The impact of rescue work on mental health and private life tasks

Bakker, A.H.M.

Publication date:
2020

Document Version
Publisher's PDF, also known as Version of record

The impact of rescue work on mental health and private life tasks:

How to protect health and effectiveness in private life tasks in a high risk job

Heilwine Bakker

Tilburg University

The impact of rescue work on mental health and private life tasks:

How to protect health and effectiveness in private life tasks in a high risk job

Proefschrift

ter verkrijging van de graad van doctor

aan Tilburg University

op gezag van prof. dr. K. Sijtsma, in het openbaar te verdedigen ten overstaan van

een door het college voor promoties aangewezen commissie in de aula van de

Universiteit op

woensdag 18 maart 2020, 16.00 uur

door

Alice Heilwine Marieke Bakker

geboren te **Santpoort, Nederland**

Promotiecommissie

Promotores: Prof. dr. M.J.P.M. van Veldhoven

Prof. dr. A.W.K. Gaillard

Overige leden:

Prof. Dr. Mw. K. van Dam

Prof. Dr. Dhr. M.C. Euwema

Prof. Dr. Dhr. S. Bogaerts

Dr. Dhr. P.G. van der Velden

Opgedragen aan reddingswerkers die in het werk de levenskracht verloren of het leven lieten.

Dedicated to rescue workers who lost vitality in life or life itself.

Contents

Chapter 1.

Introduction

◆ 1
Introduction

Rescue workers (in this thesis used as a term for uniformed employees working in the frontline e.g. police officers, firefighters, ambulance workers, military) have a highly demanding job, particularly when they work in the frontline. They dedicate their effort to and even risk their lives for the wellbeing of others. Many studies have demonstrated that rescue work in the frontline may have a negative impact on functioning, health and private life. It has been acknowledged in many countries that police work carries very high risks (Gershon, Barocas, Canton, Li & Vlahov, 2009). For example, a Dutch study (Houtman, Jettinghoff, Brenninkmeijer & Van den Berg, 2005) showed that police officers suffer much higher job stress than the average Dutch worker. There is a higher rate of job stress, higher workload and time pressure, in addition to many other sources of tension. In a British study (Paton, 2005) stress was found to be the highest cause of sick leave in British police officers. In turn, a Swiss study among police officers shows that increased stress is associated with poorer health (Gerber, Hartmann, Brand, Holsboer-Trachsler & Pühse, 2010). Recent research showed that cummulative involvement in critical incidents appears to be the main reason for reduced health in rescue workers (Alexander & Klein, 2009; Castro, 2009; Goodson et al., 2011; Kleber, 2007; Kleber, 2008; Monnier, Cameron, Hobfoll & Gribble, 2002; Van der Ploeg, Dorresteijn & Kleber, 2003; Wierda-Boer, Gerris, Vermulst, Malinen & Anderson, 2011). The impact of the job takes its toll on the private and family life of the rescue worker.

Although a sizable amount of research has been done on the impact of rescue work on mental health, particularly on Post-Traumatic Stress Disorders (Milczarek et al., 2011), relatively little research has focused on the impact of rescue work demands on functioning in private life. However, it is likely that rescue work over time affects the positive resources in life such as a stable relationship and family life, vitality, and a secure financial position

(Adler-Baeder, 2007; Cicognani, Pietrantoni, Palestini & Prati, 2009; Heshmati, 2007; Maddi, 2007; Shapiro, 2004; Slottje et al., 2007). In order to improve reintegrative coaching and treatment for rescue workers with mental health problems, more insight is required in the impact of rescue work on private life (see also Elbogen, Johnson, Wagner, Newton & Beckham, 2012). A well-functioning personal life is an important buffer for handling the impact of a high demanding job and for the maintenance of mental health.

The goal of the present study is to investigate the impact of rescue work on mental health and private life functioning and to develop preventive tools to foster mental health and effectiveness in private life functioning.

Before presenting our research questions, we will first discuss the background of the two key dependent variables in this study, mental health and the functioning in private life tasks.

Life tasks

In this study we focus on the personal effectiveness in private life tasks, including their relation to mental health. We want acquire insight into the ways rescue workers manage their private life while performing a highly demanding job. Particular attention will be paid to the impact of workload and critical incidents on private life tasks. Life tasks concern the assumption of care and responsibility over the execution of the activities needed to build up and maintain the resources of mental health and well-being, which make it possible to flourish in life. Good functioning in personal life tasks is regarded as an important pillar of mental health, further explained in Chapter 2 of this thesis. Life tasks are concerned with: social life, partner and family, maintaining mental health, household and finance, giving meaning, maintaining positivity and hope, spirituality, and religion.

Adler (1956) introduced the concept of life tasks. He delineated three main challenges in life tasks that confront individuals: work, social relations and love. Later he added the life task 'self and spirituality'. According to Adler (1956), the social context has an important role in learning how to handle and grow in life tasks. Life tasks are about striving for specific goals, building up life and striving for significance (see Mosak & Maniacci, 1999 for an overview of Adler's work). People have a specific life style with which they can handle their life tasks. This style governs how they map the world, shapes their ideas and ideals. The "life tasks" construct fits well with recent developments in positive psychology, a field that states that more attention should be paid to the development and growth in well-being. For example, although Seligman (2011) in his theory of well-being does not explicitly mention life tasks, the central question is 'What makes people flourish?'. He introduced a theory of well-being with five elements: positive emotions, engagement, meaning, positive relationships and accomplishment. A recent overview of studies about the sources of happiness (Clark, Flèche, Layard, Powdthavee & Ward, 2018) shows that happiness in adult life is closely related to mental health, quality of social relations and the quality of work. These three sources are considered to be more important than income and education.

Long, intensive working days and irregular shifts can put the life task 'maintaining mental health' under significant pressure. Among others, this life task includes planning energy sources and allowing sufficient time for rest and reflection. The maintenance of mental health may be undermined by using passive coping strategies (i.e. watching tv, playing games, using alcohol) after an intensive working day. When the life task functions on a lower level, it cannot adequately function as a buffer against the impact of high job demands.

Mental health

Good mental health is a prerequisite for both handling the impact of a highly demanding job and being able to function adequately in work and private life. A literature review of the European Agency for Safety and Health at Work for Rescue Work (Milczarek et al., 2011) showed that rescue work carries a high risk of mental and physical health problems. Rescue workers are at greater risk of mental health problems than workers in other jobs (Davey, Obst, & Sheehan, 2000; Dixon, Shochet, & Shakespeare-Finch, 2015; Maia et al., 2007). For example, police officers are at greater risk for developing mental health conditions such as depression, posttraumatic stress disorder (PTSD), burnout and

substance abuse (Asmundson & Stapleton, 2008; Austin-Ketch et al., 2012), and are more likely to suffer from physical health conditions such as heart disease, gastrointestinal disorders, and diabetes (Violanti, Vena & Petralia, 1998; Violanti et al., 2006). Green (2004) found PTSD to be four to six times more prevalent in police officers than in the general public. Additionally, the connection between alcohol abuse and the psychological consequences of traumatic event exposure are also well-documented (e.g., Young et al., 2002). The sequelae of these mental health problems for police officers extend to their families (Davidson, Berah & Moss, 2006) and to work absenteeism (Tang & Hammontree, 1992). Enhanced and prolonged physiological stress reactivity can, over time, negatively affect the mental and physical health of police officers (Anderson, Wade, Possemato & Quitmette, 2010; Violanti et al., 2006).

Main research questions

To achieve the general goal described above, the following five research questions will be addressed.

Research question 1

How can we conceptualize the private life functioning of rescue workers, and develop an adequate measure?

This research question is described in Chapters 2 and 4. In Chapter 2 the conceptual background of the concept of life tasks is discussed. The reason is that we want to develop an instrument which measures the effectiveness in private life tasks of rescue workers. In this Chapter the historical background of life tasks and the usefulness for practice are introduced. This Chapter is the base of the development of the life task test. This concept was first introduced by Adler (1956) and later Cantor and colleagues developed a life task test based on this theory (Cantor, Acker & Cook-Flannagan, 1992; Cantor, Kemmelmeier & Prentice, 2002). As far as we are aware there is no life task test specific for rescue workers, although tests about mental health complaints, disorders and problems in functioning are available. It is particularly important in rescue work that life tasks are functioning well, because of their buffering effect on the adversities of daily rescue work. That is why we developed the life task test for rescue workers, which is described in Chapter 4. We introduce a new test to measure personal effectiveness of rescue workers in their private life tasks. We conceptualized the following six domains outside work: relationships in family life, social life, household and finance, personal mental health, giving meaning and personal development and maintaining positivity. The statistical properties, factor structure and internal consistency of the five scales of the life task test are studied in this Chapter. We investigate the concurrent validity in relation to work stressors and job stress, as well as personality variables. In terms of work stressors and job stress we study workload, lack of social support of colleagues and supervisors, psychological complaints and negative rumination about work. In terms of personality we will study negativism and somatization. The development of a life task test will be particularly helpful in the prevention of mental complications and for providing psychological help for rescue workers.

Research question 2

How does the accumulation of critical incidents and other work characteristics (workload, social support) relate to mental health in rescue workers?

Research question 2 is described in Chapters 3 and 4. In Chapter 3 we ask for the number of critical incidents during the total job life. The study seeks to disclose the burden they still carry in their mind, as they look back on their career.

We used the Critical incidents inventory (Monnier et al., 2002) to measure the number of critical incidents. In line with Monnier and colleagues (2002) we adopted the following definition: “The trauma events faced by rescue workers during the course of their job are critical incidents” (e.g., responding to traffic accidents). (pg. 12)

In Chapter 4 we described how the life task test was developed. To validate the test the scores on the life task test were related to mental health, critical incidents, and work characteristics. The job characteristics examined were workload, lack of social support of colleagues and supervisor. The following mental health aspects were studied: mental health status, and negativism, somatization and negative rumination.

Research question 3

How does the accumulation of critical incidents and other work characteristics (workload, social support) relate to private life functioning in rescue workers?

Research question 3 is described in Chapters 4 and 5. In Chapter 4 the life task test is developed. This research also provides information about the impact of critical incidents and work demands on private life tasks. Attention will also be paid to the buffering effect of effectiveness in life tasks and the importance of capabilities to maintain these resources. These life tasks are: perceived effectiveness in social life, maintaining mental health, household and finance, giving meaning and maintaining positivity.

In Chapter 5 the impact of critical incidents and workload on private life functioning is examined more in depth. There is also an overview of literature about the impact on mental health and private life tasks.
In these Chapters we specifically focus on the following processes.

In Chapter 5, we see that the accumulation of critical incidents and job stress takes its toll on the private and family life of the rescue worker. This affects the positive resources in their lives, such as a stable relationship and family life, happiness, vitality, and financial position (Adler-Baeder, 2007; Cicognani et al., 2009; Heshmati, 2007; Maddi, 2007; Shapiro 2004; Slottje et al., 2007).

In times of distress, people are more focused on mitigating the negative effects of this distress, which may result in neglect of their energy sources. They may fail to perform effectively in life tasks, which in the long run, can lead to the depletion of their resources outside work, such as getting support from their families. Many studies have shown (see Chapter 4 and 5) the importance of resources in buffering and coping with the negative effects of critical incidents. In this situation a vicious circle may develop. Work stress and critical incidents may lead to a neglect of life tasks, due to a lack of time and energy for private life. This in turn may result in the loss of social support, which is a necessary buffer to mitigate the effects of stress induced by critical incidents.

Research question 4

By what process do the accumulations of critical incidents and other work characteristics influence private life functioning in rescue workers; more specifically, what is the role of mental health in this process?

Research question 4 is described in Chapter 5. This Chapter concerns itself with the impact of workload and critical incidents on mental health and on private life tasks, and whether mental health has a mediating effect.

To examine whether the impact of the demands of police work on the functioning in their private life is mediated by mental health status, we based our study on the causal chain as postulated in the work-home resources model (W-HR) (ten Brummelhuis & Bakker, 2012). Here, we studied one part of this model, the path of the diminishment process. This entails that negative work demands such as workload and critical incidents, diminish positive resources like mental health, which, in turn, causes negative home-related outcomes and lower effectiveness in private life tasks.

Some practical examples may illustrate the mediating role of mental health. Loss of mental health resources leads to both a lack of energy and a low perceived mental health, putting the maintenance of private life tasks under pressure. For example, long working hours, high workload, irregular shifts, and great exertion under difficult circumstances interfere with the ability to maintain good mental health. Mental health is put under even greater pressure when there is inadequate time to recover and maintain positive resources by engaging in relaxation, sport and activities with family and friends. Neglecting private life tasks becomes more tempting, because they simply do not demand a level of attention as do the harsh and intense demands of rescue work. It takes personal discipline and self-management to simultaneously pay attention to private life tasks as well as to the high demands of rescue work. When private life tasks are neglected due to impaired mental health and lack of energy, rescue workers experience a lower perceived efficacy on private life tasks.

Research question 5

Can preventive training improve the private life functioning of rescue workers and if so, which rescue workers benefit from such an intervention?

This research question is described in Chapter 6. The sixth Chapter examines the effectiveness of a preventive training using self-management tools. This study also seeks to find an answer to the question of who benefits from the training. Due to the small group of respondents and the lack of a control group, this study represents a preliminary investigation into the effectiveness of the preventive training.

In this study, the preventive training consisted of two 4-hour meetings, separated by a period of one month. The training was given in a group setting, with education and exercises related to work and private life. At meeting 1, the following topics were discussed: learning to handle your personal manual; recognizing your needs and stress signals and taking the right action to find relaxation again; learning to reset negative emotions and memories; and identifying your personal sources of energy in the job and your private life, and learning to use them in an active way. Particular attention was paid to the sources of energy before training as a rescue worker.

The second meeting was about identifying aspects of the job that made participants feel proud, fostering their professional growth. Attention will also be given to support of colleagues and supervisors. In the training, participants developed a "personal first aid kit to maintain a good mental condition".

This study is intended as a first step, to gain insight into this preventive training and investigate whether this training can be effective in self-management outcomes in daily life, particularly in terms of functioning in life tasks, meta-cognitive awareness (Schraw & Dennison, 1994), and coping self-efficacy (Bandura, 2001).

Data collection

For research question 1 – 4, data was collected during the first measurement of an individual psychological treatment trajectory of police officers. It was a short trajectory of personal psychological training of 10-15 sessions. This took place in an occupational health practice in the Randstad (The Netherlands). Respondents were advised to accept psychological support from the occupational physican. In the psychological treatment, the police officers worked on recovery of mental health complaints and effective functioning in private and professional life tasks. Furthermore, they worked on a process of reintegration in the job together with the company doctor. In diagnostic work and psychological support, attention was paid to the possibilities and vulnerabilities that a return to the job entails. In the various articles, different data sets were used.

In the development of the Life Task Test, a comparison group of employees who were working in an office situation was used. Additionally, this group was advised to look for psychological support by the company doctor to work on recovery of mental health complaints and reintegration in the work situation. Respondents were asked to give informed consent to provide personal data to the research. All respondents were working in the urban areas of the Netherlands.

For research question 5, data was collected before and after the preventive training for mental condition with self-management tools. This research group comprised medical drivers, ambulance workers and police officers who participated in a preventive training program consisting of two four-hour sessions. This preventative training was compulsory in the majority of training situations, as a part of education. Respondents were asked for permission to use their data by giving informed consent.

In the original research design of the preventive study, data was also requested from the partners. However, the data provided was insufficient to be of use for this study. Employees of the coast guard were part of this study as well. Unfortunately, however, their specific data was insufficient to include in this study. The data from the planned control group, consisting of managers from a company of technical engineers, was also found not to be suitable to be included in this study.

Remark

It is important to realize that for all the research questions, the research was done with a small specific group. The research group concerns police officers with absenteeism due to mental health complaints, who were referred to psychological help through an occupational physician. The psychological personal training (research questions 1-4) was short, consisting of 10-15 sessions and focussed on recovery and reintegration. The preventive research (research question 5) was about police and ambulance group who followed a short preventive training program consisting of two four-hour sessions. Furthermore, as the research design is cross-sectional, it is not possible to infer causal relationships from this data. Therefore, follow-up longitudinal research is needed. Thus, the results only show the described consistency in this specific group. It is therefore important to be cautious about generalizing these results to other populations.

Overview of PhD thesis

The first Chapter contains a general introduction of the study. In the second Chapter we introduce the conceptual base of life tasks. A summary is given of the theoretical development of life tasks in a historical perspective and within the context of recent themes in psychology.

In the third Chapter we investigated the health- and work-related problems of 67 rescue workers (police officers and medical emergency drivers) caused by the accumulation of critical incidents during their career. This group of rescue workers participated in a preventive training. The study examines whether the number of critical incidents and workload affect mental health problems. The moderating role of social support is examined as well. It is expected that social support by colleagues and supervisor reduces the effects of critical incidents on mental health complaints. We also attempt to establish whether social support moderates the relation between critical incidents and workload.

The fourth Chapter is concerned with the development of a life task test to measure the perceived effectiveness of rescue workers in private life. This effectiveness was investigated in the following six life tasks outside work: relationships in family life, social life, household and finance, personal mental health, giving meaning and personal development, and maintaining positivity. This research was done among 108 policemen following a course of psychological help.

The central question of the fifth Chapter is: what is the impact of workload and critical incidents on mental health and on private life tasks, and does mental health have a mediating effect? The research group consisted of 166 police officers with psychological health complaints and absenteeism from work.

The sixth Chapter examines the effectiveness of a preventive training using self-management tools. The training consisted of two sessions. Questionnaires were filled out before the first session and six weeks after the second session. The research group consisted of 79 respondents, 38 police officers and 41 ambulance personnel. The main questions were: does this mental health training enhance the perceived efficacy in life tasks, and does it yield a positive development in coping-self efficacy and meta-cognitive awareness? What is the influence of mediating factors, such as the number of critical incidents and age? The results here provide an answer to the question as to who benefits from the training.

The seventh and final Chapter contains a general discussion, providing an overview of the results and their relevance for theory and practice.

References

Adler, F. (1956). The value concept in sociology. *American Journal of Sociology*, *62*(3), 272-279.

Adler-Baeder, F. (2007). *Smart Steps: Embrace the journey*. Auburn, AL: National Stepfamily Resource Center.

Alexander, DA, & Klein, S. (2009). Eerstehulpverleners na rampen: een overzicht van stressreacties, risico's, kwetsbaarheid en veerkracht. *Prehospital and Disaster Medicine*, *24* (2), 87-94.

Anderson, J., Wade, M., Possemato, K., & Quitmette, P. (2010). Association between posttraumatic stress disorder and primary care provider-diagnosed disease among Iraq and Afghanistan veterans. *Psychosomatic Medicine, 72*(5), 498-504.

Asmundson, G. J. G. & Stapleton, J. (2008). Associations between dimensions of anxietysensitivity and PTSD symptom clusters in active-duty police officers.*Cognitive Behaviour Therapy, 37,* 66–75.

Austin-Ketch, T.L., Violanti, J., Fekedulegn, D., Andrew, M.E., Burchfield, C.M. & Hartley, T.A. (2012). Addictions and the criminal justice system, what happens on the other side? Post-traumatic stress symptoms and cortisol measures in a police cohort. *Journal of Addictions Nursing*, *23*(1), 22-29.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual review of psychology*, *52*(1), 1-26.

Brummelhuis, ten, L. L. & Bakker, A. B. (2012). A resource perspective on the work–home interface: The work–home resources model. *American Psychologist*, *67*(7), 545.

Cantor, N., Acker, M. & Cook-Flannagan, C. (1992). Conflict and preoccupation in the intimacy life task. *Journal of personality and social psychology, 63(4)*, 644-655.

Cantor, N., Kemmelmeier M., Prentice, D.A. (2002). Life task pursuit in social groups: balancing selfexploration and social integration. *Self and Identity, 1*, 177-184.

Castro, C. C. (2009). Impact of combat on the mental health and well-being of soldiers and Marines. *Smith College Studies in Social Work*, *79*(3-4), 247-262.

Cicognani, E., Pietrantoni, L., Palestini, L. & Prati, G. (2009). Emergency workers' quality of life: The protective role of sense of community, efficacy beliefs and coping strategies. *Social Indicators Research*, *94*(3), 449.

Clark, A. E., Flèche, S., Layard, R., Powdthavee, N., & Ward, G. (2018). *The origins of happiness: the science of well-being over the life course*. Princeton University Press.

Davey, J. D., Obst, P. L. & Sheehan, M. C. (2000). Developing a profile of alcohol consumption patterns of police officers in a large scale sample of an Australian police service. *European Addiction Research*, *6*(4), 205-212.

Davidson, A. C., Berah, E., & Moss, S. (2006). The relationship between the adjustment of Australian police officers and their partners. *Psychiatry, Psychology and law*, *13*(1), 41-48.

Dixon, K. M., Shochet, I. M., & Shakespeare-Finch, J. (2015). Stress during the rebuilding phase influenced mental health following two Queensland flood disasters more than the event itself.

Elbogen, E. B., Johnson, S. C., Wagner, H.R., Newton, V. M. & Beckham, J. C. (2012). Financialwell-being and post-deployment adjustment among Iraq and Afghanistan war veterans. *Military Medicine, 177*(6), 669–675.

Gerber, M., Hartmann, T., Brand, S., Holsboer-Trachsler, E., & Pühse, U. (2010). The relationship between shift work, perceived stress, sleep and health in Swiss police officers. *Journal of Criminal Justice*, *38(6)*, 1167-1175.

Gershon, R. R., Barocas, B., Canton, A. N., Li, X., & Vlahov, D. (2009). Mental, physical, and behavioral outcomes associated with perceived work stress in police officers. *Criminal justice and behavior*, *36*(3), 275-289.

Goodson, J., Helstrom, A., Halpern, J. M., Ferenschak, M. P., Gillihan, S. J. & Powers, M. B. (2011). Treatment of posttraumatic stress disorder in U.S. combat veterans: A meta-analytic review. *Psychological Reports, 109*, 573–599. http://dx.doi.org/10.2466/02.09.15.16.PR0.109.5.

Green, B. (2004). Post-traumatic stress disorder in UK police officers. *Current medical research and opinion*, *20*(1), 101-105.

Heshmati, A. (2007). The relationship between income inequality, poverty and globalization. *The Impact of Globalization on World's Poor. Palgrave Macmillan Ltd. Houndsmills. Basingstoke. Hampshire, UK*, 59-93.

Houtman, I. L. D., Jettinghoff, K., Brenninkmeijer, V. & Berg, R. van den (2005). De politie vijf jaar later: Werkstress en het effect van maatregelen. *Hoofddorp: TNO Work and Employment*. [Dutch police organization five years later: Workstress and the effect of policy].

Kleber, R. J. (2007). *Weg van het trauma* (proefschrift, Stichting KTP).

Kleber, R. J. (2008). Psychopathologie na rampen: algemene karakteristieken en kritische kanttekeningen. *Psychologie en Gezondheid*, *36*(3), 117-123.

Maddi, S. R. (2007). Relevance of hardiness assessment and training to the military context. *Military Psychology, 19(1),* 61-70.

Maia, D. B., Marmar, C. R., Metzler, T., Nobrega, A., Berger, W. & Mendlowics, M. V. (2007). Post-traumatic stress symptoms in an elite unit of Brazilian police officers: Prevalence and impact on psychosocial functioning and on physical and mental health. *Journal of Affective Disorders,* 97, 241–245.

Milczarek, M., Hanke, A., Georgiadou, P., Pinotsi, D., Kallio, H., Lusa, S.,... Nicolescu, G.I. (2011). Emergency Services: A Literature Review on Occupational Safety and Health Risks. *European Agency for Safety and Health at Work*. 1–80. Retrieved from: http://osha.europa.eu/en/topics/stress/index html.

Monnier, J., Cameron, R. P., Hobfoll, S. E., & Gribble, J. R. (2002). The impact of resource loss and critical incidents on psychological functioning in fire-emergency workers: A pilot study. *International Journal of Stress Management, 9,* 11–29.

Mosak, H. H., & Maniacci, M. (1999). *A primer of Adlerian psychology: The analytic-behavioral-cognitive psychology of Alfred Adler.* New York, NY: Brunner-Routledge.

Paton, D. (2005). Posttraumatic growth in protective services professionals: Individual, cognitive and organizational influences. *Traumatology*, *11*(4), 335.

Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary educational psychology*, *19*(4), 460-475.

Seligman, M. (2011). *What you can change... and what you can't: the complete guide to successful self-improvement*. Hachette UK.

Shapiro, A. (2004). The theme of the family in contemporary society and positive family psychology. *Journal of Family Psychotherapy*, *15*(1-2), 19-38.

Slottje, P., Twisk, J. W. R., Smidt, N, Huizink, A. C., Witteveen, A.B., Mechelen W. van & Smid, T. (2007). Health-related quality of life of firefighters and police officers 8,5 years after the air disaster in Amsterdam. *Quality of Life Research 16*, 239-252.

Tang, T. L. P. & Hammontree, M. L. (1992). The effects of hardiness, police stress, and life stress on police officers' illness and absenteeism. *Public Personnel Management*, *21*(4), 493-510.

Van der Ploeg, E., Dorresteijn, S. M. & Kleber, R. J. (2003). Critical incidents and chronic stressors at work: Their impact on forensic doctors. *Journal of Occupational Health Psychology*, *8*(2), 157.

Violanti, J. M., Andrew, M. E., Burchfiel, C. M., Dorn, J., Hartley, T. & Miller, D. B. (2006). Posttraumatic stress symptoms and subclinical cardiovascular disease in police officers. *International Journal of Stress Management*, *13*(4), 541.

Violanti, J. M., Vena, J. E. & Petralia, S. (1998). Mortality of a police cohort: 1950–1990. *American Journal of Industrial Medicine, 33*(4), 366-373.

Wierda-Boer, H., Gerris, J., Vermulst, A., Malinen, K. & Anderson, K. (2009). Combination strategies and work–family interference among dual-earner couples in Finland, Germany, and the Netherlands. *Community, Work & Family*, *12*(2), 233-249.

Young, S. E., Corley, R. P., Stallings, M. C., Rhee, S. H., Crowley, T. J., & Hewitt, J. K. (2002). Substance use, abuse and dependence in adolescence: prevalence, symptom profiles and correlates. *Drug and alcohol dependence*, *68*(3), 309-322.

Chapter 2.

The construct “life tasks”

◆ 2

The construct “life tasks”

In this thesis, the concept of life tasks is central to the studies that are performed. This Chapter provides the theoretical background information needed, before we can go into the results of our research. First, we will introduce the concept of “life tasks” and discuss it from a historical perspective and the position it occupies within the wider literature of psychology. Next, we will explain how it relates to mental health, work, and resilience, more specifically in rescue workers. Finally, we will discuss the usefulness of the life tasks construct for theory and practice.

Definition of “life tasks”

Life tasks can be defined as striving to build up your life. For example, the process of mastering oneself and the world, starting with our birth and building up mastery over one’s functioning within one’s environment. Life tasks are concerned with activities such as learning to walk and talk, and can range from fulfilling basic needs (protection, attachment, safety, and food) to fulfilling needs for personal growth. The latter consist of learning to build up relationships, friendships, finding an education, acquiring skills to function in a job, and parenting. Even greater life tasks are concerned with learning how to handle the difficult side of life and developing a stable personality. A person functioning effectively in life tasks can develop a good level of well-being (Seligman, 2000), a process described in the development psychology of Erikson (1968) and Maslow (1971). Life tasks provide motivation and self-knowledge, enabling individuals to successfully navigate their everyday lives (Cross & Markus, 1991), and thus have important consequences for psychological and physical well-being (Emmons, 1991; Emmons & Goldstein 1992; Klinger, 1975; Palys & Little, 1983). Myers, Sweeney and Witmer (2001) developed a

holistic model for wellness and prevention over the life span. They describe five life tasks: spirituality, self-regulation, work, love, and friendship. In this model they demonstrate the interconnectedness of the characteristics of the healthy person, the life tasks, and the life forces.

Much research has been done on the experience of effectiveness, which gives a sense of confidence and being in control in one's life. The perceived effectiveness contributes to the experience of mastery of and influence on these aspects of life (Bandura & Wessels, 1997; Seligman & Csikszentmihalyi, 2000). Life can be hard, and, in difficult times it can be a challenge to remain effective in all life tasks. Effectivity in one life task can buffer problems in another: for example, effectiveness in social relations can buffer problems in household and finance.

The origin of the life tasks concept

Alfred Adler (1956) was the first researcher/psychotherapist who introduced the term: life task. He took a particular interest in the life of tailors. Namely, due to the long hours and harsh conditions under which tailors worked which resulted in significant pressure and pour performance in life tasks. Several years later Chen, Westman and Hobfoll (2015) used the term life tasks to describe the Conseration Of Resources Theory (COR theory) in the context of resilience. They emphasize the importance of maintaining engagement in life tasks even under stressful circumstances.

Life tasks is a neutral, abstract term - not linked to any health complaint or concern, - but rather, a positive term describing abilities. It allows us to assess a person's effectiveness in a specific life task and define potential learning points. Additionally, it is a term based on a positive developmental view, that is, that life is about acquiring mastery over oneself and the surrounding world, and about striving for specific goals. The concept "life tasks" will be described from a historical perspective so as to better understand it. In order to do this, we shall describe various theoretical perspectives on life tasks and their meaning for mental health and well-being. This will also serve to position the concept within the context of current psychology.

A historical overview of theory and research on life tasks

In this section we place the concept of life tasks in a historical perspective and describe its development in recent years. Because the theorie of Adler is the most close to the concept of life tasks there is more attention for it. Also he was one of the first psychologist and psychiatrist who described the influence of social context on personal development and called the development of mastery of life life tasks.

Analytic-behavioral-cognitive psychology

Adler (1870-1937) founded the society of individual psychology. In contrast to Freud (1915) who focused on unconscious drives, Adler developed a growth model that emphasized the positive attitude of human nature and control of one's own destiny. He introduced the phenomenological perspective, which states that an individual can be understood from his or her unique point of view. Adler argued that an individual should be understand in light of his context and social relations. He believed that the social and community realms were equally important as the internal realm of the individual.

In his book, "What life should mean to you" (Adler, 1931), he explains that human beings have three ties in which we look for fulfillment and meaning. These ties are:

- The place we live (planet, earth);
- Our membership as living beings: we are not the only members of human race. There are others around us, and we are living in association with them;
- The pair bonds we form: we are bound, we are living in two sexes.

These three ties gives three problems to learn and grow; "how to find an occupation which enable us to survive under the limitations set by the nature of the earth; how to find a position among our fellows, how to accommodate ourselves to the fact that we live in to sexes" (Adler, 1931, p. 14). The development of learning cooperation with others and social interest throughout the lifespan are important in his work. "But every problem of life demands an ability to cooperate for its solution; every task must be mastered within the framework of our human society and in a way which furthers our human welfare. Only the individual who understands that life means contribution will be able to meet his

difficulties with courage and a good chance of success." (Adler, 1931, p. 30) ... "If life is approached in this way, as a cooperation of independent human beings, we can see no limits to the progress of our human association." (Adler, 1931, p. 31).

He delineated three main challenges in life tasks with which individuals are confronted: work, social relations, and love. Later, he added the life task 'self and spirituality' (Adler, 1956). Dinkmeyer, Dinkmeyer jr. and Sperry (1987) drew particular attention to the life task 'parenting and family'. In the work of Adler, the social context has an important role in the development of life tasks. Life tasks are about striving for specific goals, building a life and striving for significance (see Mosak & Maniacci, 1999, for an overview of Adler's work). People have a specific style of living in which they handle their life tasks. This style informs how they view and interact with the world.

We develop a life style because:

- A style helps to understand life. The life style allows us to make sense not only of what we are but of what life and other people are all about;
- It gives us a chance to anticipate life's developments. By having a map, a blueprint, we can plan for the future, make adjustments, and make decisions accordingly;
- It provides us with the opportunity to control life. We can control situations as we see fit (Mosak & Maniacci, 1999).

People attempt to handle life tasks according to their life styles. The life style can be conceived of as the 'rule of rules' (Shulman, 1973). It is the subjective, unarticulated set of guidelines that individuals develop and use to move through life and toward their goals. It is developed within the social context and interactions with their social life with peers, family, community.

Nancy Cantor with Acker and Clook-Flannagan (1992), Harlow and Cantor (1994, 1995) and Kemmelmeier and Prentice (2002), conducted a great deal of research into the theoretical development of life tasks, inspired by the theories of Adler (1956). According to Cantor et al. (2002), 'Personal well-being and resilience are contingent on the ability to negotiate and successfully pursue personal goals through life tasks and opportunities afforded by one's social environment.' The Social-Contextual Model of Everyday Problem Solving (Berg, Meegan & Deviney, 1998) highlights the importance of considering how a problem, or stressor may be appraised by individual members of a social unit and how those appraisals may be related to strategy use. The appraisal process is embedded in a social context and is not just an individual issue (Meegan & Berg, 2001). People appraise life tasks by means of interdependence, control, difficulty and enjoyment. These appraisals form the strategies to handle life tasks. Cantor et al. (2002) developed a life task questionnaire, which focused on the appraisal of life tasks. The life task questionnaire was designed to deal with specific ages and their life tasks. The questions about personal self-evaluation on these life tasks probe deeper. The appraisal process of a specific life task is questioned as follows: difficulty, degree of reward and outcome evaluation. Personal emotions about specific life tasks are also questioned in regard to involvement and positive affect. In a study of specific life tasks of female students, seven main life tasks were found: grades, goals, friends, intimacy, on own/independency, sorority and physical self (Cantor et al., 1991).

In 1996, Harlow and Cantor investigated the life task participation of participants in late adulthood. They found higher levels of life satisfaction when people participate in community service and social life. They emphasised the importance of life task participation; in that life tasks are individualized versions of contextual prescriptions, through which individuals meet personal and sociocultural agendas.

Although Cantor developed the life task test for specific groups, the main concept in this test is as follows. Cantor, Norem, Liendenthal, Langston and Brower (1987) developed a life tasks questionnaire to find a way to build models of behaviour that allowed for person-by-situation interactions. Ideally, these models would be able to identify concepts of interest relevant to the individual, while still retaining generalizability beyond a specific group. Cantor et al. (1987) took an approach that studied (1) the interpretation of a situation in which a task presented itself, (2) the self-knowledge and self-concept that influenced these interpretations and (3) the strategies that were used to translate individual appraisal into

purposeful action. Initially they took a sample of Honours College freshmen (n = 147) and differentiated six life tasks domains (Cantor et al., 1987). The life tasks questionnaire (described in Chapter 4) was adjusted by Cantor et al. (1991) to study a sample of campus sorority members (n = 50). Among other things, participants were asked to appraise their mood while performing a task (e.g., "How difficult is the task of finding intimacy for you?").

Development theory

Erik Erikson (1902-1994) was one of the founders of the conceptual theory of life tasks. He developed a theory about mastering the challenges of life over the lifespan (Erikson, 1968). According to this theory, every life task is connected to a stage in a person's life, and each stage requires a person to deal with a conflict connected to that particular stage of life. Gaining mastery over these challenges is essential to overcome internal and external conflicts or stagnation in life. The development of a human being according to Erikson (1968) centers around questions such as: What kind of person do I want to be? What kind of person have I been? And can I reconcile myself with that?

Social cognitive theory

Perceived self-efficacy is embedded in the agented perspective of social cognitive theory that provides principles on how to motivate, enable, and guide people toward personal and social change (Bandura & Wessels, 1997; Bandura, 2012). 'Self-efficacy beliefs influence how well people motivate themselves and persevere in the face of difficulties through the goals they set for themselves, their outcome expectations, and casual attributions for their successes and failures.' (Bandura, 2011). In this theory the term life task is not used, but there is attention to striving in life after specific goals and demands. Self-efficacy may be regarded as an element of managing mental health. Self-efficacy means to trust oneself and feeling confident to handle problems in certain situations. Coping may also be considered as a part of managing mental health, especially active coping by drawing on personal sources of energy and taking action on stress signals. Coping with self-efficacy appears to play a critical role in the recovery of post-traumatic stress (Bandura, Barbaranelli, Caprara, Gerbino, & Pastorelli, 2003; Benight & Harper, 2002). It shows that the belief in one's ability to exercise some measure of control in difficult situations has a protective function. Moreover, the impact of resource loss was mediated by perceived coping with self-efficacy (Benight, Ironson & Durham, 1999).

Positive psychology

Positive psychology is yet another domain which pays serious attention to life tasks. Although the term as such is not used, it is concerned with what are called (see Hobfoll & Wells, 1998) pillars of happiness, mental health and well-being. As early as 1998, Peseschkian, one of the initiators of positive psychology, together with Tritt distinguished four pillars of happiness and the experience of success in life: work/finance, family and social contacts, health/physical condition, consciousness and culture. Seligman and Csikszentmihalyi (2000) are also considered to be important developers of positive psychology. They criticized too much focus on the negative aspects, such as pathology, and called for research on positive human capabilities that result in happiness and good mental health. Wellness contributes to resilience and the effective handling of daily stress (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Ryff et al., 2012). Keyes (2012) shows that wellness as defined in an emotional, psychological and social sense may help people to flourish. Effectiveness in life tasks may therefore be an important source of mental health.

In the next part we describe life tasks by following some current subjects in this research. These are the psychological themes that are relevant in the development of life tasks: mental health, work demands and post traumatic growth.

Life tasks and (mental) health

The World Health Organisation (n.d.) is very clear in its definition of health: "A state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (p. 1). They argue that (1) an assessment of wellbeing is indispensable in the measurement of health and (2) that wellbeing can be assessed by measuring QOL and its degree of improvement (WHOQOL-BREF and Health: Assessing different domains of wellbeing).

For example, according to the WHO (n.d.), extension of one's life in a health care setting would not improve QOL – and as such overall health – if the treatment takes away a proportional amount of wellbeing in exchange. Serious adverse drug reactions and invasive surgeries are examples of treatments that might heavily impact QOL. Furthermore, the WHO considers QOL to be a construct that consists of multiple domains of different life aspects (The WHOQOL Group, 1995). Physical health, mental health and social well-being are three examples of such domains (Saxena & Orley, 1997). Saxena and Orley (1997) are straightforward in their notion that a person's disease and impairments negatively impact their psychological wellbeing and social life. They assert that a broader view of health in health care settings is necessary to paint an accurate picture, as improving QOL and improving health are very much interconnected. Research by Harper et al. (1998) supports this assertion by showing that all four of WHOQOL-BREF domain scores contributed significantly to explaining the variance observed within reported overall QOL and general health.

In an overview of the definitions of health over the past decades, Huber (2014) mentions that life tasks have been considered the base of health. For example, Henry Sigerist (1941), in his analysis of the relevance of health for human welfare, stated that a 'healthy individual is a man who is well balanced bodily and mentally, and well-adjusted to his physical and social environment. He is in full control of his physical and mental faculties, can adapt to environmental changes, so long as they do not exceed normal limits, and contributes to the welfare of society according to his ability. Health therefore is not simply the absence of disease; it is something positive, a joyful attitude towards life, and a cheerful acceptance of the responsibilities that life puts upon the individual.' In 1975 Ivan Illich, an Austrian philosopher and Roman Catholic priest, described health as 'the ability to adapt to a changing environment, to growing up and to aging, to healing when damaged, to suffering and to the peaceful expectation of death. Health embraces the future as well and therefore includes anguish and the inner resources to live with that anguish.'

Another theory concerned with resources as a base of mental health is The Conservation of Resources (COR) theory (Hobfoll & Lilly 1993; Hobfoll & Wells, 1998), which regards stress as a loss of energy. The theory is based on the idea that individuals want 'to obtain, retain, protect, and foster those things that have value.' Resources include object resources (housing, clothing), conditional resources (a stable relation, social support, job), personal resources (self-respect, belief in self-efficacy) and sources of energy (income, insurance). COR-theory operates on the following three principles: 1. losing resources is disproportionately more salient than gaining resources; 2. people must invest in resources in order to protect against loss, recover from losses and gain resources; 3. increases in resources gain in salience when resources loss has been high or chronic (Chen et al., 2015). In their theory, they refer to the life task of maintaining resources under the pressure and challenges of daily life. The core resources appear to be cross-cultural; these are health, children, family, work, love, honor, and the experience of control and influence over life (Schwartz & Bilsky, 1990). When resources are functioning well, they contribute to (mental) health.

This short overview gives support from other theories for the conceptualsation of (mental) health as being maintained through the adequate functioning of resources, and that maintaining these resources is a life task.

Life tasks and work demands

Specific demands of rescue work are irregular shifts, accumulation of critical incidents, unsafe circumstances, workload, high pressure, understaffing. Police work is generally recognized as highly demanding and high-risk (Gershon, Barocas, Canton, Li & Vlahov, 2009). For example, a Dutch study (Houtman, Jettinghoff, Brenninkmeijer & Van den Berg, 2005) showed that job stress for police officers is higher than for average Dutch employees. Their jobs entail a higher tempo and contain more sources of tension. Being attuned to the job on a 24/7 basis, its all-pervasive character, the irregular shifts, and chronic understaffing make it difficult to find sufficient time to recover and maintain a private life (Eriksen & Kecklund, 2007; Liu, Wu & Hu, 2010; Vila, Morrison & Kenney, 2002; Vila, 2006). Such factors mean that this job will inevitably take its toll (Demerouti, Bakker, Geurts & Toon, 2009; Innstrand, Langballe, Espnes, Aasland & Falkum, 2010; Rau & Triemer, 2004); Sanz-Vergel, Demerouti, Moreno-Jiménez & Mayo, 2010; Van der Hulst & Geurts, 2001). The various consequences for private life may be found in the research

of Shreffler, Meadows & Davis (2011), who investigated work-family conflict among fire fighters. He demonstrated how more occupational stress — working more than 60 hours per week or lack of sleep — was significantly associated with more work-to-family conflict, as well as with a lower satisfaction with children's behavior and parenthood. A good overview of the health risks can be found in the report of the European Agency for Safety and Health at Work (2011).

When studying the impact of work demands on private life, the Work-Home Resources model (ten Brummelhuis & Bakker, 2012), is useful for understanding this process. The W-HR model describes how demands in one domain deplete personal resources and impede accomplishments in the other, or, alternatively, how work and home resources increase and enrich personal resources. In this article we focus on the depletion path of this model. The W-HR model focuses on the long-term processes of depletion and enrichment. It aims to 'integrate conflicting and enriching work-home processes and unravel the linking mechanisms while taking into account conditional factors and developments over time' (ten Brummelhuis & Bakker, 2012). The model assumes that contextual work demands diminish the home outcomes through a loss in personal resources (work-to-home depletion process). The following aspects in this model influence each other. Contextual demands in the work or the home domain are categorized as quantitative demands (overload), emotional demands, physical demands and cognitive demands Demerouti, E., & Cropanzano, R. (2009); Peeters, Montgomery, Bakker & Schaufeli, 2005). Contextual resources in the home and work domain, include social support and autonomy (Demerouti, Bakker, Nachreiner & Schaufeli, 2001; Van Daalen, Willemsen & Sanders, 2006). Work-family literature (ten Brummelhuis & Bakker, 2012) categorizes personal resources as follows: physical (energy and health), psychological, intellectual (knowledge, skills, helpful experiences in the job), affective (positive emotions, optimistic mood and feelings of fulfilment) and capital resources (facilitating aspects that support role performance, such as money and time). Finally, outcomes can be described as production (creation of products and services), behavior (safety, absenteeism, availability for family members) and attitude (satisfaction, health, wellbeing) (Cohen & Baily, 1997). In a longitudinal study, Demerouti, Bakker and Bulters (2004) investigated the "loss spiral" hypothesis of work-home interference. Work pressure and exhaustion have causal and reversed causal relationships over time. Models covering reciprocal relationships between work characteristics, seem to be more useful. Work pressure, negative spillover and exhaustion predict each other over time, so that none of them can be considered as *solely* a cause or *solely* a consequence. These long-term reciprocal relations seem to conform to the *loss spirals* principle proposed by Hobfoll (1989, 2001) and Demerouti (2004). Those who lack resources attempt to employ their remaining resources, often with the self-defeating consequence of depleting their resource reserves (Hobfoll, 1989). Research by Demerouti, Bakker, & Bulters (2004) found that job demands were most strongly related to negative influences from work. Negative spillover was linked to fatigue and health complaints.

Loss of mental health resources leads to a lack of energy and a low perception of mental health, when private life tasks cannot be maintained. For example, long working hours, high workload, irregular shifts, and high exertion under difficult circumstances consume the ability to maintain good mental health. If recovery time is too short, and there is too little time to maintain positive resources by engaging in relaxation, sport and activities with family and friends, mental health will gradually be subject to even more pressure. It is easier to neglect private life tasks than the demands of rescue work, because the attentional pull towards the harsh demands of work is comparatively higher. It takes personal discipline and self-management to pay attention to private life tasks in addition to the high demands of rescue work. If private life tasks are neglected due to impaired mental health and energy, rescue workers experience a lower perceived efficacy on private life tasks.

