2005). While managers who are always critical and non-supportive create stress, a positive social environment and good team work can reduce it (Michie, 2002).

2.2.2 Role in organization

The role of an employee in the organization is important for his or her productivity and efficiency. When there is ambiguity or conflict about the role, this situation may increase the stress level. An employee feels role ambiguity when he or she is not sure about the objectives, responsibilities and expectations of their job (Kuo, 2015). Role conflicts may create expectations which are hard to satisfy (Robbins & Judge, 2009).

2.2.3 Career development problems

Career development problems include over promotion, under promotion, absence of job security and lack of training (Kuo, 2015; Michie, 2002).

2.2.4 Organizational structure

According to the research, bureaucratic structures where a hierarchy exists cause more stress (Kuo, 2015). An organization where the manager supports a hierarchy and a chain of order system rather than participative management causes stress in the worker (Tutar, 2004).

2.2.5 Organizational culture & climate

Globalization and rapid development of information technology has caused competition within the organization to increase (Kendall et al., 2000). This creates a demanding and productive climate in the organization which causes stress on employees. This competition is not as strong in the private sector police as it is in the public sector. An organizational climate in which an atmosphere of friendliness rather than boss-employee separation exists reduces stress levels. An organizational culture which involves all employees no matter their position in the decision making process reduces stress (Michie, 2002). On the other hand, the lack of organizational culture, common belief and emotions causes organizational success, decreasing motivation and stress (Eren, 2014).

2.3 Private life related factors

The weight or importance of sub-factors in this section certainly depends on the person. However, we have listed five common sub-factors gathered from the literature.

2.3.1 Family problems

Family members unsupportive about the job, parenting issues, illness of a family member, and long-term strained relations with the spouse are counted as family problems (Kuo, 2015; Luthans, 1992). Though, one who claims he or she is a professional should leave the private life problems at home and vice versa for work problems.

2.3.2 Personal characteristics

There are some specific personal characteristics such as negative affectivity (pessimism), cognitive distortions, negative thinking patterns and a lack of psychological hardiness that can affect a vulnerable person's level of perception of things and cause the job to be more stressful than it actually is (Kendall et al., 2000). A person who is assertive and good at problem solving and time management is more successful at lowering stress levels (Michie, 2002).

2.3.3 Socio-economic conditions

A rational person would like to work more to maintain his or her family members economic and social life well (Eren, 2014). Sometimes, for various reasons, no matter how much a person tries, their efforts may not be enough to make a comfortable life for him or her and that can be stressful.

2.3.4 Age

The younger the person is, the less experienced she or he is. In an occupation like police work, the more experience a person has the fewer mistakes which may cause injuries, or even death, they are likely to make. As a person gets older, both in his private and professional life, a common event called middle-age syndrome appears which results in psychological worries and stress. Finally, the older a person is the more they think about the future which is another cause of stress. Workers in jobs like the police force have a tendency to feel useless after retirement, and begin worrying about this even while still working.

2.3.5 Physical & psychological health conditions

Police work is a hard job that not everyone can cope with. Police need to be healthy both physically and psychologically. Any vulnerability or tendency toward an illness such as anxiety and depression could distract the focus of the officer from his or her job and result in stress.

The overall stress factors for policemen are shown in Figure 1 below.