Recent research in the medical science on health, well-being and happiness has focused more on resources and the vital pillars that feed and support health. In the new concept of "positive health" Huber (2014), a physician, put forward six main dimensions of health: bodily functions, mental functions and perception, spiritual/existential dimension, quality of life, social and societal participation, and daily functioning. Recent review studies about the sources of happiness (Clark, Flèche, Layard, Powdthavee & Ward, 2018) show

that happiness in adult life is closely related to mental health, quality of social relations and quality of work. Moreover, these were found to be more important than income and education. Psychological and psychiatric treatment tends to neglect the fact that, poor functioning in life tasks, provoke mental health complaints. This singular focus on mental health complaints can make it even more difficult to function effectively in life tasks.

Life tasks, resilience, and post traumatic growth

In the context of highly demanding rescue work, it is important to focus on the skills and characteristics of maintaining mental health. In the past years the focus of research has been on resilience. This is not an isolated concept, but integrates personal, behavioral and social psychology, revolving around the question what makes people survive and remain healthy in difficult circumstances. In the context of the present research, we focus on the question whether the concept of resilience takes life tasks into account. Tedeschi and Calhoun (2006) describe resilience as an aspect of post-traumatic growth. To the extent that resilience emerges from transformative processes, it may manifest itself in Post Traumatic Growth, but not necessarily so. Depending on the point of view, resilience may be considered either as an outcome or a process.

Van der Meulen, Bosman, Lens, Lahlah and Van der Velden (2017) in a review of police studies, showed that resilience is seen as 'the individual capacity to mitigate stress levels caused by circumstances that are likely to induce stress, such as potentially traumatic experiences.' Another review, Pangallo, Zibarras, Lewis and Flaxman (2015) found resilience to be made up of the following personal characteristics: flexibility, acceptance, control, self-efficacy, commitment and social competence.

Other studies pay more attention to the circumstances, work and private life and their influence on resilience. Luthar and Cicchetti (2000) describe resilience as a process, in which cultural dynamics within the family, and other groups, stimulate positive adaptation to adverse experiences. The ecological model of Masten, Powell and Luthar (2003) gives insight in the complex interactions and influences between person, family, local community and wider society. It is a model of risk and protective factors. In a review of resilience education for nurses, (Allister & McKinnon, 2009) concluded that, both personal factors and also environmental aspects, were important in supporting resilience. They emphasized the importance of a contextual learning and reflection to build resilience in the workplace.

Furthermore, in a review of 17 resilience instruments, Pangallo et al., (2015) made a distinction between several internal factors, such as adaptability, self-efficacy, active coping, positive emotions, mastery and hardiness, and external factors, such as supportive relationships (social competence, family coherence), structured environment (planning, organizing), and conceptual adequacy. Most studies focus on internal resources rather than external factors. They propose to define resilience as a process characterized by a complex interaction of internal and external resources moderated by developmental influences.

Paton (2008) describe a new resilience model in police work. They focus on personal and environmental factors and the various processes of resilience and interaction between individual, team and organizational factors. Through each progressive cycle of events (following a challenging critical incident), assessment (of specific critical incident experiences), and feedback, officers develop, maintain and change the operational schema they use to plan for, interpret and respond to critical incidents. The environmental assessment process yields two outcomes: task assessment and global assessment. Crucial elements in these assessment processes are: meaningfulness, self-efficacy, choice. Officers experience a sense of choice if they know that they are actively involved in defining how they should perform their role. The final component describes the influence of officers on organizational outcomes.

Bartone (2006) developed the concept of hardiness as a personal characteristic in military psychology. When handling adverse situations, it is important to be committed and in control, in addition to being open to challenge. Personal hardiness, therefore, is the sense that life is meaningful, that we choose our own futures and view change as interesting and valuable.

Another concept of assessing how people handle major events is post traumatic growth (PTG). This concept consists of five domains of growth: personal strength, new possibilities, relation to others, appreciation of life and spiritual change (Tedeschi & Calhoun, 2004). PTG does not necessarily entail more well-being and less stress. PTG is an indication of a person who experiences life in a way that, at least from their point of view, is fuller, richer and perhaps more meaningful. According to Fredrickson (2001, 2004) post-traumatic growth in times of stress is fostered by positive emotions, which in turn are boosted by self-esteem, optimism and control. Positive emotions under stress make it easier to think and solve problems creatively. The 'broaden-and-build' model (Fredrickson, 1998), shows that positive and negative emotions are distinct and complementary. 'Negative emotions (e.g., fear, anger, and sadness), narrow an individual's momentary thought-action repertoire toward specific actions that served the ancestral function of promoting survival. By contrast, positive emotions (e.g. joy, interest and contentment) broaden an individual's momentary thought-action repertoire which in turn can build that individual's enduring resources, resources that also served the ancestral function of promoting survival.' Cultivated positive emotions not only counteract negative emotions, but also broaden individuals' habitual modes of thinking and build their personal resources for coping (Fredrickson, 2000). In several studies Fredrickson and coworkers (Fredrickson & Levenson, 1998; Fredrickson, Mancuso, Branigan & Tugade, 2000) found that positive emotions down-regulate the lingering cardiovascular aftereffects of negative emotions. Therefore, prevention should pay more attention to enhancing positive emotions to increase health and resilience. The ability to evoke positive emotions, supports handling hardship at work and prevents getting stuck in the stress process. Research has found that people who are more resilient experience an intermix of negative and positive emotions, without the negative emotions being dominant (Folkman, 1997; Tugade & Fredrickson, 2002).

Usefulness of life tasks for research and practice

As previously mentioned, functioning in life tasks is highly relevant in research, particularly among rescue workers who have cumulative exposure to critical incidents. In order to perform such in-depth research, the starting point must be the development of a reliable, current measure of life tasks. The Life Task Test, whose development is described in this thesis, originated from the practical daily experience of its author. The author has first hand knowledge of the consequences that high pressure conditions of rescue workers experience, namely, that ptivate life task must always be performed under intense pressure.

Moreover, it appeared that paying attention to personal effectiveness in life tasks appeared to contribute to health and wellness.

The concept of life tasks is closely related to the Life task theories of Adler (1956) and Cantor et al. (1992) and Cantor and Harlow (1994). Unfortunately, during the last part of the 20th century, psychology focused more on mental health disorders, and "life tasks" no longer received much attention.

With the development of positive psychology in the 1990s and posttraumatic growth in 2004, gradually more attention has shifted to life tasks and private life as a resource for dealing with work demands. Recent research on health, well-being and happiness has focused more on resources and the vital pillars that feed and support health. In a new concept of positive health Huber (2014), a physician, distinguishes six main dimensions of health: bodily functions, mental functions and perception, spiritual/existential dimension, quality of life, social and societal participation, and daily functioning. Additionally, the World Health Organization's definition of health is that it is 'a state of complete, physical, mental and social well-being and not merely the absence of disease and infirmity.' It would seem that in physical health and well-being, the life tasks pillars are gaining greater recognition as essential factors for health, which is often overlooked in clinical therapy and research settings.

Thus, using the concept of life tasks and the Life Task Test provides insight in the pillars of mental health and resources in private life. When people feel effective in private life tasks, these can function as a buffer against life's adversities. Effectiveness in private life contributes to self-confidence and self-respect.

Research on resilience in rescue workers tends to focus on personal traits or attitudes. It ignores the impact of the long-term demands made on rescue workers, and pays no attention to people's limits (Morren, Dirkzwager, Kessels & Ijzermans, 2007; Wang et al., 2010). In this environment, the concept of life tasks can be helpful in teaching rescue workers how to maintain their private life despite their high-risk profession.

The life task concept and test can be used in various ways.

First, if functioning in life tasks is found to be failing, this may indicate an early warning signal. Rescue workers can then be stimulated to take care of these life tasks, rather than accepting their disfunction as a price to be paid for the job. On the other hand, leaders and policy makers should be made more aware of the demands they put on rescue workers. More attention should be payed to maintaining realistic levels of goals and demands, and to keep these goals and demands more in tune with the capacity of rescue workers personally and of the organization as a whole.

Second, in the practice of psychological treatment, the life task test provides insight into which life tasks are effective and where there is a need for improvement. It provides a positive approach and furnishes immediate tools for clients to control and influence their lives. Both psychologists and psychiatrists should be aware of how mental health complaints or personality disorders obstruct effectiveness in life tasks. In their therapy they can teach how to handle or overcome personal pitfalls to build on these life tasks. In practice, life tasks are the domain of social workers, whereas mental health problems and disorders are that of psychologist and psychiatrist. A more helpful approach for clients would be if both professions would take life tasks equally seriously. Furthermore, the Life Task Test is practical and closely connected to daily life, which makes it easier for clients to understand their weaker and stronger sides and what they can work on. The Life Task Testcan be used in situations of mental health problems and absenteeism. It makes it possible to build on the pillars that need to be strengthened. On the other hand, it is encouraging to see which pillars are functioning well. The effectiveness in life tasks should be an instrument of pre-diagnostic work in deciding whether a person is stable and has of sufficient resources to profit from therapy. This is particularly important in the case of trauma treatment, where the presence of sufficient private support and stable pillars are required in order to profit from this therapy. If sufficient resources are absent, therapy must begin by making these pillars stronger.

Third, in the selection for rescue work jobs, the Life Task Test can be a useful instrument to establish whether a candidate is functioning effectively in personal daily life. If the outcome is positive, the conclusion may be drawn that sufficient buffers are available to successfully come to terms with an intense job.

Finally, in prevention the test may be used as a pre-selection tool to determine the state of effectiveness in life tasks, allowing a targeted intervention starting by improving those life tasks that do not function properly. Additionally, it may be used as a pre-selection instrument before a preventive training has begun. The training can focus more on potential learning points, and candidates functioning on a low level can be given better advice on individual support.

References

Adler, A. (1931). *What life should mean to you*. Boston: Little, Brown & Company.

Adler, A. (1956). *The individual psychology of Alfred Adler* (H.L. Ansbacher, R.R. Ansbacher, Eds.). New York: Basic Books.

Allister, M. C., & McKinnon, J. (2009). The importance of teaching and learning resilience in the health disciplines. *A critical review of the literature. Nurses Education Today*, *29*, 371-9.

Bakker, A. B., & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, *22*(3), 309-328.

Bakker, A. B., & Demerouti, E. (2013). The spillover-crossover model. *New Frontiers in Work and Family Research*, 54-70.

Bandura, A., Caprara, G. V., Barbaranelli, C., Gerbino, M., & Pastorelli, C. (2003). Role of affective self-regulatory efficacy in diverse spheres of psychosocial functioning. *Child Development*, *74*(3), 769-782.

Bandura, A., & Wessels, S. (1997). *Self-efficacy* (pp. 4-6). W.H. New York: W. H. Freeman & Company.

Bandura, A. (2011). A social cognitive perspective on positive psychology. Revista de Psicologia Social, 26, 7-20.

Bandura, A. (2012). On the functional properties of perceived self-efficacy revisited.

Bartone, P. T. (2006). Resilience under military operational stress: Can leaders influence hardiness?. *Military Psychology*, *18*(sup1), S131-S148.

Benight C. C., Ironson G. & Durham R.L. (1999). Psychometric properties of a hurricane coping self-efficacy measure. *Journal of Traumatic* ***Stress***, *12*(2), 379–386. doi:10.1023/A:1024792913301

Benight, C. C., & Harper, M. L. (2002). Coping self-efficacy perceptions as a mediator betweenacute stress response and long-term distress following natural disasters. *Journal of Traumatic Stress*, *15*(3), 177-186.

Berg, C. A., Meegan S. P., Deviney F.P. (1998). A social-contextual model of coping with everyday problems across the life span. *International Journal of Behavioral Development. 22* (2), 239-261.

Brummelhuis, ten, L. L. & Bakker, A. B. (2012). A resource perspective on the work–home interface: The work–home resources model. *American Psychologist*, *67*(7), 545.

Calhoun, L. G., & Tedeschi, R. G. (2014). *Handbook of posttraumatic growth: Research and practice*. London: Routledge.

Cantor, N., Acker, M. & Cook-Flannagan, C. (1992). Conflict and preoccupation in the intimacy life task. *Journal of personality and social psychology, 63*(4), 644-655.

Cantor, N., & Harlow, R. E. (1994). Social intelligence and personality: Flexible life task pursuit. *Personality and Intelligence*, 137-168.

Cantor, N., Kemmelmeier M., Prentice, D. A. (2002). Life task pursuit in social groups: balancing self-exploration and social integration. *Self and Identity, 1*, 177-184.

Cantor, N., Norem, J., Langston, C., Zirkel, S., Fleeson, W., & Cook-Flannagan, C. (1991). Life tasks and daily life experience. *Journal of Personality*, *59*(3), 425-451.

Cantor, N., Norem, J. K., Niedenthal, P. M., Langston, C. A., & Brower, A. M. (1987). Life tasks, self-concept ideals, and cognitive strategies in a life transition. *Journal of Personality and Social Psychology, 53*(6), 1178-1191. doi:10.1037/0022-3514.53.6.1178

Chen, S., Westman, M. & Hobfoll, S.E. (2015). The commerce and crossover of resources: Resource conservation in the service of resilience. *Stress Health, 31*(2), 95-105.

Clark, A. E., Flèche, S., Layard, R., Powdthavee, N., & Ward, G. (2018). *The origins of happiness: the science of well-being over the life course*. Princeton University Press.

Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management*, *23*(3), 239-290.

Cohn, M. A., Fredrickson, B. L., Brown, S. L., Mikels, J. A., & Conway, A. M. (2009). Happiness unpacked: positive emotions increase life satisfaction by building resilience. *Emotion*, *9*(3), 361.

Cross, S., & Markus, H. (1991). Possible selves across the life span. *Human Development, 34*(4), 230-255.

Daalen, G. van, Willemsen, T.M. & Sanders, K. (2006). Reducing work-family conflict through different sources of social support. *Journal of Vocational Behavior, 69*(3), 462-476.

Demerouti, E., Bakker, A.B., Geurts, S.A.E. & Toon, W.T. (2009). Daily recovery from work-related effort during non-work time. *Occupational Stress and Well-being. 7,* 85-123.

Demerouti, E., Bakker A.B. & Bulters A.J. (2004). The loss spiral of work pressure, work-home interference and exhaustion: Reciprocal relations in a three-wave study. *Journal of Vocational Behaviour, 64*, 131-149.

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, *86*(3), 499.

Demerouti, E., & Cropanzano, R. (2009). From thought to action: Employee work engagement and job performance. In: A. B. Bakker & M. P. Leiter (Eds), Workengagement: A handbook of essential theory and research. New York: Psychology Press.

Dinkmeyer, D.C., Dinkmeyer, D.C. Jr., Sperry, L. (1987). *Adelerian Counseling and Psychotherapy* (2nd ed.) Columbus, OH: Merrill.

Emmons, R. A. (1991). Personal strivings, daily life events, and psychological and physical well-being. *Journal of Personality*, *59*(3), 453-472.

Emmons, K. M., & Goldstein, M. G. (1992). Smokers who are hospitalized: a window of opportunity for cessation interventions. *Preventive Medicine*, *21*(2), 262-269.

Eriksen, C.A. & Kecklund, G. (2007). Sleep, Sleepiness and Health Complaints in Police Officers: The Effects of a Flexible Shift System. *Industrial Health, 45,* 279-288.

Erikson, E. H. (1968). *Identity: Youth and crises*. New York: Norton. European Agency for safety and health at work (EU-OSHA), 2011, Edited by Milczarek, M. *Emergency Services: a literature review on occupational safety and health risks.*

European Agency for Safety and Health at Work, 2011. *Stress*. Retrieved from: http://osha.europa.eu/en/topics/stress/index html.

Folkman S. (1997). Positive psychological states and coping with severe stress.

Foudraine, J. (1972). *Wie is van hout...: een gang door de psychiatrie*. Ambo.

Fredrickson, B. L. (1998). What good are positive emotions? *Review of General Psychology, 2*, 300-319.

Fredrickson, B. L. (2000). Cultivating positive emotions to optimize health and well-being. *Prevention and Treatment, 3*:1.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, *56*(3), 218.

Fredrickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *359*(1449), 1367.

Fredrickson, B. L. (2009). *Positivity*. New York: Crown.

Fredrickson, B. L. & Levenson, R.W. (1998). Positive Emotions Speed Recovery from the Cardiovascular Sequelae of Negative Emotions. *Cognitive Emotions, 1*(12), 191–220.

Fredrickson, B.L., Mancuso, R.A., Branigan, C. & Tugade, M.M. (2000). The undoing effect of positive emotions. *Motivation and Emotion, 24*(4), 237-258.

Gershon, R. R., Barocas, B., Canton, A. N., Li, X. & Vlahov, D. (2009). Mental, physical, and behavioural outcomes associated with perceived work stress in police officers. *Criminal Justice and Behavior*, *36*(3), 275-289.

Harlow, R.E. & Cantor, C. (1995). To whom people turn when things go poorly? Task orientation and functional social contacts. *Journal of Personality and Social Psychology, 69*(2), 29-340.

Harlow, R.E. & Cantro (1996). Still participation after all these years: a study of life taskparticipation in later life. *Journal of Personality and Social Psychology, 71(6)*. 1235-1249.

Harper, A., Power, M., Orley, J., Herrman, H., Schofield, H., Murphy, B.,... Sartorius, N. (1998). Development of the world health organization WHOQOL-BREF quality of life assessment. *Psychological Medicine, 28*(3), 551-558. doi:10.1017/S0033291798006667

Hobfoll, S.E. (1989). Conservation of Resources. A New Attempt at Conceptualizing Stress. American Psychologist, *44*(3), 513-524.

Hobfoll, S.E. (2001). *Conservation of resources theory: Application to stress and management in the workplace*. In R.T. Golembiewski (Ed.), Handbook of organisational behaviour (2nd ed., rev. and exp. Ed., pp 57-80). New York, NY: Marcel Dekker.

Hobfoll, S.E. & Lilly, R.S. (1993). Resource conservation as a strategy for community psychology. *Journal of Community Psychology, 21*(2), 128-148.

Hobfoll, S. E., & Wells, J. D. (1998). Conservation of resources, stress, and aging. In *Handbookof aging and mental health* (pp. 121-134). Springer, Boston, MA.

Huber, M.A.S. (2014). Towards a new, dynamic concept of Health, its operationalization and use in public health and healthcare, and in evaluating health effects of food. *Thesis School for Public Health and Primary Care,* Maastricht University.

Houtman, I. L. D., Jettinghoff, K., Brenninkmeijer, V. & Berg, R. van den (2005). De politie vijf jaar later: Werkstress en het effect van maatregelen. *Hoofddorp: TNO Work and Employment*. [Dutch police organization five years later: Workstress and the effect of policy].

Hulst, M., van der & Geurts, S. A. E. (2001). Associations between overtime and psychological health in high and low reward jobs. Work & Stress, *15,* 227–240.

Huppert, F. A., & So, T. (2009, July). What percentage of people in Europe are flourishing and what characterises them. In *IX ISQOLS Conference* (pp. 1-7).

Innstrand, S. T., Langballe, E. M., Espnes, G. A., Aasland, O. & Falkum, E. (2010). Personal vulnerability and work-home interaction: The effect of job performance-based self-esteem on work/home conflict and facilitation. *Scandinavian Journal of Psychology*, *51*(6), 480-487.

Illich I.D. (1975). *Medical Nemesis: The Expropriation of Health*. Lonon: Boyars, p. 167.

Keyes, C.L.M. (2012). Mental illness and/or mental health? Investigating axioms of the complete state model of health. Springer Science & Business Media.

Klinger, E. (1975). Consequences of commitment to and disengagement fromincentives. *Psychological review*, *82*(1), 1.

Laing, R. D. (1960). 11te divided self: An existential study in sanity and madness p. 27. London: Tavistock Publications

Liu, C.T., Wu, C. & Hu, C.W. (2010). Managing temporary workers by defining temporary work agency service quality. *Human Resource Management, 49*(4), 619-646.

Luthar, S. S., & Cicchetti, D. (2000). The construct of resilience: Implications for interventions and social policies. *Development and Psychopathology*, *12*(4), 857-885.

Maslow, A. H. (1971). *The farther reaches of human nature*. Arkana/Penguin Books.

Masten, A. S., Powell, J. L., & Luthar, S. S. (2003). A resilience framework for research, policy, and practice. *Resilience and Vulnerability: Adaptation in the context of childhood adversities*, *1*, 25.

Meegan S. P., Berg C. A. (2001). Whose life task is it anyway? Social appraisal and life task pursuit. *Journal of Personality 69:3*.

Meulen van der E., Bosman M. W. G., Lens K. M. E., Lahlah E., & Velden van der P. G. (2017) Effects of mental strength training for police officers. *Journal of Police and Criminology*. Doi.org/10.1007/s11896-017-9247-8

Morren, M., Dirkzwager A. J. E, Kessels F. J. M. & IJzermans C. J. (2007). The influence of disaster on the health of rescue workers: a longitudinal study. *Canadian Medical Association, 176*(9), 1279-1283. doi: 10.1503/cmaj.060626.

Mosak H. H., & Maniacci M. (1999). *A prime of Adlerian Psychology: the analytic-behavioral-cognitive psychology of Alfred Adler*. New York, NY: Brunner-RoudledgeMyers,

J. E., Sweeney, T. J., & Witmer, J. M. (2001). Optimization of behavior: Promotion of wellness. *The handbook of counseling*, 641-652.

Oishi, S., Diener, E., Napa Scollon, C., & Biswas-Diener, R. (2004). Cross-situational consistency of affective experiences across cultures. *Journal of Personality and Social Psychology*, *86*(3), 460.

Palys, T. S., & Little, B. R. (1983). Perceived life satisfaction and the organization of personalproject systems. *Journal of Personality and Social Psychology*, *44*(6), 1221.

Pangallo, A., Zibarras, L., Lewis, R., & Flaxman, P. (2015). Resilience through the lens of interactionism: A systematic review. *Psychological Assessment*, *27*(1), 1.

Paton, D. (2008). Risk communication and natural hazard mitigation: how trust influences its effectiveness. *International Journal of Global Environmental Issues*, *8*(1-2), 2-16.

Peeters, M. C., Montgomery, A. J., Bakker, A. B., & Schaufeli, W. B. (2005). Balancing work and home: how job and home demands are related to burnout. *International Journal of Stress Management*, *12*(1), 43.

Peseschkian, N. & Tritt, K. (1998). Positive psychotherapy effectiveness study and quality assurance. *European Journal of Psychotherapy & Counseling, 1(1)*.

Rau, R. & Triemer, A. (2004). Overtime in relation to blood pressure and mood during work, leisure, and night time. *Social Indicators Research, 67,* 51-73.

Ryff, C., Friedman, E., Fuller-Rowell, T., Love, G., Miyamoto, Y., Morozink, J.,... & Tsenkova, V. (2012). Varieties of resilience in MIDUS. *Social and Personality Psychology Compass*, *6*(11), 792-806.

Sanz-Vergel, A. I., Demerouti, E., Moreno-Jiménez, B. & Mayo, M. (2010). Work-family balance and energy: A day-level study on recovery conditions. *Journal of Vocational Behavior, 76,* 118–130. doi:10.1016/j.jvb.2009.07.001

Saxena, S., & Orley, J. (1997). Quality of life assessment: The world health organization perspective. *European Psychiatry, 12*(3), 263-266. doi:10.1016/S0924-9338(97)89095-5

Schwartz, S. H. & Bilsky, W. (1990). Toward a theory of the universal content and structure of values: Extensions and cross-cultural replications. *Journal of Personality and Social Psychology*, *58*, 878-891.

Seligman M.E.P. *Flourish, a visionary new understanding of happiness and well-being.* (2011). Simon & Schuster Inc.

Seligman, M. E., & Csikszentmihalyi, M. (2000). *Positive psychology: An introduction* (Vol. 55, No. 1, p. 5). American Psychological Association.

Shreffler, K.M., Meadows, M.P. & Davis, K.D. (2011). Firefighting and fathering: Work-family conflict, parenting stress and satisfaction with parenting and child behavior. *Fathering, 9(2),* 169-188.

Shulman, B. H. (1973). *Contributions to individual psychology: Selected papers*. Adler School of Professional Psychology.

Sigerist, H.E. (1941). *Medicine and Human Welfare*, New Haven: Yale University Press.

Smith, E.E. (2017) *The power of meaning*. Crown Publishers.

Tedeschi, R.G., & Calhoun, L.G. (2004). Posttraumatic Growth: Conceptual foundations and empirical evidence, *Psychological Inquiry.*

Tedeschi, R.G., & Calhoun, L.G. (2006). Expert companions: Posttraumatic growth in clinical practice. In L.G. Calhoun & R.G. Tedeschi (Eds.), *Handbook of posttraumatic growth: Research and practice* (pp. 291-310). Mahwah, NJ: Lawrence Erlbaum Associates.

Ten Brummelhuis, L. L., & Bakker, A. B. (2012). A resource perspective on the work–home interface: The work–home resources model. *American Psychologist*, *67*(7), 545.

The WHOQOL Group. (1995). The world health organization quality of life assessment (WHOQOL): Position paper from the world health organization. *Social Science and Medicine, 41*(10), 1403-1409. doi:10.1016/0277-9536(95)00112-K

Tugade, M. M., & Fredrickson, B. L. (2002). *Positive emotions and emotional intelligence*.

Vila, B. (2006). Impact of long work hours on police officers and the communities they serve. *American Journal of Industrial Medicine, 49*(11), 972–980.

Vila, B., Morrison, G. B., & Kenney, D. J. (2002). Improving shift schedule and work-hour policies and practices to increase police officer performance, health, and safety. *Police Quarterly*, *5*(1), 4-24.

Wang, Z., Inslicht, S. S., Metzler, T. J., Henn-Haase, C., McCaslin, S. E., Tong, H., & Marmar, C. R. (2010). A prospective study of predictors of depression symptoms in police. *Psychiatry Research*, *175*(3), 211-216.

World Health Organization. (n.d.). *WHOQOL: Measuring Quality of Life*. Retrieved on 20th November 2019, fromhttps://www.who.int/healthinfo/survey/whoqol-qualityoflife/en/

Chapter 3.

Health and Work Related Effects caused by the Impact of Critical Incidents: A pilot study

◆ 3
Health and Work Related Effects caused by the Impact of Critical Incidents: A pilot study

Abstract

This study investigated health- and work-related problems of 67 rescue workers (police officers and medical emergency drivers), caused by the accumulation of critical incidents during their career. The moderation effect of social support from colleagues and supervisors was also studied. Although no effects were found for the health questionnaires, a significant effect was found of the number of critical incidents on the experience of workload. No significant moderation effects of social support were found.

Keywords

Critical incidents, rescue workers, mental health, buffers

Appeared in:

Bakker, A. H. M., van Veldhoven M. J. P. M., Gaillard A. W. K. (2015). Health and Work Related Effects caused by the Impact of Critical Incidents: A pilot study. *Policing. A journal of policy and practice* Doi.10.1093/police/pav038

Introduction

This study draws attention to the impact of a working life as a rescue worker (e.g., military, police, fire brigade, ambulance personnel, and rescue teams). Recent research shows that an accumulation of involvement in critical incidents makes the rescuer susceptible to the development of psychological symptoms (Alexander & Klein, 2009; Boer et al., 2011; Castro, 2008; Dorresteijn, van der Ploeg & Kleber, 2003; Halpern, Maunder, Schwartz & Gurevich, 2011; Kleber, 2007, 2008; Monnier, Cameron, Hobfoll & Gribble, 2002). Pressure is placed on the rescue worker and takes a toll on the private and family life. This in turn affects the positive sources in life such as a stable relationship and family life, and happiness, vitality, and financial position. (Adler-Baeder, 2007; Cicognani, Pietrantoni, Palestini & Patri, 2009; Heshmati, 2007; Shapiro, Gottman & Carrere, 2003;; Maddi, 2007;; Slottje et al., 2007).

Previous research suggests that the impact of critical incidents might be moderated by social support. Social support is assumed to act as a buffer, and so to diminish the impact of accumulated effects of incidents on health, work and well-being.

Background

A short overview of the recent research with a specific focus on the buffering effect of social support from colleagues and supervisors.

In Conservation of Resources theory (Hobfoll, 1988, 1989), stress is seen as the loss of energy and is based on "to obtain, retain, protect, and foster those things that they value. Following this premise, stress is believed to occur when individuals or groups are faced with situations in which there is a significant loss of resources or a threat of significant resource loss." (Monnier et al., 2002). Hobfoll shows in several studies among professional groups, including police officers, firefighters, and emergency workers, that the accumulation of critical incidents is associated with the loss of personal help and energy (Freedy & Hobfoll, 1993).

According to the Conservation of Resources theory of Hobfoll (1989), resources which are perceived as a buffer will protect against energy loss. Hobfoll proposes that this loss may turn into stress. Prati, Pietrantoni and Cicognani (2010) demonstrated that social support functions as a buffer and can protect against negative outcomes.

Monnier et al. (2002) showed that the accumulation of incidents was related to health outcomes such as state anger, anger out and depression.

To support this notion of Hobfoll, we will discuss studies that investigated relations between critical incidents and various outcome variables, such as PTSD symptoms or other mental health complaints, alcohol use, coping styles and perceived social support.

Several studies show that support from management, colleagues and support from significant others at home is an important buffer against the impact of work stressors, including the accumulation of critical incidents. Cohesion and a familial way of behaving with one another, with attachment and cohesion in a small unit of soldiers, has a positive effect on personal hardiness. When stressful events on an individual and group level are interpreted in a positive, learning manner, this has a positive impact on cohesion in the group (Bartone, Snook & Tremble, 2002). In a study among 547 firefighters by Tuckey and Hayward (2011) it was shown that camaraderie is an important buffer against psychological distress. When there is little support, people experience more psychological distress (Alexander & Klein, 2009; De Clercq, Deheegher & van Hoorde, 2011; Kleber, 2008.) Meyer et al. (2012) showed that firefighters with low perceived social support and high self-blame demonstrated the highest levels of clinically significant symptoms. They also found that there is no simple linear relationship between number of events and psychological symptoms. The studies of De Clercq et al. (2011) and Prati et al. (2010) also showed the complex interaction between critical incident, personality and buffers. De Clercq et al. (2011) demonstrated that distress was larger with certain types of critical incidents; for example, when children were involved, but also with shortages of supplies and other resources at work. Prati et al. (2010) reported that stress appraisal and self-efficacy influences the perceived stress. This study further showed that rescue workers'

belief in their capability to exercise some measure of control during stressful circumstances promoted resilience. In a sample of 750 United States' police officers, Mènard and Arter (2013) found that a greater number of incidents was related to more and severe PTSD symptoms. Together with social stressors, time on the police force, maladaptive coping, critical incidents accounted for 53% of the variance in the officers' PTSD symptoms. The authors stress that the combination of critical incidents, the work organization of a police force and the risk of lack of understanding in their social network at home are making officers vulnerable for maladaptive coping styles and misuse of alcohol and thereby aggravating possible PTSD symptoms.

Study set-up

The scope of the current study focusses on the impact of critical incidents on health, well-being and work-related problems, and on the moderation of these effect by the social support of both superiors and colleagues. On the basis of the literature reviewed above four hypotheses were formulated. The first two focus on the effects of the number of critical incidents on mental health problems (first) and workload (second). Using the SCL we will examine the following subjective feelings: distrust and sensitivity towards the environment (hypothesis 1A), hostility (hypothesis 1B) and overall mental health complaints (1C). The second variable is comparable with the 'anger out' variable in the Monnier et al. (2002) study. The second hypothesis expects that critical incidents will be positively correlated with the overall workload rescue workers experience. This variable will be measured with a Dutch questionnaire on work stress (VOS-D). The third and fourth hypothesis will address the moderating role of social support. It is expected that social support by colleagues or leader will reduce the effects of critical incidents on mental health complaints. Again, we divide mental complaints in hostility and sensitivity towards one environment and overall mental health complaints. The fourth and final hypothesis will be whether social support will moderate the relation between critical incidents and work overload.

Method

Procedures

The study was performed in the context of a resilience training for rescue workers. All rescue workers volunteered for such training offered by their employer and received pre-training information about the training via the internet. This training consisted of two parts, with an interval period of six weeks. Respondents completed online questionnaires on two occasions, prior to commencement of the training and two weeks after completing the second training session. In this article, only the results of the first measurement are presented. The sample consisted of 67 rescue workers with a mean age of 38.03 years (SD= 9.56). Of these respondents 57 (85.1%) worked as police officers. The other respondents were employed as medical emergency drivers. All the participants were selected from an urban area in the Netherlands.

Measures

Critical Incidents Inventory. Critical incidents were measured with the critical incidents inventory (CII) developed by Monnier et al. (2002). The test consists of 24 items indicating the type of incident using a 4-point Likert scale, ranging from 0 to 3 points for 'never experienced this event', 'experience one time', 'experienced two times' to 'experienced three or more times'. Examples of items are 'Line of duty death of a fellow emergency worker' and 'Incident requiring police protection while on duty'.

Mental health. Mental health was measured with The Dutch version of the Symptom Checklist-90 (SCL-90; Arrindell & Ettema, 1986), a valid and reliable self-report screening instrument for a range of symptoms. Respondents were asked to indicate their symptoms, which occurred in the past week. Although the SCL-90 includes many subscales, in the current analysis we will only report the results for the hostility scale, the sensitivity scale and the total score on the SCL-90.

The SCL-90 has been used previously in several studies on rescue workers. For example, Van der Velden and Grievink (2010), Van der Velden, van Loon, Benight and Eckhardt (2012), Schooler, Dougall and Baum (1999) and Wagner, McFee and Martin (2010). In the current sample the Cronbach Alpha was.97. Items from the SCL-90 are 'The feeling that other people are unfriendly or dislike you' and 'feeling the need to hit, wound or hurt other people'. Respondents have to choose on a five-point Likert scale, where one indicates

that the respondent was not hindered by the statement and five meaning that the person was hindered very much by the statement. Higher scores indicate more mental health complaints.

Workload. This scale is taken from the Dutch organizational stress questionnaire (VOS-D, Bergers, Marcelissen & de Wolff, 1986). The scale uses a four-point response Likert-scale, ranging from 'never' through to 'often'. Items typical for this scale are 'What is your opinion about the amount of work you have do on a typical day?' and 'Is there enough time to finish your tasks?'. The higher the score, the more work overload is reported. The Cronbach alpha of the workload scale in the current study is 0.83, which is considered to be good. For the descriptive statistics the outcomes in this research are compared with the norm group 'middle class employees', composed by the authors for the validation of the VOS-D questionnaire.

Social support. Social support is also measured with the stress questionnaire (VOS-D). Two scales for measuring social support are used (Bergers et al., 1986). One measures the lack of social support from colleagues and the other the lack of social support from the leader. The scales measuring lack of social support from colleagues and supervisors of the VOS-D were used studies in different professions: Houkes, Janssen, de Jonge and Nijhuis (2001) managers and teachers, van den Berg, Landeweer, Tummers and Merode (2006) inurses and health care professionals, Lechner, Steinvoorte and Näring (2008), Bailey, Woodiel, Turner and Young (1998) in a study with nurses and health care assistants. In these studies, these scales demonstrated the role of social support as a buffer. Examples of items are 'if you encounter problems in your work, is it possible for you to discuss these with your direct supervisor?' and 'How often do conflicts arise with your superior(s)?'. Respondents are to rate these questions on a four-point Likert scale, ranging from 'never' through 'often'. As is with the workload scales, the descriptive results from this study are compared with the norm groups 'middle class employees' from the original VOS-D manual (Bergers et al., 1986).

Analysis

Descriptive information for each of the study variables (means, standard deviations and correlations) are reported. We will also present all the percentages of the critical incidents the respondents have experienced throughout their career. Then, we will discuss the incidents which are known from previous research that they may have an impact on the personal life of rescue workers (Monnier, 2002). These incidents include injuries on duty or facing a threat of death, suicide or suicide attempts by fellow rescue workers, the actual death of a co-worker in the line of duty, a failed rescue attempt, verbal or physical threats, actions with three or more deaths, victims that are personally related to the rescue worker and the confrontation with children, wounded or killed.

The hypotheses are tested using multiple regression equations. Independent variables are entered into the equations in steps for each of the dependent variables. In the first step the critical incidents are entered into the equation. Step 2 adds the two measures of social support. Finally, step 3, adds the product of the critical incidents the social support variables. In order to compute the product, the scale scores were centered to the mean.

Results

Before presenting the results of the four hypotheses formulated to test the effects of incidents on mental health and work outcomes, the descriptive statistics of the critical incidents are presented in Table 1. Because Hobfoll (1993) suggested that it is the accumulation of incidents in one's career that could diminish stress reducing resources, we focus on the percentages of incidents that the sample reported to experience twice or more in their career. Only the incidents that are known for their impact on a rescue worker's (mental) health are reported (Regehr, 2003). Nearly 10 % of the 67 respondents present experienced two or more incidents involving a severe injury to themselves or faced a threat of death during a work shift. The percentage of respondents who reported more than two incidents involving personally related victims reached almost 42%. For suicide or suicide attempts of a co-worker, 37% of the sample reported that they experienced such an event more than two times in their career. Nearly one fifth, 17,9%, reported an actual death of a co-worker during work shifts. As for a failed rescue attempt after a prolonged

exertion, 71,9% of the respondents reported that this happened to them more than two times during their career. For verbal or physical threats during work shift, 56,7% of the total sample had gone through this experience multiple times as a rescue worker. Last, a majority, 59,7%, had been in situations or actions with three or more deaths for more than two times.

Effects on mental health and workload

The descriptive statistics of the perceived health, workload and social support are presented in Table 2. Respondents experienced a higher than average workload and did perceive a reasonable amount of support from both their superiors and peers. The work stress questionnaire was validated using representative norm groups from various employees.

The expected relationship of the first hypothesis should be a positive one between critical incidents and sensitivity toward the environment (hypothesis 1A), for hostility (hypothesis 1B) and the overall mental health complaints (hypothesis 1C). Although all measures increased in the expected direction, none were found to be significant. For the second hypothesis we found a significant effect of the number of critical incidents on workload (r=.284, p=<.05). Although significant, a correlation of this magnitude is considered to be weak. These correlations are also displayed in Table 2.

The influence of social support

We expected that the effect of critical incidents on mental health complaints (hypothesis three) and work overload (hypothesis four) would be moderated by social support. This was tested with a three-step multiple linear regression model (see Table 3).

There results were insufficient to support the third hypothesis (F (66,5) = 1.364, p>.05). The total amount of variance explained by the contributing variables was slightly under 14%. None of the variables added to the model made a significant contribution. On this basis the hypothesis must be rejected. In this study, social support did not significantly moderate the relationship between critical incidents and health complaints.

The second model that was tested included the moderation of the relationship between critical incidents and sensitivity by social support, again from both colleagues and supervisors. Again, this turned out to be non-significant (F (66,5) = 1.978, p>.05). For this model, the goodness of fit resulted in a 10,8% of the variance explained by the variables. Therefore, this hypothesis was also rejected. For the third model, where social support was expected to moderate the linear relation between critical incidents and hostility, we also had to conclude that there was not enough statistical evidence to confirm the hypothesis. The final model proved not to be significant (F (66,5) = 1.630, p>.05). This hypothesis was also rejected. The assumptions that social support functions as a buffer for various health complaints could not be supported by statistical evidence in this study. In this model the proportion explained turned out to be slightly over ten percent. The model for hypothesis four, the moderating effect of social support on work overload, was not significant (F (66,5) = 1.895, p>.05). Here also, just as was the case with the former regression models, none of the individual variables added enough to make a significant contribution to the equation. There was insufficient evidence to conclude that social support moderated the relationship between critical incidents and work overload. The variance explained in this model was highest for all the models: almost 29%.

Table 1: Means and standard deviations

Variable	Mean	SD
Critical Incidents	29.94	16.84
Sensitivity	22.82	4.03
Hostility	6.73	1.10
Total score	110.1	16.41
Workload	3.1	.44

Table 2: Correlations.

Variable	1.	2.	3.	4.	5.	6.
Critical Incidents	1					
Work Overload	.284*	1				
Total score SCL-90	.023	.075	1			
Sensitivity (SCL-90)	.086	.110	.878**	1		
Hostility (SCL-90)	.197	-.055	.499**	.394**	1	
Lack of social support Coworker	-.039	.075	.296*	.318*	.261*	1
Lack of social support supervisor	-.053	.098	.189	.268*	.133	.445**

* p=<.05; ** p=<.01

Table 3: The results of the regression analyses on the four dependent variables

	Variables	Model 1	Model 2	Model 3	Workload
Step 1	Constant				
	Critical Incidents	.086	.197	.023	**.284***
Step 2	Constant				
	Critical Incidents	.104	.209	.037	**.291***
	Lack of support collegae	.063	.030	.073	.093
	Lack of support superior	.249	.255	.265	.045
Step 3	Constant				
	Critical Incidents	.114	.182	.016	**.388***
	Lack of support collegae	.200	-.016	.027	.081
	Lack of support superior	.234	.257	.272	.206
	Interaction CI* support colleague	-.173	.160	.178	.008
	Interaction CI * Lack support superior	.160	-.097	-.130	-.262
	R2 change	R2=.007, ΔR2=.124 ΔΔR2=.008	R2=.039, ΔR2=.073 ΔΔR2=.006	R2=.001, ΔR2=.093 ΔΔR2=.007	R2=.191, ΔR2=.085 ΔΔR2=.012

* $p < 0.05$

Table 4: The percentages of rescue workers (n=67) of their exposure for different type of incidents during their career as measured with the Critical Incidents Inventory (Monnier, 2002).

Type of incident	Never	Once	Twice	Three or more
Serious line of duty incident to self	68.7	16.4	4.5	10
Threat of death or serious injury (without actual getting injured)	43.3	13.4	6	37.3
Incident necessitating search or rescue involving serious risk to yourself	74.6	10.4	1.5	13.4
Direct exposure to extremely hazardous materials	68.7	14.9	6	10.4
Direct exposure to blood and body fluids	44.8	13.4	6	35.8
Line of duty death of a fellow rescue worker	68.7	13.4	13.4	4.5
Serious line of duty injury to fellow rescue worker (that did not result in death)	73.1	10.4	4.5	11.9
Threat of serious line of duty injury or threat of death to fellow emergency worker (that did not result in actual serious injury or death)	50.7	6	4.5	38.8
Suicide or attempted suicide by fellow emergency worker	47.8	14.9	9	28.4
Victim(s) known to the rescue worker	44.8	19.4	4.5	31.3
Responded to incident involving three or more deaths.	25.4	14.9	7.5	52.2
Responded to incident involving one or two deaths.	43.3	17.9	7.5	31.3
Responded to incident involving multiple serious injuries (three or more victims sustained serious injuries)	37.3	13.4	6	43.3
Incident involving serious injury or death to children.	53.7	14.9	14.9	16.4
Incident involving severe threat to children (that did not result in actual serious injury or death to children).	43.3	16.4	6	34.3
Incident requiring police protection while on duty	37.3	10.4	6	46.3
Verbal or physical threat by public while on duty (that did not result in police protection)	28.4	14.9	10.4	46.3
Failed mission after extensive effort	23.9	4.5	7.5	64.2
Critical (negative) media interest of an incident where you were involved	56.7	11.9	7.5	23.9
Use of deadly force by police at an incident	82.1	9	6	3
Critical equipment failure or lack of equipment in any of the above situations	80.6	11.9	0	7.5
Close contact with burned or mutilated victims	56.7	11.9	1.5	29.9
Removing dead body or bodies	26.9	10.4	4.5	58.2
Prolonged extrication of trapped victim with life-threatening injuries.	68.7	10.4	1.5	19.4

Discussion

It is remarkable to see how many rescue workers are affected by the death of a co-worker, or the near dead of one. Major studies on this topic are non-existent in The Netherlands. There are no known statistics about the rate of suicide within the rescue community or the impact on co-workers or relatives. This study sheds a first light on that area.

The first hypothesis investigated the influence of critical incidents on the amount of sensitivity (1A), hostility (1B) and overall mental health problems (1C). The hypotheses were not confirmed as expected. The coefficients were weak and non-significant. It is possible that in our sample, the rescue workers are well equipped with adaptive coping styles to deal with the strain caused by their work. However, recent research (Mènard & Arter, 2013) shows that this population is prone to underreport both physical and mental health complaints. The comparisons with the norm groups of the original questionnaire manuals supports this explanation. All the scores on mental health outcomes were lower in comparison with their norm group. This attitude of underreporting complaints in rescue workers is described by several authors (Anshel, 2000; Buijssen, 2002; Griffin, 2008; Pole, Kulkarni, Bernstein & Kaufmann, 2006).

The second hypothesis concerns the relation between critical incidents and workload. For this hypothesis a positive effect was found. Although weak, there exists a relationship between the number of incidents experienced, and the workload perceived by the rescue workers. This indicates that critical incidents contribute to a higher burden on the job. However, due to the non-causal nature of correlational analysis, it can also be that a higher workload leads in turn to more critical incidents, or to a higher sensitivity (i.e., reduced resilience) of the rescue worker. Literature suggests n that, with more job demands or workload, employees are more likely to become distracted and have less time to prepare (Backtermann-Erlansonn et al., 2011). For example, in a qualitative study, officers were interviewed when they experienced more stress. It turned out that several officers explained that time to prepare for an incident greatly improved their self-efficacy (Backtermann-Erlansonn et. al., 2011).

The third and fourth hypotheses addressed the moderating role that social support supposedly plays in the relationship between critical incidents and mental health complaints (third hypothesis) or work overload (the fourth hypothesis). It is believed that the positive relation as stated in two hypotheses is reduced with higher levels of social support. The expected buffer effect from social support from colleagues and supervisors was not found. There was a slight effect between critical incidents and the experience of workload.

Limitations

Since the number of respondents in the current sample was small, the results should be interpreted with caution. Second, there is the nature of the analyses, which cannot lead to causal inferences. The effects may also be caused the other way around, as briefly explained in the section above. The tendency of rescue workers to underreport complaints, and the psychodynamic explanation for that phenomenon is hard to test empirically. In the Netherlands, attempts to test this kind of presumptions are made by Eurelings-Bontekoe and Snellen (2003), Eurelings-Bontekoe, Onnink, Williams and Snellen (2008), Eurelings-Bontekoe, Onnink, Williams and Snellen (2009), Eurelings-Bontekoe, Luyten, Ijssennagger, van Vreeswijk and Koelen (2010), Eurelings-Bontekoe, Luyten, Remijsen and Koelen (2010a; 2010b).

Implication for research

Further research should focus on larger controlled trial studies to examine the effects of prevention training. Up until now these studies are not widespread or mainly focused on the treatment of psychiatric disorders such as axis I bipolar disorder or PTSD (Haugen, Evces & Weiss, 2012). However, it must be noted that prevention training is more cost-efficient than treatment of mental health problems afterwards. Such training should be focused on preventing symptoms by providing the rescue workers concrete tools to keep their mental health in work and private life. Prevention training can also focus more on developing stronger buffers in their personal and job life, to improve protection against the impact of critical incidents.

Moreover, further research should focus more on the impact of a lifelong career as a rescue worker on resources in their private life and functioning in life tasks. Life tasks like operating effectively in relationships, family life, attention to personal resources of energy, housekeeping and finance. When rescue workers pursue a lifelong career in this field, they must be prepared the strain this can bring on their personal life, in order to deal with this compentently. The effects of accumulating incidents involving violence and aggression throughout their career is known to have detrimental effects on people's wellbeing. This is derived from studies with veterans and war victims.

Implications for practice

Counselors, general practitioners and therapists as well as supervisors should be aware of the tendency of rescue workers to underreport mental or physical complaints they might have. Largely because of the 'keep you self-strong' organizational culture within rescue workers' organizations, employees are not eager to share their possible complaints on the work floor. It is important to understand that this behavior is necessary in situations of critical incidents. But it is important to learn self-reflection and recognize stress signals when there is safety again and time to recover. Several researchers have named multiple reasons for this phenomenon. Among others, these are a fear of demotion, cutback of salary, becoming a target of mocking by peers or not receiving any more assignments in the line of duty (Anshel, 2000; Buijssen, 2002; Griffin, 2008; Pole et al., 2006).

When giving support as a supervisor and/or colleagues, extra attention must be paid to the capabilities to remain healthy and to cope with stress signals. The possibility to recognize and talk about the impact of the job can contribute to mental health and functioning well in life tasks in job and private life. It prevents feeling lonely with the impact of critical incidents.

References

Adler-Baeder, F. (2007). *Smart Steps: Embrace the journey*. Auburn, AL: National Stepfamily Resource Center.

Arrindell, W., & Ettema, J. (1986). *SCL-90: Handleiding bij een multidimensionele psychopathologie-indicator [SCL-90 symptom checklist: Manual to a multidimensional indicator of psychopathology].* Lisse: Swets & Zeitlinger.

Alexander, DA, & Klein, S. (2009). Eerstehulpverleners na rampen: een overzicht vanstressreacties, risico's, kwetsbaarheid en veerkracht. *Prehospital and DisasterMedicine, 24* (2), 87-94.

Anshel, M.H. (2000). A Conceptual Model and Implications for Coping with Stressful Events in Police Work. *Criminal Justice and Behavior, 27*(3), 375-400.

Backtermann- Erlansonn, S., Jacobsson, A., Öster, I., & Brulin, C., (2011). Caring for traffic accidents victims: The stories of nine male police officers. *International Emergency Nursing, 19*(2), 90-95.

Bailey, W.C., Woodiel, D.K., Turner, M.J. & Young, J. (1998). The relationship of financial stress to overall stress and satisfaction. *Personal Finances and Worker Productivity, 2*(2), 198-206.

Bartone, P.T., Snook, S.A. and Tremble, T. (2002), Cognitive and personality predictors of leader performance in West Point cadets. *Military Psychology, 14*, 321-338.

Bergers, G.P.A, Marcelissen, F.H.G., & de Wolff, Ch. J. (1986). VOS-D Vragenlijst Organisatiestress-D. Handleiding. Nijmegen: Stressgroep Publicatie 36. [VOS-D Questionnaire Organizational Stress –D. Instructor's Manual. Nijmegen: Stressgroup Publication 36].

Berg, T.I.J. van den, Landeweerd, J.A., Tummers G.E.R., Merode, G.G. (2006). A comparative study of organizational characteristics, work characteristics and nurses's psychological work reactions in a hospital and nurses home setting. *International Journal of Nursing Studies, 43*, 491-505.

Boer, J.A., Lok, A., Verlaat van't E., Duivenvoorde H.J., Bakker A.B., Smit B.J. (2011), Work-related critical incidents in hospital-bases health care providers and the risk of post-traumatic stress symptoms, anxiety, and depression: A meta-analysis. *Social Science & Medicine, 73*, 316-326.

Buijssen, H., (2002). Traumatische ervaringen van Verpleegkundigen. Als je beroep een nachtmerrie wordt...(Vol.3). Maarssen: Elsevier Gezondheidszorg.

Castro, C. (2008). Impact of Combat on the Mental Health and Well-Being of Soldiers and Marines, US Walter Reed Army Institute of Research.

Cicognani E, Pietrantoni L., Palestini L, Patri G. (2009), Emergency Workers' Quality of Life: The Protective Role of Sense of Community, Efficacy Beliefs and Coping Strategies, *Soc Indic Res: 94*: 449–463.

De Clercq, F., Deheegher, J. & Van Hoorde, H. (2011). Frequency of and subjective response to critical incidents in the prediction of PTSD in Emergency Personnel. *Journal of Traumatic Stress, 24* (1), 133–136.

Dorresteijn S. M., Ploeg van der E., Kleber R.J., (2003). Critical Incidents and Chronic Stressors at Work: Their Impact on Forensic Doctors. *Journal of Occupational Health Psychology, 8*(2), 157-166.

Eurelings-Bontekoe, E. H. M., & Snellen, W. M. (2003). *Dynamische persoonlijkheidsdiagnostiek*. Swets Zeitlinger: Lisse.

Eurelings-Bontekoe, E.H.M., Onnink, A. Williams M. M., Snellen W. M. (2008), A new approach to the assessment of structural personality pathology: Theory-driven profile interpretation of the Dutch Short Form of the MMPI. *New Ideas in Psychology, (26):* 23-40.

Eurelings- Bontekoe, E., Luyten, P., IJssennagger, M., van Vreeswijk, M., Koelen, J., (2010). Relations between personality organisation and Young's cognitive model of personality pathology. *Personality and Individual Differences, (49)*: 198-203.

Eurelings-Bontekoe E. H. M., Luyten P., Remijsen M., Koelen J., (2010a). The relationship between personality Organiszation as Asessed by Theory-Driven Profiles of the Dutch Short Form of the MMPI and Self-Reported Features of Personality Organization. *Journal of Personality Assessment.*

Eurelings-Bontekoe, E., Luyten, P., Remijsen, M., & Koelen, J. (2010b). The relationship between personality organization as assessed by theory-driven profiles of the Dutch Short Form of the MMPI and self-reported features of personality organization. *Journal of Personality Assessment (92)*, 1-11.

Eurelings- Bontekoe, E., Onnink, A., Williams, M. & Snellen, W. (2009). Validation of a theory-driven profile interpretation of the Dutch Short Form of the MMPI using the TAT social cognitions and object relations scale (SCORS). *Journal of Personality Assessment, (91)*: 155-165.

Freedy J. R., Hobfoll, S. E., (1993) Stress inoculation for reduction of burnout: a conservation of resources approach. *Anxiety, Stress and Coping. (6)*:311-325.

Griffin, E. E. (2008). I Get by with a Little Help from my Friends: Peer Support in the Emergency Department. *Journal of Emergency Nursing, 34(6)*, 547-549.

Halpern J, Maunder, R. G., Schwartz B., Gurevich, M. (2011). Attachment insecurity, responses to critical incident distress, and current emotional symptoms in ambulance workers. *Emergency Medical Journal. 28*(1): 51-6.

Haugen, P. T., Evces, M., & Weiss, D.S. (2012). Treating Post Traumatic Stress disorder in first responders: A Systematic Review. *Clinical Psychology Review, 32*(5), 370-380.

Heshmati, A. (2007). *The relationship between income inequality, poverty and globalization. The Impact of Globalization on World's Poor*. Palgrave Macmillan Ltd. Houndsmills. Basingstoke. Hampshire, UK, 59-93.

Hobfoll, S. E. (1988). *Ecology of stress.* New York, Hemisphere.

Hobfoll, S.E. (1989). Conservation of Resources. A New Attempt at Conceptualizing Stress. *American Psychologist, 44(3)*, 513-524.

Hobfoll, S. E. & Freedy, J. (1993). *Conservation of resources: A general stress theory applied to burnout.* In W. B. Schaufeli, C. Maslach and T. Marek (Eds.), Professional burnout: Recent developments in theory and practice (pp. 115-133). Washington, D.C.: Taylor and Francis.

Houkes, I., Janssen, P. M., de Jonge, J., Nijhuis, F. J. N., (2001); Specific relationships between work characteristics and intrinsic work motivation, burnout and turnover intention: A multi-sample analysis, *European Journal of Work and Organizational Psychology*, *10*(1): 1-23.

Kleber, R. J. (2007). *Weg van het trauma* (proefschrift, Stichting KTP).

Kleber, R. J. (2008). Psychopathologie na rampen: algemene karakteristieken en kritische kanttekeningen. *Psychologie en Gezondheid, 36*(3), 117-123.

Lechner, L., Steinvoorte, T., Näring, G., (2008); Emotieregulatie en burnout bij ziekenverzorgenden, *Gedrag en Organisatie, 21*(2): 137-149.

Maddi S. R., Relevance of Hardiness Assessment and Training to the Military Context.

Military Psychology, 2007, 19(1), 61-70.

Mènard, K. S., & Arter, M. L. (2013). Police Officers Alcohol Use and Trauma Symptoms; Associations with Critical Incidents, Coping and Social Stressors. *International Journal of Stress Management. 20*(1), 37-56.

Meyer, E. C., Zimering, R., Daly, E., Knight, J., Kamholz, B. W., & Gulliver, S. B. (2012). Predictors of posttraumatic stress disorder and other psychological symptoms in trauma-exposed firefighters. *Psychological Services*, *9*(1), 1.

Monnier, J., R. P. Cameron, S. E. Hobfoll, J.R. Gribble, The impact of resource loss and critical incidents on psychological functioning in fire-emergency workers: a pilot study. (2002) *International journal of Stress Management, 9*(1), 11-29.

Prati G., Pietrantoni L., Cicognani E. (2010). Self-efficacy moderates the relationship between stress appraisal and quality of life among rescue workers. *Anxiety, Stress & Coping 23*(4), 463-470.

Pole, N., Kulkarni, M., Bernstein, A., & Kaufmann, G. (2006). Resilience in Retired Police Officers. *Traumatology, 12*(3), 207-216.

Regehr, C., Hill, J., Knott, T., & Sault, B. (2003). Social support, self-efficacy and trauma in new recruits and experienced firefighters. *Stress and Health: Journal of the International Society for the Investigation of Stress,* 19, 189-193.

Schooler, T. Y., Dougall, A.L., Baum, A. (1999); Cues, frequency, and the disturbing nature of intrusive thoughts: Patters seen in rescue workers after the crash of flight 427, *Journal of Traumatic Stress, 12* (4): 571-585.

Shapiro, A. F., Gottman, J.M; Carrere, S. (2003). The baby and the marriage: identifying factors that buffer against decline in marital satisfaction after the first baby arrives. *Journal of Family Psychology. 14*:59-70.

Slottje, P., Twisk, J. W. R., Smidt, N, Huizink, A. C., Witteveen, A. B., Mechelen W. van & Smid, T. (2007). Health-related quality of life of firefighters and police officers 8,5 years after the air disaster in Amsterdam. *Quality of Life Research 16,* 239-252.

Tuckey M. R., Hayward, R. (2011). Global and occupation-specific emotional resources as buffers against the emotional demands of fire-fighting. *Applied Psychology*, *60*(1): 1-23.

Velden, van der, P. G., Loon, van, P., Benight, C. C., Eckhardt, T. (2012); Mental health problems among rescue workers deployed in the Haïti eartquake 2010: A pre-post comparison, *Psychiatry Research*, *198*: 100-105.

Velden, van der, P. G., Grievink, L., (2010); Confrontations with aggression and mental health problems in police officers: The role of organizational stressors, life-events and previous mental health problems. *Psychological Trauma: Theory, Research, Practice and Policy, 2*(2): 135-144.

Wagner, S. L., McFee, J. A., Martin, C. A. (2010*);* Mental health implications of fire service membership, *Traumatology, 16* (2): 26-32.

Chapter 4.

The Functioning of Policemen in Life Tasks: Development of a Test

◆ 4
The Functioning of Policemen in Life Tasks: Development of a Test

Abstract

Since policemen have a highly demanding job, they have a high risk of developing mental health problems, which may have a negative influence on their private life. This paper presents a new questionnaire for measuring the functioning of rescue workers in life tasks outside of work. The internal consistency, factor structure and concurrent validity of this Life Tasks Test (LTT) were examined in a group of 108 policemen. Results demonstrate that the test measures perceived effectiveness in the following five domains: social life, maintaining mental health, household and finance, giving meaning and maintaining positivity. Cronbach's alpha was acceptable for one scale (> 0.60) and good for the other four (> 0.70). The hypothesized five-factor structure of the LTT was corroborated in a confirmatory factor analysis (CFA). Concurrent validity was examined by comparing the scores on the LTT with two established questionnaires, one for personality characteristics and one for work characteristics and work stress. All LTT scales, with the exception of *Social life*, showed significant correlations with social support, workload and personality.

Keywords

Life tasks, rescue workers, mental health, personality, work stress

Appeared in:

Bakker, H., van Veldhoven, M., Gaillard, T., Hertogs, R., & Feenstra, M. (2019). The functioning of rescue workers in life tasks: development of a test. *International Journal of Emergency Services*.

Introduction

Rescue workers have a demanding job, especially when they work in the frontlines. This can have a negative impact on their functioning in life tasks. Adler (1912) was the first to introduce the term life tasks. Life tasks are about striving for specific goals, building up a life and striving for significance. He identified three main challenges in life tasks with which individuals are confronted. These are are work, social relations and love. Later he added the life task 'self and spirituality'. Huber (2014) asserts that these life tasks are important pillars of health and well-being.

Recent research shows that an accumulation of involvement in critical incidents makes the rescue worker susceptible for the development of psychological symptoms (Dorresteijn, van der Ploeg & Kleber, 2003; De Boer et al., 2011; Halpern & Maunder, 2011; Monnier, Cameron, Hobfoll & Gribble, 2002). For example, a Dutch study (Houtman, Jettinghoff, Brenninkmeijer & Van den Berg, 2005) showed that job stress for police officers is higher than for average Dutch employees. Their jobs entail a higher tempo and contain more sources of tension. Being attuned to the job on a 24/7 basis, its all-pervasive character, the irregular shifts, and chronic understaffing make it difficult to find sufficient time to recover and maintain a private life (Eriksen & Kecklund, 2007; Vila, 2006). Most studies emphasize the risks of rescue worker sacrificing their health and private life, for recent examples see the studies by Harvey et al. (2016) and Siffaki-Pistola, Vaasilici-Eirini, Sofia-Aikaterini, Melidoniotis and Pistolla (2017). On the other hand, rescue workers do a job which makes a difference in the lives and safety of other people. So, it is not all negative. For example, Leppma et al. (2018) showed posttraumatic growth (PTG) in policemen after a disaster.

Life tasks

In the present study we focussed on practical daily life tasks. On the basis of earlier research, the following domains were regarded as the most important life tasks: *Family life*, *Social life*, *Household and finance*, *Maintaining mental health*, *Giving meaning,* and *Maintaining positivity*. To distinguish between job related tests, we focus on private life tasks. This term can be somewhat confusing, because functioning in life tasks as a person has an influence on private and job functioning.

The aim of the present study was to develop a test for measuring the effectiveness of the functioning of rescue workers in their life tasks. Before we turn to the development of the test, the relevant literature about the impact of rescue work on the effectiveness in life tasks will be briefly reviewed for each of the domains mentioned above.

Social Life

Several studies show that a supportive environment can act as a protective buffer. Social support by friends moderates negative effects in life (Bandura, 2001) and it is believed to be positively associated with satisfaction and productivity, and negatively with burnout (Baruch-Feldman, Brondolo, Ben-Dayan & Schwartz, 2002). Stetz, Stetz and Bliese (2006) showed the importance of social support in units of military police, where it was believed that social support moderates the effect of strain in a relationship. Supervisory support in particular is related to satisfaction and productivity but not to burnout, whereas family support is related to job stress (i.e., burnout) and less with productivity (Evans, Pistrang, & Billings, 2013). Chae and Boyle (2013) and Yasien, Nasir and Shaheen (2016) show the importance of sense of community and bonding to others which lowers psychological distress.

Maintaining Mental Health

Self-efficacy appears to play a critical role in the recovery of post-traumatic stress) and in the impact of loss of resources (Bandura, 2001; Benight & Harper 2002). Cicognani, Pietrantoni, Palestini and Prati (2009) studied emergency workers and found that a sense of community was positively related to efficacy beliefs and active coping strategies.

Heinrichs et al., (2005) concluded that firemen develop more PTSD and feelings of hostility, if they score low on self-efficacy. Self-efficacy buffers the impact of perceived stressful encounters on professional quality of life (Prati, Pietrantoni & Cicognani, 2010; Regehr, Hill & Glancy, 2000; Robyn, Robyn, Shakespeare-Finch & Gavan, 2011). Shepherd and Wild (2014) found in ambulance workers that enhanced coping was associated with making more positive appraisals and greater levels of objectivity during these call-outs. Additionally, Sonnentag and Grant (2012) show that perceived competence and reflection foster positive work reflection after-work hours.

Household and Finance

The practical organization of household chores and finance is an important life task that can easily come under pressure due to long hours and irregular shifts. Elbogen, Johnson, Wagner, Newton & Beckham (2012) found the following protective factors among a group of veterans: paid employment, self-care and stable financial situation. Moreover, respondents with mental health problems had more financial and job problems than participants without those mental health problems. In a study of Bailey, Woodiel, Turner and Young (1998) on mental health care professionals, financial stress is responsible for 30% of the variance of personal and job happiness.

Giving Meaning

Research on the role of meaning in treatment is still in its early stages (Cheavens, Feldman, Gum, Michael, & Snyder, 2006). The more important the role rescue workers play in a mission or assignment, the better they are able to cope with the stress (Schok, Kleber, Elands, & Weerts, 2008). The professional role of being of meaning in life saving and well-being is an important protective factor (Abelson, 2018). Allen, Rhoades, Stanley and Markman (2011) found that higher resilience predicts less distrust in others and the world and more personal growth. Giving meaning in response to adverse and stressful events acts as a protective buffer and facilitates recovery.

Maintaining Positivity

Sonnentag and Grant (2012) found that positive work reflection was associated with higher perceived competence and predicted positive affect at home. The ability to mentally detach from work is also associated with improved affective states at home (Oginska-Bullik & Zadwarnacieslak, 2018). Additionally, engaging in positive activities, buffers against negative feelings and beliefs about self-efficacy (Caprara & Steca, 2005). Helping others is an experience of success that can boost feelings of competence (Grant & Campbell, 2007; Penner, Dovidio, Piliavin & Schroeder, 2005). Maintaining positivity is an aspect of resilient individuals. Such individuals experience a mix of negative and positive emotions, without letting negative emotions overwhelm them (Calhoun & Tedeschi, 2014; Fredrickson, 2009). In a study under rescue workers (Yasien et. al., 2016) especially show that religion, sense of community and sense of importance helping others is related to less psychological distress. The ability to stay positive in work seems like an important dimension in the life tasks of rescue workers.

Test development

The 'Life Tasks Test' (LTT) was developed for research purposes, but it may also be used in clinical practice for preventive and curative support to rescue workers. It may contribute to diagnosing problem areas of the client by examining whether they function well in their life tasks.

This concept of life tasks was first introduced by Adler (1912). Later Cantor, Kemmelmeier and Prentice (2002) developed a life task test based on this theory. As far as we know there is no life task test specific for rescue workers. Most psychological tests for rescue workers focus on mental health and personality, and contain few questions referring to functioning in life tasks. With the development of the Life Tasks Test we will be able to obtain more specific information about effectiveness in the life tasks for rescue workers.

The 'Life Tasks Test' (LTT) was developed for research purposes but it may also be used in clinical practice for preventive and curative support to rescue workers. It may contribute to diagnose problem areas of the client by examining whether they function well in their life

tasks. Most psychological tests for rescue workers focus on mental health and personality, and contain few questions referring to the functioning in life tasks. For example, the Quality of Life Test (Wang, Lawler, Walumbwa & Shi, 2004), Life task Questionnaire of Cantor (1987) and the Post-Traumatic Growth test (PTG, Tedeschi & Calhoun, 2006) pay limited attention to the functioning in private life. With the Life Tasks Test we will be able to obtain more specific information about effectiveness in the life tasks for rescue workers.

There are some tests which pay attention to life tasks. In the context of this article we give a short overview in appendix 1, more detailed information is described. The scale structure and items were developed on the basis of our literature review as presented above, as well as on the basis of the first author's long experience in clinical practice counseling and training rescue workers. During the development phase, the questions were discussed with a small group of eight rescue workers and a team of psychologists.

We encountered some problems in the development of a scale for measuring relationships in family life. The research group was too small to distinguish between the many different options of family compositions. We decided to omit this from the further construction process. In the first version of the test, there were also questions about perceived effectiveness in handling private life events and the meaning of belief/faith. There was less data to compare the group on different private life events. And the question about belief/faith was answered with "not suitable" by the main respondents (niet van toepassing). Thus, these items were skipped. The current analysis therefore is based on the following five life tasks: *Social life*, *Maintaining mental health*, *Household and finance*, *Giving meaning*, and *Maintaining positivity*. The list of items is presented in Table 1 and the psychometric properties in Table 2.

Table 1: Items of the Life Task Test (LTT)

Social life
I can maintain friendships
I can give support and sympathy in my friendships
I can receive support and sympathy in my friendships *
I can maintain my social network
Managing mental health
I can deal with my emotions effectively
I can deal with stress effectively
I can deal with adversity effectively
I can deal with shocking events
I am effective in searching for sources of relaxation and energy
Household and finance
I can manage money effectively
I can build a stable romantic relationship *
I can run the household chores effectively
I can manage the financial administration effectively
Giving meaning
I can pursue an education or a course with success
I believe that my work is of significance in a larger whole
I try to learn from the things that I experience in life
I contribute in improving difficult situations
I feel relevant in my life
Maintaining positivity
The disturbing incidents I experience at work make it hard to stay positive
The disturbing incidents I experience at work make it hard to stay vibrant and hopeful in life

** removed after confirmatory factor analysis*

Table 2: Means, standard deviations and intercorrelations and Cronbach's alpha (on the diagonal) of the LTT scales (N = 108).

	Mean	SD	1	2	3	4	5
Social life	3.70	.664	.822				
Maintaining mental health	3.15	.688	.37**	.777			
Household and finance	3.77	.598	.31**	.44**	.753		
Giving meaning	3.75	.496	.32**	.39**	.24**	.615	
Maintaining positivity	3.10	1.220	.16	.37**	.13	.31**	.922

** *p* <.01

Testing concurrent validity

We chose to test the concurrent validity of the LTT scales with two frequently used tests in this area: one on work characteristics (e.g., work load, social support) and one on personality characteristics (e.g., personality traits). Should the scales in the LTT relate to these well-known factors as hypothesized, this would provide support for the construct validity of the new instrument. The following four hypotheses were tested:

Lower effective functioning in life tasks is expected to be associated with:

1) Higher scores on experienced workload

Critical incidents put a lot of pressure on rescue workers, which affects positive resources in the rescue workers' lives, such as a stable relationship and family life, happiness, vitality and financial position (Cicognani et al., 2009; Heshmati, Jafar, Safar & Mirnader, 2010; Slottje et al., 2007). Menard and Arter (2013) found that the number of critical incidents was related to more frequent and more severe PTSD symptoms. Shreffler, Meadows and Davis (2011) found that occupational stress, working more than 60 hours and lack of sleep were associated with greater work-to-family conflicts. Thus, job stress appears to cause more work-family conflicts and poorer health and well-being for both individual and family (Allen et al., 2000; Bianchi, Casper & King, 2005; Gerris & Vermulst, 2009).

2) Reduced social support from colleagues and direct supervisor.

Prati et al. (2010) demonstrated that social support functions as a buffer and can protect against negative outcomes. The following studies demonstrate that this protection also applies for rescue workers. Among firefighters, Tuckey and Hayward (2011) showed that camaraderie is an important buffer against psychological distress. With little support, people experience more psychological distress (Alexander & Klein, 2001). Baruch-Feldman et al., (2012) showed that in police officers supervisor support was especially related to satisfaction and productivity, but not to burnout.

3) Higher scores on psychological complaints and negative rumination about work

Recent research shows that an accumulation of involvement in critical incidents makes the rescuer susceptible to the development of psychological symptoms (Alexander & Klein 2001; De Boer et al., 2011; Dorresteijn et al., 2003; Halpern & Maunder, 2011). For example, Monnier and coworkers (2002) showed that the accumulation of incidents is related to health outcomes, such as state-anger, anger-out and depression.

4) Higher scores on negativism and somatization.

The literature on the relationship between personality and functioning in life tasks is rather scarce. Bramsen, Dirkzwager and Van der Ploeg (2000) found that former United Nations peacekeepers with high scores on negativism and psychopathology in the NVM test have more severe PTSD symptoms. This is in line with the general expectation of rescue work being associated with higher levels of problems in (mental) health mentioned above (Monnier et al., 2002; Halpern & Maunder, 2011).

Method

Procedure and participants

Data collection for this study was incorporated in a standard procedure of diagnostic examination and personal psychological training for police officers with mental health problems and absenteeism in their job. The psychological intervention was focused on recovery in mental health and reintegration in the job and contained 10-15 sessions. The present study was executed with 28 items and used a 5-point Likert - scale, with the

following categories: very good - good - average - bad - very bad. After an informed consent was obtained, the test (in Dutch) was filled out online. The initial invitation was sent to 170 policemen working in urban areas in The Netherlands. Only 108 gave their permission to be included in this study. This sample consisted of 62 male and 46 female participants. 59 did not have a relationship at time of inclusion. The average age was 42.9 (*SD*: 10.14) years old. The youngest was 21 and the oldest 61 years old, and their tenure was an average of 21.4 (*SD*:11.33) years, with a range of 2 through 46 years of tenure. Of the participants, 24 participants did not have children. The education level was mostly middle school level. A few participants (13%) had a managerial position at work.

Comparison group

In appendix 1 of this article (p. 115), CFA analyses of the LTT can be found. The first was conducted on a sample of 183 office employees with mental health complaints and absenteeism of the job. The second analysis was performed on a group that consisted of office employees and police officers (N=108). These analyses, though conducted separately, serve the function of a comparison group.

Confirmatory factor analysis

To examine the factorial validity of the LTT, we conducted a Confirmatory Factor Analysis (CFA). This CFA analysis was also used in the Posttraumatic Growth inventory (Taku, Cann, Calhoun & Tedeschi, 2008). This was done with AMOS and R, version 3.1.3, and the add-on package of Lavaan, version 0.5-20. The five-factor model that we postulated based on the literature was tested and compared with a one factor model. We checked whether the difference between the two models was significant and justified our further use of the five-factor model. For this, we used a Chi2 difference test ($\Delta\chi^2$) in R, using the Lavaan package. In interpreting the results of the factor analysis, we followed recommendations and interpretations by Byrne (2006). We will report Goodness of fit indices (χ^2), Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA) and the Standardized Mean Square Residual.

Cronbach's Alpha

To assess the internal consistency of the scales, we calculated the Cronbach's alpha for each scale. Cronbach's alpha was computed using SPSS, version 23. The psychometric properties of the intended scales are presented in Table 2.

We report the alpha, inter-item correlations and item-rest correlations; the latter two assess convergent validity. Cut-off scores for the former are r = 0.20 and for the latter r = 0.30. If deleting an item yields a substantially higher alpha, i.e. an increase of 0.05 or more, this will be reported.

Concurrent validity

In order to assess the concurrent validity of our questionnaire, we used Pearson's correlation coefficient r. In order to claim support for concurrent validity, we expect correlation coefficients that are medium in magnitude, (i.e. between 0.30 and 0.40). Significance level was set at 0.05.

Survey measures collected

The Dutch organizational stress questionnaire (VOS-D; Bergers, Marcelissen & de Wolff, 1986) has been widely used to examine the effects of stress in the work environment. For an overview of other studies using these scales of the VOS-D see [Reference withheld for review purposes]. The questionnaire uses a four (lack of social support scales and rumination scale) or five-point Likert-scale (workload scale), ranging from 'never' to 'often' or something similar, depending on the type of question. The following sub-scales were chosen for this study:

Workload. This sub-scale contains 9 questions; an item typical for this scale is 'Do you have not enough time to finish the work?' The higher the score, the more work load is reported, indicating work overload, thus rating themselves less effective in their life tasks. Therefore, the expected direction for the relation with the different LTT scales is negative. The original authors validated this instrument with middle class employees and reported an overall alpha of 0.77.

Lack of social support. To measure social support two scales are used. One measures the lack of social support from colleagues and the other the lack of social support from supervisors. An example of a typical item is 'How often do conflicts arise between your superior(s)/ co-workers?' The higher the score, the greater the lack of support the respondents report. Several studies in different professions demonstrate that social support can buffer the negative effects of work stress (Berg, Landeweerd, Tummers & Merode, 2006; Lechner, Steinvoorte & Näring, 2008). As with the Workload scale, we expect the direction to be negative. The authors report an alpha of 0.83 for the lack of support from supervisor scale and an alpha of 0.75 for the lack of support scale from colleagues.

Psychological complaints. This scale has 11 questions about anxiety, irritation and anger during work. For administrative reasons, 21 respondents received a shorter version of the VOS-D that did not include this scale. Examples of items are 'I feel anger', 'I feel lonely'. The alpha for psychological complaints was 0.80.

Negative rumination about work. There are four items concerning ruminating about work. An example is 'are you worried that you might not be up to do your job?' For both Psychological complaints and Rumination, we expect the direction of the correlation with the LTT to be negative. Here, the original alpha was 0.58 for the rumination scale, which is fairly low.

The *NVM* (Luteijn & Kok, 1985) is a Dutch personality questionnaire, based on the short version of the Minnesota Multiphasic Personality Inventory (MMPI). We used the subscales of Negativism and Somatization. Many studies have been conducted researching the NVM (Eurelings, Luyten, Remijsen & Koelen, 2010).

Negativism has items about passive avoidance behavior, feelings of dissatisfaction, resentment with daily life. A typical example is: 'The life I lived was not the life that I imagined to live'.

Somatization. Contain items related to vague physical complaints. Here, a typical example is 'My stomach upsets me a lot'.

Results

Cronbach's alpha and inter-item correlations

As can be seen in Table 2, all the five scales had a reliable Cronbach's alpha. The alpha's varied between.62 and.92. One of the scales has acceptable reliability (<.70, but >.60), for the other four reliability was good (≥.70). Next, we inspected the inter-item correlation matrix and the item-rest correlation matrix, to assess item convergent validity per scale. The mean scores of the items were all in the same range; no outliers were spotted. In Table 2, the items are marked with a low inter-item correlation. We removed these items from the LTT and excluded these from subsequent analyses.

Confirmatory Factor Analysis

The five-factor model noted a χ^2 (125) of 270.6. Thus, the five-factor model shows a reasonable fit, but not yet completely adequate. Although the one-factor model performed worse on all parameters than the five-factor model (see Table 3).

Subsequently, the $\Delta\chi^2$ of 301.985 was significant at the.001 level, making our five-factor model a significantly better fit on the observed data than the unidimensional model. Finally, our CFA suggested testing an adjusted five factor model, with two items removed, see Table 1 for more details about the items. The difference of the unidimensional model with this adjusted five factor model was larger than for the full five factor model: $\Delta\chi^2$ = 381.048. The adjusted model shows more adequate fit measures, with CFI now reaching above.90 (.904) and RMSEA at.070 and SMRS at.078. We therefore choose to proceed with the adjusted model below.

Table 3: Fit measures for the one-factor model, five-factor model, and the adjusted five-factor model.

Model	Des-cription	χ^2 (df)	$\Delta\chi^2$	CFI	SMRS	RMSEA	RMSEA 90% CI
CFA Life Tasks	One factor model	572.598(170)	-	.454	.116	.148	.135;.162
CFA Life Tasks	Five factor model	270.613(161)	301.985**	.860	.089	.078	.061;.094
CFA Adjusted	Five factor model*	191.550(125)	381.048**	.904	.078	.070	.050;.089

** Adjusted model with two items removed. See text for details.*
*** p <.001, n = 108.Concurrent validity*

Concurrent validity

Table 4 shows the correlations between the LTT scales and work overload, social support, psychological complaints and rumination and personality. As expected, Workload (hypothesis 1) had a significant correlation with *Maintaining mental health* (r= -.27, p <.01) and *Maintaining positivity* (r = -.28, p <.01). Lack of support (hypothesis 2) correlated with *Social life* (r = -.25, p <.01) for colleagues, *Maintaining mental health* (r = -.20, p <.05 for supervisors; r= -.20, p <.05 for colleagues). For *Household and finance,* only the correlation for colleagues turned out to be significant (r = -.26, p <.05). The last two scales of the LTT, *Giving meaning* and *Maintaining positivity* correlated with the lack of support scales, r = -.34, p <.01 for supervisors, r = -.32, p <.01 for colleagues and r = -.50, p <.01 for supervisors, r = -.41, p <.01 for colleagues, respectively, indicating a small to medium effect for these variables. For hypothesis 3, Negative rumination was correlated with three scales of the LTT. The correlations with *Maintaining mental health* (r = -.32, p <.01) and *Maintaining positivity* (r = -.48, p <.01) were moderate, the correlation with *Giving meaning* was somewhat lower (r = -.20, p <.05). Policemen who experience more psychological complaints feel less effective in maintaining an optimistic outlook on the near future. They feel that they have difficulties in attributing meaning to what they do and that they are less effective in managing their own mental health.

In line with hypothesis 4, Negativism correlated with lower effectiveness on all life tasks, except *Social life*. Somatization had negative correlations with efficacy on *Maintaining mental health* (r = -.50, p <.01) and *Maintaining positivity* (r = -.40, p <.01). As hypothesized, this indicates that people, who report a higher level of somatic complaints, report on average, less effectiveness in their life tasks. Having somatic complaints also correlates, although less strongly, with lower effectiveness in *Household and finance* (r = -.25, p <.05) and *Giving meaning* (r = -.23, p <.05).

In general, the above results can be interpreted as good indications of concurrent validity for four of the five LTT scales (see also Table 4). The concurrent validity of the *Social life* scale was weakly supported; only one out of six of the expected correlations was significant.

Table 4: Means, standard deviations and correlations of the LTT-scales with personality, workload, social support, ruminating and psychological complaints (N = 108).

		Mean	SD	1	2	3	4	5
	Negativism	21.19	7.81	-.12	-.25**	-.33**	-.29**	-.31**
	Somatization	17.44	9.78	-.02	-.50**	-.23*	-.23*	-.40**
Work load	3.09	.64	-.18	-.27**	-.02	-.02	-.28**	
Lack of support supervisors	1.85	.62	-.14	-.20*	-.14	-.34**	-.50**	
Lack of support colleagues	2.17	.39	-.25**	-.20*	-.26*	-.32**	-.41**	
Negative ruminating about work	2.88	.58	-.09	-.32**	-.16	-.20*	-.48**	
Psychological complaints (a)	2.48	.99	-.15	-.26*	-.23*	-.13	-.11	

*(a) n = 87, * p< 0.05, ** p< 0.01. Columns labeled 1 through 5 correspond with LTT scales, as in Table 3.*

Discussion

The goal of the present study was to develop a life tasks test, which contributes to the diagnosis of rescue workers and helps in protecting against the eroding effect of cumulative confrontation with adversities.

Results showed that the LTT is a valid test for the following life task domains: *Maintaining mental health, Household and finance, Giving meaning, Maintaining positivity*. Additionally, the comparison group of office employees (see appendix 1) show that the LTT is a valid test. These four scales have negative correlations with personality and work-related measures

of work pressure, stress at work, social support, negativity and somatization. We did not find consistent support for the concurrent validity of the *Social life* scale. Only one of the expected correlations was confirmed, providing little evidence for the validity of this scale. Preliminary analysis showed that this scale did not violate any assumptions in terms of distribution, nor did it show any important outliers in the distribution. It is difficult to explain why this scale failed to produce the expected results, whereas all the other scales did. It could be that overall, social life is not as much affected as one would expect based on the literature. The one correlation that turned out to be significant was lack of support from colleagues, which is related to the quality of the social network at work.

When compared to other tests, the LTT was found to contain more specific questions concerning effectiveness in private life tasks, whereas other tests focussed more on satisfaction, personal characteristics and the state of the situation. Furthermore, the TLT is short and especially developed for rescue workers.

Limitations and suggestion for research

The relatively small size of the test group (i.e., police officers exclusively) is a limitation of this study. Further research should be conducted among other rescue workers, such as firemen, ambulance workers, veterans, in order to assure the generalizability of the current results. Another point is that we included only police officers, who we registered for psychological therapy, who may have been more prone to certain behavioral traits as compared with the general population of police officers.

Since test development is an on-going process, we emphasize the need for further work on the LTT. It is clear from this study that the social dimension (i.e., family relationships, social life) of private life functioning requires further attention in future versions of the LTT, both in terms of items/scales and in terms of establishing concurrent validity, especially when they are used in conjunction with (neuro-) physiological measures, such as suggested by Koch et al. (2017).

Practical implications

This research provides immediate insight into life tasks, which are performed well and contribute to a better mental health and uncover problems in need of support. The effectiveness in life tasks is an important buffer to the impact of rescue work. Skills in maintaining life tasks should be trained in regular job training to reduce the risk that life tasks are neglected. Moreover, it gives rescue workers mastery of their personal life, makes self-management stronger, as well as giving feelings of confidence and positive energy (Allen et al., 2011; Bandura, 2001). Elbogen et al. (2012) emphasized the importance of proper integration of mental health tools in the personal life for rescue workers. They suggest the development of an assessment tool, which pays attention to functioning in private life. Early detection of a decline in effectiveness in life tasks can be used as an early warning signal for a decline of well-being. In situations where low functioning on life tasks is detected, intensive trauma therapy would be undesirable.

References

Abelson, A. (2018) First response emergency care-experiences described by fire fighters. *International journal of emergency services.* Doi./abs/10.1108/IJES-05-2018.

Adler, A. (1912). *The Neurotic Character*, Alfred Adler Institute, San Francisco; trans. 2002.

Alexander, D. A. & Klein, S. (2001). Ambulance personnel and critical incidents: Impact ofaccident and emergency work on mental health and emotional well-being. *The British Journal of Psychiatry, 178,* 76-81.

Allen, E. S., Rhoades, G. K., Stanley, E. M. & Markman, H.J (2011). On the home front: Stress for recently deployed army couples. *Family Process*, *50* (2), 235-247.

Bailey, W. C., Woodiel, D. K., Turner, M. J. & Young, J. (1998). The relationship of financial stress to overall stress and satisfaction. *Personal Finances and Worker Productivity, 2*(2), 198-206.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52,* 1-26. Doi:10.1146/annurev.psych.52.1.1

Baruch-Feldman, C., Brondolo, E., Ben-Dayan, D. & Schwartz, J. (2002). Sources of social support and burnout, job satisfaction, and productivity. *Journal of Occupational Health Psychology, 7*(1), 84–93.

Benight, C. C., & Harper, M. L. (2002). Coping self-efficacy perceptions as a mediator between acute stress response and long-term distress following natural disasters. *Journal of Traumatic Stress, 15*(3), 177-186.

Berg, T. I. J. van den, Landeweerd, J. A., Tummers G. E. R., Merode, G. G. (2006). A comparativestudy of organizational characteristics, work characteristics and nurses'spsychological work reactions in a hospital and nurses home setting. *InternationalJournal of Nursing Studies, 43,* 491-505.

Bergers, G. P. A, Marcelissen, F. H. G., & de Wolff, Ch. J. (1986). *VOS-D Vragenlijst Organisatiestress-D. Handleiding.* Nijmegen: Stressgroep Publicatie 36. [VOS-D Questionnaire Organizational Stress –D. Instructor's Manual. Nijmegen: StressgroupPublication 36.]

Bianchi, S. M., Casper, L. & King, R. B. (2005). *Work, family, health and well-being,* Mahwah, NJ: Lawrence Erlbaum Associates.

Boer, J. de, Lok, A., Verlaat, E. van 't, Duivenvoorden, H.J., Bakker, A.B. & Smit B.J. (2011). Work- related critical incidents in hospital-based health care providersand the risk of post-traumatic stress symptoms, anxiety and depression: Ameta-analysis. *Social Science & Medicine*, *73*, 316-326.

Bramsen I. Ph.D., Dirkzwager, A. J. E., van der Ploeg, M. A. Ph.D. (2000). Pre-deployment personality traits and exposure to trauma as predictors of post-traumatic stress symptoms: a prospective study of former peace keepers. *International Journal of Psychiatry.*

Byrne, B. M. (2006). *Structural Equation Modeling with AMOS. Basic Concepts, Applications, and Programming.* 2nd edition. Routledge: New York.

Calhoun, L. G., & Tedeschi, R. G. (2014). *Handbook of posttraumatic growth: Research and practise.* London: Routledge.

Cantor, N., Kemmelmeier M., Prentice, D.A. (2002). Life task pursuit in social grouos: balancing self-exploration and social integration. *Self and Identity, 1,* 177-184.

Caprara G. V, Steca P., (2005). Affective and social self-regulatory beliefs as determinants of positive thinking and happiness. *European Psychologist*.

Chae M. H., Boyle D. J., (2013) Police suicide: prevalence, risk and protective factors. *International Journal of Policing*. Vol 36. P 91-118. DOI.org/10.1108/13639511311302498

Cheavens, J. S., Feldman, D. B., Gum, A., Michael, S. T. & Snyder, C. R. (2006). Hope therapy in a community sample: A pilot investigation. *Social Indicators Research, 77*, 61–78.

Cicognani, E., Pietrantoni, L., Palestini, L., & Prati, G. (2009). Emergency Workers' Quality of Life: The Protective Role of Sense of Community, Efficacy Beliefs and Coping Strategies. *Social Indicators Research, 94*(3), 449-463.

Dorresteijn, S. M., van der Ploeg, E., & Kleber, R. (2003). Critical incidents and chronic stressors at work: Their impact on forensic doctors. *Journal of Occupational Health Psychology*.

Elbogen, E. B., Johnson, S. C., Wagner, H. R., Newton, V. M. & Beckham, J. C. (2012). Financial well-being and post-deployment adjustment among Iraq and Afghanistan war veterans. *Military Medicine, 177*(6), 669–675.

Eriksen, C. A. & Kecklund, G. (2007). Sleep, Sleepiness and Health Complaints in Police Officers: The effects of a Flexible Shift System. *Industrial Health, 45,* 279/288.

Evans, R., Pistrang, N., & Billings, J. (2013). Police Officers' experience of Supportive and Unsupportive Social Interactions Following Traumatic Incidents. *European Journal of Psychotraumatology, 4*(1). DOI:10.3402/ejpt.v4i0.19696.

Eurelings-Bontekoe E. H. M., Luyten P., Remijsen M., Koelen J., (2010). *The relationship between personality Organiszation as Asessed by Theory-Driven Profiles of the Dutch Short Form of the MMPI and Self-Reported Features of Personality Organization*. Journal of Personality Assessment.

Fredrickson, B. L. (2009). *Positivity*. New York: Crown.

Grant, A. M. & Campbell, E. M. (2007). Doing good, doing harm, being well and burning out: The interactions of perceived prosocial and antisocial impact in service work. *Journal of Occupational and Organisational Psychology, 80,* 665-691.

Gerris J. R. M., Vermulst A. A. (2009). Managing multiple roles, personality, stress, work-family interference in dual career couples. *Journal of Individual Differences. 30*, 6-19.

Halpern, J. & Maunder, R. G. (2011). Acute and Chronic Workplace Stress in Emergency Medical Technicians and Paramedics: Chapter from *Handbook of Stress in the Occupations*. Edited by Langan-Fox, J. & Cooper, pp. 135-160. C.L. Edward Elgar: Cheltenham, UK.