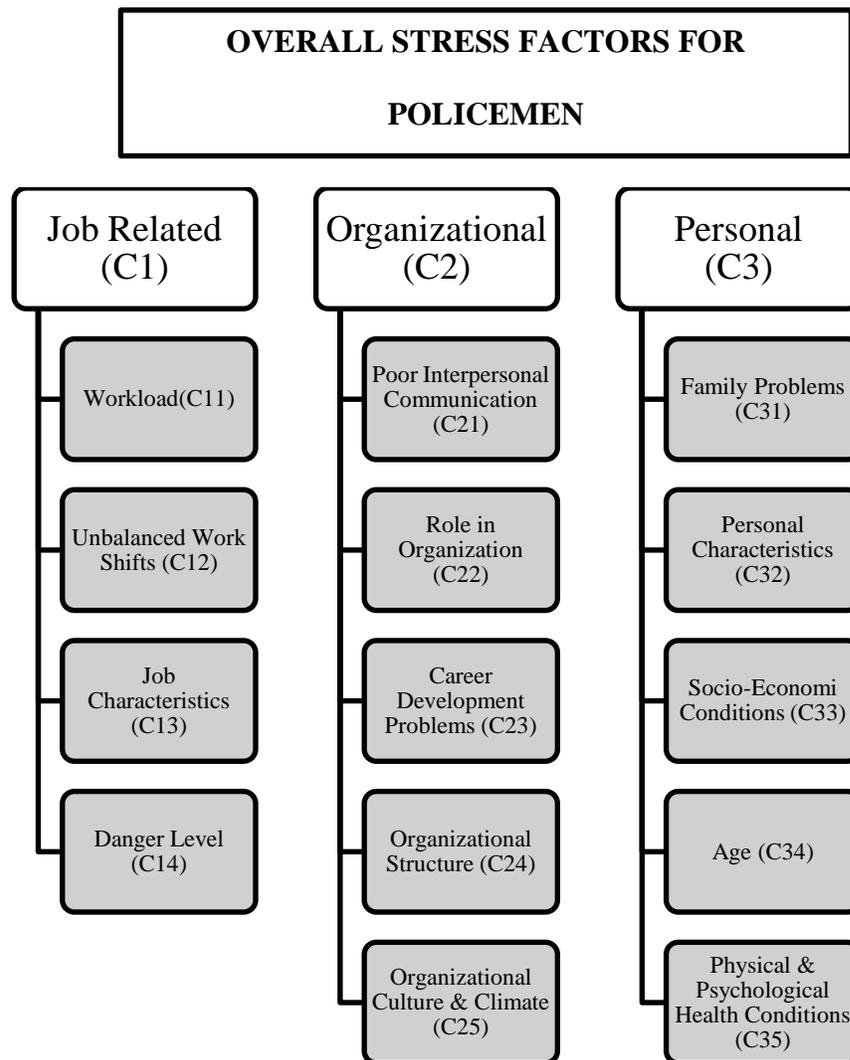


Figure 1. Overall stress factors for policemen

2.4 Analytic Hierarchy Process (AHP)

The Analytic Hierarchy Process was developed by Thomas L. Saaty in 1977 and used for multi criteria decision making with the advantage of being used in both qualitative and quantitative variables at the same time (Dong & Cooper, 2016). There are four axioms in the method (Saaty, 1991).

Axiom 1 (Opposite Existence): In the AHP method, when two criterion are compared such as criterion i^{th} and criterion j^{th} , it is shown as a_{ij} , and the vice versa demonstration is a_{ji} and is calculated as $\frac{1}{a_{ij}}$. In AHP, there is a fundamental scale used that is shown in Table 1.

Table 1
AHP fundamental scale

Intensity of Importance	Definition	Explanation
1	Equal Importance	If i^{th} and j^{th} criterion is equally important
3	Moderate Importance	If i^{th} slightly important than j^{th} criterion
5	Strong Importance	If i^{th} strongly important than j^{th} criterion
7	Very Strong Importance	If i^{th} much strongly important than j^{th} criterion
9	Absolute Strong Importance	If i^{th} absolute strongly important than j^{th} criterion
2,4,6,8	Moderate Values	If the decision maker is irresolute

(Saaty and Vargas, 2012)

Axiom 2 (Homogeneity): In the AHP method, the objects being compared should have similar characteristics within the boundary of the scale developed by Saaty from 1 to 9 as seen in Table 1.

Axiom 3 (Independence): In the AHP method, there is no relationship and dependence among the criteria as an assumption.

Axiom 4 (Expectancy): In the final AHP table, all criteria and alternatives in the problem are ordered in a hierarchy.

There are some steps that must be followed in this method (Supçiller & Çarpraz, 2011).

Step 1: Build the hierarchical structure from top to bottom; goal, criteria and alternatives respectively.