Harvey, S. B., Milligan-Saville J. S., Paterson H. M., Harkness E. L., Marsh A. M., Bobson M., Kemp R., Bryan R. A. (2016) The mental health of firefighters: An examination of the impact of repeated trauma exposure. *Australian and New Zealand Journal of Psychiatry Vol. 50*(7) 649-658. Doi:10.1177/0004867415615217

Heinrichs, M., Wagner, D., Schoch, W., Soravia, L. M., Hellhammer, D. H., & Ehlert, U. (2005). Predicting posttraumatic stress symptoms from pretraumatic risk factors: A 2-year prospective follow-up study in firefighters. *American Journal of Psychiatry, 162*, 2276–2286.

Heshmati R., F, Jafar H., Salar, R., Mirnader, M. (2010). Sensation Seeking and marital adjustment in handicapped veterans suffering from PTSD. *Procedia. Soc Behav Sci, 5:* 1783-1787.

Houtman, I. L. D., Jettinghoff, K., Brenninkmeijer, V. & Berg, R. van den (2005). De politie vijf jaar later: Werkstress en het effect van maatregelen. *Hoofddorp: TNO Work and Employment*. [Dutch police organization five years later: Workstress and the effect of policy].

Huber, M. A. (2014). Towards a new, dynamic concept of Health, its operationalizationand use in public health and healthcare, and in evaluating health effects of food.*School for Public Health and Primary Care,* Maastricht University.

Koch, S. B. J., Klumpers, F., Zhang, W., Hashemi, M. M., Kaldewaij, R., van Ast, V.A.,Smit, A. S. & Roelofs, K. (2017). The role of automatic defensive responses in thedevelopment of posttraumatic stress symptoms in police recruits: protocol of aprospective study. *European Journal of Psychotraumatology*, *8*(1), DOI: 10.1080/20008198.2017.1412226.

Lechner, L., Steinvoorte, T., & Näring, G. (2008). Emotieregulatie en burnout bij ziekenverzorgenden. *Gedrag en Organisatie*, *21*(2), 137-149. [Emotion regulation and burnout in nurses. *Behavior and Organization].*

Leppma, M. Mnatsakanova A., Sarkisian K., Scott O., Adjeroh C., Andrew M. E., Violanti J. M., Mc Canlies E.C.(2018). Stressful events and posttraumatic growth amoungpoliceofficers. A cross-sectional study. *Journal of Stress and Health.* Doi:10.1002/smi.2772

Luteijn, F. & Kok, A. P., (1985). *Herziene handleiding NVM*. Lisse: Swerts & Zeitlinger. [*Revised manual NVM*. Lisse: Swerts & Zeitlinger]

Menard, K. S. & Arter M. L. (2013). Police Officer Alcohol Use and Trauma Symptoms: Associations with Critical Incidents, Coping, and Social Stressors. *International Journal of Stress Managemen*t. *20*(1): 37-56.

Monnier, J., Cameron, R. P., Hobfoll, S. E. & Gribble, J. R. (2002). The impact ofrescpirse loss and critical incidents on psychological functioning in fire-emergency workers: A pilot study. *International Journal of Stress Management, 9,*11-29.

Oginska-Bullik N., Zadvarnaciesak M., (2018) The role of resiliency and coping strategies in occurrence of positive changes in medical rescueworkers. *International Emergency Nursing. Vol. 39.* July 2018, p40-45. Doi.org/10.1016/j.ienj.2018.02.004.

Penner, L. A., Dovidio, J. F., Piliavin, J. A. & Schroeder, D. A. (2005). Prosocial behavior: Multilevel perspectives. *Annual review of Psychology, 56,* 365-392.

Prati, G., Pietrantoni, L. & Cicognani, E. (2010). Self-efficacy moderates the relationship between stress appraisal and quality of life among rescue workers. *Anxiety, Stress, & Coping, 23*(4), 463-470.

Regehr, C., Hill, J., & Glancy, G. D. (2000). Individual predictors of traumatic reactions in firefighters. *Nervous and Mental Disease, 188*(6), 333-339.

Robyn, R. M., Robyn, K., Shakespeare-Finch, J. & Gavan, P. (2011). Adaptive and maladaptive coping strategies predict post-trauma outcomes in ambulance personnel. *Traumatology, 17*(4), 25-34.

Schok, M. L., Kleber, R. J., Elands, M. & Weerts, J. M. (2008). Meaning as a mission: A review ofempirical studies on appraisals of war and peacekeeping experiences. *Clinical Psychology Review, 28*, 357-365.

Shepherd, L., & Wild, J. (2014). Emotion regulation, physiological arousal and PTSD symptoms in trauma-exposed individuals. *Journal of Behavior therapy and Experimental Psychiatry*, *45*(3), 360-367. Doi: 10.1016/j.jbtep.2014.03.00.

Shreffler, K. M., Meadows, M. P., & Davis, K. D. (2011). Firefighting and fathering: Work-family conflict, parenting stress and satisfaction with parenting and child behavior. *Fathering*. *9*(2): 169-188.

Siffaki-Pistola D., Vaasilici-Eirini C., Sofia-Aikaterini V., Melidoniotis E., Pistolla G.(2017) Who is going to the rescueworkers? Post-traumatic stress disorder amoung rescueworkers operating in Greece during the European refugee crises. *Journal of Social Psychiatric Emidimeology 52*: 45-54. DOI 10.1007/s00127-016-1302-8

Slottje, P., Twisk, J. W. R., Smidt, N., Huizink, A.C., Witteveen, A. B., Mechelen W. van & Smid, T. (2007). Health-related quality of life of firefighters and police officers8,5 years after the air disaster in Amsterdam. *Quality of Life Research, 16,* 239-252.

Sonnentag, S. & Grant, A. M. (2012). Doing good at work feels good at home, but not right away: When and why perceived prosocial impact predicts positive affect. *Personnel Psychology, 65*, 495–530.

Stetz, T. A., Stetz, M. C. & Bliese, P.D. (2006). The importance of self-efficacy in the moderating effects of social support on stressor-strain relationships. *Work & Stress,20*(1)*:* 49-59.

Taku, K., Cann, A., Calhoun, L. G., & Tedeschi, R. G. (2008). The factor structure of the posttraumatic growth inventory: A comparison of five models using confirmatory factor analysis. *Journal of Traumatic Stress, 21*(2), 158-164. doi:10.1002/jts.20305

Tedeschi, R. G., & Calhoun, L. G. (2006). Expert companions: Posttraumatic growth in clinical practice. In L. G. Calhoun & R. G. Tedeschi (Eds.), *Handbook of posttraumatic growth:Research and practice* (pp. 291-310). Mahwah, NJ: Lawrence Erlbaum Associates.

Tuckey, M. R., & Hayward, R. (2011). Global and Occupation-Specific Emotional Resources as Buffers against the Emotional Demands of Fire-Fighting. *Applied Psychology, 60*(1), 1-23. doi: 10.1111/j.1464-0597.2010.00424.x

Vila, B. (2006). Impact of long work hours on police officers and the communities they serve. *American Journal of Industrial Medicine, 49*(11), 972-980.

Wang, P., Lawler, J. J., Walumbwa, F. O. & Shi, K. (2004). Work-family conflict andjob withdrawal intentions: The moderating effect of cultural differences. *International Journal of Stress Management*, *11*(4), 392–412.

Yasien, S., Nasir J.A., Shaheen T., (2016) Relationship between psychological distress and resilience in rescueworkers. *Saudi Med.J. juli: 37*(7);778-782. Doi:10.155371smj.2016.7.15004

Appendix 1. Comparison groups

In order to examine the generalizabilty of the LTT we replicated our Chapter 4 analyses in a group of office employees. This is reported in this appendix.

Procedure and participants

The data were collected using diagnostic data from people working as employees in office settings, no- rescue workers (see Table below), who were referred for psychological support by an occupational physician. The participants were experiencing absenteeism and followed a personal psychological training (of 10-15 sessions) focussed on recovery and reintegration in the job. All of the included participants approved the usage of their data for this study. The present study was executed with 28 items. The questionnaire was filled out online by participants, at a time and place of their own choosing. This sample consisted of 87 male and 96 female participants, the total sample of 183 participants. 33 participants did not have a relationship at the time of inclusion. The average age was 45.16 (SD: 9.46) years. The youngest was 23 and the oldest 63 years old, and their tenure was an average of 23.85 (SD: 10.79) years, with a range of one through 46 years of tenure. The education level is mostly community college level. One fourth of the participants (25.1%) have a managerial position at work.

The joint sample contained 291 entries, from both police officers (N=183) and office workers (N=108).

Employment sectors for the 183 no-rescue workers; office employees, business services, education and health care

	Frequency	%
Education	18	9.8
Healthcare	15	8.2
Mental Healthcare	5	2.7
Local government	11	6
Governance	49	26.8
Business Services	8	4.4
Industry	11	6
Maritime sector	5	2.7
IT	48	26.2
Banking	7	3.8
Self-employed/ small business owner/ construction	1	0.5

Note. 5 respondents had missing values.

Confirmatory factor analysis office employees

To examine the factorial validity of the LTT, we conducted a Confirmatory Factor Analysis (CFA). For this we used R, version 3.1.3, and the add-on package of Lavaan, version 0.5-20. The five-factor model that we postulated based on the literature was tested and compared with a one factor model. We checked whether the difference between the two models were significant and justified our further use of the five-factor model. For this, we used a Chi2 difference test ($\Delta\chi^2$) in R, using the Lavaan package. In interpreting the results of the factor analysis, we followed recommendations and interpretations by Byrne (2006). We will report Goodness of fit indices (χ^2), Comparative Fit Index (CFI), the Root Mean Square Error of Approximation (RMSEA) and the Standardized Mean Square Residual.

Results of the CFA

The five-factor model noted a χ^2 (165) of 385.97. Although the one-factor model performed worse on this parameter than the five-factor model, the chi-square fit was somewhat off, and based on the literature (Byrne, 2006) this might have been caused by our sample size. Despite this, our reported $\Delta\chi^2$ of 305.76 was significant at the.001 level, making our five-factor model a significantly better fit for the observed data than the one factor model. Additional fit parameters will be discussed to accommodate for the chi-square. The CFI is.904 which is above.90, but not above the desired.95. The RMSEA of 0.06 was sufficient, although here, the same as with the chi-square, we need to be cautious due to our sample size. However, judging by the 90% confidence interval, we see that the desired value of 0.05 is within the interval of [.047;.073]. The SRMR of 0.076 is within the values that are considered to be adequate (between 0.05 and 0.08). Byrne (2006) states for this parameter that a value of 0.10 is sufficient, which would mean that ours is slightly below that.

For the individual factor loadings, it can be seen that the factor loadings of the individual items do vary to some extent between the two samples of police officers and no-rescueworkers'. For example, in the original rescue workers sample, the items about romantic relationships and friendships tended to have lower factor loadings, suggesting a less than reasonable fit with their respective scales, *Household and finance* and *Social life*, as described in Chapter 4. Both these items have higher loadings in the office employees' sample (0.286 and 0.368 versus.0148 & 0.265 respectively) suggesting a somewhat better fit, albeit still not perfect. The scale of *Giving meaning*, in the original sample of policeman described in Chapter 4, had the least good fit overall. This is still the case with the office employee sample, although it is marginally better in the latter.

Joint sample

The 5-factor model for the two groups combined noted a χ^2 (190) of390.2, which was significantly better than our 1-factor model, with a reported difference of 326.34. The CFI reported reached.88, below the desired cut-off of.95. The RMSEA was above 0.06, although the 90% interval did not include 0.05. Lastly, the SRMR notes 0.076, and is in between 0.05 and 0.08 and well below 0.1. For all the factor analyses, we present the Tables below, including the lambda Table for factor loadings.

Conclusion

The overall conclusion is that the hypothesized scale structure of the factor analysis of the office employees group sample is similar to the police officers'. Both groups had sick leave from their job and were referred to psychological support. The items with low factor loadings, have low loadings in both samples. In general, the CFA results were quite similar in the two groups. This supports the reliability/generalizability of the questionnaire at least to some extent. However, it is desirable that more research should be done on this topic and questionnaire. As can be seen in the item factor loadings, some items seem to be somewhat ill-suited for their current hypothesized scale structure. Further research, with different constellations of the questionnaire, and different samples are needed. In further development the test can, for example, be tested on healthy people with different occupations.

Table 1: CFA parameters of one and five factor model for the office employees sample (N = 183)

Model	Description	χ^2 (df)	$\Delta\chi^2$	CFI	SMRS	RMSEA	RMSEA 90% CI
CFA Life Tasks	One factor model	691.726(170)	-	.525	.106	.130	.120;.140
CFA Life Tasks	Five factor model	385.97(165)	305.76***	.904	.076	.06	.047;.073

Table 2: Factor loadings for all items and factors for the office employees sample (N=183)

	Social Life	Mental Health	Household & Finance	Giving Meaning	Maintaining Positivity
Life task_4	***0.846***				
Life task_12	***0.476***				
Life task_13	***0.368***				
Life task_14	***0.901***				
Life task_5		***0.762***			
Life task_6		***0.791***			
Life task_7		***0.744***			
Life task_15		***0.723***			
Life task_19		***0.373***			
Life task_1			***0.688***		
Life task_2			***0.286***		
Life task_16			***0.321***		
Life task_17			***0.845***		
Life task_18	***0.445***				
Life task_20	***0.262***				
Life task_22	***0.549***				
Life task_24	***0.611***				
Life task_25	***0.701***				
Life task_26					***0.952***
Life task_27					***0.808***

Table 3: Factor loadings for the police officers' sample (N=108)

	Social Life	Mental Health	Household & Finance	Giving Meaning	Maintaining Positivity
Life task_4	***0.879***				
Life task_12	***0.592***				
Life task_13	***0.265***				
Life task_14	***0.887***				
Life task_5		***0.656***			
Life task_6		***0.710***			
Life task_7		***0.736***			
Life task_15		***0.739***			
Life task_19		***0.380***			
Life task_1			***0.740***		
Life task_2			***0.148***		
Life task_16			***0.571***		
Life task_17			***0.865***		
Life task_18	***0.490***				
Life task_20	***0.468***				
Life task_22	***0.499***				
Life task_24	***0.322***				
Life task_25	***0.650***				
Life task_26					***0.780***
Life task_27					***0.900***

Table 4: CFA Table for the joint sample of police officers' and office employees (n = 291)

Model	Description	χ^2 (df)	$\Delta\chi^2$	CFI	SMRS	RMSEA	RMSEA 90% CI
CFA Life Tasks	One factor model	716.542(170)	-	.499	.107	.131	.121;.141
CFA Life Tasks	Five factor model	390.20(190)	326.34***	.88.	.076	.065	.053;.077

Table 5: Factor loadings for all items and factors for the joint sample; office employees and police officers' (N=291)

	Social Life	Mental Health	Household & Finance	Giving Meaning	Maintaining Positivity
Life tasks_4	***0.862***				
Life tasks_12	***0.446***				
Life tasks_13	***0.369***				
Life tasks_14	***0.855***				
Life tasks_5		***0.749***			
Life tasks_6		***0.782***			
Life tasks_7		***0.743***			
Life tasks_15		***0.729***			
Life tasks_19		***0.389***			
Life tasks_1			***0.675***		
Life tasks_2			***0.296***		
Life tasks_16	***0.324***				
Life tasks_17	***0.817***				
Life tasks_18			***0.383***		
Life tasks_20			***0.272***		
Life tasks_22			***0.568***		
Life tasks_24			***0.645***		
Life tasks_25			***0.696***		
Life tasks_26				***0.952***	
Life tasks_27				***0.826***	

Appendix 2. Comparison between LTT and related tests

In this appendix we compare the LTT to a selection of other tests that measure related topics. In Table 1 a short overview is given of the main points of the comparison.

The Life Tasks Test (LTT). *Description*: The LTT was developed by Bakker (2017) to assess problem areas in life tasks functioning of rescue workers. The LTT is unique in this regard for focussing specifically on the effectiveness of rescue workers in their private lives. Item examples are "I can maintain my social network" and "The disturbing incidents I experience at work make it hard to stay positive". Initially this instrument was intended for use in research settings, but it is suitable for diagnostic and care use as well to support rescue workers during their treatment and recovery (Bakker, van Veldhoven, Gaillard, Hertogs, & Feenstra, 2019).

Scoring: The LTT has a total of 20 items that are distributed across five scales (Bakker, 2017). The item scales are 'social support', 'mental health', 'household and finance', 'giving meaning' and 'maintaining positivity'. Participants fill in each item by selecting the best corresponding answer according to a 5-point Likert scale. The values range from '*very effective*' to '*very ineffective*'. A mean score is calculated for every item scale to effectively identify specific problem areas or strengths.

Reliability: During the development of the LTT different literature sources were consulted in combination with the longstanding clinical experience of the developer to determine the scale structure and items (Bakker et al. 2019). Originally the LTT consisted of 28 items. After conducting a CFA, eight items with a factor loading of <.40 were removed. In a

sample of 108 rescue workers that have been left sick from work, the internal reliability of the scales range from α =.62 to.92, with α ≥.70 in four of five scales (Bakker, 2017). In a sample of 183 office workers the internal reliability of the scales range from α =.56 to.87, with α ≥.70 in three of the five scales (Bakker, 2017).

The Quality of Life Scale (QOLS). *Description:* The QOLS was developed by Flanagan (1978) at the request of the American Institutes of Research to assess the quality of life (QOL) of American citizens. During the first phase of its development 3.000 people of various backgrounds representing different regions were interviewed to ensure that the test would be qualified as a valid measure of QOL. In the first version of the QOLS, participants were asked to rate their feelings of satisfaction with regards to items like "Participating in active recreation" and "Material comforts, home, food, conveniences, financial security". However, in due course the instrument became popular to measure QOL for individuals with a chronic illness, which prompted Flanagan to suggest adding an extra item tailored to this population (Burckhardt, Anderson, Archenholtz, & Hägg, 2003). To this end, Burckhardt, Woods, Schultz and Ziebarth (1989) added the item "Independence, being able to do things for yourself".

Scoring: The QOLS is scored by adding up the score on each item to yield a total score for individual QOL (Burckhardt & Anderson, 2003). Participants fill in each item by selecting the best corresponding answer according to a 7-point Likert scale ranging from 1 to 7. The values range from '*delighted*' to '*terrible*'. Scores can range from 16 to 112 on the 16-item QOLS, with higher scores indicating higher QOL. Even though officially no separate scores are to be calculated for the scales, the QOLS differentiates six components that each contribute to QOL (Liedberg, Eddy, & Burckhardt, 2012). These scales consist of 'material and physical well-being', 'relationships with other people', 'social, community and civic activities', 'personal development and fulfillment', 'recreation' and 'independence'.

Reliability: The reliability of the original 15-item scale was tested in four chronic illness samples, with all samples being tested a total of three times across three-week intervals (Burckhardt et al., 1989). Each of the samples was differentiated by a particular chronic illness: ostomy, rheumatoid arthritis, osteoarthritis or diabetes. The reliability across all samples and testing times ranged from α =.82 to.92. The internal reliability of the 16-item scale was tested by Offenbächer, Sauer, Kohls, Waltz, and Schoeps (2012) in a German fibromyalgia sample. Their study resulted in a reliability score of α =.90. Latorre-Román et al. (2014) tested the internal reliability of the 16-item scale in a Spanish fibromyalgia sample and calculated a reliability score of α =.89.

Points of comparison: The first and foremost point of difference between the QOLS and the LTT concerns the construct that is being measured. The QOLS, to be specific, measures 'satisfaction' with different aspects of personal life while the LTT measures personal 'effectiveness' in functioning on life tasks. So, for example, a person with schizoid personality disorder might score high on satisfaction regarding his current life on the QOLS, while at the same time score as very ineffective on the LTT. Further differences in the QOLS concern the inclusion of community activities/services, the inclusion of an item targeted to chronic illness groups and the emphasis on family relations rather than friendships. On the other hand, the most notable similarity between the QOLS and the LTT pertains to shared dimensions of personal development, fulfillment and leading a meaningful life.

The Post-Traumatic Growth Inventory (PTGI). *Description:* The PTGI was developed by Tedeschi and Calhoun (1996) to measure a person's perceived benefit resulting from a traumatic experience. Tedeschi and Calhoun describe finding a sizable body of literature suggesting that traumatic experiences could lead to positive growth or transformation in people. However, they found there was still lacking in an instrument that could specifically measure the extent to which survivors of traumatic experiences perceived benefits (Tedeschi & Calhoun, 1996). The PTGI asks its participants to appraise possible areas of growth and change following a traumatic experience (e.g., "New opportunities are available which wouldn't have been otherwise" and "I discovered that I am stronger than I thought I was").

Scoring: The PTGI is scored by adding up the score on each item to yield a total score (Taku, Cann, Calhoun, & Tedeschi, 2008). Participants fill in each item by selecting the best corresponding answer according to a 6-point Likert scale ranging from 0 to 5. The values range from '*I did not experience this change as a result of my crisis*' to '*I experienced this change to a very great degree as a result of my crisis*'. Scores can range from 0 to 105 on the 21-item PTGI, with higher scores meaning more positive outcomes. Statistical analysis produced suggested that the 21 items can be divided into five different factors (Taku et al., 2008; Tedeschi & Calhoun, 1996). These factors were named 'relating to others', 'new possibilities', 'personal strength', 'spiritual change' and 'appreciation of life'. Taku et al., (2008) suggest it might be worthwhile to calculate scores for individual scales seperately from the total score.

Reliability: Originally 34 items were generated that referred to frequently mentioned positive changes (Tedeschi & Calhoun, 1996). A principal component analysis was conducted, resulting in six factors that could be differentiated, with five of them being easily interpretable. As a result, the 21 items belonging to the five factors were retained while the other 13 items were removed from the current PTGI due to a lack of practical utility (Tedeschi & Calhoun, 1996). The internal reliability of the remaining 21 items is α =.90 in a sample of undergraduate students with a history of traumatic experience. The internal reliability of the individual factors in the same sample ranged from α =.67 to.85.

Points of comparison: The main difference between the PTGI and the LTT boils down to them respectively measuring positive outcomes and measuring personal effectiveness. The PTGI construct 'positive outcome' implies a development over time, while personal effectiveness can be measured without factoring in development. A clear example of the implication of time is the PTGI's explicit assessment of transformation (Tedeschi & Calhoun, 1996). Another example is that the LTT doesn't describe cause and effect relevant to the construct that it measures, like the PTGI does with traumatic experience and outcome. Lastly there is the small but notable difference that the PTGI lacks any items related to householding. Both do however have in common that they include multiple items on personal efficacy during adversity, stress and difficult moments.

The Resilience Scale (RS25). *Description:* The RS25 was developed by Wagnild and Young (1993) to assess resilience levels in adults. Resilience is defined as a personality trait that empowers one with the ability to moderate negative consequences of stress, while also enhancing the possibility of adapting to stressful situations (Wagnild & Young, 1993). The items were generated after identifying five core concepts based on relevant literature and conducting interviews in a sample of 24 women, that successfully adapted to major life events (Wagnild & Young, 1990). The five core concepts of resilience referred to are: 'equanimity', 'perseverance', 'self-reliance', 'meaningfulness' and 'existential aloneness'. Examples of items are "I can usually find something to laugh about" and "Sometimes I make myself do things whether I want to or not".

Scoring: The original RS25 has been adjusted and translated into Dutch by Michael Portzky (Portzky, Wagnild, De Bacquer, & Audenaert, 2010). In the Dutch version (RS-NL) the original items were retained, but a 4-point Likert scale replaces the original 7-point scale. Participants fill in each item on the RS-NL by selecting the best corresponding answer ranging from 1 to 4. The values range from '*strongly disagree*' to '*strongly agree*'. Scores can range from 25 to 100, with higher scores meaning a higher degree of individual resilience. Likewise, the RS25 ranges from 1 to 7, with scores from 25 to 175.

Instead of finding a 5-factor design based on the aforementioned core concepts, Wagnild and Young (1993) found more evidence for a 2-factor design. The two subscales were labelled 'personal competence' and 'acceptance of self and life'. Portzky et al. (2010) retained the same classification for the RS-NL, affirming the 2-factor design. Scores for the individual subscales can be calculated by adding up their related item scores.

Reliability: Multiple studies have been conducted that report the internal reliability of the RS25 for their specific samples. Wagnild and Young (1993) summarized findings from six studies ranging from 1988 to 1993 with an internal reliability of α =.76 to.91. Years later, Wagnild (2009) described further internal reliability scores reported in different studies: in three adolescent samples from 1999 to 2004 α =.72 to.91; in three young-middle-aged women samples from 2002 to 2004 α =.85 to.94; and in three middle-aged and older adult

samples from 2005 to 2007 α =.85 to.94. Portzky et al. (2010) describe reliability of α =.85 for the RS-NL in a mixed Dutch/Flemish sample with 3.265 participants.

Points of comparison: Albeit similar in measuring personal effectiveness, unlike the LTT, the RS25 comprehensively measures a person's general ability to adapt to any situation in which he or she gets confronted by important setbacks. The LTT on the other hand assesses personal effectiveness in separate areas of a person's private life and identifies the corresponding problem areas, which the RS25 does not. Nevertheless, the LTT scales 'maintaining positivity' and 'mental health' cover similar ground as the RS25. For example, the LTT 'maintaining positivity' scale measures the ability to stay positive even when facing adversity. This particular ability corresponds with the definition of resilience by Druss and Douglas (1988). So, it is noteworthy that this particular definition of resilience was also used during the development of the RS25 (Portzky et al., 2010). The LTT, however, also measures effectiveness in householding and finance tasks and social life. The RS25, on the other hand, does not differentiate between domains of private life functioning.

The WHO-Quality of life-BREF (WHOQOL-BREF). *Description:* The World Health Organization (WHO) wanted to develop a QOL test that would be valid and applicable cross-culturally (Harper et al., 1998). The WHO's definition of QOL is "an individual's perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns" (WHO, as cited in Skevington, Lofty, & O'Connell, 2004, p. 299). To this end a QOL test with 100 items (WHOQOL-100) was developed across 15 international WHO centres simultaneously. Subsequently they wanted to develop an abbreviated version of the WHOQOL-100 to be more time efficient in situations when QOL was just one aspect being measured of a person's characteristics (WHO, 1996). With that reason in mind, a total of 26 items from the WHOQOL-100 were selected while retaining all item facets from the original 4-factor model (WHO, 1996, Table 1) to develop the WHOQOL-BREF (Harper et al., 1998; WHO, 1996). The WHOQOL-BREF contains questions like "How safe do you feel in your daily life?" and "To what extent do you feel your life to be meaningful?".

Scoring: The WHOQOL-BREF is scored by adding up scores of each item separately for each of four domains (WHO, 1996). These domains are 'physical health', 'psychological', 'social relationships' and 'environment'. Furthermore, there are two independent items that assess an individual's perceived general QOL and perceived general health. Participants fill in each item by selecting the best corresponding answer according to a 5-point Likert scale ranging from 1 to 5. The values change according to the question asked. After adding them up, the raw scores are converted into transformed scores according to the manual (WHO, 1996). Ultimately the WHOQOL-BREF produces a profile that indicates a person's QOL regarding each of the aforementioned domains. A higher score stands for a higher QOL.

Reliability: The internal reliability of the WHOQOL-BREF was tested in 24 samples across 24 centres worldwide (Skevington et al., 2004). In the population (n = 11830) the following internal reliabilities were reported: for domain 1 'physical health' with 7 items α =.82; for domain 2 'psychological' with 6 items α =.81; for domain 3 'social relationships' with 3 items α =.68; and for domain 4 'environment' with 8 items α =.80. The lowest reliability was reported for domain 1 in the Argentinian sample (n = 106) α =.55 and the highest for domain 2 in Chinese sample (n = 50) α =.89. Internal reliability in the Dutch sample (n = 41) ranged from α =.75 to.85.

Points of comparison: The WHOQOL-BREF appears to measure many of the same constructs as the LTT. They both share multiple similar items but distribute them differently across their scales. Despite the similarities the WHOQOL-BREF distinguishes itself through its focus on situational facilities among other things. For example, it wants to assess the accessibility to health services in a person's environment (WHO, 1996). Furthermore, the WHOQOL-BREF predominantly assesses perceived satisfaction and welfare, while items on the LTT measure personal effectiveness. But the biggest difference between them is that the LTT is designed specifically with rescue workers as target group in mind, while the WHO's test is developed for broader demographic research. It is important to note however that the WHOQOL-BREF was shown to be a valid measure of QOL in a clinical sample with depression, in which it could also detect changes over time in QOL (Berlim,

Pavanello, Caldieraro, & Fleck, 2005). Last but not least, both the WHOQOL-BREF and LTT produce scores for individual scales rather than generating a total score. In short both are designed to compare scores on different aspects of life and are able to identify specific problem areas.

The life tasks questionnaire by Cantor. *Description:* Cantor, Norem, Liendenthal, Langston and Brower (1987) developed a life tasks questionnaire to find a way to build models of behaviour that allowed for person-by-situation interactions. Ideally these models would be able to identify concepts of interest relevant to the individual, while still retaining generalizability beyond a specific group. Cantor et al. (1987) took an approach that studied (1) the interpretation of a situation in which a task presented itself, (2) the self-knowledge and self-concept that influenced these interpretations and (3) the strategies that were used to translate individual appraisal into purposeful action. Initially they took a sample of Honours College freshmen ($n = 147$) and differentiated six life tasks domains (Cantor et al., 1987). The life tasks questionnaire described in Table 2 was adjusted by Cantor et al. (1991) to study a sample of campus sorority members ($n = 50$). Among other things, participants were asked to appraise their mood while performing a task (e.g., "How difficult is the task of finding intimacy for you?").

Scoring: In this particular case the aforementioned sample of campus sorority members were presented with seven life tasks that emerged as being representative for this particular population (Cantor, Acker, & Cook-Flannagan, 1992). Concurrently they were asked to evaluate each life task according to a 15-item measurement of task appraisal, by selecting the best corresponding answer on a 9-point Likert scale ranging from 1 to 9. The values ranged from '*not at all*' to '*very much*'. A subsequent factor analysis resulted in three appraisal scales: 'difficulty', 'rewardingness' and 'outcome evaluation'. Two items that didn't belong to any of the factors were removed from further analysis. In the following phase of the study participants were subjected to event-sampling by daily diary turn-ins for 15 days (Cantor et al., 1991). The goal was to assess emotive experience regarding the life tasks. Participants filled in a mood questionnaire with 13 items by way of a 7-point Likert scale ranging from 1 to 7. The corresponding factor analysis resulted in two mood scales: 'affective' and 'involvement'. Three items did not belong to one of two scales and were subsequently removed.

Reliability: The internal reliability of the domains of the life tasks questionnaire by Cantor et al. (1991) has not been published. Neither have the number and content of its items. However, Cantor et al., (1992) reported an internal reliability $\alpha = .76$ for four items in the appraisal dimension scale 'difficulty'. Furthermore Cantor et al., (1992) reported an internal reliability $\alpha = .91$ for the six items in the mood dimension scale 'affective'.

Points of comparison: Cantor et al., (1987) introduced the concept of *life tasks* in the context of a person's particular life period. A life tasks questionnaire was developed accordingly to identify the life tasks and matching strategies that define certain life situations and to build a generalizable model of behaviour. The content of the questionnaire reflects the target group, with items assessing tasks that are relevant to the individual's life situation, as well as appraising their accompanying meaning and mood. The relevant life tasks were defined according to existing literature and by inquiry (Cantor et al., 1987). Bakker at al., (2019) developed the LTT in a similar way, with the exception of specifically having rescue workers in mind as target group. Moreover, the LTT's objective is to measure health, inspired by the definition of health proposed by Huber et al., (2011, 2016). The ability of a person to cope with stress or maintain friendships, for example, tells a tale about his or her general wellbeing. Appraisal of relevant mood and meaning, however, has been left out in the LTT.

So in summary,two major differences can be identified between the life tasks questionnaire by Cantor and the LTT: (1) Contrary to the LTT, the questionnaire's items and scales are not set, but adjusted according to the target group (Cantor et al., 1987, 1991); and (2) the questionnaire is developed with testing models of behavior and tasks strategies in mind, while the LTT measures a person's effectiveness in certain life tasks. Nevertheless the research by Cantor et al. (1987, 1991, 1992) illustrates the potential of life task assessment according to specific domains and life situations, in which the measurement of individual life task functioning can also be used to draw a conclusion about a person's wellbeing (Huber et al., 2011, 2016) and is as such, applicable in a health care context.

Conclusion:

Compared with the tests described above, the Life Task Test (LTT) is the only test with specific questions about perceived effectiveness. These questions have more to do with personal action rather than the degree of satisfaction. Also, the life task test is a short practical test and specific developed for rescue workers.

Table 1: Summary of quality of life (QOL) related self-report measures and content-related comparisons with the LTT

Test	Intended use and target group	Scales and amount of scales	Amount of items	Notable similarities to LTT	Notable differences to LTT	Reliability α
LTT	Measuring functioning on life tasks in private life of rescue workers. Research on validity for office workers still on-going.	Five scales: 1. social life 2. maintaining mental health 3. household and finance 4. giving meaning 5. maintaining positivity	20 items			Rescue workers: α =.62 to.92; 3 of 5 scales: α ≥.70. Office workers: α =.56 to.87; 3 of 5 scales: α ≥.70.
QOLS	Developed by Flanagan (1978) to analyze individual QOL. Subsequently the test was often used to measure the effect of chronic illness on QOL. This led to the later addition of a 16th item to measure perceived independence.	Six scales: 1. Material and physical well-being 2. Relationships with other people 3. Social, community, and civic activities 4. Personal development and fulfillment 5. Recreation 6. Independence	16 items	• Multiple items on personal development, fulfillment and a meaningful life	• Measures life satisfaction instead of effectiveness/ functioning on tasks • Includes community activities/ service • Includes perceived independence during chronic illness • Lacks items related to friendships and focusses more on family relationships	15 items: α =.82 to.92 in four chronic illness samples. 16 items: α =.90 in German fibromyalgia sample. α =.89 in Spanish fibromyalgia sample.

Table 1 (continued)

Test	Intended use and target group	Scales and amount of scales	Amount of items	Notable similarities to LTT	Notable differences to LTT	Reliability α
PTGI	The PTGI (1996) is used to assess positive outcomes in individuals who have experienced traumatic events.	Five scales: 1. Relating to others 2. New possibilities 3. Personal strength 4. Spiritual change 5. Appreciation of life	21 items	• Multiple items on efficacy during adversity, stress and difficult moments	• Measures positive growth (outcomes) instead of current effectiveness/ functioning on tasks • Assesses personal and emotive transformation • Lacks items related to household-ing	α =.90 in sample of undergraduate students with a history of trauma.
RS25	Developed by Wagnild and Young (1993) in 1988 to assess resilience levels in adult individuals.	Two scales: 1. Personal competence 2. Acceptance of self and life	25 items	• Similar in measuring personal effectiveness • Multiple items on hardiness and staying positive in the face of adversity	• Is comprehensive in but limited to items on handling important setbacks • Misses items related to social life and household-ing	α =.76 to.91 across six studies from 1988 to 1993. α =.85 in mixed Dutch/Flemish sample.
WHO-QOL-BREF	Developed by the WHO to measure an individual's QOL for demographic research across different cultures and situations worldwide.	Four scales: 1. Physical health 2. Psychological 3. Social relationships 4. Environment	24 items; + 2 items independent of scales: - General QOL - General health	• Includes multiple similar items, albeit distributed differently across scales	• Less focus on personal effectiveness and more on (situational) facilities • Developed for demographic research outside of health care setting	α =.68 to.82 (total sample means); 3 of 4 scales: α ≥.80. α =.55 to.89 across all 24 samples.

Note. LTT = Life Tasks Test; QOLS = Quality of Life Scale; PTGI = Post-Traumatic Growth Inventory; RS25 = Resilience Scale; and WHOQOL-BREF = World Health Organization Quality of Life assessment (abbreviated version).

Table 2. Comparison of the life tasks questionnaire by Cantor and the LTT

Test	Intended use and target group	Scales and amount of scales	Appraisal dimensions	Mood dimensions	Notable similarities to LTT	Notable differences to LTT	Reliability y α[1]
Life tasks questionnaire by Cantor	Developed by Cantor et al. (1987) to assess functioning on and appraisal of individual life tasks. Adjusted by Cantor et al. (1991) for a sample of campus sorority members.	Seven domains: 1. Making friends; getting along with others (social life) 2. Doing well academically 3. Developing independence from family 4. Finding intimacy 5. Physical maintenance 6. Deciding on future goals 7. Being a member of the sorority	1) Difficulty a) Difficulty b) Conflict c) Stress d) Time spent e) Challenge 2) Rewardingness a) Progress b) Enjoyment c) Initiative d) Control e) Importance 3) Outcome evaluation a) Extrinsic value b) Desire to achieve satisfaction c) Desire to avoid unhappiness	1) Affective a) Pessimism – optimism b) Sad – happy c) Irritable – cheerful d) Hostile – friendly e) Dissatisfied – satisfied f) Stressed – relaxed 2) Involvement a) Passive – active b) Distant – intimate c) Detached – involved d) Bored – excited	• The LTT is inspired by Cantor's theory on life tasks • Similar assessment of social life, academic/ professional development, finding intimacy	• Specified according to particular life period(s) • Includes appraisal and mood dimensions • Not an official instrument; meant for use in specific research	α =.91 total for the mood dimensions α =.76 for 4-item appraisal dimension 'difficulty'

Note. 1 The internal reliability of the domains of the life tasks questionnaire by Cantor et al. (1991) has not been publicised. Neither have the number and content of its items.

References

Bakker, H., van Veldhoven, M., Gaillard, T., Hertogs, R., & Feenstra, M. (2019). The functioning of rescue workers in life tasks: Development of a test. *International Journal of Emergency Services*, doi:10.1108/IJES-03-2019-0014

Berlim, M. T., Pavanello, D. P., Caldieraro, M. A. K., & Fleck, M. P. A. (2005). Reliability andvalidity of the WHOQOL BREF in a sample of brazilian outpatients with major depression. *Quality of Life Research, 14*(2), 561-564. doi:10.1007/s11136-004-4694-y

Burckhardt, C. S., & Anderson, K. L. (2003). The quality of life scale (QOLS): Reliability, validity, and utilization. *Health and Quality of Life Outcomes, 1* doi:10.1186/1477-7525-1-60

Burckhardt, C. S., Anderson, K. L., Archenholtz, B., & Hägg, O. (2003). The flanagan quality of life scale: Evidence of construct validity. *Health and Quality of Life Outcomes, 1* doi:10.1186/1477-7525-1-59

Burckhardt, C. S., Woods, S. L., Schultz, A. A., & Ziebarth, D. M. (1989). Quality of life of adults with chronic illness: A psychometric study. *Research in Nursing & Health, 12*(6), 347-354. doi:10.1002/nur.4770120604

Cantor, N., Acker, M., & Cook-Flannagan, C. (1992). Conflict and preoccupation in the intimacy life task. *Journal of Personality and Social Psychology, 63*(4), 644-655. doi:10.1037/0022-3514.63.4.644

Cantor, N., Norem, J. K., Langston, C. A., Zirkel, S., Fleeson, W., & Cook-Flannagan, C. (1991). Life tasks and daily life experience. *Journal of Personality, 59*(3), 425-451. doi:10.1111/j.1467-6494.1991.tb00255.x

Cantor, N., Norem, J. K., Niedenthal, P. M., Langston, C. A., & Brower, A. M. (1987). Life tasks, self-concept ideals, and cognitive strategies in a life transition. *Journal of Personality and Social Psychology, 53*(6), 1178-1191. doi:10.1037/0022-3514.53.6.1178

Druss, R. G., & Douglas, C. J. (1988). Adaptive responses to illness and disability: Healthy denial. *General Hospital Psychiatry, 10*(3), 163-168. doi:10.1016/0163-8343(88)90015-1

Flanagan, J. C. (1978). A research approach to improving our quality of life. *American Psychologist, 33*(2), 138-147. doi:10.1037/0003-066X.33.2.138

Harper, A., Power, M., Orley, J., Herrman, H., Schofield, H., Murphy, B.,... Sartorius, N. (1998). Development of the world health organization WHOQOL-BREF quality of life assessment. *Psychological Medicine, 28*(3), 551-558. doi:10.1017/S0033291798006667

Huber, M., André Knottnerus, J., Green, L., Van Der Horst, H., Jadad, A. R., Kromhout, D.,... Smid, H. (2011). How should we define health? *BMJ (Online), 343*(7817) doi:10.1136/bmj.d4163

Huber, M., Van Vliet, M., Giezenberg, M., Winkens, B., Heerkens, Y., Dagnelie, P. C., & Knottnerus, J. A. (2016). Towards a 'patient-centred' operationalisation of the new dynamic concept of health: A mixed methods study. *BMJ Open, 6*(1) doi:10.1136/bmjopen-2015-010091

Latorre-Román, P. A., Martínez-Amat, A., Martínez-López, E., Moral, Á., Santos, M. A., & Hita-Contreras, F. (2014). Validation and psychometric properties of the Spanish version of the quality of life scale (QOLS) in patients with fibromyalgia. *Rheumatology International, 34*(4), 543-549. doi:10.1007/s00296-013-2874-1

Liedberg, G. M., Eddy, L. L., & Burckhardt, C. S. (2012). Validity testing of the quality of life scale, swedish version: Focus group interviews of women with fibromyalgia. *Occupational Therapy International, 19*(4), 167-175. doi:10.1002/oti.1329

Offenbächer, M., Sauer, S., Kohls, N., Waltz, M., & Schoeps, P. (2012). Quality of life in patients with fibromyalgia: Validation and psychometric properties of the German quality of life scale (QOLS-G). *Rheumatology International, 32*(10), 3243-3252. doi:10.1007/s00296-011-2184-4

Portzky, M., Wagnild, G., De Bacquer, D., & Audenaert, K. (2010). Psychometric evaluation of the dutch resilience scale RS-nl on 3265 healthy participants: A confirmation of the association between age and resilience found with the swedish version. *Scandinavian Journal of Caring Sciences, 24*(SUPPL. 1), 86-92. doi:10.1111/j.1471-6712.2010.00841.x

Skevington, S. M., Lotfy, M., & O'Connell, K. A. (2004). The world health organization's WHOQOL-BREF quality of life assessment: Psychometric properties and results of the international field trial a report from the WHOQOL group. *Quality of Life Research, 13*(2), 299-310. doi:10.1023/B:QURE.0000018486.91360.00

Taku, K., Cann, A., Calhoun, L. G., & Tedeschi, R. G. (2008). The factor structure of the posttraumatic growth inventory: A comparison of five models using confirmatory factor analysis. *Journal of Traumatic Stress, 21*(2), 158-164. doi:10.1002/jts.20305

Tedeschi, R. G., & Calhoun, L. G. (1996). The posttraumatic growth inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress, 9*(3), 455-471. doi:10.1002/jts.2490090305

Wagnild, G., & Portzky, M. (2008). Resilience Scale – Nederlandse Versie [Testhandleiding]. Geraadpleegd via: https://www.pearsonclinical.nl/rs-resilience-scale

Wagnild, G. (2009). A review of the resilience scale. *Journal of Nursing Measurement, 17*(2), 105-113. doi:10.1891/1061-3749.17.2.105

Wagnild, G., & Young, H. M. (1990). Resilience among older women. *The Journal of Nursing Scholarship, 22*(4), 252-255. doi:10.1111/j.1547-5069.1990.tb00224.x

Wagnild, G., & Young, H. M. (1993). Development and psychometric evaluation of the resilience scale. *Journal of Nursing Measurement, 1*(2), 165-178. Retrieved from www.sapibg.org

World Health Organization. (1996). *WHOQOL-BREF Introduction, Administration, Scoring and Generic Version of the Assessment* [Testing manual]. Retrieved on 20th November 2019, from https://www.who.int/mental_health/media/en/76.pdf

Chapter 5.

The Impact of Critical Incidents and Workload on Functioning in Private Lives of Police Officers: Does Weakened Mental Health Act as a Mediator?

◆ 5

The Impact of Critical Incidents and Workload on Functioning in Private Lives of Police Officers: Does Weakened Mental Health Act as a Mediator?

Abstract

This study examined the disintegrating effects of critical incidents (Cri) and workload (WL) on the mental health status (MHS) and private life tasks of 166 police officers. In addition, it investigated whether diminished MHS mediated the impact of Cri and WL on private life tasks. This mediation effect was based on the work–home resources model of Brummelhuis and Bakker (2012). The respondents were police officers functioning in the front line, experiencing Cri and working in urban areas. We investigated the effects on the following five private life tasks: 'social life, maintaining mental health, household and

finance, giving meaning, and maintaining positivity'. The results showed that Cri only had a negative effect on 'maintaining positivity'. Respondents reporting more Cri had a lower MHS, which in turn had a direct effect on the functioning in all private life tasks except 'social life'. When mediated by MHS, Cri were associated with less effective functioning in all private life tasks except for 'social life'. Thus, the effects of Cri on functioning in private life tasks (except social life) were larger for respondents with a low MHS. The largest effects were found for 'maintaining mental health (MMH) and maintaining positivity'. In the WL model, no significant indirect effects were found on life tasks.

Keywords

police officer, critical incidents, life tasks, spillover

Appeared in:

Bakker, A. H. M., Van Veldhoven, M. J. P. M., Gaillard, A. W. K., & Feenstra, M. (2019). The Impact of Critical Incidents and Workload on Functioning in the Private Life of Police Officers: Does Weakened Mental Health Act as a Mediator?. *Policing: A Journal of Policy and Practice*, paz051.

Introduction

Police officers report higher stress levels than other members of the workforce and a higher rate of absenteeism (Houtman et al., 2005; Tang and Hammontree, 1992). To distinguish the literature in this article, we cite literature of police officers and rescue workers (ambulance personal, firefighters, first responders). Rescue work professions and police officers are at greater risk for mental health problems, such as depression, post-traumatic stress disorder (PTSD), burnout, and substance abuse, than individuals in other professions (Asmundson and Stapleton, 2008; Austin-Ketch et al., 2012; Maia et al., 2007;; Shochet et al., 2011). Research findings by Green (2004) revealed that PTSD is four to six times more prevalent among police officers than in the general public. Furthermore, police officers have a higher risk of developing heart problems, gastrointestinal disorders, and diabetes (Violanti et al., 2006).

Police work is generally recognized as highly demanding and high-risk (Gershon et al., 2009). A Dutch study (Houtman et al., 2005) showed that job stress for police officers is higher than for average Dutch employees. Their jobs entail a higher tempo and contain more sources of tension. Similarly, a British study (Paton, 2005) established stress as the most frequent cause of sick leave in British police officers. A Swiss study among police officers (Gerber et al., 2010) linked increased stress to poorer health.

It is important to realize that different rescue work occupations have different roles and responsibilities. The comparable aspect is that in these occupations, the personal and professional risk is taken to save one's life and/or take care for safety of others. Even for policemen, a substantial part of their job is first aid help like resuscitations. 'The job context of police work has special aspects that influence their job experience, health, and private life. For example, working in shifts Vila (2006) and confronted with moral dilemmas, political pressure (Birch et al., 2016). In the latter, a central concern was that the rights of police officers are not the same as a citizen's, where innocent until proven guilty' is the rule. Police officers remain under an informal scrutiny and often times speculation that became problematic. In addition, police work also entails working at a high pace and working overtime, which diminishes the ability to relax and recover from work demands (Sanz-Vergel et al., 2010). Workload (WL) is related to management issues (Pisanti et al., 2011; Velden et al., 2010). For example, in understaffing, it is a daily struggle to get schedules around. Eriksen and Kecklund (2007) and Sonnentag and Zijlstra (2006) indicated that officers who were afforded flexibility to determine their schedule for shift work were better able to integrate their work into their private lives and were less likely to experience sleep disturbances.

The influence of work on the person and his or her life is developed in work psychology (Arnold, 2005). In work psychology, five factors are important: 1. the particular thoughts, behaviour, emotion in question; 2. differences between people to which they characterize their behaviour; 3. situational factors; 4. the consequences of interaction between 2 and 3; and 5. any ways in which particular thoughts, behaviours, or emotions might feedback to produce changes in 2 and 3. Life tasks represent the perceived effectiveness of the ability

to build up a life. Witmer and Sweeney (1992) developed a holistic model for wellness and prevention over the life span. In this model, the theory of Adler (1956) and Maslow (1970) is an important base. They describe five life tasks: spirituality, self-regulation, work, love, and friendship. Perceived efficacy in life tasks acts as resources for good mental health and well-being. They help people flourish in their life. It requires discipline and proactive behaviour to maintain life tasks when under pressure. The pressure that workers experience and the stress that builds up take a toll on their family life, which in turn affects their resources, such as a stable relationship and family life, happiness, vitality, and financial position (Cicognani et al., 2009; Heshmati, 2007; Slottje et al., 2007).

Research on job stress has linked work–family conflicts to negative outcomes, including poor health and well-being, for individuals and their families (Bakker and Demerouti, 2013; Bianchi et al., 2005; Wierda-Boer et al., 2009). Shreffler et al. (2011) also associated occupational stress, long working hours (> 60 h a week), and lack of sleep with greater work-to-family conflicts and a higher perceived burden of childcare. The mental health problems of police officers thus extend to their family members (Davidson et al., 2006).

Longitudinal research demonstrates that the larger the number of years in service and the number of critical incidents (Cri) experienced results in more mental health complaints, poorer health, and a higher rate of sick leaves (Gerber et al., 2010; Morren et al., 2007; Paton, 2005).

Recent studies have shown that the accumulation of Cri makes rescue workers susceptible to developing psychological and physical symptoms, such as PTSD, depression, health problems, state anger, anger out, emotional dissonance, and burnout (Alexander and Klein, 2009; Boer et al., 2011; Goodson et al., 2011; Monnier et al., 2002). Cri account for 53% of the variance in the officers' PTSD (Menard and Arter, 2013). Situations in which police officers were confronted with the victims' vulnerability (e.g. abuse, murder cases)

were associated with higher rates of reported PTSD (Carlier et al., 2000). Furthermore, Cri in which children were involved and/or there was a shortage of supplies/resources were linked to higher reported distress (Declercq et al., 2011). Hence, we hypothesize that Cri have a direct negative effect on mental health status (MHS) (Hypothesis 1).

In addition to Cri, a heavy WL also leads to an increase in stress among police officers. A heavy WL is associated with more reported somatic and psychological complaints (Gerber et al., 2010; Wang et al., 2010). Enhanced and prolonged physiological stress reactivity can lead to depletion of resources over time (Anderson et al., 2010).

Rescue workers can develop work-related psychological problems and physical symptoms even 12- and 18-months post-adversity, leading to additional sick leaves. This demonstrates the pressing need to reduce work-related stress at work among rescue workers (Morren et al., 2007; Wang et al., 2010). On the basis of the above results, we expect that WL has a direct negative effect on MHS (Hypothesis 2).

Negative work-home spillover

To examine whether the impact of the demands of police work on the functioning in their private life is mediated by MHS, we based our study on the causal chain, postulated in the work–home resources (W-HR) model (Brummelhuis & Bakker, 2012). In this study, we used one part of this model path of the diminished process (decline of resources). In this research, negative work demands like WL and Cri diminish positive resource mental health and causes negative home outcomes and lower effectiveness on private life tasks. This model is based on the conservation of resources theory, which regards stress as a loss of energy (Hobfoll and Freedy, 1993). According to Brummelhuis and Bakker (2012), Hobfoll (1998), and Monnier et al., (2002), we regard stress as a response to the loss (or the threat of loss) of resources and is based on the premise that individuals strive to obtain, retain, protect, and foster those things that they value. Stress is believed to occur when individuals or groups are faced with situations with threat of a loss of resources or there is already loss of resources.

Bakker and Demerouti (2013) have asserted that employees who are confronted with work overload and high emotional demands have more difficulties balancing their work

and their private life. High job demands require employees to devote more resources (e.g. time, energy) to work, leaving them with fewer resources to devote to their family (Frone et al., 1997). Another way in which work demands hamper functioning at home is when experiences at work (e.g. negative emotions, fatigue) spill over to the home domain (Bakker and Demerouti, 2013).

It is hypothesized that MHS has a direct negative effect on private life tasks (Hypothesis 3) and that Cri have a direct negative effect on private life tasks (Hypothesis 4). Furthermore, we also hypothesize that WL has a direct negative effect on private life tasks (Hypothesis 5). We expect that work demands (Cri and WL) induce a negative spillover from work to home, which results in a reduced effectiveness in life tasks. Since these work demands are also assumed to diminish MHS, we expect that the negative impact of work demands on effectiveness in private life tasks will be higher when the MHS is weakened.

In a longitudinal study, Demerouti et al. (2004) examined how chronic effects develop. When work demands have a negative impact on effectiveness in life tasks, home resources (e.g. recovery opportunities, social support) may decrease. This in turn may result in difficulties in dealing with the work demands. Due to this so-called loss spiral, work pressure and exhaustion have causal and reversed causal relationships with functioning in life tasks over time. For example, work pressure causes exhaustion and in turn, exhaustion makes it difficult to handle work pressure and worsens the exhaustion.

The loss spiral has also been found in a prospective longitudinal study of healthy police officers, duty-related depression was found after 12 months, pressing the need for strategies to reduce work stress (Wang et al., 2010). Finally, Morren et al. (2007) found that sick leave and psychological problems increased 18 months post-trauma compared to a control group of non-involved rescue workers. In a 1-year follow-up study with ambulance workers, Sterud et al. (2011) found that job satisfaction reduced, and health problems increased. Lower job satisfaction was associated with a lack of support from superiors and with the severity of challenging job tasks.

It is presumed that Cri have a negative effect on the effectiveness in private life tasks when mediated by MHS (Hypothesis 6). Moreover, we assume that WL has a negative effect on effectiveness in private life tasks when mediated by MHS (Hypothesis 7). In sum, the purpose of this study was to gain more insight into the impact of work demands on the private life of policemen. In this study, we examine the depletive effects of Cri and WL on mental health and the consequent degrading effect on functioning in private life. We particularly investigated whether mental health plays a mediating role in these effects. The results are analysed and discussed based on the W–HR model (Brummelhuis & Bakker, 2012).

Method

Participants

The respondents were police officers who were referred to psychological help for their psychological complaints and absenteeism. Only police officers who have been exposed to Cri in the line of duty were included in the study. Depending on the severity of their complaints and problems, they received 10–20 sessions of psychological personal training. Prior to starting psychological personal training, they completed psychological questionnaires. Participants signed an informed consent form to participate in this study. The sample consisted of 166 police officers. All participants were selected from an urban area in the Netherlands. Of these respondents, 69 (41.57%) were female and 90 (54.22%) were male subjects, aged between 16 and 63 years, with a M (SD) of 44.55 years (10.43). A total of 77 (46.4%) participants lived with a partner. The M (SD) service years amounted to 17.57 (11.69). Most participants had one or more children (69.4%). Education was mostly middle level (66.9%), and 18.1% reported higher education. All participants were selected from an urban area in the Netherlands.

Measures

Cri inventory (Monnier et al., 2002). This inventory was used to measure the number of Cri. In line with Monnier et al. (2002), we adopted the following definition: 'The trauma events faced by rescue workers during the course of their job are Cri (e.g. responding to a motor vehicle accident) (p. 12) This self-report instrument consists of 24 items, and

participants responded on a four-point Likert scale, ranging from 0 'never experienced this event' to 3 'experienced three or more times'. Examples of items included 'Line of duty death of a fellow emergency worker' and 'Incident requiring police protection while on duty'. Monnier et al. (2002) reported a median of 8.5 incidents and a range of 0–53. This was considerably lower than in our sample. In this study, the following values were obtained: M= 25.93, SE = 18.53, and median = 25. This result cannot be seen as the total amount of Cri because the final answer involves the frequency 'three or more times' only. In this study, we asked about Cri during their entire career as rescue workers. Comparing the internal validity with a norm group is not possible because other studies used different questions over a different time period (see also Monnier et al., 2002).

Experienced WL. This scale is taken from the Dutch organizational stress questionnaire (VOSD; Caplan and Jones, 1975; Bergers et al., 1986). The scale used a four-point response Likert scale, ranging from 'never' through 'often'. An example of one of the items was 'Are there moments where you can take it easier during work?' Cronbach's alpha of the WL scale in this study is 0.86, which is good. The descriptive statistics in this research were compared with the norm group 'middle class employees' composed by the authors for the validation of the VOS-D questionnaire. Respondents were supposed to score these questions on a five-point Likert scale, ranging from 'very high' to 'very low' and 'very often' to 'rarely'.

MHS. To measure MHS, we used the widely administered SCL-90 (symptom checklist) to evaluate experienced mental health complaints. It provided an indication of the general mental health complaints that hinder the respondent's performance in his/her daily life, such as anxiety, agoraphobia, depression, somatic complaints, distrust, interpersonal sensitivity, hostility, and sleep disorders. For this study, we only used the total score on general mental health as included in the Dutch version of SCL-90, which is considered valid and reliable (Arrindell and Ettema, 1986). Respondents were asked to indicate symptoms that occurred in the past week. The SCL-90 has been used in several studies on rescue workers (e.g. Van der Velden et al., 2010; Wagner et al., 2010; Van der Velden et al. 2012). In this sample, the Cronbach's alpha was 0.85. The used scale is the PSNEUR, which is a total score of the subscales. These subscales of health complaints are: agoraphobia (I am afraid to go home alone), anxiety (I feel anxious), depression (I feel lonely), somatic complaints (I feel dizzy), insufficiency in thinking and feeling (I have difficulties making decisions), interpersonal sensitivity (I am critical to others), hostility (I feel bored and irritated), sleeping problems (I have difficulties falling asleep). The response categories are: very low, low, below average, average, above average, high, very high (a seven-point Likert scale). The scores for MHS (M = 185.51, SE = 57.79) were higher than two standard deviations above the mean score found by Arrindell and Ettema (1986) in their norm group (M = 118.28, SE = 32.38, n = 2368). This was a very high result in comparison with the normal population as a whole and comparable with the mean scores of psychiatric patients.

Life tasks. This self-report instrument was specifically developed for measuring effectiveness in private life tasks (Bakker et al., 2015). The scale has a five-point Likert scale ranging from 'very bad' through 'very good'. The higher the score, the higher is the perceived effectiveness in life tasks. In the domain of 'social life', respondents were presented with four questions or statements. For example, 'I can maintain friendships'. The Cronbach's alpha of the social life scale in the current study was 0.78, which is considered to be good. The second scale was 'maintaining mental health MMH)', assessed with five questions. For example, 'I can deal with my emotions effectively'. In comparison to the SCL-90, this questionnaire does not address specific complaints about mental health problems. Cronbach's alpha for this scale was 0.72. The third scale, 'household and finance', consisted of four questions. A typical item for this scale was 'I can manage money effectively'. Cronbach's alpha for this scale is 0.67. The fourth scale is 'giving meaning'. It includes five questions. An example of one of the questions was 'I try to learn from the things that I experience in life'. Cronbach's alpha for this scale was 0.65. The last scale was 'maintaining positivity', which was measured by two questions. An example of an item was 'The disturbing incidents I experience at work make it hard for me to stay positive'. Cronbach's alpha for this scale is 0.90. In the original version of the life task test, there was a scale on 'partner and family life'. But during scale development, we found that it was unfortunately necessary to remove these items. The reason was that the research group was diverse in terms of different partner and family forms.

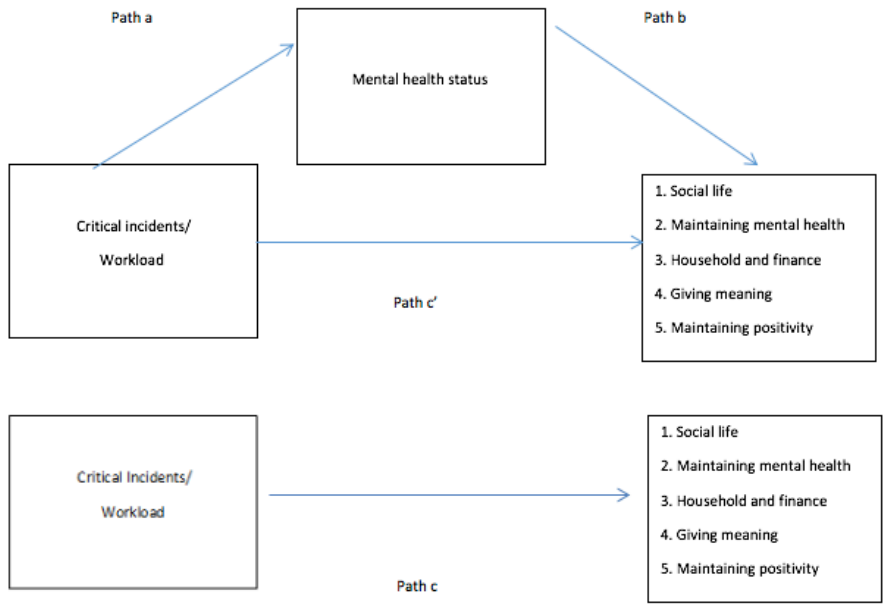

Figure 1. Conditional process analysis (on the basis of Hayes and Preacher, 2014) testing the relation between critical incidents and workload and private-life tasks, mediated by mental health status.

Statistical analysis

The model that is researched in this article is illustrated in Fig. 1. It constitutes a mediation model. Path 'a' shows the direct effects of the Cri/WL on MHS. Path 'c' shows the direct effects of Cri/WL on the life tasks and Path 'b' the direct effects of the mediator MHS on the life tasks. Path 'c' shows the full mediation model, namely the indirect (bootstrapping) effects of Cri/WL on life tasks when mediated by MHS.

The hypotheses were tested using conditional process analysis, developed by Hayes and Preacher (2014), in SPSS version 23, after standardizing the variables. This analysis is generally accepted as the procedure of choice for analyzing mediation, moderation, and combinations of these. In this case, we examined potential mediation effects. We expected

that Cri and WL not only had a (direct) effect on private life tasks but also indirect effects, when mediated by MHS. We report statistical tests for direct effects and indirect effects, as well as confidence intervals for these effects. This means that the negative impact of demands on life tasks is expected to be larger when MHS is reduced. The effects are tested by the bootstrapping, which consists of repeatedly randomly sampling observations with replacement from the dataset to compute the desired statistic in each sample. Computing over thousands in this study, of bootstrap resamples provide an approximation of the sampling distribution of the statistic of interest (Preacher & Hayes, 2004, 2008).

Table 1: Descriptive Statistics, and Intercorrelations.

	Mean	Sd.	1	2	3	4	5	6	7	8
1. Critical incidents	25.93	18.51								
2. Workload	3.07	.57	-.13**							
3. Mental health status	185.51	57.79	-.19*	-.08						
4. Social life	3.73	.49	-.09	.11	-.14					
5. Mental health	3.20	.67	.04	.09	-.47**	.31**				
6. Household and finance	3.86	.62	.06	-.01	-.25**	.28**	.44**			
7. Giving meaning	3.79	.50	.02	-.02	-.26**	.27**	.50**	.39**		
8. Maintaining positivity	3.02	1.11	-.30**	.09	-.48*	.09	.35**	.16*	.27*	

*Note. * p <.05, ** p <.01. N =166*

Table 2: Results on the effects of Critical incidents (Cri) on Mental Health Status (Mhs) and life tasks, as well as the effects of critical incidents on life tasks as mediated by mental health status (bootstrapping).

Direct effects	B	SE	T	p	95%	CI
Cri - MHS	.59	.24	2.47	.01*	.12	1.06
Cri - Social life	-.002	.00	-.75	.46	-.01	.003
Cri - MMH	-.005	.00	1.84	.07	-.0003	.01
Cri - Household & finance	.004	.00	-1.47	.14	-.001	.01
Cri - Giving meaning	.002	.00	.96	.34	-.002	.01
Cri - Maintaining positivity	-.01	.00	-3.16	.002**	-.02	-.005
MHS - Social life	-.001	.00	-1.58	.12	-.002	.003
MHS - MMH	-.01	.00	-7.06	.01**	-.01	-.004
MHS - Household & finance	-.003	.00	-3.52	.01**	-.005	-.001
MHS - Giving meaning	-.002	.00	-3.52	.01**	-.004	-.001
MHS - Maintaining positivity	-.01	.00	-6.41	.01**	-.011	-.001

Indirect effects	B	SE	95%	CI
Cri - MHS - Social life	-.001	.00	-.003	-.0001
Cri - MHS - MMH	-.003	.00	-.01	-.0006
Cri - MHS - Household & finance	-.002	.00	-.001	-.0003
Cri - MHS - Giving meaning	-.001	.00	-.004	-.0002
Cri - MHS - Maintaining positivity	-.01	.00	-.011	-.001

*Note. n = 166; CI = confidence interval 95%; * p <.05, ** p <.01. Confidence Intervals in bold are significant.*
MMH = Maintaining mental health.

Table 3: Results on the effects of Workload on Mental Health Status and life tasks, as well as the effects of workload on life tasks as mediated by mental health status (bootstrapping).

Direct effects	B	SE	T	P	95%	CI
WL - MHS	-.08	.08	-1.00	.32	-.23	.08
WL - Social life	.05	.04	1.24	.22	-.03	.12
WL- MMH	.04	.05	.83	.41	-.05	.13
WL - Household & finance	-.01	.05	-.34	.73	-.11	.08
WL - Giving meaning	-.02	.04	-.53	.60	-.10	.06
WL - Maintaining positivity	-.06	.08	-.79	.43	-.09	-.21
MHS - Social life	-.06	.04	-1.65	.10	-.14	.01
MHS - MMH	-.31	.05	-6.69	.001**	-.40	-.22
MHS - Household & finance	-.15	.05	-3.30	.001**	-.25	-.06
MHS - Giving meaning	-.13	.04	-3.42	.001**	-.21	-.06
MHS - Maintaining positivity	-.53	.08	-6.86	.01**	-.68	-37

Indirect effects	B	SE	95%	CI
WL - MHS - Social life	.005	.01	-.003	.03
WL - MHS - MMH	.02	.03	-.03	.08
WL - MHS - Household & finance	.01	.01	-.01	.05
WL - MHS - Giving meaning	.01	.01	-.01	.04
WL - MHS - Maintaining positivity	-.04	.04	-.04	.13

*Note. N =166. * p <.05, ** p <.01. Confidence Intervals in bold are significant.*
MMH = the life task of "Maintaining Mental Health".

Results

Table 1 displays the scales, means, standard deviations, scale reliabilities, and inter-correlations of all variables in this study. The measures relevant in this study are: Cri correlate with MHS and with '*maintaining positivity*'. Furthermore, MHS correlated with the life tasks: '*MMH, household and finance, giving meaning, and maintaining positivity*'.

Tables 2 and 3 display the results of the conditional analysis on the effects of Cri and WL, respectively, on MHS and the five life tasks. The first rows show the direct effects, and the bottom rows present the results of the indirect effects.

Hypothesis 1. Cri had a direct negative effect on MHS. b = 0.59, t = 2.47, p < 0.01; 95% confidence interval (CI: 0.12–1.06).

Hypothesis 2. WL did not have a direct negative effect on mental health status: b = -0.08, t = -1.00, p = 0.32; 95% CI: -0.23; 0.08].

Hypothesis 3. MHS was negatively related to effectiveness in private life tasks. Negative effects were found for the following life tasks: *'MMH'* (b = -0.01, t = -7.06, p < 0.01; 95% CI [-0.01; -0.004]); *'household and finance* (b = -0.003, t = -3.52, p < 0.01; 95% CI -0.005; -0.001); *'giving meaning'* (b = -0.002, t = -3.52, p < 0.01; 95% CI: -0.004; -0.001); and *'maintaining positivity'* (b = -0.01, t = -6.41, p < 0.01; 95% CI [-0.011; -0.006]). No effect was found on social life task. Similar results were found in the WL model (Table 3).

Hypothesis 4. Cri only had a negative effect in *maintaining positivity* (b = -0.01, t = -3.16, p < 0.002 and 95% CI: -0.02; -0.005). No direct effects were found for the other life tasks: *'social life, MMH, household and finance, and giving meaning'*.

Hypothesis 5 stated that WL has a direct negative effect on private life tasks (path c). The data provide no support for this hypothesis whatsoever. In Hypotheses 6 and 7, we hypothesized that Cri and WL have a negative effect on effectiveness in private life tasks when mediated by MHS. In the Cri model, the indirect coefficient for social life was not significant, but significant effects were found for the other life tasks: *'MMH'* (b = -0.003; 95% CI: -0.01; -0.0006)*;'household and finance'* (b = -0.002; 95% CI: -0.001; -0.0003), *'giving meaning'* (b = 0.001, 95% CI: 0.004 to 0.0002), and *'maintaining positivity'* (b = -0.001, 95% CI -0.004; -0.0002). The mediated effects of the WL model did not reach significance for any of the five life tasks. The mediation analysis demonstrated that the effects of Cri on functioning in private life tasks (except *social life*) were larger for respondents with a low MHS. Hypothesis 5 stated that WL has a direct negative effect on private life tasks (path c). The data provide no support for this hypothesis whatsoever.

In Hypotheses 6 and 7, we hypothesized that Cri and WL have a negative effect on effectiveness in private life tasks when mediated by MHS. In the Cri model, the indirect coefficient for social life was not significant, but significant effects were found for the other life tasks: *'MMH'* (b = - 0.003; 95% CI: -0.01 to -0.0006), *'household and finance'* (b = -0.002; 95% CI: -0.001 to -0.0003), *'giving meaning'* (b = -0.001, 95% CI: -0.004 to -0.0002), and *'maintaining positivity'* (b = -0.01, 95% CI: -0.011 to -0.001).

The mediated effects of the WL model did not reach significance for any of the five life tasks. The mediation analysis demonstrated that the effects of Cri on functioning in private life tasks (except *social life*) were larger for respondents with a low MHS.

Discussion

As expected, Cri had a direct negative effect on MHS, which was consistent with many studies (Alexander and Klein, 2009; Boer et al., 2011; Goodson et al., 2011; Menard and Arter, 2013; Monnier et al., 2002), and demonstrated that police work is a high-risk job. In contrast, WL had no direct negative effect on MHS, which was not consistent with other research (e.g. Gerber et al., 2010; Wang et al., 2010). A probable explanation was that this group of participants was assessed during sick leave, and the daily WL may have been experienced less as a stressor (at the time of the study, they were not actively employed) compared to the impact of Cri.

The distinctive aspect of this study is the combination of predictor Cri and WL. There are more studies that press the impact of Cri (Boer et al., 2011; Monnier et al., 2002; Ploeg et al., 2003; Wagner et al., 2010) and others the impact of organization problems like WL in rescue work (Pisanti et al., 2011; Velden et al., 2010). No study was found to examine both predictors. This study shows that Cri and WL are both to be taken seriously when it comes to understanding the impact of rescue work.

Hypothesis 3 was confirmed. MHS had a direct negative effect on private life tasks, with the exception of '*social life*'. This is in line with research showing that lower mental health puts private life under pressure (Bakker and Demerouti, 2013; Bianchi et al., 2005; Wierda-Boer et al., 2009). This result may be explained by the fact that police officers' function as teams and find social support among their colleagues. This interpretation is supported by the research of Bartone et al. (2002) on the importance of camaraderie in groups. Argentero and Setti (2011) found in 782 rescue workers that a supportive working environment in particular favours engagement, reducing probability of developing burnout. Allen et al., 2000 showed that a supportive organization with attention for family, colleagues, and supervisor support improves job satisfaction, organizational commitment, and less work–family conflict.

As postulated in Hypothesis 4, Cri had a direct negative effect on private life tasks, which was only confirmed for '*maintaining positivity*'. This lack of effect is not in line with research that shows negative effects on private life (Cicognani et al., 2009; Heshmati et al., 2010; Slottje et al., 2007). Research on so-called post-traumatic growth shows the importance of maintaining positivity. Positive emotions can foster post-traumatic growth and enhance psychological resources, which act as buffers against depressive symptoms (Calhoun & Tedeschi, 2014). A lack of '*maintaining positivity*' makes it difficult to handle the negative impact of major events (Fredrickson, 2000).

Contrary to Hypothesis 5, no direct effects of WL were found on private life tasks. This is not in line with research showing a negative impact of WL on private life (Rau, 2006; Innstrand et al., 2010; Shreffler et al., 2011). As argued earlier, this may be explained by a reduced impact of WL during sick leave, whereas Cri continue to have an impact.

Hypothesis 6 postulated that the impact of Cri on private life tasks would be mediated by MHS. This hypothesis was confirmed for four life tasks but not for *social life*. Hypothesis 7 regarding the mediation model of WL was not confirmed.

The impact of Cri was rather large (four indirect and one indirect effect) and represents a process of erosion; while employed, Cri degrade MHS, which in turn reduces the effectiveness in private life tasks. This process is a typical example of the loss spiral described by Bakker and Demerouti (2013) and confirms the diminished process (decline of resources) in the W-HR model (Brummelhuis & Bakker, 2012). Cri diminish mental health and cause lower perceived effectiveness in private life tasks.

This study showed that effectiveness in life tasks is mediated by MHS. These processes have been shown in longitudinal studies, including Sterud et al. (2011), Morren et al. (2007), and Wang et al. (2010). Although very little is known about the factors that determine the impact on private life tasks, some general remarks can be made. For police officers, Crimay have additional consequences; their home can become unsafe due to triggers related to Cri. Rosner and Powell (2014) showed the importance of safety and the fulfilment of basic needs to foster post-traumatic growth. In a meta-analysis of predictors of PTSD, Brewin et al. (2000) concluded that people who live in unsafe circumstances and lack basic needs have a higher risk of developing PTSD symptoms. This is applicable to the present group of police officers, who appear to experience working and living in the same location as a burden because they are confronted in private life with an environment in which Cri occurred and with unsafe situations due to their professional knowledge and experience. Furthermore, they can miss basic needs and may, for example, experience financial problems due to lower income and ill health.

The life task *'social life'* was not affected by work demands. One explanation may be that police officers' function in a team and regard themselves as effective in social relations. Bartone et al. (2002) showed camaraderie in militaries. Argentero and Setti (2011)

and Sterud et al. (2011) show the importance of colleague and supervisor support for job satisfaction and mental health. Another probable explanation is that they also find it important to keep functioning in the outside world normally, notwithstanding a low MHS. Finally, they may find it difficult to admit their weaknesses. To be able to cope with the (occasionally extreme) demands of their work, it is important to have a strong self presentation (Bakker et al., 2015) to the outside world. These interpretations are also based on our experience obtained in providing psychological help to rescue workers.

The concept of perceived effectiveness, measured with the life task test, can be defined as the ability to master one's life, even under very demanding (work) circumstances. Perceived effectiveness provides control, which is an important basis for mental health (Bakker et al., 2019). Although this concept is situation-specific, it has several similarities to that of self-efficacy as introduced by Bandura in 1997. Self-efficacy has been demonstrated to play a critical role in the recovery from post-traumatic stress (Bandura, 2002; Patterson, 2003) and the impact of loss of resources (Benight and Harper, 2002). Several studies (Prati et al., 2010; Regehr et al., 2003; Heinrichs et al., 2005) have shown that self-efficacy buffered the impact of stressful encounters on the quality of life.

Limitations of this study and future research

This research focused on one specific sample group: police officers with psychological health complaints currently on sick leave. The high scores on mental health problems corroborate the specificity of this group. The experienced WL may have been lower because at the time of the study, they were at home and not confronted with the daily hassles of theWL. During sick leave, Cri can have more impact as they tend to weigh on the mind. We recommend performing similar research on healthier groups, both in the police and among other rescue workers functioning on the front line. The lack of a comparison group in this study makes it difficult to generalize the results to other groups. For future research, it is important to include a control group.

Another point of attention is that in research, a variety of instruments are used to measure Cri. It is suggested that future research use a standardized instrument regarding the type of questions and period measured. Additionally, more longitudinal studies (such as Sterud et al., 2011) are needed to examine the long-term effects of this depletion process. Future research should pay more attention to the influence of the professional and private contexts on mental health, rather than treating it as an isolated phenomenon, unrelated to the resources, or lack of them, of daily work and life. In addition, more longitudinal research is needed if we are to gain more insight into the loss spiral and process of erosion in rescue work and the prevention of this process.

Practical implications

Our results provide several clues to improve interventions and training for rescue workers. This is in line with the review of Van der Kolk (2015) on guidelines for the treatment and support of traumatized people; he stressed the importance of psychological training for veterans in their everyday lives. They should be trained to cope with stressful job demands to prevent negative spill over from work to private life tasks. When treating mental health problems, such as PTSD, depression, and anxiety, recovery of effectiveness in life tasks may help to improve mental health. Individuals who function well in life tasks feel energized and fulfilled even in high-risk jobs. Sacrificing effectiveness in private life and losing resources is too high a price to pay for rescue work. Prevention in the form of increased recovery time, personal influence on the choice of shifts, temporary retreat from the line of fire, limitations to years on the front line, support from colleagues and leaders, and on-the-job mental health training can be meaningful and help to maintain resources. Alexander et al. (2000) concluded in a study of the long-term effects of serial exposure to Cri among paramedics that the most important factor regarding recovery for officers is an organizational climate of care. More research still has to be conducted on identifying and implementing buffering effects. Furthermore, it would be helpful if the idea that a high-risk job demands a high-care job context would find more acceptance within academic research and clinical practice or the organizational structure of rescue workers.

References

Adler, A. (1956). *The individual psychology of Alfred Adler* (H.L. Ansbacher, R.R. Ansbacher, Eds.). New York: Basic Books. 2013

Alexander, D. A. & Klein, S. (2009). First responders after disasters: a review of stress reactions, at risk, vulnerability, and resilience factors. *Prehospital and Disaster Medicine*, *24*(2), 87-94.

Allen, T. D., Herst, D. E., Bruck, C. S. & Sutton, M. (2000). Consequences associated with work-to family conflict: A review and agenda for future research. *Journal of Occupational Health Psychology*, *5*(2), 278- 308.

Anderson, J., Wade, M., Possemato, K., & Quitmette, P. (2010). Association between posttraumatic stress disorder and primary care provider-diagnosed disease among Iraq and Afghanistan veterans. *Psychosomatic Medicine, 72*(5), 498-504.

Argentero P., & Setti I. (2011). Engagement and vicarious traumatization in rescue workers. *Int. Archives of Occupational and Environmental Health, jan. 84 IS.1.* 67-75.

Arnold J. (2005). *Work psychology. Understanding Human Behaviour in the Workplace.*Pearson education. Harlow.

Arrindell, W. A., & Ettema, J. H. M. (1986). SCL-90: *Handleiding bij eenmultidimensionele psychopathologie-indicator* [SCL-90 symptom checklist: Manual to a multidimensional indicator of psychopathology]. Lisse: Swets & Zeitlinger. Asmundson, G. J. G. & Stapleton, J. (2008). Associations between dimensions of anxiety sensitivity and PTSD symptom clusters in active-duty police officers. *Cognitive Behaviour Therapy*, *37*, 66–75. doi:10.1080/16506070801969005.

Austin-Ketch, T. L., Violanti, J., Fekedulegn, D., Andrew, M. E., Burchfield, C. M. & Hartley, T. A. (2012). Addictions and the criminal justice system, what happens on the other side? Post-traumatic stress symptoms and cortisol measures in a police cohort. *Journal of Addictions Nursing*, *23*(1), 22-29.

Bakker, A. B. & Demerouti, E. (2013). The spillover-crossover model. *New Frontiers in Work and Family, Research*, 54-70.

Bakker, A. B. & Heuven, E. (2006). Emotional dissonance, burnout, and in-role performance among nurses and police officers. *International Journal of Stress Management*, *13*(4), 423- 440.

Bakker, A. H. M., Gaillard, A. W. K., van Veldhoven, M. J. P. M., & Hertogs, R. (2015). The impact of critical Incidents on Mental Health: An Exploratory Pilot Study into the Moderating Effects of Social Support on the Impact of Adverse Events in Dutch Rescue Workers. *Policing*, doi: 10.1093/police/pav038

Bandura, A., Caprara, G. V., Barbaranelli, C., Gerbino, M., & Pastorelli, C. (2003). Role of affective self-regulatory efficacy in diverse spheres of psychosocial functioning. *Child Development*, *74*(3), 769-782.

Bandura, A., & Wessels, S. (1997). *Self-efficacy (pp. 4-6)*. W.H. Freeman & Company.

Bartone, P. T., Johnsen, B. H., Eid, J., Brun, W. & Laberg, J. C. (2002). Factors influencing small unit cohesion in Norwegian Navy officer cadets. *Military Psychology*, *14*, 1–22. Benight C.C., Ironson G. & Durham R.L. (1999). Psychometric properties of a hurricanecoping self-efficacy measure. *Journal of Traumatic Stress*, *12*(2), 379–386. doi:10.1023/A:1024792913301

Benight, C. C., & Harper, M. L. (2002). Coping self-efficacy perceptions as a mediator between acute stress response and long-term distress following natural disasters *Journal of Traumatic Stress*, *15*(3), 177-186.

Berg, T. I. J. van den, Landeweerd, J. A., Tummers G. E. R., Merode, G. G. (2006). A comparativestudy of organizational characteristics, work characteristics and nurses's psychological work reactions in a hospital and nurses home setting. *International Journal of Nursing Studies,* 43, 491-505.

Bergers, G. P. A., Marcelissen, F. H. G. & Wolff, C. J. (1986). *VOS-D: vragenlijst organisatiestress-D: Handleiding.* [VOS-D Questionnaire Organizational Stress-D: Manual]. Katholieke Universiteit, Nijmegen: Psychologisch Laboratorium.

Bianchi, S. M., Casper, L. & King, R. B. (2005). *Work, family, health and well-being,* Mahwah, NJ: Lawrence Erlbaum Associates.

Birch, G. S., Vickers, P., Kennedy, M. H., Michael H., (2016). Procedural justice and frontlinepolicing : the effects of the police complaints system. *The Journal of Forensic Practice vol 18,* no 3, pp 170 - 181.

Boer, J. de, Lok, A., Verlaat, E. van 't, Duivenvoorden, H. J., Bakker, A. B. & Smit B. J. (2011). Work- related critical incidents in hospital-based health care providers and the risk of post-traumatic stress symptoms, anxiety and depression: A meta-analysis. *Social Science & Medicine*, *73,* 316-326.

Brewin, C. R., Andrews, B., & Valentine, J. D. (2000). Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults. *Journal of Consulting and Clinical Psychology, 68*(5), 748-766.

Brummelhuis, ten, L. L. & Bakker, A. B. (2012). A resource perspective on the work–home interface: The work–home resources model. *American Psychologist*, *67*(7), 545.

Calhoun, L. G., & Tedeschi, R. G. (2014). *Handbook of posttraumatic growth: Research and practice*. London: Routledge.

Caplan, R. D., & Jones, K. W. (1975). Effects of work load, role ambiguity, and type A personality on anxiety, depression and heart rate. *Journal of Applied Psychology*, *60*(6), 713.

Carlier, I. V. E., Voerman, A. E. & Gersons, B. P. R. (2000). The influence of occupational debriefing on post-traumatic stress symptomatology in traumatized police officers *British Journal of Medical Psychology*, *73*, 87–98.

Castro, C. C. (2009). Impact of combat on the mental health and well-being of soldiers and Marines. *Smith College Studies in Social Work*, *79*(3-4), 247-262.

Cicognani, E., Pietrantoni, L., Palestini, L., & Prati, G. (2009). Emergency workers' quality of life: The protective role of sense of community, efficacy beliefs and coping strategies. *Social Indicators Research*, *94*(3), 449.

Davey, J. D., Obst, P. L. & Sheehan, M. C. (2000). Developing a profile of alcohol consumption patterns of police officers in a large scale sample of an Australianpolices service. *European Addiction Research, 6*(4), 205-212.

Davidson, A. C., Berah, E. & Moss, S. (2006). The relationship between the adjustment of Australian police officers and their partners. *Psychiatry, Psychology and Law*, *13*(1), 41-48.

De Clercq, F., Deheegher, J. & Van Hoorde, H. (2011). Frequency of and subjective response to critical incidents in the prediction of PTSD in Emergency Personnel. *Journal of Traumatic Stress, 24* (1), 133–136.

Demerouti, E., Bakker A.B. & Bulters A.J. (2004). The loss spiral of work pressure, work-home interference and exhaustion: Reciprocal relations in a three-wave study. Journal of *Vocational Behaviour*, *64*, 131-149.

Fredrickson, B. L. (2000). Cultivating positive emotions to optimize health and well-being. *Prevention & Treatment*, *3*(1), 1a.

Frone, M. R., Yardley, J. K., & Markel, K. S. (1997). Developing and testing an integrative model of the work–family interface. *Journal of Vocational Behavior*, *50*(2), 145-167.

Gerber, M., Hartmann, T., Brand, S., Holsboer-Trachsler, E. & Pühse, U. (2010). The relationship between shift work, perceived stress, sleep and health in Swiss police officers. *Journal of Criminal Justice*, *38*(6), 1167-1175.

Gershon, R. R., Barocas, B., Canton, A. N., Li, X. & Vlahov, D. (2009). Mental, physical, and behavioral outcomes associated with perceived work stress in police officers. *Criminal Justice and Behavior*, *36*(3), 275-289.

Goodson, J., Helstrom, A., Halpern, J. M., Ferenschak, M. P., Gillihan, S. J. & Powers, M. B. (2011). Treatment of posttraumatic stress disorder in U.S. combat veterans: A meta-analytic review. *Psychological Reports*, *109*, 573–599. http://dx.doi.org/10.2466/02.09.15.16.PR0.109.5.573-599.

Green, B. (2004). Post-traumatic stress disorder in UK police officers. *Current Medical Research and Opinion*, *20*(1), 101-105.

Hayes, A. F. & Preacher, K. J. (2014). Statistical mediation analysis with a multicategorical independent variable. British Journal of Mathematical and Statistical Psychology, *67*, 451-470. doi: 10.1111/bmsp.12028

Heinrichs, M., Wagner, D., Schoch, W., Soravia, L. M., Hellhammer, D. H., & Ehlert, U. (2005). Predicting posttraumatic stress symptoms from pretraumatic risk factors: A 2- year prospective follow-up study in firefighters. *American Journal of Psychiatry, 162*, 2276–2286.

Heshmati, A. (2007). The relationship between income inequality, poverty and globalization. *The Impact of Globalization on World's Poor.* Palgrave Macmillan Ltd. Houndsmills. Basingstoke. Hampshire, UK, 59-93.

Heshmati, R., Hoseinifar, J., Rezaeinejad, S., & Miri, M. (2010). Sensation Seeking and marital adjustment in handicapped veterans suffering from PTSD. *Procedia-Social and Behavioral Sciences*, *5*, 1783-1787.

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, *44*(3), 513.

Hobfoll, S. E. & Freedy, J. (1993). Conservation of resources: A general stress theory applied to burnout. In W. B. Schaufeli, C. Maslach and T. Marek (Eds.), *Professional Burnout: Recent Developments in Theory and Practice* (pp. 115-133). Washington, D.C.: Taylor and Francis.

Houtman, I. L. D., Jettinghoff, K., Brenninkmeijer, V. & Berg, R. van den (2005). De politievijf jaar later: Werkstress en het effect van maatregelen. *Hoofddorp: TNO Work and Employment*. [Dutch police organization five years later: Workstress and the effect of policy].

Innstrand, S. T., Langballe, E. M., Espnes, G. A., Aasland, O. & Falkum, E. (2010). Personal vulnerability and work-home interaction: The effect of job performance-based self-esteem on work/home conflict and facilitation. *Scandinavian Journal of Psychology*, *51*(6), 480-487.

Kleber, R. J. (2008). Psychopathologie na rampen: algemene karakteristieken en kritische kanttekeningen. *Psychologie en Gezondheid*, *36*(3), 117-123.

Kolk, van der, B. A. (2015). *The body keeps the score: Brain, mind, and body in the healing of trauma.* New York: Penguin Books.

Lechner, L., Steinvoorte, T., & Näring, G. (2008). Emotieregulatie en burnout bij ziekenverzorgenden. *Gedrag en Organisatie, 21*(2), 137-149. [Emotion regulation and burnout in nurses. Behavior and Organization.]

Maddi, S.R. (2007). Relevance of hardiness assessment and training to the military context. *Military Psychology*, *19*(1), 61-70.

Maia, D. B., Marmar, C. R., Metzler, T., Nobrega, A., Berger, W. & Mendlowics, M. V. (2007). Post-traumatic stress symptoms in an elite unit of Brazilian police officers: Prevalence and impact on psychosocial functioning and on physical and mental health. *Journal of Affective Disorders*, *97*, 241–245.

Menard, K. S. & Arter M. L. (2013). Police Officer Alcohol Use and Trauma Symptoms: Associations with Critical Incidents, Coping, and Social Stressors. *International Journalof Stress Management*. *20*(1), No. 1, 37-56.

Maslow, A. H. (1970). *Motivation and personality.* New York: Harper & Row.

Monnier, J., Cameron, R. P., Hobfoll, S. E. & Gribble, J. R. (2002). The impact of resource loss and critical incidents on psychological functioning in fire-emergency workers: A pilot study. *International Journal of Stress Management*, *9*, 11–29.

Morren, M., Dirkzwager A.J.E, Kessels F.J.M. & IJzermans C.J. (2007). The influence of a disaster on the health of rescue workers: a longitudinal study. *Canadian Medical Association, 176*(9), 1279-1283. doi: 10.1503/cmaj.060626.

Paton, D. (2005). Posttraumatic growth in protective services professionals: Individual, cognitive and organizational influences. *Traumatology*, *11*(4), 335.

Patterson, G. T. (2003). Examining the effects of coping and social support on work and life stress among police officers. *Journal of Criminal Justice*, *31*(3), 215-226.

Ploeg, E. van der, & Kleber, R. J. (2003). Acute and chronic job stressors among ambulance personnel: predictors of health symptoms. *Occupational and Environmental Medicine*, *60*(1), 140-146.

Pisanti, R., van der Doef, M., Maes, S., Lazzari, D., & Bertini, M. (2011). Job characteristics,organizational conditions, and distress/well-being among Italian and Dutch nurses: across-national comparison. *International Journal of Nursing Studies, 48*(7), 829-837.

Prati, G., Pietrantoni, L., & Cicognani, E. (2010). Self-efficacy moderates the relationship between stress appraisal and quality of life among rescue workers. *Anxiety, Stress, Coping*, *23*(4), 463-470.