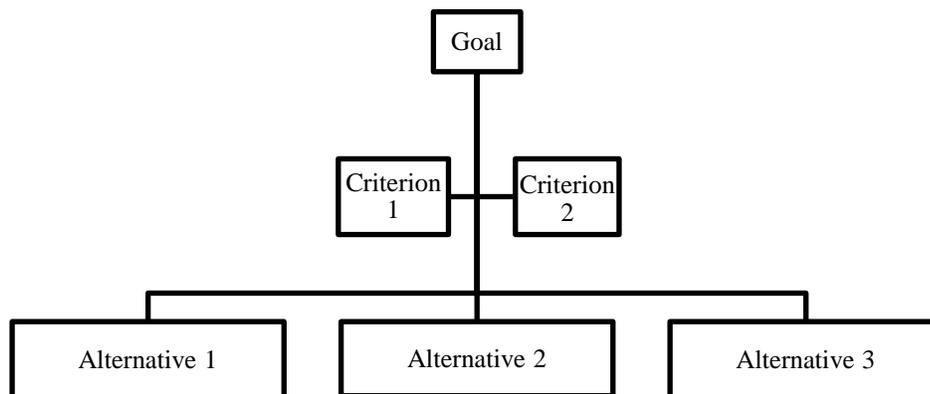


Figure 2. Hierarchical structure

Step 2: Create a pairwise comparison matrix of the main criteria and sub criteria respectively ($i= 1, 2, \dots n; j= 1, 2, \dots, n$)

Table 2
Basic pairwise comparison matrix of criteria (A_{ij}).

Criteria	i	j
i	1	a_{ij}
j	$\frac{1}{a_{ji}}$	1

Step 3: Find the Priority Vector (PV) of each sub and main criterion (Crawford & Williams, 1985).

$$w_i = \frac{\prod_{j=1}^n a_{ij}^{1/n}}{\sum (\prod_{j=1}^n a_{ij}^{1/n})} \tag{1}$$

Step 4: Examine the Consistency Ratio (CR) of Priority Vectors (Dong & Cooper, 2016).

$$I_{\max} = \frac{\sum_{i=1}^n \frac{d}{w_i}}{n} = (\text{CM-Consistency Measure}) \tag{2}$$

$$\text{Consistency Index } (CI_A) = \frac{I_{\max} - n}{n - 1} \tag{3}$$

$$CR_A = \frac{CI_A}{RI_n^*} \tag{4}$$

Random Index*

Table 3
Random index numbers

N of C	1	2	3	4	5	6	7	8	9
RI	0	0	0,52	0,89	1,11	1,25	1,35	1,40	1,45

(Saaty and Vargas, 2012)

Step 5: Determine the final global weights of each criterion.

In this research, the aim is to determine and hierarchically order overall stress factors for policemen working in Turkey. All the criteria are provided by the literature review. To find the weights of each criterion and order them hierarchically, the Analytic Hierarchy Process (AHP) was chosen. The scoring process was performed by an online interview with two chiefs of police and two commissars who carry out work somewhere close to the Syrian border of Turkey where war conditions are mainly dominant. Each participant provided pairwise criterion comparison judgements which were aggregated, using the

geometric mean in each case, into a final (aggregate) pairwise comparison matrix shown in Tables 4, 5, 6 and 7.

3. Results

First, pairwise comparison matrices for each comparison of criteria that belong to either job (C1), organization (C2), private life (C3) or main criteria were obtained through the online interview. Then, the geometric mean of each participant's answers for each criteria group was obtained.

Table 4
Pairwise comparison matrix of criteria related with job (C1)

Overall Stress Factors for Policemen	Workload (C11)	Unbalanced Work Shifts (C12)	Job Characteristics (C13)	Danger Level (C14)	PV
Workload (C11)	1,00	3,00	5,00	0,20	0,22
Unbalanced Work Shifts (C12)	0,33	1,00	5,00	0,18	0,12
Job Characteristics (C13)	0,20	0,20	1,00	0,14	0,05
Danger Level (C14)	5,00	5,44	7,00	1,00	0,61

CR=0,1

In Table 4, the priority vectors (weights) of sub criteria including workload (c11), unbalanced work shifts (c12), job characteristics (c13) and danger level (c14) of the main criterion job (c1) were found by using Equation 1. In this criterion section, the most weighted criterion was danger level with a priority vector of 0,61. Consistency indexes for each criterion were obtained using Equations 2 and 3. The consistency ratio was found as 0,1 using Equation (4).