Preacher, K. J.; Hayes, A. F. (2004). "SPSS and SAS procedures for estimating indirect effects in simple mediation models". *Behavior Research Methods, Instruments, and Computers*, *36* (4): 717–731. doi:10.3758/BF03206553.

Preacher, K. J.; Hayes, A. F. (2008). "Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models". *Behavior Research Methods*, *40* (3): 879–891. doi:10.3758/BRM.40.3.879.

Rau, R. (2006). Learning opportunities at work as predictor for recovery and health. *European Journal of Work and Organizational Psychology, 15(2)*, 158-180

Regehr, C., Hill, J., Knott, T., & Sault, B. (2003). Social support, self-efficacy and trauma in new recruits and experienced firefighters. *Stress and Health: Journal of the International Society for the Investigation of Stress, 19*, 189-193.

Rosner, R., & Powell, S. (2014). Posttraumatic growth after war. In: L.G. Calhoun & R.G Tedeschi (Eds.), *Handbook of Posttraumatic Growth: Research and Practice* (pp. 197-213). New- York: Psychology Press.

Sanz-Vergel, A.I., Demerouti, E., Moreno-Jiménez, B. & Mayo, M. (2010). Work-family balance and energy: A day-level study on recovery conditions. *Journal of Vocational Behavior, 76,* 118–130. doi:10.1016/j.jvb.2009.07.001

Shapiro, A. (2004). The theme of the family in contemporary society and positive family psychology. *Journal of Family Psychotherapy*, *15*(1-2), 19-38.

Shapiro, A. F., Gottman, J. M., & Carrere, S. (2000). The baby and the marriage: Identifying factors that buffer against decline in marital satisfaction after the first baby arrives. *Journal of Family Psychology, 14*(1), 59.

Shochet I.M., Shakespeare-Finch J., Craig C., Roos C., Wurfl A., Hoge R., Young R.M., Brough, P. (2011). The Development of the promoting resilient officers (PRO)Program. *Traumatology, 17*(4), 43-51.

Shapiro, A. (2004). The theme of the family in contemporary society and positive family psychology. *Journal of Family Psychotherapy, 15*(1-2), 19-38.

Shapiro, A. F., Gottman, J. M. & Carrere, S. (2000). The baby and the marriage: Identifying factors that buffer against decline in marital satisfaction after the first baby arrives *Journal of Family Psychology*, *14*, 59–70

Shreffler, K.M., Meadows, M.P. & Davis, K.D. (2011). Firefighting and fathering: Work-family conflict, parenting stress and satisfaction with parenting and child behavior *Fathering, 9*(2), 169-188.

Slottje, P., Twisk, J.W.R., Smidt, N, Huizink, A.C., Witteveen, A.B., Mechelen W. van & Smid, T. (2007). Health-related quality of life of firefighters and police officers 8,5 years after the air disaster in Amsterdam. *Quality of Life Research, 16*, 239-252.

Sterud, T., Hem, E., Lau, B. & Ekeberg, Ø. (2011). A comparison of general and ambulance Specific stressors: predictors of job satisfaction and health problems in a nationwide one-year follow-up study of Norwegian ambulance personnel. *Journal of Occupational and Toxicology Medicine*, *6*(10), 1-9.

Tang, T. L. P. & Hammontree, M. L. (1992). The effects of hardiness, police stress, and life stress on police officers' illness and absenteeism. *Public Personnel Management, 21*(4), 493-510.

Velden P. G. van der, Kleber, R. J., Grievink, L., & Yzermans, J. C. (2010). Confrontations with aggression and mental health problems in police officers: The role of organizational stressors, life-events and previous mental health problems. *Psychological Trauma: Theory, Research, Practice, and Policy, 2*(2), 135.

Velden, P. G. van der, Loon, P., van, Benight, C. C., & Eckhardt, T. (2012). Mental health problems among search and rescue workers deployed in the Haïti earthquake 2010: A pre–post comparison. *Psychiatry Research*, *198*(1), 100-105.

Vila, B. (2006). Impact of long work hours on police officers and the communities they serve. *American Journal of Industrial Medicine, 49*(11), 972–980.

Vila, B., Morrison, G. B., & Kenney, D. J. (2002). Improving shift schedule and work-hour policies and practices to increase police officer performance, health, and safety. *Police Quarterly, 5*(1), 4-24.

Violanti, J. M., Andrew, M. E., Burchfiel, C. M., Dorn, J., Hartley, T. & Miller, D. B. (2006). Posttraumatic stress symptoms and subclinical cardiovascular disease in police officers. *International Journal of Stress Management*, *13*(4), 541.

Wagner, S.L., McFee, J.A. & Martin, C.A. (2010). Mental health implications of fire service Membership. *Traumatology, 16*(2), 26-32.

Wang, P., Lawler, J. J., Walumbwa, F. O. & Shi, K. (2004). Work-family conflict and job withdrawal intentions: The moderating effect of cultural differences. International *Journal of Stress Management*, *11*(4), 392–412.

Wierda-Boer, H., Gerris, J., Vermulst, A., Malinen, K. & Anderson, K. (2009). Combination strategies and work–family interference among dual-earner couples in Finland, Germany, and the Netherlands. *Community, Work & Family, 12*(2), 233-249.

Witmer, J. M., & Sweeney, T. J. (1992). A holistic model for wellness and prevention over the life span. *Journal of Counseling & Development*, *71*(2), 140-148.

Appendix

Type of incident	Never	Once	Twice	Three or more
1. Serious line of duty incident to self	64,5	13,9	9	12,7
2. Threat of death or serious injury (without actual getting injured)	43,4	9,6	8,4	38,6
3. Incident necessitating search or rescue involving serious risk to yourself	75,3	15,1	4,2	5,4
4. Direct exposure to extremely hazardous materials	59,6	18,1	4,2	18,1
5. Direct exposure to blood and body fluids	58,4	13,9	6,6	21,1
6. Line of duty death of a fellow rescue worker	54,2	26,5	9,6	9,6
7. Serious line of duty injury to fellow rescue worker (that did not result in death)	74,7	10,2	5,4	9,6
8. Threat of serious line of duty injury or threat of death to fellow emergency worker (that did not result in actual serious injury or death)	42,2	5,4	7,2	45,2
9. Suicide or attempted suicide by fellow emergency worker	45,2	6	6	42,8
10. Victim(s) known to the rescue worker	36,1	4,8	5,4	53,6
11. Responded to incident involving three or more deaths.	24,1	6	3,6	66,3
12. Responded to incident involving one or two deaths.	48,2	16,9	10,8	24,1
13. Responded to incident involving multiple serious injuries (three or more victims sustained serious injuries)	51,8	9	11,4	27,7
14. Incident involving serious injury or death to children.	63,9	20,5	10,2	5,4
15. Incident involving severe threat to children (that did not result in actual serious injury or death to children).	54,8	3,6	6,6	34,9
16. Incident requiring police protection while on duty	45,8	8,4	7,2	38,6
17. Verbal or physical threat by public while on duty (that did not result in police protection)	36,1	8,4	10,2	45,2
18. Failed mission after extensive effort	28,3	63,9	6	1,8
19. Critical (negative) media interest of an incident where you were involved	60,2	16,3	6,6	16,9
20. Use of deadly force by police at an incident	68,1	10,8	10,2	10,8
21. Critical equipment failure or lack of equipment in any of the above situations	92,2	3	3	1,8
22. Close contact with burned or mutilated victims	68,7	14,5	7,2	9,6
23. Removing dead body or bodies	34,3	10,2	7,2	48,2
24. Prolonged extrication of trapped victim with life-threatening injuries.	74,1	7,8	5,4	12,7

Percentages of police officers (n=166) and their exposure to critical incidents. Measured with the Critical Incidents Inventory (Monnier & Hobfoll, 2002)

The sample included 166 police officers, with the average age of 44,57 years (SD = 10,44 years). In this sample, 41,6% (69) were female. The average age of female officers was 40,16 years (SD = 9,7 years). Minimum age reported was 24, maximum age 59. Mean age of male officers was 47,7 years (SD = 9,84), where the youngest officer was 23 and the oldest was 63 years. All the respondents came from the urban area and were included in 2015/2016. Important to note is that all were on sick leave and received some form of mental health counselling.

Appendix of Chapter 3 The Impact of Critical Incidents and Workload on the Functioning in Private Life of Police Officers: Does Weakened Mental Health Act as a Mediator?

Chapter 6.

Which rescue workers benefit from preventive training in self-management to improve mental health?

◆ 6

Which rescue workers benefit from preventive training in self-management to improve mental health?

Abstract

The purpose of this study was to shed light on the question which rescue workers benefit from training in mental health self-management skills. The effectiveness of this training was examined in 79 respondents. The sample contained 38 policemen and 41 ambulance personnel. The effectiveness of the current training was evaluated by measuring the functioning in five private life tasks, metacognitive awareness and coping self-efficacy prior to and after the training. The influence of critical incident exposure, age and personality on intervention effectiveness was also evaluated. The results showed non-significant increases at T2 in perceived effectiveness for the life tasks: *Social life* and *Maintaining mental health*. In the scores on two other life tasks (*Household and finance* and *Maintaining Positivity*) no significant differences were found. The fifth life task, *Giving meaning*, was marginally lower at T2. The scales metacognitive awareness and coping self-efficacy showed no significant change. Analyses on differential training effects showed that respondents who experienced more critical incidents showed a smaller T2-T1 difference score on *Giving meaning*. Due to the small research group we can say with caution that this can indicate that individuals

who have a lower exposure of critical incidents at T1, benefit more from these kinds of training schemes. Older respondents showed a smaller gain on *Household and finance* and *Maintaining positivity* between measurements, which might indicate that individuals at a younger age might benefit more from the training.

Key words

preventive training, rescue workers, self-management, mental health, differential training effects

Accepted in:

Journal of stress prevention at 19-11-2019

Which rescueworker benefit from preventive training in self-management to improve mental health?

A. H. M. (Heilwine) Bakker, M. J. P. M. (Marc) van Veldhoven, A. W. K. (Anthony) Gaillard, R. (Remy) Hertogs

Introduction

This study examined the effectiveness of a preventive mental health training in self-management skills for rescue workers (e.g., military, police, fire brigade, ambulance personnel,). We also investigated whether critical incident exposure, age, and personality play an influential role in the effectiveness of this training. Rescue workers are known to have very demanding and high-risk jobs. Providing them with skills for maintaining a healthy mental condition is thus a necessity to give protection against the impact of a high demanding job. Research shows that an accumulation of involvement in critical incidents makes the rescuer susceptible to developing psychological symptoms like, exhaustion, feelings of depression, anxiety, hostility, sleeping problems, post-traumatic stress symptoms (Alexander & Klein, 2009; de Boer et al., 2011; Castro, 2009; Halpern & Maunder, 2011; Kleber & van der Ploeg, 2003; Monnier, Cameron, Hobfoll & Gribble, 2002). It also puts pressure on their private lives and takes a toll on their family life (Heshmati, 2007; Maddi, 2007), which reduces vitality (Bakker, Veldhoven, Gaillard & Hertogs, 2015; Cicognani, Pietrantoni, Palestini & Prati, 2009; Slotje, 2007), work and financial status (Adler-Baeder, 2007). The present study evaluated whether preventive mental health training was effective in protecting rescue workers from developing mental health problems. The question of who benefits from a prevention program has been receiving much attention in other research areas (e.g. clinical psychology and health care). The training consists of two meetings of four hours. The focus was on learning to know ones' personal way of self-management, learning to recognize stress signals, finding resources of relaxation and energy, personal confidence and giving meaning. There was attention specifically for mental self-protection against negative energy and harsh events. The combination of psycho-education and exercises was pragmatic and was performed in a group as well as in couples.

Although the effects of preventive training in rescue workers have been studied before, research on who benefits from such training is still unexplored. In this study we try to provide new insights on the subject. This may help practitioners to decide which self-management skills help to maintain mental health in a highly demanding job and who may benefit from receiving this training.

Before we go into the details of the current preventive training, we present a brief review of studies to date on the effectiveness of preventive mental health training in the two groups examined in this study: policemen and ambulance personnel.

Preventive mental health training

Until now the effects of preventive training for rescue workers have largely focused on policemen and ambulance workers. The outcomes of a preventive training program given to 65 police officers by McCraty and Atkinson (2012) showed a decrease in psychological stress signals such as anger, sadness and anxiety and improved communication skills at work and at home. The trainees listened more during the training, which resulted in low competitiveness, greater cooperation and team cohesiveness. In a preventive training program for police officers, Shochet et al. (2015) gave "refresh" sessions 18 months after the initial sessions. The data showed a high level of engagement and acceptability to the program. The seven sessions enhanced posttraumatic growth,

motivational interviewing and promoted positive relations within the organization. The program was based on cognitive behavioral therapy strategies of stress management and cognitive restructuring. Comparable studies have asserted that relaxation techniques and imagery-based techniques improved health and problem-focused coping (Arnetz et al., 2013 ; Arble, Lumley, Pole & Blessman, 2016; Anderson et al., 2015). The police officers demonstrated positive reframing, humor and a reduction in anxiety and alcohol use. Furthermore, preventive training based on mindfulness showed improvements in self-reported mindfulness, resilience, emotion regulation, physical health and sleep disturbance (Bergman, Christoffer & Bowen, 2016; Christopher et al., 2016). Moreover, organizational stress, operational stress, and anger were reduced. Only few studies have been focused on preventive training among rescue workers. Weltman, Lamon, Freedy & Chartrand (2014) demonstrated that preventive training with self-regulation skills, utilizing an app and four one-hour telephone training sessions, improved wellness. When policemen are confronted with distressing and negative emotions, they have difficulties accepting and tolerating them. Respondents were better able to successfully accept and tolerate their emotion, when trained in emotion regulation (Berking, Meier & Wupperman, 2010). Resiliency building for emergency service personnel was focused on the personal strengths of the trainees, highlighting the positive aspects of the emergency role and repeating the training periodically within the organization (Shakespeare-Finch & Copping, 2006; Shakespeare-Finch, 2007; Van der Meulen, & Bosman, 2018). Rewards were given for individual and group performances. The emergency workers self-monitored by periodically revisiting their own sense of meaning, shared it with their colleagues and maintained professional supervision. Police recruits, whom followed a resilience training program, showed more posttraumatic growth than those not in the program. Lastly, Siu, Cooper and Philips (2014), investigating stress management training, adopted a positive psychology approach with health care workers and teachers. The results demonstrated an improvement in work-related well-being and a reduction in burnout. The large differences between the theoretical concepts and the contents of these studies make it difficult to compare these results. In addition, these studies collected their data during different time intervals after the training. The studies that contained more follow-up sessions over a longer period of time seemed to yield better and longer lasting mental health results (e.g. Shochet et al., 2015). Preventive programs that were integrated in regular job training appeared to be the most effective (Shakespeare-Finch & Copping, 2006).

The present report described the results of a training that focused on learning to maintain mental health through the application of self-management skills. Self-management consists of having control over one's thinking, behavior, and emotions and of being able to regulate and to adapt to internal and external demands (Bakker, 2007). The term self-management was originally developed in programs of health care for patients with chronic diseases. The definition in such programs is, that the patient is responsible for his or her day to day care, self-management is a life task for such patients (Lorig, Halsted & Holman, 2003).

Mental health status improves, when self-management supports an internal stable core in a demanding environment. The opposite occurs when an individual is driven by external triggers and impulses, which results in an inconsistent and stressed behavioral pattern (Bakker et al., 2015).

How policemen behave on the job becomes their way of life. Since critical incidents may occur at any time, they have to be continuously alert and available. This context of the daily job makes it difficult to have time to recover. Their behavior is thus continuously being stimulated and driven by external factors, even when it is no longer appropriate. In the long run, this has an eroding effect on rescue workers' personal health (Bakker et al., 2015, Bakker et al., 2019).

In addition, self-regulation and the processing of negative emotions after surviving a traumatic event facilitates staying healthy. Internalizing, inhibiting, the lack of emotion processing and keeping their problems to themselves, increase the risk of health problems. The lack of proper emotion regulation inhibits the possibility to integrate the trauma in their life narrative (Tedeschi and Calhoun, 2006). Having low self -awareness has also been linked to more health problems (Pennebaker, 1989). Delahaij, Gaillard and van Dam (2009) show in their research that the relationship between hardiness and responses

to a stressful situation are mediated by contextual person characteristics like coping style and coping self-efficacy. The term hardiness is further developed in the military psychology by Bartone (2006). Hardy people experience harsh and difficult events as "overall interesting and worthwhile". Such experiences are experienced as challenging and present opportunities to learn and grow. Hardy people had a more effective coping style characterized by a more task-focused coping style in stressful circumstances rather than emotions focused coping style (Bartone, Picano & Williams, 2008). Furthermore, hardy people tend to be more confident about their ability to cope with a stressful situation and they appraise the situation as more challenging and less threatening.

The goal of the current preventive training is to improve skills and abilities in rescue workers that maintain mental health and function as a buffer against the impact of job demands. These skills are perceived effectiveness in life tasks, meta cognitive awareness and coping self-efficacy. We describe the following hypotheses: Preventive mental health training improves functioning in life tasks (hypothesis 1), improves metacognitive awareness (hypothesis 2), improves coping self-efficacy (hypothesis 3). The fourth hypothesis is: Which rescue-workers benefit from this training? In this last hypothesis we want to investigate if there are any specific aspects measured at T1, that may correlate with outcomes measured at T2.

Hypothesis 1: Preventive mental health training improves functioning in life tasks.

Life tasks

The effects of work on the functioning of rescue workers in their private life is a neglected area of research. Most studies focus on mental health problems, like PTSD and depression. In this study we focus on the effectiveness in life tasks. Life tasks are about the striving to build up your life; life tasks are about mastering oneself and the world, starting with our birth and building up mastery over one's functioning within one's environment (Adler, 1956). Adler (1956) and Maslow (1970) developed the pillars for health and happiness such as there are spirituality, self-regulation, work, love and friendship. Peseschkian and Tritt (1998), the initiators of positive psychology, distinguished similarly four pillars of happiness and of the experience of success in life: work/finance, family and social contacts,

health condition, consciousness and culture. Witmer and Sweeney (1992) developed a holistic model for wellness and prevention over the life span, based on the theories of Adler (1956) and Maslow (1970).

In the present study we focused on practical daily life tasks, which were developed with a peer group of psychologist and rescue workers. On the basis of this preliminary research the following domains were regarded as the most important life tasks: *Social life*, *Household and finance*, *Maintaining mental health*, *Giving meaning,* and *Maintaining positivity*.

If these life tasks are properly maintained, they act as pillars for mental health and well-being, and support people to flourish in their life. However, to maintain the life tasks under pressure of high work demands, requires discipline and proactive behaviour.

The perceived effectiveness in life tasks is comparable to the concept of self-efficacy (Bandura, 2003). The difference is that perceived effectiveness focuses on the experience of functioning in private life. Self-efficacy appeared to play a critical role in the recovery of posttraumatic stress (Bandura, 2003; Benight & Harper, 2002) and in the impact of the loss of resources (Benight, Swift, Sanger, Smith & Zeppelin, 1999). Having a sense of community was positively related to efficacy beliefs and to active coping strategies (Cicognani et al., 2009). Low self-efficacy has been linked to experiencing feelings of hostility, developing PTSD and being affected more by stressful situations (Heinrichs et al., 2005). We view self-efficacy as an element of managing mental health. Self-efficacy means trusting oneself and feeling confident that one can handle the problems that one is confronted with.

Effectiveness in life tasks is an important buffer against the hard side of life (Hobfoll, 2002).

Hypothesis 2: Preventive mental health training improves metacognitive awareness

Metacognitive awareness

Schraw and Dennison (1994) developed the notion of metacognition for use in the educational domain. They developed a measurement which focused on the ability to reflect upon, understand and control one's learning. Learners who are more "metacognitively aware" are more strategic and perform better, because they have insight in their own learning strategies and effectiveness (Delahaij, 2009). The importance of awareness of one's stress reactions and coping strategies in order to effectively regulate coping behavior has been developed in the theoretical frameworks of rational emotive therapy (Ellis, 1991) and cognitive appraisal (Lazarus & Folkman, 1984).

Hypothesis 3: Preventive mental health training improves coping self-efficacy

Coping self-efficacy

Coping buffers against the detrimental effects of stressors (Bandura, 2001). The distinction between adaptive and maladaptive coping styles, or active and passive styles, has received much attention, particularly in studies with rescue workers. Passive coping styles means avoidance of the problem through; seeking distraction like watching television, drink alcohol, or worrying.

Shepherd and Wild (2014) found that enhanced active coping among ambulance workers was associated with making more positive appraisals and greater levels of objectivity during call-outs. Adaptive coping styles (i.e., self-help, approach, and accommodation) led to better post-trauma outcomes among ambulance workers than a maladaptive coping style (i.e., avoidance or self-punishment) (Robyn, Shakespeare-Finch, & Palk, 2011). Sonnentag and Grant (2012) examined prosocial behavior, which is defined as the perception that one's actions on the job are beneficial to others. Positive work reflection was associated with higher perceived competence and predicted a positive effect at home. In another study (Sonnentag, Mojza, Binnewies, & Scholl, 2008), mentally detaching from work was associated with improved affective states at home. Engaging in positive activities buffers against negative feelings and beliefs about self-efficacy and functions as a determinant of prosocial behavior (Caprara & Steca, 2005).

To answer the question which person can benefit of a preventive training we found some interesting existing research. In an overview of the effectiveness of resilience training, Leppin and colleagues (2014) found that low confidence had a small to moderate effect on improving resilience. Positive changes were found in short interventions that did not include structured exercise sessions (Conn et al., 2011). Interventions with inactive participants produce larger effects on physical activity, compared with such interventions with previously active adults before the intervention. Self-efficacy is a better predictor of current ability (Jansen, Scherer & Schroeders, 2015). In mental health-promoting school programs especially, self-esteem seems to be a crucial factor for benefitting from these programs (Flay & Ordway, 2001).

We formulated three hypotheses for assessing the effect of our preventive training: mental health training in self-management was expected to result in 1) an increase in perceived effectiveness in life tasks, (2) an increase in metacognitive awareness, and 3) an increase in coping self-efficacy among rescue workers.

Hypothesis 4: Which rescue-workers benefit from this training?

The second goal of this study is to shed more light on the question of which rescue-worker benefits from this training. Resilience-oriented training programs have seldom been found to be effective in rescue-workers (e.g., Van der Meulen, Bosmans, Lens, & Van der Velden, 2018) Most studies in this area yielded negligible or no results and occasionally even reported a diminishing attitude towards the training and a declining resilience over time. The lack of strong overall training effects does not preclude, however, that preventive intervention may be helpful for *some* (rather than *all*) of the participants. If this is indeed the case it would be highly imperative to determine which participants benefited from the training. The research on preventive training in rescue workers is scarce, and differential training effects have hitherto not been reported in the literature. It is very important to gain insight into how to improve preventive programs for the subgroups of rescue workers. Therefore, we will contribute to the literature by exploring whether there are differential effects of the current preventive training program in relation to the following variables: the number of incidents, functional age and personality.

One key characteristic of the work of rescue workers is that they experience several critical incidents, the accumulation of which can overwhelm an individual when it reaches a critical point, and this may drain resources. One would expect accumulation to depend on functional age, e.g., how long one has been working in a rescue job (Declercq et al., 2011; Monnier et al., 2002; Prati, 2010). The accumulation of critical incidents increases over time for rescue workers.

When we pay attention to age Ramey et al. (2016) found increased stress in elder policemen after a preventive training and less stress experienced in younger policemen after the training. They explain this effect with greater awareness of stress after the training and more mental and physical health problems than before the training in the elder group.

The other variable to be examined was personality, because Carr and colleagues (2013) have argued that resilience training was more effective if participants were more optimistic and reported less use of disengagement coping styles. Active coping creates resilience, whereas passive coping does not. Vulnerable people often use passive coping styles, which reduces their resilience and their capability to build resilience. This may be problematic because people who tend to have passive coping strategies, low social support and lower levels of optimism are more prone to stressors (McGarry et al., 2015). This is unfavorable, because they are also less responsive to resilience training programs and do not benefit from them. Thus, the training of this group should concentrate on learning to apply the skills to acquire healthier coping styles. Beehr et al. (2014) studied the effect of initial resources on the development of strain during a stressful training situation. They examined four resources: emotional stability, previous experience, low drain on pre-existing resources, and group work quality. The primarily emotional stability and lack of pre-existing resources drain, tended negatively related to strains, consistent with the idea that it reduces strain. But contrary to the expectations the three resources that predicted trends over time (emotional stability, previous experience, and low pre-existing resource drain) were associated with worsening rather than improving strains. Britt, Adler and Bartone (2001), investigated in a study of US soldiers the relationship between the meaningfulness of work, personality hardiness, and deriving long term benefits from a stressful event. They completed measures during a year deployment and 4-5 months after it. Personal hardiness was associated with being engaged in meaningful work during the deployment, which was strongly associated with deriving benefits from the deployment months after it was over.

Several studies show an avoidance coping style in policeman, while an active coping style is more protective for mental health (Fortes-Ferreira et al, 2008; Shakespeare-Finch et al, 2005). They suggest that because law enforcement professionals are socialized to believe they are “invincible” and “superhuman” (Violanti, 2006) they are likely to disregard information that conflicts with their police role and identity. Shepherd and Wild (2014) found in ambulance workers that enhanced coping was associated with making more positive appraisals during the call-out. Better coping was also related to greater levels of objectivity during these call-outs. Coping less well was associated with the use of more negative appraisals during the call-out.

In international studies on the wellbeing of rescue workers, little research was conducted on the psychodynamic aspects of the personality. Psychodynamic personality assessment was developed by Eurelings and Snellen (2003).

The underlying personality structure helps to determine the style of self-management, interaction with the environment and expression of psychological symptoms. The personality structure was determined using a comprehensive clinical interview and test diagnostics. With determining the personality structure, it is important to look at the relationship between introversion / extraversion, levels of stress, and anxiety sensitivity in relation to skills in self-control, stress signaling and whether or not a person takes responsibility for their own suffering. The personality assessment is also important to determine to what extent the self-image and self-presentation match or differ from the inner structure. Research shows that a high self-esteem is associated with a low degree of identification of psychological problems or issues on self-assessment questionnaires (Eurelings-Bontekoe, Luyten & Snellen, 2009).

Method

Procedure

The research was executed in the context of training to increase resilience in a highly demanding job by learning self-management skills. The preventive training consisted of two parts, each lasting four hours, with an interval of four to six weeks between the two sessions. Participants completed online questionnaires on two occasions: before the start of the first training (T1) and one month after the second training (T2). Participants received information about the study and about self-management training in advance by email and via intranet. They volunteered to participate in this study and gave permission by informed consent to use their data for this research. The training sessions were provided by an experienced psychologist in rescue work and an experienced expert trainer that was educated as a social worker.

The theoretical framework is described in Bakker (2007). The following theoretical elements are present in the training: knowledge about personal character and using your personal manual (Eurelings-Bontekoe, Luyten & Snellen, 2009; Kernberg, 1984; Kernberg, 2005; Bakker, 2007, maintaining and using personal resources (Hobfoll, 1989; Hobfoll, 2002), hardiness (Bartone, 2006), sensemaking/hope (Tedeschi & Calhoun, 2006), personal effectivity (Bandura, 2001). The training was given in a group setting, with education and exercises related to work and private life. At T1, the following topics were discussed: learning to handle your personal manual; recognizing your needs and stress signals and taking the right action to find relaxation again; learning to reset negative emotions and memory; and identifying your personal sources of energy in the job and your private life and learning to use them actively. In particular, attention was paid to the sources of energy before training as a rescue worker.

The second meeting was about identifying aspects of the job that made them feel proud, fostering their professional growth. There is also attention to support of colleagues and supervisors. In the training, they developed a "personal first aid kit to maintain a good mental condition".

Sample

The demographic data are presented in Table 1. Our initial sample consisted of 79 respondents (49 men (62%) and 30 women), containing 38 policemen and 41 ambulance personnel (before starting training), all of whom grew up in The Netherlands. The mean age was 40.76 years (SD: 9.87). The average numbers of hours worked was 36.73 hours (SD: 4.63), with a range of 24 to 50 hours per week. Forty-nine respondents (59.8%) completed the T2 assessment after the training period: 28 were police officers, and 21 were ambulance personnel. This group consisted of 25 men and 24 women, with an average age of 42.33 years (SD: 10.17) and an average of 36.57 (SD: 4.66) working hours per week.

Table 1: Demographics of responders and non-responders

	Overall (n = 79)	Responders (n = 48)	Non-responders (n = 31)
Gender			
Man (%)	49 (62%)	25 (52.1%)	24 (77.4%)
Women (%)	30 (38%)	23 (47.9%)	7 (22.6%)
Age in years (M, SD)	40.76 (9.87)	42.08 (10.13)	39.16 (9.17)
Critical incidents (M, SD)	26.51 (12.88)	25.71 (13.73)	27.74 (11.55)
Personality (median)			
Extraversion	16	17.00	15.00
Somatization	3.00	3.00	3.00
Negativism	12.00	11.50	14.00

Measurements

In the present study we collected three sorts of measures before and after training: effectiveness in life tasks, metacognitive awareness, and coping self-efficacy. We also studied potential differential training effects, depending on personality characteristics, age and exposure to critical incidents.

Life Tasks. We conceptualized the quality of functioning in private life as the perceived effectiveness in the following private life tasks outside work*: Social life, Household and finance, Maintaining mental health, giving meaning and maintaining positivity.* This test was especially developed for rescue workers (Bakker, Veldhoven, Gaillard & Hertogs, 2015). The scales used a five-point Likert scale, ranging from 'very bad' through 'very good'. The higher the score was, the more tasks were reported. Respondents were asked to indicate tasks in the domain of *Social life* through four questions. Items typical for this scale were 'I can maintain friendships' and 'I can receive support and sympathy in my friendships'. The Cronbach's alpha value (0.78) of the *Social life* scale in the current study was considered to be good. The second scale was *Maintaining Mental Health,* which was measured through five questions. Typical items from this scale are 'I can deal with my emotions effectively' or 'I can deal with adversity effectively'. Cronbach's alpha for this scale was.72, which is considered to be good. The third scale was Household and Finance which included four questions. Examples of items from this scale were 'I can manage money effectively' and 'I can build a stable romantic relationship'. Cronbach's alpha for this scale was.67. The fourth scale was Giving meaning, which includes five questions. Items included in this scale were 'I try to learn from the things that I experience in life' and 'I feel relevant in my life'. Cronbach alpha for this scale was.65. The last scale was *Maintaining positivity*. It was measured by the following two questions: 'The disturbing incidents I experience at work make it hard to stay positive' and 'The disturbing incidents I experience at work make it hard to stay vibrant and hopeful in life'. Cronbach's alpha for this scale was.90

Metacognitive awareness. Delahaij and van Dam (2010) developed a metacognitive awareness instrument about stress and coping (MASC) based on the work of Schraw and Dennison (1994). It was developed for military exercises. The scale was constructed for the educational domain. The MASC consisted of 26 items and measured insight into one's coping behavior during a stressful situation and an evaluation of reactions and subsequent performance during and after a stressful situation. Examples of items were 'I know how my body reacts in stressful situations' and 'I know which methods to cope with stress work for me'. The response format was on a 5-point Likert scale ranging from 1 (not at all) to 5 (very much).

Coping self-efficacy. Delahaij and van Dam (2010) constructed a coping self-efficacy list, based on Bandura's definition of self-efficacy (Bandura, 1997). It measured the perceived capability to perform well during stressful situations. The list was developed for military exercises and consisted of 11 items. Examples of items are 'I am confident that I will be able to focus on my task, even when I feel anxious' and 'I am confident I will be able to control my fear during threatening circumstances.'

Personality characteristics. The NVM (Luteijn & Kok, 1985) is a Dutch personality questionnaire, based on the short version of the Minnesota Multiphasic Personality Inventory (MMPI). We used the subscales of Negativism, Somatization, and Extraversion. Several studies have been conducted researching the NVM (Eurelings-Bontekoe, Onnink, Williams & Snellen, 2008; Eurelings-Bontekoe et al., 2009; Eurelings-Bontekoe, Luyten, Remijsen, & Koelen, 2010). *Negativism* had items about passive avoidance behavior, feelings of dissatisfaction, and resentment with daily life. A typical example was 'The life I lived was not the life that I imagined to live.' *Somatization* contained items related to vague physical complaints. Respondents with high scores tended to respond to psychological tension with physical complaints. Here, a typical example was "My stomach upsets me a lot."

In the research work of Eurelings-Bontekoe, Luyten and Snellen they developed a theory-driven profile interpretation of the Dutch short form of the MMPI (2009) DSFM (Luteijn & Kok, 1985). The interpretation method aimed at assessing structural features of personality based on Kernberg and Caligor's (2005). Research shows the DSFM profiles predicted structural features of personality functioning. In short Kernberg (1984) described three levels of personality organization; the neurotic, the borderline and the psychotic personality organization (PPO). The importance of combining traits in personality assessments into profiles is more available in research work. Morey et al. (2002) and Miller (2003) show that it gave more depth information to combine dimensions in personality tests. It is about the whole picture, not a single dimension. In the DSFM are five subscales: Negativism, Somatization, Shyness, Severe Psychopathology and Extraversion. The explanation of these scales is in the theory driven way; Negativism is considered to

measure the level negative affectivity. The subscale Somatization is considered to measure awareness of somatic (stress) signals, handling personal affect and social capacity. The subscale Shyness reflects the persons capacity of impulse control and inhibitory capacity. The subscale severe psychopathology assumed to reflect anxiety tolerance. The subscale extraversion is the way the person's openness or more closed to the environment. The subscale Shyness and Somatization must give self-regulation and self-protection to compare with the amount the person is open to the environment.

Critical incidents inventory. Critical incidents were measured with the critical incidents inventory (CII) developed by Monnier et al. (2002). The test consisted of 24 items indicating the type of incident using a four-point Likert scale, ranging from 0 to 3 points for 'never experienced this event', 'experienced one time', 'experienced two times', and 'experienced three or more times'. Examples of items were 'Line of duty death of a fellow emergency worker' and 'Incident requiring police protection while on duty'. Monnier et al. (2002) reported a median of 8.5 incidents and a range of 0-53.

Statistical analyses

The analyses and the descriptive statistics were performed using IBM SPSS Statistics version 23. Training effects were assessed by performing paired T-tests on the pre- and post-training scores for each of the outcome variables in the study, e.g. life tasks, meta-cognitive awareness, and coping self-efficacy. To find differential effects of the intervention, we examined how critical incidents, age and personality were related to the difference values (T2 minus T1), using Pearson's correlations.

Table 2: Correlations between measures used at T1 (n = 79)

	Social Life	Maintaining mental health	Household and finance	Giving meaning	Maintaining positivity	Metacognitive awareness	Coping self-efficacy
Maintaining mental health	.187						
Household and finance	.326**	.046					
Giving meaning	.155	.402**	0.55				
Maintaining positivity	.415**	.149	.130	.209			
Metacognitive awareness	-.073	-.562**	.010	-.504**	-.156		
Coping self-efficacy	.028	-.494**	-.073	.353**	.170	-.480**	
Critical Incidents	-.150	.-045	.100	0.092	-.116	.093	.132

* *p*<.05, ***p*<.01

Results

In Table 2 means, standard deviations and correlations at T1 are reported for the variables in this study. Some of the correlations are worthy to note here. Metacognitive awareness and self-efficacy were both highly correlated with *Giving meaning* and *Maintaining positivity*. Officers might view themselves as highly effective that enhances and reinforces their sense of duty from which they derive meaning. Other notable correlations are the low correlations of *Critical incidents* with all scales of the Life task test.

Training effects

We must interpret the results with caution because of the small sample size. In Table 3, the outcome measures are shown, comparing pre- and post-training scores. We expected that the training would result in a higher perception of their effectiveness in the life tasks. Although participants increased in the perceived effectiveness in their life tasks for Social life, which went from 4.00 (SD:.47, 95% CI [3.87; 4.14]) at T1 to 4.1 (SD:.36, 95% CI [3.95; 4.17]) at T2, and *Maintaining mental health,* which went from 3.9 (SD:.32, 95% CI [3.81; 3.98]) at T1 to 3.92 (SD:.4, 95% CI[3.82; 4.03]) at T2, these changes were not significant in a paired T-test. The scores on *Household and finance*, and *Maintaining positivity* were

slightly reduced but also not significantly different. Participants had a decreased sense of *Giving meaning* at T2; the decrease from 3.96 (SD:.53, 95% CI [3.8; 4.12]) to 3.77 (SD:.47, 95% CI [3.64; 3.9]) at T2 was significantly different ($t(47)= 2.286$, $p=.03$). In contrast to police officers, ambulance personnel reported decreases in their perceived effectiveness in the following life tasks: *Giving meaning* decreased from an average of 4.04 (SD:.45, 95% CI [3.85; 4.24]) at T1 to 3.67 (SD:.49, 95% CI [3.44; 3.88] at T2, and *Maintaining positivity* decreased from an average of 4.31 (SD:.64, 95% CI [4.06; 4.56]) to 3.98 (SD:.62, 95% CI [3.73; 4.25]).

Metacognitive awareness. No significant differences were found between the two groups at T1 and T2. Metacognition decreased between the two measurements, but not significantly, from 2.23 (SD:.36, 95% CI [2.13; 2.33]) at T1 to 2.17 (SD:.25, 95% CI [2.10; 2.24]).

Coping self-efficacy. We expected that the training would have provided respondents with a positive development in terms of coping self-efficacy. For the complete sample, we did not find any support for our claim that the training increases the coping self-efficacy of the respondents: The observed difference of.02 (95% CI [-.16;.20]) was not significant ($t(47)=.064$, $p=.949$).

Table 3: Mean and SD of the outcome measures at T1 and T2

Responders	T1	T2	T	p
Life tasks				
Social life	4.00 (.47)	4.10 (.36)	-.844	.403
Maintaining mental health	3.90 (.32)	3.92 (.40)	-.487	.629
Household and finance	4.13 (.39)	4.08 (.40)	.822	.415
Giving meaning	3.96 (.53)	3.77 (.47)	2.286	.027*
Maintaining positivity	4.21 (.72)	4.13 (.71)	.649	.519
Metacognitive awareness	2.23 (.36)	2.17 (.25)	1.409	.165
Coping self-efficacy	7.66 (1.02)	7.64 (1.00)	.242	.81

Table 4: Correlations of the differential effects. Life tasks Social Life, Mental Health, Household and finance, Giving Meaning, and Maintaining Positivity are differential scores for T2 – T1

	1. Social Life	2. Mental Health	3. Household and Finance	4. Giving Meaning	5. Maintaining Positivity
Critical Incidents	.072	-.208	.022	-.330*	-.002
Age	-190	-.124	-.447**	-.089	-.436**
Negativism	.120	-.063	-.233	.109	-.022
Somatization	.009	-.156	.068	.069	.091
Extraversion	-.121	-.038	.131	.106	.166

** p <.05, **p <.001*

First, we must press to interpret the differential effects with caution due to the small sample size. Before we proceeded with the differential effect analyses, we examined whether there were differences between the group that responded to both T1 and T2 (referred to as the *responsive group)* versus the group that only responded to T1. The following demographic variables showed differences: gender, age, critical incidents; see Table 1 for an overview. Significant differences were found for the scores on the Life tasks test. The responsive group had a higher perceived effectiveness in Social life (t (77) = 2.58, $p=.012$). The respective means were 4,.03 (sd:.49, 95% CI [3.89; 4.16]) for the responsive group versus 3.76 (SD:.40, 95% CI [3.61; 3.89]) for the unresponsive group. The responsive group also had a higher perceived effectiveness of their Household and finance tasks ($t(77)=2.24$, $p=.028$). The responsive group had a mean score of 4.14 (SD:.39, 95% CI [4.03; 4.25]) while the unresponsive group had a mean score of 3.93 (SD:.46, 95% CI [3.77; 4.08]). For metacognitive awareness and coping efficacy, we found no differences in scores between the two groups. These initial results can be viewed in Table 1.

Critical incidents

Critical Incidents at T1 are a significant predictor for the difference score for Giving meaning ($r= -.330$, $p=.022$), which indicates that a higher difference (more progress on this scale between T1 and T2) is associated with a lower score of Critical incidents at T1.

Age

The same is true for Household and finance, with age as a predictor (r= -.447, p=.001). Also, the difference score of Maintaining positivity seemed to be negatively associated with age at T1 (r= -.436, p=.002).

Personality Characteristics

For personality characteristics Negativism, Somatization and Extraversion we found that none of the personality characteristics turned out to be significantly related with the difference scores for Life tasks.

Discussion

The first goal of this study was to examine whether preventive training in self-management improved functioning among rescue workers. Due to the small sample size, we have to interpret the results of this study with caution and be mindful when generalizing the results to other populations.

We hypothesized that the training would result in a positive development on (1) perceived effectiveness in life tasks, (2) metacognitive awareness, and (3) coping self-efficacy. Concerning the first hypothesis, participants' scores increased in perceived effectiveness in their life tasks for Social life and Maintaining mental health, however these changes were not significant, whereas the score for *Giving meaning* was significantly reduced. The scores on *Household and finance*, and *Maintaining positivity* were slightly reduced but not significant. Therefore, we cannot say that any improvement occurred in these life tasks of the respondents one month after training, as measured with the Life task test. For the ambulance personnel, effectiveness in two life tasks (*Giving meaning* and *Maintaining positivity*) even decreased over the course of the training.

An explanation for the small effects may be that rescue workers tend to underreport mental health complaints (Bakker et al., 2015). In this preventive training, they have learned to recognize stress signals and to use skills in self-management. This means that a possible training effect could be that they are now capable of listening to and accepting stress signals in their awareness, rather than ignoring them. Another explanation for small or even opposite training effects has been suggested by Cigrang, Todd and Carbone (2000). In a study of cadets, they found no improvement because of a pessimistic attitude and disengagement coping. They expected that participants who were more optimistic and preferred problem-focused coping would benefit more from a preventive training. Robertson, Cooper, Sarkar and Curran (2015) found in a review of 14 studies of resilience training in the workplace that the expectations of benefit from the preventive training influenced the results. They quoted a study by Carr et al. (2013), who found that when commanders have the impression that a particular program will not provide benefit, there is less of a training effect. In their study, resilience declined over time. This seems to be in line with the conclusions of Van Hove et al. (2015) that some people benefit more from intensive individual training with attention to their personal needs.

We also found that none of the groups (overall group, police group and the ambulance group) showed improvements in metacognitive awareness. The training did not seem to improve their awareness of how they think and reflect under stress. Likewise, coping self-efficacy was not enhanced after the training. It should be noted that the scores on coping self-efficacy and meta-cognitive awareness of our group were quite high at T1. Due to this ceiling effect, the chance of finding further improvements was rather low. The high scores also show that rescue workers exhibit great trust in their own skills as a rescue worker, which in itself may act as a buffer against the detrimental effects of their work.

A possible explanation of lower scores on *Giving meaning* and maintaining positivity was that the training strengthens the awareness of stress signals. The experience that life is hard can grow larger when people pay more attention to it. Ramey et al. (2016) advises to give older people individualized training and to perform a pre-training test to select people with high scores on mental health problems to profit from preventive training. It is also possible that the period to expect change was too short, although measurements after 3 or 6 months can show more positive effects.

Differential effects

The second part of our study was to provide some insight into the question who might and who might not be receptive of an intervention. Critical incidents and age at T1 predicted the difference scores on three Life task scales. Respondents who experienced more critical incidents showed a smaller difference score on *Giving meaning*. This indicates that individuals who have a lower exposure of critical incidents at T1, benefit more from these kinds of training schemes. Older respondents showed a smaller gain on *Household and finance* and *Maintaining positivity* between measurements, which might indicate that individuals at a younger age might benefit more from the training. This has practical implications with respect who to include in a training like this. This concurs with earlier findings by Ramey et al. (2016), who found increased stress in elder policemen after a preventive training, whereas younger policemen experienced less stress after the training. Ramey and colleagues explained this effect by assuming that older trainees were more aware of stress after the training and had more mental and physical health problems after the training. Considering the relatively high average age, which was approximately 40 years old, this might be an explanation for why there were no differences before and after the training in the current study; our group might have suffered from the same effects as Ramey et al. (2016) found. It is also possible that the training had a larger effect with the younger rescue workers, who were also less exposed to critical incidents. We think that these findings have practical implications and can be used to improve training programs.

Research on posttraumatic growth (PTG) also showed that results can be mixed. People might experience life as more meaningful, but that richer life may come at the price of the discomfort that tragedy and loss almost always produce (Calhoun & Tedeschi, 2009). In their research the relations and dependencies between critical incident exposure, personality and coping style are complicated because they are not linear making it difficult to untangle. On the one hand, incidents that are potentially traumatic can also foster growth in people, but on the other hand, people might acknowledge that experiences were difficult or hard; furthermore, in the latter case, they may realize the impact but were able to learn from it or to overcome, recover and become stronger because of it.

This is also supported on the basis of more qualitative and process-oriented evaluation that we did for the current training. In these evaluations, the rescue workers who felt supported by their colleagues and their friends, were more capable of applying the learned skills to handle the impact of their job and maintain their mental condition. For others, it was the first time they could talk about their experiences and learn practical skills in maintaining mental condition.

In this study no differential effect was found for the personality factors. It means that in this study personality factors don't give an explanation for the benefits of the training. It is difficult to give an explanation for this result. Probably it is because of the small research group or in this group there are less differences between personality characteristics.

Limitations and future research

The major limitation of this research was the relatively small number of respondents in the two groups of rescue workers and the limited research design (no control group, only one follow-up period). This may be a partial explanation for the lack of an overall significant training effect. The differential results were promising, although they would need to be replicated in more (diverse) samples, using more sophisticated research designs. The inclusion of a control group (for example, colleagues with a less stressful or non-rescue job) is also imperative to be able to compare results and specific job characteristics.

In our design, we have chosen to run t-tests instead of a multivariate analysis, such as Manova. First, our sample was insufficient for the latter type of analysis, and second, that Manova analysis is vulnerable for underestimating the levels of chance, especially in small samples, or in samples with large outliers. However, we do not dismiss these multivariate analyses, and recommend future research that incorporates such a design. Possible interaction effects can then also be distinguished, as well as revealing the individual variance of each contributing variable. This might provide more insight in the workings of the effects of interventions like the current one.

Comparison of characteristics of dropouts from the study at T2 with the final sample indicates selective responses. It appears that respondents who score worse at T1 in terms of Social life and Household and finance are less likely to participate in subsequent measurements, such as T2. This might have biased our sample, therefore the conclusions drawn for this study should be interpreted with caution.

Practical implications

On the basis of the present study, the results can indicate that one should be careful to administer a training to rescue workers, especially without any thoughts about who to include. None of our initial hypotheses where confirmed. There was slight improvement in *Social life* and *Maintaining mental health*, but not significant. On the other hand, the slight increase of difficulties in *Household and finance, Giving meaning and Maintaining positivity* can also show that the training support reflection and awareness of difficulties which needs to be solved. Rescue workers tend to underreport complaints (Mènard & Arter, 2013) and this training can give them support to be aware of it and take responsibility for improvement. Our (small) study showed that most likely younger, less exposed rescue workers benefit more in their perceived efficiency in life tasks, compared to older colleagues who are more exposed to critical incidents. This would suggest that training for the target audience of rescue workers should preferably be offered to individuals at the beginning of their career, or even still in training. For rescue workers, who have years of professional experience and who have reported relatively more critical incidents, earlier studies showed that a training program that ran for a longer time, focused on cognitive behavioral skills and using a combination of group and individual approaches gave some improvement (Shochet et al., 2015). Another point is that this study showed that there is a need for more diverse research on this topic, to uncover differential effects in these training programs. We urgently advise HR managers, education policymakers in rescue organizations and other people involved in the training of rescue workers to integrate these types of training in and after basic training. Continuous training in mental health should be integrated into daily work rituals and ongoing education activities (Shakespeare-Finch, 2007). In addition to the training program itself, preventive actions should be integrated into the job. Like recovery time, limitations to years on the front line and support of leaders, create moments for colleague support and an effective work organization.

For future research it is advised to develop more incentives, for example a study reward, to stimulate study participation. The inclusion of a control group (for example, colleagues with a less stressful or non-rescue job) is also imperative in order to be able to compare results and specific job characteristics.

References

Adler, A. (1956). *The individual psychology of Alfred Adler* (H.L. Ansbacher, R.R. Ansbacher, Eds.). New York: Basic Books.

Adler-Baeder, F. (2007). *Smart steps: Embrace the journey*. National Stepfamily Resource Center.

Andersen, J. P., Papazoglou, K., Koskelainen, M., Nyman, M., Gustafsberg, H., & Arnetz, B. B. (2015). Applying resilience promotion training among special forces police officers. *SAGE open*, *5*(2), Doi: 10.1177/2158244015590446

Arnetz, B., Arble, E., Backman, L., Lynch, A., & Lublin, A. (2013). Assessment of a prevention program for work-related stress among urban police officers. *International Archivesof Occupational and Environmental Health, 86*(1), 79-88.

Alexander, D., & Klein, S. (2009). First Responders after Disasters: A Review of Stress Reactions, At-Risk, Vulnerability, and Resilience Factors. *Prehospital and Disaster Medicine, 24*(2), 87-94. Doi: 10.1017/S1049023X00006610

Andersen, J. P., Papazoglou, K., Koskelainen, M., Nyman, M., Gustafsberg, H., & Arnetz, B. B.(2015). Applying resilience promotion training among special forces police officers. *SAGE open*, *5*(2), Doi: 10.1177/2158244015590446

Arble, E., Lumley, M. A., Pole N., Blessman J., Arnetz, B. B., (2016). Refinement and preliminary testing of an imagery-based program to improve coping and performance and prevent trauma among urban police officers. *Journal of Policeand Crime Psychology*

Arnetz, B. B., Bliese, P. B., Mc Gurk, D., Hoge C. W., & Castro,C. A. (2009). Battle mind debriefing and battlemind training as early interventions with soldiers returning from Iraq: Randomization by platoon. *Journal of Consulting and Clinical Psychology, 77,* 928-940. Doi:10.1037/a0016877

Bakker, A. B., & Heuven, E. (2006). Emotional dissonance, burnout and in-role performanceamong nurses and police officers. *Journal of Stress Management*. Vol. 13, No. 4, 423-440.

Bakker, A. B. & Brummelhuis, L. L., ten (2012). A resources perspective on the work-home interface. The work-home resources model. *American Psychologist, 67*(7), 545-556.

Bakker, A. H. M., Veldhoven, M. J. P. M., van, Gaillard, A. W. K., & Hertogs, R. (2015).The impact of critical Incidents on Mental Health: An Exploratory Pilot Study into the Moderating Effects of Social Support on the Impact of Adverse Events in Dutch Rescue Workers. Policing, Doi: 10.1093/police/pav038

Bakker, A. H. M., van Veldhoven, M., Gaillard, T., Hertogs, R. and Feenstra, M. (2019), The functioning of rescue workers in life tasks: development of a test, *International Journal of Emergency Services*, Vol. ahead-of-print No. ahead-of-print.

Bakker, A. H. M. (2007). *Jezelf Besturen*. Weesp, The Netherlands: Tatra Media BV.

Bandura, A. (1997). Editorial. *American Journal of Health Promotion*, *12*(1), 8-10.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, *52*(1), 1-26. Doi: 10.1146/annurev.psych.52.1.1

Bandura, A. (2003). On the psychosocial impact and mechanisms of spiritual modeling. *International Journal for the Psychology of Religion*, 13, 167-173.

Bartone P. T. (2006). Resilience under military operational stress: can leaders influence hardiness. *Military Psychology*, 18 (suppl) S131-S148

Bergman, A. L., Christopher, M. S., & Bowen, S. (2016). Changes in facets of mindfulness predict stress and anger outcomes for police officers. *Mindfulness*, *7*(4), 851-858. Doi:10.1007/s12671-016-0522-z

Benight, C. C., & Harper, M. L. (2002). Coping self-efficacy perceptions as a mediator between acute stress response and long-term distress following natural disasters. *Journal of Traumatic Stress*, *15*(3), 177-186. Doi: 10.1023/A:1015295025950.

Benight, C. C., Swift, E., Sanger, J., Smith, A., & Zeppelin, D. (1999). Coping self-efficacy as a mediator of distress following a natural disaster. *Journal of Applied Social Psychology*, *29*(12), 2443-2464. Doi: 10.1111/j.1559-1816.1999.tb00120.x

Bartone, P. T., Picano.J. J., Williams, T. J. (2008). Psychological hardiness predicts success in US army special forces candidates. *International of Selection and Assessment, 16*. 78-81

Beehr, T., Ragsdale, J., & Kochert, J. (2015). Effects of initial resources on the development of strains during a stressful training situation: Some counterintuitive results. *Journal of Organizational Behavior, 36*(4), 467-490.

Berking, M., Meier, C., & Wupperman, P. (2010). Enhancing emotion-regulation skills in police officers: results of a pilot controlled study. *Behavior Therapy*, *41*(3), 329-339. Doi: 10.1016/j.beth.2009.08.001

Boer, J. de, Lok, A., Verlaat, E. van 't, Duivenvoorden, H. J., Bakker, A. B. & Smit B. J. (2011). related critical incidents in hospital-based health care providers and the risk of post-traumatic stress symptoms, anxiety, and depression: A meta-analysis. *Social Sciences& Medicine, 73, 316-326*.

Britt, T., Adler, A., & Bartone, P. (2001). Deriving Benefits From Stressful Events: The Role ofEngagement in Meaningful Work and Hardiness. *Journal of Occupational HealthPsychology, 6*(1), 53-63.

Brummelhuis ten, L. L., ter Hoeven, C. L., Bakker, A. B., & Peper, B. (2011). Breaking through the loss cycle of burnout: The role of motivation. *Journal of Occupational and Organizational Psychology*, *84*(2), 268-287. Doi: 10.1111/j.2044-8325.2011.02019.x

Calhoun, L. G., Tedeschi, R. G. (2009). The foundations of posttraumatic growth: an expanded framework. *Handbook of Posttraumatic Growth*. Lawrence Erlbaum Associates.

Carr, W., Bradley, D., Ogle, A. D., Eonta, S. E., Pyle, B. L., & Santiago, P. (2013). Resilience training in a population of deployed personnel. *Military Psychology*, *25*(2), 148. Doi: 10.1037/h0094956

Caprara, G. V., & Steca, P. (2005). Affective and social self-regulatory efficacy beliefs asdeterminants of positive thinking and happiness. *European Psychologist*, *10*(4), 275-286. Doi: 10.1027/1016-9040.10.4.275.

Castro, C. C. (2009). Impact of Combat on the Mental Health and Well-Being of Soldiers and Marines. *Smith College Studies in Social Work*, *79*(3-4), 247-262.

Cigrang, J. A., Todd, S. L., & Carbone, E. G. (2000). Stress management training for military trainees returned to duty after a mental health evaluation: effect on graduation rates. *Journal of Occupational Health Psychology*, *5*(1), 48. Doi: 10.1037/1076-8998.5.1.48

Christopher, M. S., Goerling, R. J., Rogers, B. S., Hunsinger, M., Baron, G., Bergman, A. L., & Zava, D. T. (2016). A pilot study evaluating the effectiveness of a mindfulness-based intervention on cortisol awakening response and health outcomes among law enforcement officers. *Journal of Occupational Health Psychology*, *31*(1), 15-28. Doi: 10.1007/s11896-015-9161-x

Cicognani, E., Pietrantoni, L., Palestini, L., & Prati, G. (2009). Emergency workers' quality of life: The protective role of sense of community, efficacy beliefs and coping strategies. *Social Indicators Research*, *94*(3), 449. Doi: 10.1007/s11205-009-9441-x

Conn, V., Hafdahl, A., & Mehr, D. (2011). Interventions to increase physical activity among healthy adults: Meta-analysis of outcomes. *American Journal of Public Health, 101*(4), 751-758.

Ellis, A. (1991). The revised ABC's of rational-emotive therapy (RET). *Journal of Rational-Emotive and Cognitive-Behavior Therapy*, 9, 139-172. Doi:10.1007/BF01061227

Declercq, F., Meganck, R., Deheegher, J., & Van Hoorde, H. (2011). Frequency of and subjective response to critical incidents in the prediction of PTSD in emergency personnel. *Journal of Traumatic Stress*, *24*(1), 133-136.

Delahaij R., Gaillard A. W. K., Dam van K. (2009). Hardiness and the response to stressful situations: Investigation mediation processes. *Personality and Individual Differences. 59*(5): 386-390.

Delahaij, R. (2009). Coping under acute stress: the role of person characteristics. *Breda: Kon. Broese & Peereboom*.

Delahaij, R., & van Dam, K. (2010). Coping style development: The role of learning goal orientation and metacognitive awareness. *Personality and Individual Differences*, *92*, 57-62. Doi: 10.1016/j.paid.2015.12.012

Eurelings-Bontekoe, Elisabeth H. M, & Snellen, W. M. (2003). *Dynamische Persoonlijkheidsdiagnostiek*. Lisse: Swets & Zeitlinger.

Eurelings-Bontekoe, E. H., Onnink, A., Williams, M. M., & Snellen, W. M. (2008). A new approach to the assessment of structural personality pathology: Theory-driven profile interpretation of the Dutch Short Form of the MMPI. *New Ideas in Psychology*, *26*(1), 23-40. Doi: 10.1016/j.newideapsych.2007.03.002.

Eurelings-Bontekoe, E. H., Luyten, P., & Snellen, W. (2009). Validation of a theory-driven profile interpretation of the Dutch short form of the MMPI using the TAT Social Cognitions and Object Relations Scale (SCORS). *Journal of Personality Assessment*, *91*(2), 155-165. Doi: 10.1080/00223890802634274.

Eurelings-Bontekoe, E. H., Luyten, P., Remijsen, M., & Koelen, J. (2010). The relationship between personality organization as assessed by theory-driven profiles of the DutchShort Form of the MMPI and self-reported features of personality organization. *Journal of Personality Assessment*, *92*(6), 599-609. Doi: 10.1080/00223891.2010.513311.

Flay, B., Allred, R., & Ordway, C. (2001). Effects of the Positive Action Program on Achievement and Discipline: Two Matched-Control Comparisons. *PreventionScience, 2*(2), 71-89.

Fortes-Ferreira, L., Peiró, J., González-Morales, M., & Martín, I. (2006). Work-related stress and well-being: The roles of direct action coping and palliative coping. *Scandinavian Journal of Psychology, 47*(4), 293-302.

Green, B. (2004). Post-traumatic stress disorder in UK police officers. *Current Medical Research and Opinion, 20*(1), 101-105.

Halpern, J. & Maunder, R.G. (2011). Acute and Chronic Workplace Stress in Emergency Medical Technicians and Paramedics: Chapter from Handbook of Stress in theOccupations. Edited by Langan-Fox, J. & Cooper, *pp. 135-160*. C.L. Edward Elgar: Cheltenham, UK.

Heinrichs, M., Wagner, D., Schoch, W., Soravia, L. M., Hellhammer, D. H., & Ehlert, U. (2005). Predicting posttraumatic stress symptoms from pretraumatic risk factors: a 2-year prospective follow-up study in firefighters. *American Journal of Psychiatry*, *162*(12), 2276-2286. Doi: 10.1176/appi.ajp.162.12.2276

Heshmati, A. (2007). The relationship between income inequality, poverty and globalization. In *The Impact of Globalization on the World's Poor* (pp. 59-93). Palgrave Macmillan UK.

Hobfoll, S.E. (1989). Conservation of Resources. A New Attempt at Conceptualizing Stress. *American Psychologist, 44(3),* 513-524.

Hobfoll, S. E. (2002). Social and psychological resources and adaptation. *Review of General Psychology, 6*, 307-324.

Jansen, Scherer, & Schroeders. (2015). Students' self-concept and self-efficacy in the sciences: Differential relations to antecedents and educational outcomes. *Contemporary Educational Psychology, 41*, 13-24.

Kernberg, O. F. (1984) *Severe personality disorders. Psychotherapeutic strategies.* New Haven, London: Yale University Press.

Kernberg, O. F., & Caligor, E. (2005). A psychoanalytic theory of personality disorders. *Major Theories of Personality Disorder*, *2*, 114-156.

Kleber R. J., & Ploeg E, van der., (2003). Acute and chronic job stressors among ambulance personnel: Predictors of health symptoms. *Occupational & Environmental Medicine*, *60*: 40-46.

Lazarus, R. S., & Folkman, S. (1984). Coping and adaptation. *The Handbook of Behavioral Medicine*, 282-325.

Leppin A.L., Pavithra R Bora, Jon C Tilburt, Michael R Gionfriddo, Claudia Zeballos-Palacios, Megan M Dulohery,... Victor M Montori. (2014). The efficacy of resiliency training programs: A systematic review and meta-analysis of randomized trials. *PLoS ONE, 9*(10), E111420.

Luteijn, F., & Kok, A. P. (1985). Revised Manual of the Dutch NVM.

Lorig K. R., Halsted P.H., Holman H.R. (2003) Self-management education, history, definition, out comes and mechanisms. *Annals of Behaviour Medicine. 26(*1), 1-7.

Maddi, S. R. (2007). Relevance of hardiness assessment and training to the military context. *Military Psychology*, *19*(1), 61. Doi: 10.1080/08995600701323301.

Maslow, A.H. (1970). *Motivation and personality.* New York: Harper & Row.

McGarry, S., Girdler, S., McDonald, A., Valentine, J., Lee, S., Blair, E.,... Elliott, C. (2013). Paediatric health-care professionals: Relationships between psychological distress, resilience and coping skills. *Journal of Paediatrics and Child Health, 49*(9), 725-732.

McCraty, R., & Atkinson, M. (2012). Resilience training program reduces physiological andpsychological stress in police officers. *Global Advances in Health and Medicine*, *1*(5),44-66. Doi: 10.7453/gahmj.2012.1.5.013

Meloth, M. S. (1990). Changes in poor readers' knowledge of cognition and the associationof knowledge of cognition with regulation of cognition and reading comprehension. *Journal of Educational Psychology*, *82*(4), 792. Doi: 10.1037/0022-0663.82.4.792.

Mènard, K.S., & Arter, M. L. (2013). Police Officers Alcohol Use and Trauma Symptoms; Associations with Critical Incidents, Coping and Social Stressors. *International Journal of Stress Management. 20(1), 37-56.*

Meulen van der, E., Bosmans, M. W., Lens, K. M., Lahlah, E., & van der Velden, P. G. (2018). Effects of mental strength training for police officers: A three-wave quasi-experimental study. *Journal of Police and Criminal Psychology*, *33*(4), 385-397.

Miller, M. W. (2003). Personality and the etiology and expression of PTSD. A three factor model perspective. *Clinical Psychology, Science and Practice, 10* (4), 373-393.

Monnier, J., Cameron, R. P., Hobfoll, S. E., & Gribble, J. R. (2002). The impact of resource loss and critical incidents on psychological functioning in fire-emergency workers: A pilot study. *International Journal of Stress Management*, *9*(1), 11-29. Doi: 10.1023/A:1013062900308.

Morey, L., Gunderson, J., Quigley, B., Shea, M., Skodol, A., McGlashan, T.,... Zanarini, M. (2002). The representation of borderline, avoidant, obsessive-compulsive, and schizotypal personality disorders by the five-factor model. *Journal of Personality Disorders, 16*(3), 215-234.

Peseschkian, N. & Tritt, K. (1998). Positive psychotherapy effectiveness study and quality assurance. *European Journal of Psychotherapy & Counseling, 1(1). Doi*:10.1080/13642539808400508

Pennebaker J.W. (1989). Confession, inhibition and disease. *Advances in Experimental Social Psychology.* 22: 211-244.

Prati, G., & Pietrantoni, L. (2010). Risk and Resilience Factors among Italian Municipal Police Officers Exposed to Critical Incidents. *Journal of Police and Criminal Psychology, 25*(1), 27-33.

Ramey, S. L., Perkhounkova, Y., Hein, M., Chung, S., Franke, W. D., & Anderson, A. A. (2016). Building resilience in an urban police department. *Journal of Occupational and Environmental Medicine*, *58*(8), 796-804. Doi: 10.1097/JOM.0000000000000791

Robertson, I. T., Cooper, C. L., Sarkar, M., & Curran, T. (2015). Resilience training in theworkplace from 2003 to 2014: A systematic review. *Journal of Occupational and Organizational Psychology*, *88*(3), 533-562. Doi: 10.1111/joop.12120

Robyn, K., Shakespeare-Finch, J., Palk, G. (2011). Adaptive and maladaptive coping strategies predict post trauma outcomes in ambulance personal. *Journal of Traumatology, 17*(4).

Schaufeli, W. B., Bakker, A. B., & Van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. *Journal of Organizational behavior*, *30*(7), 893-917. Doi: 10.1002/job.595.

Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, *19*(4), 460-475. Doi: 10.1006/ceps.1994.1033.

Shakespeare-Finch, J., Gow, K., & Smith, S. (2005). Personality, Coping and Posttraumatic Growth in Emergency Ambulance Personnel. *Traumatology, 11*(4), 325-334.

Shakespeare-Finch, J., & Copping, A. (2006). A grounded theory approach to understanding cultural differences in posttraumatic growth. *Journal of Loss and Trauma*, *11*(5), 355-371.

Shakespeare-Finch, J. (2007). Building resilience in emergency service personnel through organisational structures. *The 42 annual australian psychological society conference: making an impact, 25-29, Brisbane.*

Shepherd, L., & Wild, J. (2014). Emotion regulation, physiological arousal and PTSD symptoms in trauma-exposed individuals. *Journal of Behavior Therapy and Experimental Psychiatry*, *45*(3), 360-367. Doi: 10.1016/j.jbtep.2014.03.002.

Shochet, I. M., Smith, C. L., Roos, C. R., Wurfl, A., Mackay, B., Robinson, T.,... & Ashby, B. (2015). Rationale and description of an innovative resilience-building to promote mental health forindigenous job seekers. *Journal of Australian Indigenous Issues*, *18*(4), 53-70.

Siu, O. L., Cooper, C. L., & Phillips, D. R. (2014). Intervention studies on enhancing work well-being, reducing burnout, and improving recovery experiences among Hong Kong health care workers and teachers. *International Journal of Stress Management*, *21*(1), 69. Doi: 0.1037/a0033291.

Slottje, P., Twisk, J.W.R., Smidt, N, Huizink, A..C., Witteveen, A..B., Mechelen W. van & Smid, T. (2007). Health-related quality of life of firefighters and police officers 8,5 years after the air disaster in Amsterdam. *Quality of Life Research 16*, 239-252.

Sonnentag, S., Mojza, E. J., Binnewies, C., & Scholl, A. (2008). Being engaged at work and detached at home: A week-level study on work engagement, psychological detachment, and affect. *Work & Stress*, *22*(3), 257-276. Doi: 10.1080/02678370802379440.

Sonnentag, S., & Grant, A. M. (2012). Doing good at work feels good at home, but not right away: When and why perceived prosocial impact predicts positive affect. *Personnel Psychology*, *65*(3), 495-530. Doi: 10.1111/j.1744-6570.2012.01251.x.

Tedeschi, R. G., & Calhoun, L. G. (2006). Expert companions: Posttraumatic growth in clinical practice. *Handbook of Posttraumatic Growth: Research and Practice*, 291-310.

Theodosiou, A., & Papaioannou, A. (2006). Motivational climate, achievement goals and metacognitive activity in physical education and exercise involvement in out-of-school settings. *Psychology of Sport and Exercise*, *7*(4), 361-379. Doi: 0.1016/j.psychsport.2005.10.002

Vanhove, A. J., Herian, M. N., Perez, A. L., Harms, P. D., & Lester, P. B. (2016). Can resilience be developed at work? A meta-analytic review of resilience-building programme effectiveness. *Journal of Occupational and Organizational Psychology*, *89*(2), 278-307.

Violanti, J. M., Andrew, M. E., Burchfiel, C. M., Dorn, J., Hartley, T., & Miller, D. B. (2006). Posttraumatic stress symptoms and subclinical cardiovascular disease in police officers. *International Journal of Stress Management*, *13*(4), 541.

Watson, D. Pennebaker J.W, (1989). Health complaints, stress and distress: Exploring the central role of negative affectivity. *American Psychological Association.*Vol. 96. (2)234-254

Weltman, G., Lamon, J., Freedy, E., & Chartrand, D. (2014). Police department personnel stress resilience training: an institutional case study. *Global Advances in Health and Medicine*, *3*(2), 72-79. Doi: 10.7453/gahmj.2014.015

Witmer, J. M., & Sweeney, T. J. (1992). A holistic model for wellness and prevention over the life span. *Journal of Counseling & Development*, *71*(2), 140-148.

Yap, A. J., & Tong, E. M. (2009). The appraisal rebound effect: Cognitive appraisals on the rebound. *Personality and Social Psychology Bulletin*, *35*(9), 1208-1219. Doi:10.1177/0146167209338073.

Chapter 7.

General discussion

◆ 7
General discussion

The main goal of the present study was to investigate the impact of rescue work on mental health and private life tasks and to develop preventive tools to foster mental health and effectiveness in private life tasks. For that purpose, a new questionnaire was developed to measure the effectiveness of the functioning of rescue workers in their private life tasks. Additionally, a preventive mental health training was developed and evaluated.

In this Chapter we summarize and discuss the results of this thesis research, separately for each research question (see also Chapter 1). We will also mention limitations and future directions. In the final section we will present the practical implications of this study.

Remark

It is important to realize that for all the research questions, the research was done with a small specific group. The research group concerns police officers with absenteeism due to mental health complaints, who were referred to psychological help through an occupational physician. The psychological personal training (research questions 1-4) was short, consisting of 10-15 sessions and focussed on recovery and reintegration. The preventive research (research question 5) was about police and ambulance group who followed a short preventive training program consisting of two four-hour sessions. Furthermore, as the research design is cross-sectional, it is not possible to infer causal relationships from this data. Therefore, follow-up longitudinal research is needed. Thus, the results only show the described consistency in this specific group. It is therefore important to be cautious about generalizing these results to other populations.

Concept and measurement of life tasks (RQ1)

Our first question was: How can we conceptualize the private life functioning of rescue workers, and develop an adequate measure? This research question was addressed in Chapters 2 and 4. This research sought to develop a reliable instrument to measure effectiveness in life tasks objectively. Since rescue workers (e.g. police officers, firefighters, ambulance staff, and military personnel) have a highly demanding job, they run a serious risk of developing mental health problems, which in turn may negatively influence their functioning in private life. The theoretical base is founded on Adler's work (1956). Life tasks are about striving for specific goals, building up life and striving for significance.

For the purpose of this thesis we define life tasks as the perceived effectiveness in building up life and maintaining these pillars of mental health in various domains of life. The perceived effectiveness in private life tasks concerns taking care of and responsibility for maintaining these pillars. Properly maintained, they act as resources for mental health and well-being, supporting people to flourish in their life. However, maintaining life tasks under pressure requires discipline and proactive behavior.

Next, this study elaborated a new questionnaire for measuring the performance of rescue workers in life tasks. As far as we could establish, our research showed, no instrument for measuring the effectiveness in life tasks for rescue workers is currently available. There is a life task test developed by Cantor et al. (1991), but this is mostly concerned with the appraisal process and life tasks in specific stages of life, and therefore not easily applicable in current practice of occupational health psychology. This is particularly true in the case of practical daily life questions, such as: "I can maintain my social network." Such questions are easy to understand and relate directly to the daily experience of rescue workers. Most psychological tests are more abstract and focused on mental health and personality, and contain few questions concerning functioning in life tasks. The questionnaires we found that pay attention to these issues were the Quality of Life Scale (QOLS; Flanagan, 1978); Post-Traumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996); Resilience Scale (RS25; Wagnild & Young 1993); and World Health Organization Quality of Life assessment (abbreviated version) (WHOQOL-BREF; Harper et al., 1998) and the Life Task Questionare (LTQ; Cantor, Norem, Niedenthal, Langston & Brower, 1987). In Chapter four, a comparison of these tests to the Life Task Test, show that this test focussed more on perceived effectiveness, where the other test focus more on satisfaction in life, or personal characteristics. Furthermore, the LTT is a practical short test especially developed for rescue workers.

The test that is most similar to the LTT for rescue workers can be found in the life task questionnaire developed by Nancy Cantor (Cantor et al., 1991), based on Adler (1956) and Maslow (1971). Adler (1956) delineated three main challenges in life tasks with which individuals are confronted: work, social relations, and love, to which Cantor added the life task 'self and spirituality'. Her questionnaire focuses on the appraisal of life tasks. In each of her studies the life task questionnaire explicitly concerns specific ages and life stages and their life tasks. The questions about personal self-evaluation on these life tasks are more in-depth. Questions about the appraisal process over a specific life task were: difficulty, degree of reward and outcome evaluation. Personal emotions are also questioned in relation to specific life tasks for involvement and positive affect. For example, a study of specific life tasks of female students found seven main life tasks: grades, goals, friends, intimacy, being on one's own in college, sorority, and physical self (Cantor et al., 1991). Cantor's theory pays specific attention to the social context and appraisal process. People appraise life tasks by means of interdependence, control, difficulty and enjoyment. These appraisals constitute the strategies to handle life tasks. The appraisal process is embedded in a social context and not just an individual issue (Meegan & Berg, 2001).

Compared to Cantor's questionnaire, which contains several dimensions concerning the appraisal process and emotions, as described above, the life task test for rescue workers as developed in this PhD thesis is less complex and more compact, focusing on the single dimension of "perceived effectiveness".

Furthermore, the Quality of life test, World Health Organization Quality of Life assessment (abbreviated version) (WHOQOL-BREF; Harper et al., 1998) has similar domains as the Life Task Test. Additionally, the vision that (mental) health is maintained by pillars of well-

being and welfare is the base of the Quality of life test. However, not a single question refers to personal effectiviness in maintaining life tasks and is specific developed for rescue workers.

The factor structure, internal consistency and concurrent validity of the Life Tasks Test (LTT) were examined in a sample of 108 police officers. Results show that the test reliably measures perceived effectiveness in the following five domains: *social life, maintaining mental health, household and finance, giving meaning, and maintaining positivity.* Cronbach's alpha was acceptable for two scales (>0.60), and good for the other three (>0.70). The hypothesized five-factor structure of the LTT was corroborated in a confirmatory factor analysis (CFA). Concurrent validity was examined by comparing the scores on the LTT with two established questionnaires, one for personality characteristics and one for work characteristics and work stress. All LTT scales, with the exception of social life, showed significant correlations with social support, workload, and personality. This supports the concurrent validity of the questionnaire.

Additionally, the analysis of the comparison group of 183 office employees and the total group of office employees and police officers' (n=291) show the development of a valid instrument.

Altogether, the Life Task Test presented in this research provides a concise and clear image of the personal effectiveness in life tasks and whether these are functioning well in contributing to mental health and wellness.

We would also like to highlight the importance of perceived effectiveness here, to possess energy and vitality in life. The questions about perceived effectiveness constitute the basis for this test. A person's perceived effectiveness is closely related to the experience of being in control over one's own life (self-management). The ability to influence and control one's own life is fundamental for mental health. Work load and critical incidents bring many unpredictable and unmanageable situations into one's life. Rescue workers can feel powerless in situations of overwhelming sorrow and cruelty.

Many situations bring a great deal of misery and allow little opportunity to make any significant contribution to alleviate it. It is very important that private life is in good shape, with the rescue worker having influence and control over his or her life and security to a sufficient extent, in order to prevent these adverse experiences from penetrating private life. Using Adler's (1956) theory in the life task test there is more focus than in other tests on the developmental aspects of mastery of life and striving for meaning. Interestingly, Adler was affected by the appalling working conditions of tailors, which he observed put their life tasks under pressure.

Limitations and future research (RQ1)

The life task test is one of the first instruments specifically designed for rescue workers with focus on private life tasks. Future research can use it as a base for further development. However, it has certain limitations that must be remarked on. In developing this test, a lack of data prevented the inclusion of the following three scales: 1) partner, family life and parenting, 2) spirituality/religion, 3) handling private life events. We will explain this per scale.

In the case of the scale partner, family life and parenting, the research group was too small to differentiate between: living with and without partner, living with and without children. Therefore, questions about effectiveness in parenting and intimate relationships could not be included. However, the scale 'social life' includes some of these aspects more generally. Since this life task constitutes an important base in life, we suggest the development of a scale 'relationship and family' for future research. In rescue work in particular, having a stable relation/family base at home has a buffering effect on the impact of the intense demands of the job (see Chapter 5).

Another, and rather remarkable outcome was that it appeared to be impossible to create a scale measuring the importance of spirituality and religion as too many participants answered that it did not apply to them. This would seem to be typical for the Dutch context, particularly in comparison to American studies. In Dutch society the positive meaning of religion and spirituality has largely disappeared. Within the context of rescue work the lack of an idea of a higher meaning or mission in life may be considered a loss (Smith, 2017).

Furthermore, for the questions about handling private life events, the sample size was too small to differentiate between different private life events. Further research using larger samples can make it possible to further develop this scale.

Future development of the test should include a wider variety of rescue workers (healthy and with health complaints) and at a later stage could profitably be extended to other high-risk, high-pressure jobs. Since this study covers a relatively small group, a test over larger samples and a greater variety of rescue work professionals will be necessary to develop a more reliable instrument. Thus, it is important to be cautious when generalizing the results of this study to other populations at this phase of test development.

In order to arrive at a better psychometric testing method, more attention should be paid to the scale 'social life'. No consistent support for the concurrent validity of the 'social life' scale could be found. The only correlation of any significance was lack of support from colleagues, which is related to the quality of the social network at work. It seems likely that this is a peculiarity of our specific sample group, which for reasons of absenteeism responded differently to the questions on 'social life'.

Keeping these reservations in mind, the development process may prove useful as a base for future research involving a larger number number of respondents and various professions. Again, to complement this test, a life task test should be set up that digs deeper into the appraisal process and emotions (Cantor et al., 1991).

Impact of critical incidents on mental health (RQ2)

Research question 2 was: How does the accumulation of critical incidents and other work characteristics (workload, social support) relate to mental health in rescue workers? This research question was addressed in Chapters 3, 4 and 5.

In Chapter 3 we investigated the health- and work-related problems of 67 rescue workers (police officers and medical emergency drivers) caused by the accumulation of critical incidents during their career. This group participated in a preventive training.

The health questionnaires showed no effect. However, the effect of the number of critical incidents on perceived workload was significant. No significant moderation effects of social support were found.

In the study on the development of the life task test (Chapter 4), workload correlates with less perceived effectiveness on the life task maintaining mental health and maintaining positivity. This research was conducted on 108 police officer on sick leave and following a course of psychological help. Lack of support from supervisors and colleagues correlated with less perceived effectiveness in social life and maintaining mental health. Lack of support from colleagues correlated with less perceived effectiveness in household and finance. When respondents experience lack of support from colleagues and supervisors there is less perceived effectiveness in giving meaning and maintaining positivity. Negative rumination correlated with less perceived effectiveness on mental health, maintaining positivity and giving meaning. Police officers who experience more mental health complaints feel less effective in maintaining positivity, feel that they have difficulties in attributing meaning to what they do, and feel less effective in managing their own mental health. Personal negativism correlated with lower perceived efficacy on all life tasks, except social life. Somatization had negative correlations with efficacy on mental health and maintaining positivity. People who report a higher level of somatic complaints, report, on average, less perceived effectiveness in their life tasks.

In Chapter 5 the main question was: What is the impact of workload and critical incidents on mental health and does mental health have a mediating effect on private life tasks. The research group comprised of 166 police officers with psychological health complaints and absenteeism from work. This study found that critical incidents diminish mental health and in a mediation model that private life tasks are functioning on a lower level. In the case of research question 2 we focus only on the direct effect of workload and critical incidents on mental health.

For this study, we selected police officers functioning in the front line, experiencing critical incidents and working in urban areas. Respondents that reported more critical incidents

have a lower mental health status. No direct negative effect of workload on mental health was found.

This is in accordance with a literature review of the European Agency for Safety and Health at Work for Rescue Work (Milczarek et al., 2011), which showed that rescue work carries high risks of mental and physical health problems. Adequate mental health is fundamental to handle the impact of a highly demanding job and to function satisfactorily in work and private life. Professionals in high-stress occupations (police officers, ambulance personnel, firefighters) are at greater risk of mental health problems than those performing other work roles (Davey, Obst, & Sheehan, 2000; Maia et al., 2007; Shochet et al., 2011). Police officers are at elevated risk of such mental health conditions as depression, posttraumatic stress disorder (PTSD), burnout and substance abuse (Asmundson & Stapleton, 2008; Austin-Ketch et al., 2012), and at elevated risk of such physical health conditions as heart disease, gastrointestinal disorders, and diabetes (Violanti et al., 2006; Violanti, Vena & Petralia, 1998). Green (2004) found PTSD to be four to six times more prevalent in police officers than in the general public. On the other hand, van der Velden et al. (2013) found no indication that self-reported mental health disturbances were more prevalent among police officers than those in non-high-risk employee groups.

Specific research on the accumulation of critical incidents makes rescuers susceptible to developing psychological symptoms (Alexander & Klein, 2001; Castro, 2009; De Boer et al., 2011; Goodson et al., 2011; Kleber, 2008; Monnier, Cameron, Hobfoll & Gribble, 2002; Van der Ploeg & Kleber, 2003). Carlier, Voerman and Gersons (2000) associated situations confronting police officers with victims' vulnerability, such as cases of abuse and murder, with higher rates of post-traumatic stress disorder. Monnier et al. (2002) demonstrated the connection between the accumulation of incidents and health problems such as state anger, anger out and depression. Alexander and Wells (1991), in a before and after comparison of police officers involved in body-handling duties following a disaster, found no clinical levels of post-traumatic stress or psychiatric morbidity. Thinking about the positive aspects of their work, humour and a positive organizational support were helpful. They concluded that these factors give a sense of control and mastery in adverse tasks.

The fact that no direct negative effect of workload on mental health was found can be explained by the fact that this research group was at home, on leave for health reasons. Although they were not actively experiencing any workload at the time, the impact of critical incidents would still be present in their mind. Other studies show the impact of organizational stress. Maguen et al. (2009) found that routine work and environment stress was most strongly associated with PTSD symptoms. They conclude that when work environment is functioning well it protects against duty-related critical incidents.

When we compare the studies in Chapters 3 and 5, the difference between the healthy group (chapter 3) and the group with mental health complaints (Chapter 5) is striking. In the healthy group no effect of critical incidents on mental health complaints is found. A greater accumulation of critical incidents only leads to a higher experienced work load. In the group with mental health complaints and absenteeism, we see that critical incidents decrease mental health (Chapter 5) and effectiveness in life tasks. In Chapter 4 we find somatic complaints and negativism in the group with absenteeism.

1In this part of the discussion we take a more in-depth look at the different experiences in terms of health complaints between the group on sick leave and the preventive group, and the influence of critical incidents on mental health.

A first explanation for these results may be found in a study by Braathen, Veiersted and Heggenes (2007) (in a more general professional context) and Argentero and Setti (2011) (in a group of rescue workers. They report that an unhealthy work environment (i.e., low perception of mastery of work, low support from co-workers, low empowering leadership, a poor social climate and a low priority to human resources in the workplace), leads to more mental health complaints and absenteeism. Additionally, Dekkers-Sanchez (2010) found that the following factors influence the return-to-work process in a negative way: higher age, poor working relationships, poor degree of control over the working situation, lack of modified labor conditions, negative illness perceptions and recovery expectations. We are under the impression that the job circumstances of the preventive group might be better than those of the group on sick leave.

A second explanation for the difference between the group with sick leave and healthy preventive group (research question 2) might be the different number of critical incidents between both groups. Some care must be taken in our assessment, because the preventive group is small and contains medical drivers and police officers. The group with sick leave contains only police officers.

Carlier et al. (2000) associated situations confronting police officers with victims' vulnerability, such as cases of abuse and murder, with higher rates of post-traumatic stress disorder. Monnier et al. (2002) connected the accumulation of incidents with such health outcomes as state anger, anger out and depression. A. Bakker and Heuven (2006) combined the emotionally demanding jobs of police officers and nurses in one study and concluded that emotional dissonance has a mediating influence on the development of burnout. This conclusion has been supported, among others, by De Clercq, Deheegher and Van Hoorde (2011), who demonstrated that distress was greater in case of certain types of critical incidents, such as when children were involved, but also with shortages of supplies and other resources at work. The following studies show that critical incidents have a negative impact on mental health. In a sample of 750 United States police officers, Menard and Arter (2013) linked the number of critical incidents to more frequent and more severe PTSD symptoms. Together with social stressors, pressure on the police force, and maladaptive coping, critical incidents accounted for 53% of the variance in the officers' PTSD symptoms. This can lead to sick leave and loss of mental health. Hunt, Jones, Hastings and Greenberg (2013) found among 717 police officers that greater traumatic exposure was associated with longer sickness absence. Additionally, Alexander, Klein and Bowes (2000) linked longer time in service and higher numbers of critical incidents to mental health complaints.

It is important to press that there is no simple one to one relation between critical incidents and mental health problems (Mc. Farlane's, 1988). A distinction must be made between post-traumatic reactions and clinical levels of mental health problems. The studies mentioned above show that positive organizational factors and personal coping can be important buffers (Alexander & Wells 1991; Maguen et al., 2009).

Taking a closer look at the number of critical incidents between the group with absenteeism and the preventive group, allows us the following insights. When we compare both groups (Chapter 3 and Chapter 5) we focus on those critical incidents known as impactful. These are situations in which the rescue worker feels powerless and/or is confronted with vulnerable victims (Carlier, Lamberts & Gersons, 1997), (De Clercq et al., 2011).

The following Table indicates in percentages how many in each group experienced three or more critical incidents over the course of their career:

Table 1: Comparison of group with absenteeism and preventive group in tough critical incidents

Critical incident	Group with absenteeism	Preventive group
The threat of death or serious injury (without actually getting injured)	38,6%	37,3%
The threat of serious line of duty injury or threat of death to fellow emergency worker (not resulting in actual serious injury or death)	45,2%	4.03
Suicide or attempted suicide by fellow emergency worker	42,8%	28,4%
Responded to incident involving three or more deaths	66,3%	52,2%
Victims known to rescue worker	53,6 %	31,3%
Incident involving severe threat to children (not resulting in actual serious injury or death of children)	34,9%	34,3%
Incident involving serious injury or death to children	5,4%	16,4%
Removing dead body or bodies	48,2%	58,2 %

This overview shows that the group with sick leave, have experienced a higher number of critical incidents in 6 out of 8 categories. However, we need to stress that rescue work does not just consist of a number of critical incidents; it is much more complex. As shown above, a possible explanation might be found in the availability of resources in the job, which might be better in the preventive group.

The third explanation of the lack of impact of critical incidents on mental health of the preventive group is given in Chapter 3. The professional attitude of over-presentation and self-defense, necessary in the job on the street, makes it difficult to recognize stress signals and personal weakness. But once the process of diminished mental health begins to show its effects (Chapter 5), mental health complaints can no longer be ignored and become on the surface. This would seem to offer the most straightforward explanation for the absence of stress signals and health complaints in the first group and their prevalence in the second group.

Limitations and future research (RQ2)

Since the number of respondents in Chapter 3 is small, the results should be interpreted with caution. Another problem is posed by the combination in one group of different professionals, the medical emergency drivers and police officers. This may have influenced the results to the extent that less effects were found of critical incidents on mental health. Another explanation is the tendency of rescue workers to underreport complaints. In The Netherlands, attempts to test this type of presumption have been made by Eurelings-Bontekoe and Snellen (2003), Eurelings-Bontekoe, Onnink, Williams and Snellen (2008), Eurelings-Bontekoe, Onnink, Williams and Snellen (2009), Eurelings-Bontekoe, Luyten, Ijssennagger, van Vreeswijk and Koelen (2010), Eurelings-Bontekoe, Luyten, Remijsen and Koelen (2010a; 2010b). Particularly in the preventive healthy group, stress signals can be seen as personal weakness, and will not be taken seriously and acted upon appropriately in order to maintain mental health.

A limitation of Chapter 5 is that this group consists solely of police officers. Performing this research on other rescue work occupations might provide interesting insights. Additionally, since this group was referred to psychological support by the company doctor, there might be an effect of pre-selection.

Future research should be conducted among a greater variety of rescue workers and larger groups. Furthermore, comparing the work circumstances and mental health of rescue workers with that of office professionals may yield interesting results. It is important that research among rescue workers in particular takes into account the entirety of a career spent in dangerous, frontline work. A longitudinal study could provide more conclusive results as to the impact on mental health and private life.

Impact of critical incidents on private life task functioning (RQ3)

Research question 3 was: How does the accumulation of critical incidents and other work characteristics (workload, social support) relate to private life functioning in rescue workers? This research question is dealt with in Chapters 4 and 5.

Chapter 4 developed the life task test and show negative impact of work pressure on the life task *Maintaining mental health, Household and finance, Giving meaning, Maintaining positivity*. The life task social life was not affected. In this study, 108 police officers participated with a high incidence of absenteeism.

Chapter 5 examines the degrading effects of critical incidents and workload on the mental health status and private-life tasks. For this study, we selected 166 police officers functioning in the front line, experiencing critical incidents and working in urban areas. We investigated the effects on the following five private-life tasks: social life, maintaining mental health, household and finance, giving meaning, and maintaining positivity. Results show that critical incidents have a direct effect on maintaining positivity alone. Respondents reporting more critical incidents have a lower mental health status. Mental health status has a direct effect on functioning in all private life tasks, except social life. When mediated by mental health status, critical incidents are associated with less effective functioning in all private-life tasks, except social life. The most notable effects were found in maintaining mental health and maintaining positivity. The mediation analysis demonstrates that the effects of critical incidents on functioning in private life tasks (except social life) were larger for respondents with a low mental health status. In the Workload model, no significant indirect effects were found for life tasks.