Table 5
Pairwise comparison matrix of criteria related with organization (C2)

Overall Stress Factors for Policemen	Poor Interpersonal Communication (C21)	Role in Organization (C22)	Career Development Prob. (C23)	Organizational Structure (C24)	Organizational Climate & Culture (C25)	PV
Poor Interpersonal Communication (C21)	1,00	0,14	0,14	0,13	0,20	0,035
Role in Organization (C22)	7,00	1,00	1,41	1,00	2,71	0,30
Career Development Prob. (C23)	7,00	0,71	1,00	2,14	2,14	0,29
Organizational Structure (C24)	7,45	1,00	0,47	1,00	3,95	0,265
Organizational Climate & Culture (C25)	5,00	0,37	0,47	0,19	1,00	0,11

CR=0,05

In Table 5, the priority vectors (weights) of sub criteria including poor interpersonal communication (c21), role in organization (c22), career development problems (c23), organizational structure (c24) and organizational climate and culture (c25) of the main criterion organization (c2) were found by using Equation 1. In this criterion section, the most weighted criterion was role in organization with a priority vector of 0,30. Consistency indexes for each criterion have been obtained by using Equations 2 and 3. The consistency ratio was 0,05 by using Equation (4).

Table 6
Pairwise comparison matrix of criteria related with private life (C3)

Overall Stress Factors for Policemen	Family Problems (C31)	Personal Characteristics (C32)	Socio-Economic Cond. (C33)	Age (C34)	Physical & Psychological Health Cond. (C35)	PV
Family Problems (C31)	1,00	7,94	5,92	9,00	4,21	0,56
Personal Characteristics (C32)	0,13	1,00	0,14	1,32	0,13	0,04
Socio-Economic Cond. (C33)	0,17	7,00	1,00	5,00	3,00	0,22
Age (C34)	0,11	0,76	0,20	1,00	0,33	0,04
Physical & Psychological Health Cond. (C35)	0,24	7,94	0,33	3,00	1,00	0,14

CR=0,1

In Table 6, the priority vectors (weights) of sub criteria including family problems (c31), personal characteristics (c32), socio-economic conditions (c33), age (c34) and physical and psychological health conditions (c35) of the main criterion private life (c3) were found by using Equation 1. In this criterion section, the most weighted criterion was family problems with a priority vector of 0,56. The consistency indexes for each criterion were obtained by using Equations 2 and 3. The consistency ratio was 0,1 using Equation(4).

Table 7
Pairwise comparison matrix of main criteria

Overall Stress Factors for Policemen	Job Related Factors (C1)	Organizational Factors (C2)	Personal Factors (C3)	PV
Job Related Factors (C1)	1,00	3,63	9,00	0,69
Organizational Factors (C2)	0,28	1,00	5,59	0,25
Private Life Factors (C3)	0,11	0,18	1,00	0,06

CR=0,06

In Table 7, the priority vectors (weights) of main criteria including job related factors (c1), organizational factors (c2) and private life factors (c3) were found using Equation 1. In this criterion section, the most weighted was job related factors with a priority vector of 0,69. The consistency indexes for each criterion were obtained by using Equations 2 and 3. The consistency ratio was 0,06 by using Equation 4.

Table 8
Final results

Main Factors	Weights of M.F.	Sub Factors	Weights of S.F.	Global Weights	Place in Hierarchy
C1	0,69	C11	0,22	0,150481	2
		C12	0,12	0,085072	3
		C13	0,05	0,031437	8
		C14	0,61	0,424711	1
C2	0,25	C21	0,035	0,008679	11
		C22	0,30	0,075249	4
		C23	0,29	0,072760	5
		C24	0,265	0,065827	6
		C25	0,11	0,027207	9
C3	0,06	C31	0,56	0,032519	7
		C32	0,04	0,002275	14
		C33	0,22	0,012938	10
		C34	0,04	0,002583	13
		C35	0,14	0,008261	12

***Sum of Weights = 1**

According to the final results, the most important stress factor is “Danger Level” by 40,62%. This result is not a surprise when the nature of this occupation and the selected region where this study has been conducted are considered. As mentioned before, the police job is dangerous work compared to many other fields and requires people who are able to be courageous in dangerous situations. The region studied is near the Syrian border of Turkey which is a very dangerous place because of war conditions within and outside the borders, and also because of the illegal flow of refugee migration in that area. For example, one of the interviewees added a note at the bottom of the questionnaire asking, “Have you ever had to stand near a bomb until the bomb-expert comes and hope it will not explode? The answer is certainly the danger level!” Although the interviewees do not know the AHP method in detail, and simply scored the criteria, the results show that he was right. The second most important stress factor was found to be the “Workload” by 15%. It seems that an overload of work has a notable stressful effect on policemen as proven in the literature. It can be said that job related factors play the most important part in the stress level on policemen since this category included the three most significant stress factors and its own weight was 69%. On the other hand, the least important stress factors were found in the private life related factors category. Personal

characteristics and age seem to have almost no significance on stress levels. Perhaps personal characteristics may play a more important role when it comes to coping with stress. Age may be more important in other occupations when related to stress; but in this job, it is obvious that there are more things to consider instead of age when it comes to stress.

4. Conclusion and discussion

In this study, overall stress factors on policemen were determined and ordered hierarchically by the AHP method. The study was conducted via an online interview with two chiefs of police and two commissars who perform their duties in one of the most dangerous places in Turkey. Although, the existing literature about stress factors of policemen show some differences in the most important stress factors such as killing someone in the line of duty, administrative matters and relationship with non-police, this study showed that the most important factor in our context is “Danger Level” (Violanti & Aron, 1995; Storch & Panzarella, 1996). “Personal characteristics” and “Age” were found to be the least important stressors in contrast to the Deschamps et al. (2003) and Newman and Rucker-Reed (2004) studies respectively. The reasons for these differences can be split into two parts which include the macro level and the micro level. From the macro level perspective, Turkey is different from the previous research locations in the literature, and from the micro level perspective the region selected is also different. Apart from the social and economic development differences, the previous research was performed in Western, peaceful and developed countries; this research was conducted in Turkey which is closed to the Middle East as well as Europe. Furthermore, the selected region is one of the most dangerous places in Turkey near the Syrian border where terrorist attacks and war conditions are a daily routine. The reality of the region’s and country’s conditions make it necessary to take precautions and to provide solutions for coping with this increased stress level for the people who are brave enough to sacrifice themselves for the peace and safety of rest. This is important not only for the police’s own psychological health, but also because of the fact that the more stress a person has, the greater the possibility she or he may make mistakes, and their mistakes could be severe enough to result in injuries and deaths. The literature gives considerable suggestions to cope with stress and this should be a person’s own responsibility as much as the responsibility of his or her organization. According to Tekiner and Tavas (2016), in order to reduce stress an individual should follow strategies such as having positive dreams, exercising, maintaining personal control of behaviors, communication with others, mediation and nutrition control, having hobbies and being extroverted. According to the same study an organization should follow strategies such as creating a supportive organizational climate, job enrichment, making organizational roles clear, planning career development paths and coaching the employees in order to reduce stress. In Patterson’s (2003) study, a person should get social support from his or her friends, family, supervisor or coworkers in the form of information, money or emotional support. Another study encourages organizational support through time management and problem solving and through the work conditions such as creating a good environment and social support (Michie, 2002). In contrast, Loriol (2016) suggests that collective coping such as group therapy is more significant than social support in coping with stress. No matter what the occupation is, each job has its own stress factors for the employees. Additionally, as a human being, there may be other factors that are involved in making people stressed.

Some occupations like police work can have a more stressful environment due to the nature of the work, and the stress born from that environment may be multiplied by other factors in people's private lives. All of those factors may compound on each other, gather together and make life unbearable for an individual. Stress is inevitable in life, and up to a point it plays a positive role. In order to keep it beneath this threshold, both individuals and organizations should assume responsibility for its management.

This research has some limitations since it is conducted only with policemen, and the results should not be generalized to other occupations. The factors may be different in other jobs. Furthermore, this research was conducted in a country where a peaceful environment exists mostly theoretically, and this situation probably had an effect on the results. Hence, this research is original because it was conducted in a country whose environment shows disturbance and it also used a Multi- Criteria Decision Making Model called AHP. Further research may be conducted in different work areas, in different countries and with other MCDM methods such as the Analytic Network Process (ANP) to investigate the relationship among the criteria or other methods such as PROMETHEE, ELECTRE, VIKOR or MOORA.

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