These results show that critical incidents diminish effectiveness in private life tasks, in particular when mental health status is weakened. This is in line with the spillover effect of work stressors into private life, as researched in a longitudinal study by Demerouti, Bakker and Bulters (2004) in which they explain the loss spiral. When work demands have a negative impact on the effectiveness in life tasks, home resources (e.g. recovery opportunities, social support) may be degraded. This in turn may lead to additional, non-work-related problems. Due to this loss spiral, work pressure and exhaustion have causal and reversed causal relationships with functioning in life tasks over time. Those few studies that have been done on rescue work and private life tasks confirm the degradation of private life tasks due to high work demands (Elbogen, Johnson, Wagner, Newton & Beckham, 2012; Sterud, Hem, Lau, and Ekeberg, 2011). In a 4-year study among 1,403 rescue workers Morren, Dirkzwager, Kessels and Yzermans (2007) found that sick leave and psychological problems increased. A prospective longitudinal study of 119 healthy police officers found duty-related depression after 12 months, pressing the need for strategies to reduce work stress (Wang et al., 2010).

Limitations and future research (RQ3)

This research shows that the impact of critical incidents on private life tasks needs serious attention. Future research should take private life tasks more into consideration, rather than focus nearly exclusively on mental health complaints. More attention to private life tasks might be helpful to keep up these resources and prevent the need for sick leave. There are other, more practical and organizational aspects to the job that put private life under pressure. These aspects are not within the scope of this research, but we suggest including them in future research. Lack of recovery time, for instance, aggravates the impact of critical incidents. The scarce time available is needed to recover and thus can absorb all time and energy required for private life tasks.

Shift work, time pressure, and under-staffing make it difficult to have breaks during work and brings recovery time at home under pressure as well. Recovery time is an important aspect of maintaining mental health and feeling effective and having control over one's life. Rescue workers come to feel they should be available 24/7, and they perform their duties in irregular work shifts, generally when the general public is not at work. Merkus, Holte, Huysmans and van de Ven (2017) showed the need of recovery time after night shifts. Even outside working time rescue workers can feel responsible for the health and safety of civilians and be on the alert for news and messages. It seems to be in the nature of rescue workers to be on duty, even when, officially, they are not. This creates an attitude of constant awareness. As a consequence, there is a risk that inadequate time might be given to recover or pay close attention to personal resources. In a review study about the daily recovery from work-related effort during non-work time, Demerouti, Bakker, Geurts and Toon (2009) showed that daily recovery is an important moderator in the process through which job characteristics and related strain may lead to unfavourable states on a daily basis. Future research can be helpful to determine the importance of adequate time for recovery and private life as a base for mental health in rescue work.

Some critical remarks must be made about the results that we presented for research question 3. This research focused on one specific sample group: police officers with psychological health complaints currently on sick leave. The high scores on mental health problems corroborate the specificity of this group. The experienced work load may have been lower due to the fact that at the time of the study they were at home, and not directly confronted with the daily turmoil of their workload. During sick leave, critical incidents can have more impact as they tend to weigh on the mind. We recommend doing similar research on healthier groups, among police officers as well as other rescue workers functioning in the front line. Another point of attention is that, in research, different instruments are used to measure critical incidents. The use of a standardized instrument regarding the type of questions and period measured would therefore be advisable in future research. Additionally, more longitudinal studies (such as Sterud et al., 2011) are needed to examine the long-term effects of the depletion process. Future research should pay more attention to the influence of the professional and private contexts of mental health, rather than treating it as an isolated phenomenon, unrelated to the presence or absence of resources of daily work and life.

By what process do the accumulation of critical incidents and other work characteristics influence private life functioning in rescue workers, specifically what is the role of mental health in this process? (RQ4)

Research question 4 was: by what process do the accumulation of critical incidents and other work characteristics influence private life functioning in rescue workers, specifically what is the role of mental health in this process? This research question is described in Chapter 5.

Many of the details of the study in Chapter 5 are already described under research question 3 above. We concentrate here on the mediating role of mental health. Our research shows that mental health diminishes within a context of accumulation of critical incidents. In its turn, diminished mental health reduces effectiveness in life tasks even further. Mental health is an important base to support the demands of life.

As expected, we found a significant result in the relation between critical incidents and perceived effectiveness, when mediated by mental health status, the total explained variance in life tasks being: Maintaining mental health 24%, Household and finance 7%, Giving meaning 7%, Maintaining positivity 27%.

In the mediation model, with mental health status as a mediator, workload as a predictor, and the life task maintaining mental health as outcome, we found a significant result with a total explained variance 22%. With the life task household and finance as outcome, we found a marginally significant result, with a total explained variance of 7%. With the life task giving meaning as outcome, the total explained variance is 7%. Using the life task maintaining positivity as outcome, the total explained variance is 23%. When we compare the two predictors, workload and critical incidents, we may conclude that both diminished mental health and affect a lower perceived effectiveness in private life tasks. However, in the case of diminished mental health, the predictor critical incidents have a more negative impact on maintaining mental health and maintaining positivity than workload.

Interestingly, the life task social life is not affected. A possible explanation might be that rescue workers function within a group and have a strong feeling of collegiality. Another explanation is that rescue workers are unwilling to reveal their personal vulnerabilities to others, and use their skills, self-image and strong self-presentation to be effective in social life.

This is in line with other research which shows that employees functioning in high-stress occupations (police officers, ambulance personnel, firefighters) are at greater risk of mental health problems than people in other professions (Davey et al., 2000; Maia et al., 2007; Shochet et al., 2015). Police officers run a greater risk of such mental health conditions as depression, posttraumatic stress disorder (PTSD), burnout and substance abuse (Asmundson & Stapleton, 2008; Austin-Ketch et al., 2012). They are also more likely to suffer from such physical health conditions as heart disease, gastrointestinal disorders, and diabetes (Violanti et al., 2006; Violanti et al., 1998). Green (2004) found PTSD to be four to six times more prevalent in police officers than in the general public.

The sequelae of these mental health problems for police officers extend to their families (Davidson, Berah & Moss, 2006) and to work absenteeism (Tang & Hammontree, 1992). Enhanced and prolonged physiological stress reactivity can, over time, negatively affect the mental and physical health of police officers (Anderson, Wade, Possemato & Quitmette, 2010; Violanti et al., 2006). This process of mental health depletion can have a temporary or a more chronic character. Chronic stressors bear the risk of depleting the personal resources required to handle them (Hobfoll, 2002; ten Brummelhuis & Bakker, 2012). Several studies provide evidence for loss spirals of work-related burnout and engagement (Schaufeli, Bakker & Van Rhenen, 2009; Ten Brummelhuis & Bakker, 2012). This depletion process eventually consumes more structural personal resources (e.g., health) and deteriorates long-term outcomes in the private domain (Ten Brummelhuis & Bakker, 2012).

The process of depletion is best shown in longitudinal research, and its process is confirmed by two studies of rescue workers by Morren et al. (2007) and Wang, et al. (2010). This kind

of research is complicated and remains scarce. These longitudinal studies show the risk of a depletion process setting in in rescue work and subsequent loss of health and resources. This thesis confirms this depletion process but pays more attention to the specific impact of lower mental health on private life than other studies do. Most affected are the life tasks maintaining mental health and maintaining positivity, precisely the life tasks that play a crucial role in enabling recovery from mental health complaints (Fredericson, 2009; Tedeschi & Calhoun, 2006). Thus, the loss of these particular life task pillars makes it even more difficult to find the way to recovery. The loss of these life task pillars makes it even more difficult to find the way to recovery.

In this Chapter we used the work-home resources model by ten Brummelhuis and Bakker (2012) as a theoretical starting point, although other theories exist that may explain the depletion process of mental health and private life tasks. The theory of the tipping point (Scheffer, Carpenter, Dakos & van Nes, 2015) was developed in ecology and water quality management but might be quite useful in the current context as well. Although it is concerned with a different professional environment, there are clear parallels with the eroding effects of rescue work. The theory of the tipping point (Leemput et al., 2013; Scheffer et al., 2015) shows that the consequences of the processes of pollution remain hidden under the surface for a considerable amount of time. This is called a critical slowing down. However, once they become apparent as the tipping point is reached, the way to return to a clean environment and healthy biotope has become extremely difficult. If we translate this into rescue work terms, the process of erosion may remain hidden under the surface for a long time. The rescue worker does everything to meet the demands of the job and will use all available private resources to cope with this. The code of the profession and the prolonged functioning in unsafe circumstances, make it difficult to assess the seriousness of stress signals and vulnerability. Once the tipping point is reached, the exhaustion of resources can no longer be hidden and will surface. (Mental) illness is the likely result. The way to recovery is difficult and occasionally no longer available. This process of critical slowing down (Leemput et al., 2013) has also been described for the onset and termination of depression.

Limitations and future research (RQ4)

This study should be regarded as a first step in research on the impact of rescue work on mental health and private life tasks; few studies are available. The accumulation of critical incidents is researched by examining the number of critical incidents during job life. Longitudinal research including a control group should provide more specific and more detailed information. It is recommended to collect measurements using everyday, practical language and terminology (such as in the critical incident test and life task test) and avoid using abstract terms that seems far removed from daily life. It is also necessary to be cautious when generalizing these results to other population groups and situations, because this research was conducted specifically on policeman with mental health problems and absenteeism.

Addionally, qualitative interviews might give more insight in the process of mental health depletion. This study set out to include the partners of rescue workers. They were questioned about the functioning of their partner (rescue worker) in private life tasks. Collecting these data proved very difficult, and not a large amount was available for use in this research. However, a cautious interpretation seems to indicate a that the evaluation of the partners in the life task test gives lower scores than those of the rescue workers themselves. For future research we suggest that partners of rescue workers be asked about the functioning in private life tasks of their partners.

Furthermore, it should be pointed out that preselection might play a role here, since this research group is trained to recognize mental health problems and motivated to seek mental health support. For future research it is advisable to research a broader group and include various rescue work professions. It is advisable as well to focus not only on mental health complaints, but on the consequences of lower mental health for private life and functioning in the job, too. This information can be helpful for prevention and intervention.

In this thesis, critical incidents and workload are combined as predictors. It would be sensible to do so in future research as well, as the impact of critical incidents is aggravated

by organizational problems, lack of support and the lack of adequate equipment (Naudé & Rothmann, 2006). On the other hand, when these job resources are available, they can buffer the impact of critical incidents (Argentero & Setti, 2011; Sterud et al., 2011).

Preventive training (RQ5)

Research question 5 was: Can preventive training improve the private life functioning of rescue workers and if so, which rescue workers benefit from such an intervention? This research question is addressed in Chapter 6.

The results of this research should be interpreted with caution due to the small sample size and lack of a control group.

Results of Chapter 6 showed non-significant increases at T2 in perceived effectiveness for the life tasks social life and maintaining mental health. The scores on two other life tasks (household and finance and maintaining positivity) were reduced, but not significantly. The fifth life task, giving meaning, was marginally lower at T2. Metacognitive awareness slightly decreased but not significantly, whereas coping self-efficacy remained unchanged. Regression analyses showed that critical incidents affected the score for giving meaning. The higher the score, the lower the effectiveness in this life task. Age was a negative predictor for the life tasks household and finance and maintaining positivity. The older the respondent and the more critical incidents they experienced, the lower the scores on giving meaning and maintaining positivity.

These results are very interesting and in combination with findings from the earlier Chapters of this thesis, might carry practical implications. More specifically, the group with a history of more critical incidents on T1 showed lower improvement on giving meaning. Older respondents showed less improvement in maintaining positivity and household and finance on T2. This seems to be in line with the conclusions of Vanhove, Herian, Perez, Harms and Lester (2015), that individuals at risk can benefit more from an intensive individual training that pays specific attention to their personal needs. A preventive training can have the opposite effect for them, since in these trainings they might come to realize

to an even greater extent the vulnerability of their health, but lack the necessary intensive individual training to work on improvement — something we might call a reverse buffer effect. This is confirmed by Ramey et al. (2016), who found increased stress among older police officers after a preventive training, whereas younger police officers experienced less stress after the training. They explain this effect as the result of greater awareness of stress after the training and the existence of more mental and physical health problems in the older group before the training.

Considering the higher *average* age of our group, which was about 40 years, this might explain why we did not find significant differences before and after the training; our group might have suffered from the same effects as Ramey et al. (2016) found in his sample. Although the training might possibly have more effect on younger rescue workers, who have been less exposed to critical incidents, the current study could not corroborate this. In our sample, there was an average of at least 24 incidents for younger rescue workers, against at least 28 for the older group. Considering that the answer scale for critical incidents runs from 'never exposed' through 'exposed three times or more' this is a low estimate. The observed difference was not significant. Nonetheless it might be something trainers and health care professionals might want to take into consideration in their selection of candidates for this type of training. From this point of view, the connection between age and life tasks as revealed by the exploratory results of the regression are particularly interesting. It seems more likely that this kind of training is of greater benefit to younger rescue workers, with respect to maintaining some level of optimism and functioning in domestic work and household and finances.

Another explanation might be that rescue workers tend to have an underscore response on mental health complaints (Bakker, Gaillard, van Veldhoven & Hertogs, 2015). In the preventive training they learn to recognize stress signals, and tools in self-management and self-care. An effect of such a training is that they become more aware of stress signals and come to assess and accept rather than ignore them. This might also explain the the lower scores of giving meaning in this group, because on average they have had a long career as rescue workers and have been exposed to many critical incidents over the course

of it, into a relatively higher age. Our exploratory analyses show that more exposure to critical incidents might hinder success in training effectiveness in life tasks.

A small amount of research that has attempted to explain the negative or even contrary effect of preventive training. Cigrang, Todd and Carbone (2000), in a study of cadets, found no improvement because of a pessimistic attitude and disengagement coping. Their assessment is that that participants who are more optimistic and prefer problem focused coping would benefit more of a preventive training. Robertson, Cooper, Sarkar and Curran (2015) found in a review of 14 studies about resilience training in the workplace that expectations of the benefit of the preventive training influence the result. They quote a study of Carr et al. (2013), who found that when commanders give the impression that programs do not provide benefit, there is less training effect. In their study, resilience declined over time. They proposed that "cast expectations for the effects of such programs are essential for their implementation." Klink et al. (2001), in a review study of 84 experimental studies about interventions for work-related stress, concluded that stress-reducing interventions appeared to be effective for populations with high levels of job control, as opposed to jobs with low job control. They suggest the development of new hypotheses and fresh research on these findings. They also suggest researchers be cautious in interpreting these findings, because the level of job control is inferred from occupational status. In their large review study (n = 3736) they found that cognitive-behavioral interventions are the most effective with employees with high job control. A possible explanation might be that these employees are allowed to bring their individual coping skills in practice. The cognitive-behavioral interventions may be less effective for employees working in a situation with less job control, such as first responders, especially those who respond to emergency calls. Since the collected data do not allow good comparison of predictive data such as age, level of education, presentation, etc., the original authors suggest the development of a research model with greater comparability, allowing better research into the predictive factors of the benefits of preventive training.

Limitations and future research (RQ5)

This research has a small group and lack of a control group. The research question "who benefit of this training" was perhaps too ambitious. The preventive training did not produce the expected results. The results as to the differential training effects, however interesting, have serious limitations in terms of selection effects involved and sample size, and should therefore be confirmed by fresh, rigorously set up research. In order to increase a study's validity, prior calculations must be made about the number of participants included in order to adequately measure certain effects or, indeed, even to prove their presence at all. Since our study had to confine itself to the number of participants set by the police and ambulance departments, we were unable to do this.

As to the possibility of selection effects in this part of the thesis, it appeared that people who filled out T2 (as opposed to those who did not and/or dropped out of our study) perceived more effectiveness in social life and household. This might imply that respondents who experience more efficacy in social life and household and finance are more willing to keep participating in this type of research.

A critical remark on this kind of research is that it is a wide spread idea that resilience, hardiness and psychological capital, support police officers to handle stressful and traumatic situations. But there are less studies who show the improvement of these aspects on the daily functioning as a professional (Janssens, van der Velden, Taris & van Veldhoven, 2018). Janssens et al. (2018) analyzed 17 cross-sectional and 15 longitudinal studies and found in cross-sectional and longitudinal studies, associations with health variables were very weak to moderate. In future research there should be more focus on improvement of these aspects in functioning as a professional and effectiveness in private life.

It is advisable for future research to develop more tools to stimulate a response on T2, for instance some type of study reward. More follow-up measurements are required to assess the effectiveness of trainings and this, in its turn, requires larger samples so as to prevent non-response. The inclusion of a control group (consisting of colleagues or non-rescue workers in stressful jobs) is imperative to compare results and specific job

characteristics. The inclusion of a greater variety of rescue work occupations might also yield interesting information. A longitudinal on preventive training could provide valuable information about enduring preventive results. However, since practical research on the effects of preventive programs is time and cost intensive, success can only be achieved by organizations' commitment and the presence of a sense of urgency to put effort in prevention.

Practical implications

In this paragraph we explain the implications of the research outcomes for practice. The core intention of this research was to further our understanding of the impact of rescue work on mental health and private life, and to provide tools and guidelines for practice to maintain mental health and private life even in a high demanding job.

Life Task Test

The following remarks can be made about the value and usefulness of the life task test. This research demonstrates that the life task test is a reliable instrument to investigate how life tasks are functioning. It provides immediate insight into which life tasks are performing well and positively contributing to mental health and uncovers problems in need of support. In practical use of this test it is important to be aware that it is tested on policeman and a control group of office employees in a situation of absenteeism due to mental health problems. So, when using this test, it is important to consider whether it is applicable to the chosen population.

It is important to check the degree of erosion and the state of the life tasks in diagnostic work before psychological and therapeutic intervention. In situations of high erosion and low functioning on life tasks intensive trauma therapy is undesirable (Van der Kolk, 2015). It can undermine an already fragile balance even more.

Learning effectiveness in private life tasks should have a place within the context of psychological and therapeutic interventions. It allows the client influence and control over his or her personal life and strengthens the pillars of mental health. Within the practice of therapeutic treatment, life tasks should not be regarded as an exclusive domain for social workers. Psychologists, psychiatrists and therapists, in cooperating with social workers, might come to be aware of the pitfalls in mental health problems and personality disorders that obstruct effectiveness in life tasks. Attention should be paid in their intervention to teach skills and habits to overcome or manage those pitfalls.

In prevention it is advised to perform pre-selection on life tasks. When private life tasks are functioning at a low level it is not appropriate to participate in a preventive group intervention (See Chapter 6). Instead, individual support is more appropriate.

Preventive training

Literature shows that the effect of these preventive interventions is optimal when they are integrated in the daily work rhythm. In practice it might be more helpful to examine the buffering effect of these interventions and to develop tools and working habits for daily practice, rather than to focus on enhancing a person's resilience to a level that they can handle the impact of their job. It seems to make more sense to accept the high impact of the job (see above) and to give practical preventive support to protect against mental health complaints and improve effectiveness in private life.

We suggest that a preventive training should be preceded by a selection procedure, and that only healthy participants in the early stages of their career are selected. We think that rescue workers with more career years and experience of more critical incidents would have more benefit from more intensive preventive training combined with a mix of group and individual training.

Literature on the topic of preventive training shows that a longer training period (several months), focus on cognitive-behavior tools, and a combination of group and individual sessions provide a better and enduring result (Arnetz, Nevedal, Lumley, Backman & Lublin, 2013; Christopher et al., 2016; Robertson et al., 2015; Shochet et al., 2015). In our cooperation with actual departments and organizations involved with rescue work, we have learned that the approach as recommended by Robertson et al. (2015) is generally

too costly and time-consuming (involving several individual and group trainings). It puts too much pressure on the workflow process of individual rescue workers, as well as their teams and planning. We urgently advise HR-managers, education policymakers, and other people involved in the training of rescue workers to integrate these types of trainings in and after basic training. Training should be integrated in daily work rituals and education on an ongoing, permanent basis. Additionally, the psychological tools must be integrated more in job-technical training and daily work functioning of professional and group. Practical tools such as the recognition of stress signals and how to take the necessary action, time to recover and moments of self and group reflection and support can be embedded in the daily work rhythm. Recent examples of integrating preventive, buffering actions in daily work are, planning recovery time after a for the person high demanding critical incident (Halpern, Maunder, Schwartz & Gurevich, 2014), which is shown to prevent the development of depressive symptoms. Furthermore, TRiM (trauma risk management; an early supportive interview incorporating psychological risk management, which is followed by watchful waiting by collegues, seniors and advised to seek professional mental health if mental health problems worsen) was orginally developed in military service. A study of policeman (Hunt et al., 2013) show that TRIM is helpful in early assessment of police officers at risk and a timely support for police officers with high trauma exposure. Having a dedicated team leader or senior team member responsible for daily action on these subjects is helpful. In this way a team can work as one to maintain mental health in an intensive job.

In preventive training, such practical tools for self-management and self-care should be taught that can find a place within the daily rhythm of work and private life: time to recover, time for reflection, sources of energy and social support. Rescue workers and their organizations should be aware that a typical pitfall of the job is that sources of private life are consumed in order to be able to handle the high demands of work (see Chapter 5). In regular training before starting the job, recruits can be taught to function “environmentally directed” in unsafe situations and subsequently to switch over to “self-management” in safe work situations and private life. The continual environmentally driven habits and high awareness of signals in the environment (in work and private life) in particular make it

difficult to find relaxation and resources and will cause the process of erosion to continue. In training recruits, paying attention to self-management in safety as well as in the daily course of work, can prevent mental health problems (see Chapter 2 and 4).

Psychological help

In the past years, psychological help for rescue workers focused mostly on personality and mental health disorders. In many cases the context of the work and the private life of rescue workers was largely neglected. This study shows that the eroding effect and loss of personal power on both the internal (mental health complaints, loss of effectiveness in maintaining mental health, giving meaning, positivity) and external level (effectiveness in household and finance) is highly relevant in the case of rescue workers.

Teaching effectiveness in private life tasks should have a place within the context of psychological and therapeutic intervention. It allows the client influence and control over his or her personal life and strengthens the pillars of mental health. Within the practice of therapeutic treatment, life tasks should not be regarded as an exclusive domain for social workers. Psychologists, psychiatrists and therapists, in cooperating with social workers, might come to be aware of the pitfalls in mental health problems and personality disorders that obstruct effectiveness in life tasks. Attention should be paid in intervention to teach skills and habits to overcome or manage those pitfalls.

Rescue work professionals and organizations should be aware that a typical pitfall of the job is that sources of private life are consumed in order to be able to handle the high demands at work (see Chapter 5). In regular training before starting the job, recruits can be taught to function, “environmentally directed” in unsafe situations and subsequently to switch over to “self-management” in safe work situations and private life. The continual environmentally driven habits and high awareness of signals in the environment (in work and private life) in particular make it difficult to find relaxation and resources and will cause the process of erosion to continue. In training recruits, paying attention to self-management in safety as well as in the daily course of work, can prevent mental health problems (see Chapter 2 and 4).

In his overview and guidelines for treatment and support of traumatized individuals, Van der Kolk (2015) stresses the importance of psychological training for veterans in their everyday lives. Functioning in civil life requires a type of self-management different from that needed in stressful and dangerous situations. Rescue workers should be trained to handle these different demands in order to prevent negative spillover from professional to private life tasks. When treating mental health problems such as post-traumatic stress disorder (PTSD), depression and anxiety, recovery of effectiveness in life tasks may contribute to improved mental health. It is a life task to maintain these key resources and take care of them, even when professional life puts the rescue worker under pressure. When these tasks are neglected, they can no longer function as a resource (Chen, Westman and Hobfoll, 2015). Individuals who function well in life tasks feel energized and fulfilled, even in high-risk jobs. Sacrificing effectiveness in private life and losing resources is too high a price to pay for rescue work.

Finally

The motivation for this research lies in years of psychological support to rescue workers and their families. I am affected by their dedication to health, safety and order.

I hope that the outcomes and suggestions given here will contribute to limit the price they pay with their personal and private life. I also hope that a more hands-on mentality in practical preventive actions will develop, with more attention to recovery time, support, respect, and compliments, among organizations as well as citizens. Backing support makes it possible to carry the load of a heavy job, lack of it makes it even heavier.

This research is like putting certain aspects of rescue work under the microscope. It is difficult for scientific work to take all aspects of its subject into full account. More in-depth interviews would probably do more justice to rescue workers and their families. However, since we live in a time where numbers count and qualitive information is valued less, I decided to focus on quantitative research. It should be kept in mind, though, that these numbers tell the stories of rescue workers and their families. Please listen to their stories and give them your support — after all, we need rescue workers for health, safety and order in society.

References

Adler, F. (1956). The value concept in sociology. *American Journal of Sociology, 62*(3), 272- 279.

Alexander, D. A. & Klein, S. (2001). Ambulance personnel and critical incidents: Impact of accident and emergency work on mental health and emotional well-being. *The British Journal of Psychiatry, 178,* 76-81.

Alexander, D. A., Klein, S., & Bowes, L. B. (2000). The long-term effects of serial exposure to critical incidents' among paramedics. In Third World Conference for the International Society for Traumatic Stress Studies.

Alexander, D. A., & Wells, A. (1991). Reactions of police officers to body-handling after a major disaster a before-and-after comparison. *The British Journal of Psychiatry*, *159*(4), 547-555.

Anderson, J., Wade, M., Possemato, K., & Quitmette, P. (2010). Association between posttraumatic stress disorder and primary care provider-diagnosed disease among Iraq and Afghanistan veterans. *Psychosomatic Medicine, 72*(5), 498-504.

Argentero, P., & Setti, I. (2011). Engagement and vicarious traumatization in rescue workers. *International Archives of Occupational and Environmental Health*, *84*(1), 67-75.

Arnetz B. B., Nevedal D. C., Lumley M. A., Backman L., Lublin A., (2009) Trauma resilience training for police: Psychophysiological and performance effects. *Journal of Police and Criminal Psychology 24*:1-9. DOI 10.1007/s11896-008-9030-y

Asmundson, G. J. G. & Stapleton, J. (2008). Associations between dimensions of anxiety sensitivity and PTSD symptom clusters in active-duty police officers. *Cognitive Behaviour Therapy, 37*, 66–75. doi:10.1080/16506070801969005.

Austin-Ketch, T. L., Violanti, J., Fekedulegn, D., Andrew, M. E., Burchfield, C. M. & Hartley, T. A. (2012). Addictions and the criminal justice system, what happens on the other side? Post-traumatic stress symptoms and cortisol measures in a police cohort. *Journal of Addictions Nursing*, *23*(1), 22-29.

Bakker, A. H. M., Gaillard, A. W. K., Veldhoven, M. J. P. M., van & Hertogs, R. (2015). The impact of critical Incidents on Mental Health: An Exploratory Pilot Study into the Moderating

Effects of Social Support on the Impact of Adverse Events in Dutch Rescue Workers. Policing, doi: 10.1093/police/pav038

Bakker, A. B. & Heuven, E. (2006). Emotional dissonance, burnout, and in-role performance among nurses and police officers. *International Journal of Stress Management, 13*(4), 423-440.

Bandura, A. (2002). Social cognitive theory in cultural context. *Applied psychology*, *51*(2), 269-290.Carlier, I.V.E., Voerman, A.E. & Gersons, B.P.R. (2000). The influence of occupational debriefing on post-traumatic stress symptomatology in traumatized police officers. *British Journal of Medical Psychology, 73*, 87–98.

Bandura, A. (2012). Going global with social cognitive theory: From prospect to paydirt. In *Applied Psychology* (pp. 65-92). Psychology Press.

Boer, J. de, Lok, A., Verlaat, E. van 't, Duivenvoorden, H.J., Bakker, A.B. & Smit B.J. (2011). Work-related critical incidents in hospital-based health care providers and the risk of post-traumatic stress symptoms, anxiety and depression: A meta-analysis. *Social Science & Medicine, 73,* 316-326.

Braathen, T. N., Veiersted, K. B., & Heggenes, J. (2007). Improved work ability and return towork following vocational multidisciplinary rehabilitation of subjects on long-term sick leave. *Journal of Rehabilitation Medicine*, *39*(6), 493-499.

Brummelhuis, ten, L. L. & Bakker, A. B. (2012). A resource perspective on the work–home interface: The work–home resources model. *American Psychologist, 67*(7), 545.

Burckhardt, C. S., Anderson, K. L. (2003). The quality of life scale (QOLS): Reliability, Validity and Utilization. *Health and Quality of Life Outcomes.* BioMedCentral.

Carlier, I. V. E., Voerman, A. E. & Gersons, B. P. R. (2000). The influence of occupational debriefing on post-traumatic stress symptomatology in traumatized police officers. *British Journal of Medical Psychology, 73*, 87–98.

Carlier I. V. E., Lamberts R. D., Gersons B. P. R. (1997) Risk factors for posttraumatic stress symptomatology in police officers: a prospective analysis. *Journal of Nervous and Mental Diseases. Vol. 185* Issue 8. Pg. 498-506

Cantor, N., Norem, J., Langston, C., Zirkel, S., Fleeson, W., & Cook-Flannagan, C. (1991). Life tasks and daily life experience. *Journal of Personality*, *59*(3), 425-451.

Cantor, N., Norem, J. K., Niedenthal, P. M., Langston, C. A., & Brower, A. M. (1987). Life tasks, self-concept ideals, and cognitive strategies in a life transition. *Journal of Personality and Social Psychology, 53*(6), 1178-1191. doi:10.1037/0022-3514.53.6.1178

Castro, C. C. (2009). Impact of combat on the mental health and well-being of soldiers and Marines. *Smith College Studies in Social Work*, *79(3-4)*, 247-262.

Carr, W., Bradley, D., Ogle, A. D., Eonta, S. E., Pyle, B. L., & Santiago, P. (2013). Resilience training in a population of deployed personnel. *Military Psychology*, *25*(2), 148. Doi: 10.1037/h0094956

Chen, S., Westman, M. & Hobfoll, S.E. (2015). The commerce and crossover of resources: Resource conservation in the service of resilience. *Stress Health, 31*(2), 95-105.

Christopher, M. S., Goerling, R. J., Rogers, B. S., Hunsinger, M., Baron, G., Bergman, A. L., & Zava, D. T. (2016). A pilot study evaluating the effectiveness of a mindfulness-based intervention on cortisol awakening response and health outcomes among law enforcement officers. *Journal of Police and Criminal Psychology, 31*(1), 15-28. Doi: 10.1007/s11896-015-9161-x

Cigrang, J. A., Todd, S. L., & Carbone, E. G. (2000). Stress management training for military trainees returned to duty after a mental health evaluation: effect on graduation rates. *Journal of Occupational Health Psychology, 5*(1), 48. Doi: 10.1037/1076-8998.5.1.48

Davey, J. D., Obst, P. L. & Sheehan, M. C. (2000). Developing a profile of alcohol consumptionpatterns of police officers in a large scale sample of an Australian police service. *European Addiction Research*, *6*(4), 205-212.

Davidson, A. C., Berah, E., & Moss, S. (2006). The relationship between the adjustment of Australian police officers and their partners. *Psychiatry, Psychology and Law*, *13*(1), 41-48.

Dekkers-Sanchez, P. M., Wind, H., Sluiter J.K., Frings-Dresen, M.H.W. A qualitative study of perpetuating factors for long-term sick leave and promoting factors for return to work: chronic work disabled patient in their own words. *Journal of Rehabilitation Medicine*. Vol 42. Number 6.

Demerouti, E., Bakker, A. B., & Bulters, A. J. (2004). The loss spiral of work pressure, work–home interference and exhaustion: Reciprocal relations in a three-wave study. *Journal of Vocational Behavior*, *64*(1), 131-149.

Demerouti, E., Bakker, A.B., Geurts, S.A.E. & Toon, W.T. (2009). Daily recovery from work-related effort during non-work time. *Occupational Stress and Well-being. 7,* 85-123.

De Clercq, F., Deheegher, J. & Van Hoorde, H. (2011). Frequency of and subjective response to critical incidents in the prediction of PTSD in Emergency Personnel. *Journal of Traumatic* Stress, *24* (1), 133–136.

Elbogen, E. B., Johnson, S. C., Wagner, H. R., Newton, V. M. & Beckham, J. C. (2012). Financial well-being and post-deployment adjustment among Iraq and Afghanistan war veterans. *Military Medicine, 177*(6), 669–675.

Eurelings-Bontekoe, E. H. M., & Snellen, W. M. (2003). *Dynamische persoonlijkheidsdiagnostiek*. Swets Zeitlinger: Lisse.

Eurelings-Bontekoe, E. H. M., Onnink, A. Williams M. M., Snellen W. M. (2008), A new approach to the assessment of structural personality pathology: Theory-driven profile interpretation of the Dutch Short Form of the MMPI. *New ideas in Psychology, (26):* 23-40.

Eurelings- Bontekoe, E., Luyten, P., IJssennagger, M., van Vreeswijk, M., Koelen, J., (2010). Relations between personality organisation and Young's cognitive model of personality pathology. *Personality and Individual Differences, (49)*: 198-203.

Eurelings-Bontekoe E. H. M., Luyten P., Remijsen M., Koelen J., (2010a). *The relationship between personality Organiszation as Asessed by Theory-Driven Profiles of the Dutch Short Form of the MMPI and Self-Reported Features of Personality Organization.* Journal of Personality Assessment.

Eurelings-Bontekoe, E., Luyten, P., Remijsen, M., & Koelen, J. (2010b). The relationship between personality organization as assessed by theory-driven profiles of the Dutch Short Form of the MMPI and self-reported features of personality organization. *Journal of Personality Assessment (92)*, 1-11.

Eurelings- Bontekoe, E., Onnink, A., Williams, M. & Snellen, W. (2009). Validation of a theory-driven profile interpretation of the Dutch Short Form of the MMPI using the TAT social cognitions and object relations scale (SCORS). *Journal of Personality Assessment, (91)*: 155-165.

Flanagan, J. C. (1978). A research approach to improving our quality of life. *American Psychologist*, *33*(2), 138.

Fredrickson, B.L. (2009). *Positivity*. New York: Crown.

Green, B. (2004). Post-traumatic stress disorder in UK police officers. *Current medical research and opinion*, *20*(1), 101-105.

Goodson, J., Helstrom, A., Halpern, J. M., Ferenschak, M. P., Gillihan, S. J. & Powers, M. B. (2011). Treatment of posttraumatic stress disorder in U.S. combat veterans: A meta-analytic review. *Psychological Reports, 109*, 573–599. http://dx.doi.org/10.2466/02.09.15.16.PR0.109.5.573-599.

Halpern, J., Maunder, R. G., Schwartz, B., & Gurevich, M. (2014). Downtime after critical incidents in emergency medical technicians/paramedics. *BioMed Research International*, *2014*.

Harper, A., Power, M., Orley, J., Herrman, H., Schofield, H., Murphy, B.,... Sartorius, N. (1998). Development of the world health organization WHOQOL-BREF quality of life assessment. *Psychological Medicine, 28*(3), 551-558. doi:10.1017/S0033291798006667

Hobfoll, S. E. (2002). Social and psychological resources and adaptation. *Review of General Psychology, 6*, 307-324.

Hunt, E., Jones, N., Hastings, V., & Greenberg, N. (2013). TRiM: An organizational response to traumatic events in Cumbria Constabulary. *Occupational Medicine*, *63*(8), 549-555.

Janssens, K. M., van der Velden, P. G., Taris, R., & van Veldhoven, M. J. (2018). Resilience among police officers: A critical systematic review of used concepts, measures, and predictive values of resilience. *Journal of Police and Criminal Psychology*, 1-17.

Klink van der, J. J. Blonk R. W., Schene A. H., Dijk van F. J. The benefits of interventions for work-related stress. *American Journal of Public Health,* feb, 91(2):270-276 PMID: 11211637

Kleber, R. J. (2007). *Weg van het trauma* (proefschrift, Stichting KTP).

Kleber, R. J. (2008). Psychopathologie na rampen: algemene karakteristieken en kritischekanttekeningen. *Psychologie en Gezondheid*, *36*(3), 117-123.

Kolk, B. vd (2015) *The body keeps the score. Mind, brain and body in the transformation of trauma*. Penquin Books Ltd sept.

Leemput I. A. van de, Wichers M., Cramers A. D. J. Scheffer M. Critical slowing down as early warning of the onset and termination of depression. PNAS University of Wilconsin-Madison nov. 11. 2013

Maguen, S., Metzler, T. J., McCaslin, S. E., Inslicht, S. S., Henn-Haase, C., Neylan, T. C., & Marmar, C. R. (2009). Routine work environment stress and PTSD symptoms in police officers. *The Journal of Nervous and Mental Disease*, *197*(10), 754.

Maia, D. B., Marmar, C. R., Metzler, T., Nobrega, A., Berger, W. & Mendlowics, M. V. (2007). Post-traumatic stress symptoms in an elite unit of Brazilian police officers: Prevalence and impact on psychosocial functioning and on physical and mental health. *Journal of Affective Disorders,* 97, 241–245.

Maslow, A. H. (1971). *The farther reaches of human nature*. Arkana/Penguin Books.

McFarlane, A. C. (1988) Relationship between psychiatric impairment and a natural disaster: the role of distress. *Psychological Medicine,* 18, 129-139.

Meegan S. P., Berg C. A. (2001). Whose life task is it anyway? Social appraisal and life task pursuit. *Journal of Personality 69:3*.

Menard, K. S. & Arter M. L. (2013). Police Officer Alcohol Use and Trauma Symptoms: Associations With Critical Incidents, Coping, and Social Stressors. *International Journal of Stress Management*. *20*(1), 37-56.

Merkus, S. L., Holte K. A., Huysmans M. A., Ven vd P. M. (2015). Self-reported recovery from 2-week 12-hour shift work scheduels: a 14-day follow-up. *Journal of Safety and Health at Work* july.

Milczarek, M., Hanke, A., Georgiadou, P., Pinotsi, D., Kallio, H., Lusa, S.,... Nicolescu, G.I. (2011). Emergency Services: A Literature Review on Occupational Safety and Health Risks. *European Agency for Safety and Health at Work*. 1–80.

Monnier, J., Cameron, R. P., Hobfoll, S. E. & Gribble, J. R. (2002). The impact of resource loss and critical incidents on psychological functioning in fire-emergency workers: A pilot study. *International Journal of Stress Management, 9,* 11–29.

Morren, M., Dirkzwager, A. J., Kessels, F. J., & Yzermans, C. J. (2007). The influence of a disaster on the health of rescue workers: a longitudinal study. *Canadian Medical Association Journal*, *176*(9), 1279-1283.

Naudé, J. L., & Rothmann, S. (2006). Work-related well-being of emergency workers in Gauteng. *South African Journal of Psychology*, *36*(1), 63-81.

Ploeg, E. van der, & Kleber, R. J. (2003). Acute and chronic job stressors among ambulance personnel: predictors of health symptoms. *Occupational and Environmental Medicine*, *60*(1), 140-146.

Ramey, S. L., Perkhounkova, Y., Hein, M., Chung, S., Franke, W. D., & Anderson, A. A. (2016). Building resilience in an urban police department. *Journal of Occupational and Environmental Medicine*, *58*(8), 796-804. Doi: 10.1097/JOM.0000000000000791

Robertson, I. T., Cooper, C. L., Sarkar, M., & Curran, T. (2015). Resilience training in the workplace from 2003 to 2014: A systematic review. *Journal of Occupational and Organizational Psychology*, *88*(3), 533-562. Doi: 10.1111/joop.12120

Schaufeli, W. B., Bakker, A. B., & Van Rhenen, W. (2009). How changes in job demands and resources predict burnout, work engagement, and sickness absenteeism. *Journal of Organizational behavior, 30*(7), 893-917. Doi: 10.1002/job.595.

Scheffer, M., Carpenter S.R., Dakos V., Nes van E.H. Generic indicators of ecological resilience: inferring the chance of a critical transition. *Annual review of Ecology, Evolution and Systematics*. Sept, 21, 2015.

Seligman, M. E., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction (Vol. 55, No. 1, p. 5). American Psychological Association.

Shochet I.M., Shakespeare-Finch J., Craig C., Roos C., Wurfl A., Hoge R., Young R.M., Brough P. (2011). The Development of the promoting resilient officers (PRO) Program. *Traumatology, 17*(4) 43-51.

Smith, E.F. (2017). *The power of meaning: crafting a life that matters*. New York, Crown 2017.

Sterud, T., Hem, E., Lau, B., & Ekeberg, Ø. (2011). A comparison of general and ambulance specific stressors: predictors of job satisfaction and health problems in a nationwide one-year follow-up study of Norwegian ambulance personnel. *Journal of Occupational Medicine and Toxicology*, *6*(1), 10.

Tang, T. L. P. & Hammontree, M. L. (1992). The effects of hardiness, police stress, and life stress on police officers' illness and absenteeism. *Public Personnel Management*, *21*(4), 493-510.

Tedeschi, R. G., & Calhoun, L. G. (1996). The Posttraumatic Growth Inventory: Measuring the positive legacy of trauma. *Journal of Traumatic Stress*, 9(3), 455-471.

Tedeschi, R. G., & Calhoun, L. (2004). Posttraumatic growth: A new perspective on psychotraumatology. *Psychiatric Times*, *21*(4), 58-60.

Tedeschi, R. G., & Calhoun, L. G. (2006). Expert companions: Posttraumatic growth in clinical practice. *Handbook of Posttraumatic Growth: Research and Practice*, 291-310.

Tedeschi, R. G., & McNally, R. J. (2011). Can we facilitate posttraumatic growth in combat veterans?. *American Psychologist*, *66*(1), 19.

Vanhove A. J., Herian M. N., Perez A. L. U., Harms P. D. Lester P. B. (2015) Can resilience be developed at work? A meta-analytic review of resilience-building programme effectiveness. *Journal of Occupational and Organizational Psychology*. DOI: 10.1111/joop.12123

van der Velden, P. G., Rademaker, A. R., Vermetten, E., Portengen, M. A., Yzermans, J. C., & Grievink, L. (2013). Police officers: a high-risk group for the development of mental health disturbances? A cohort study. *BMJ open*, *3*(1).

Violanti, J. M., Andrew, M. E., Burchfiel, C. M., Dorn, J., Hartley, T. & Miller, D. B. (2006). Posttraumatic stress symptoms and subclinical cardiovascular disease in police officers. *International Journal of Stress Management*, *13*(4), 541.

Violanti, J. M., Vena, J. E. & Petralia, S. (1998). Mortality of a police cohort: 1950–1990. *American Journal of Industrial Medicine, 33*(4), 366-373.

Wagnild, G., & Young, H. (1993). Development and psychometric. *Journal of Nursing Measurement*, *1*(2), 165-17847.

Wang, Z., Inslicht, S. S., Metzler, T. J., Henn-Haase, C., McCaslin, S. E., Tong, H., & Marmar, C. R. (2010). A prospective study of predictors of depression symptoms in police. *Psychiatry Research*, *175*(3), 211-216.

Summary

Summary

This thesis aims to assess the impact of rescue work on the mental health and the functioning levels in the private lives of rescue workers. We aspire to inspire further research and the development of preventive diagnostic tools, which could further strengthen the mental health of rescue workers and improve the effective functioning in their private lives.

It presents the theoretical essence of the concept ‘life task’ and a discussion of four practical studies.

‘Life tasks’ are defined as the experienced effectiveness in developing one’s life and their maintenance as ‘pillars of mental health’ (Chapter 2). The concept consists of the following elements: social life; maintaining of mental health; household and finance; giving meaning; positivity. The experienced effectiveness of the life tasks concerns the care and the responsibility to maintain these tasks. If they are being well sustained, they will provide a resource of good mental health and well-being. This requires discipline and pro-active behavior. This thesis describes the development of a Life Task Test, which was found to be a reliable and a valid instrument that consists of the following scales: social life, mental health, household and finance, giving meaning, positivity.

The first study (Chapter 3) examines the impact of accumulated critical incidents and the workload of 67 rescue workers (police officers and medical emergency drivers). Although health problems do not appear to be affected, the accumulation of critical incidents does lead to an increase in the experienced workload. Social support from managers and colleagues does not appear to have any moderating effect.

The second study (Chapter 4) describes the development of a reliable and valid instrument that measures the experienced effectiveness in life tasks. Subjects of this study are police officers, who are absent from work due to their mental health adversities. The following are

noteworthy conclusions: the experienced workload is related to an experienced diminished effectiveness in mental health status and positivity levels; the experienced lack of support from the managers and colleagues is related to an experienced diminished effectiveness in mental health, giving meaning and positivity; Ruminating about work is related to a diminished effectiveness in mental health, giving meaning and positivity. Police officers, who report experiencing more health complaints, feel less effective in positivity and in maintaining their mental health. Personal negativity and somatisation is related to an experienced diminished effectiveness in all life tasks. An exception is negativism. It is unrelated to an experienced diminished effectiveness in the social life.

The third study (Chapter 5) examines the mediating effect of mental health on the effectiveness in life tasks. Predictors are critical incidents and workload. This study was performed among 166 police officers, who are absent from work due to mental health problems. Results confirm the process of erosion. Mental health is undermined by an accumulation of critical incidents and it leads to a deterioration in the functioning levels in the life tasks.

The fourth study (Chapter 6) inspects the effect of a preventive training on the mental condition in a highly demanding professional environment, by means of self-management tools. The research group consisted of 67 rescue workers (police officers and ambulance personnel), who participated in two sessions. No significant improvement could be established. A possible explanation could be that this group consisted of more experienced rescue workers, who may be less susceptible to such training. Additionally, it is possible that a preventive training leads to an increased awareness of healthy stress signals, which could result in lower scores in the experienced levels of improvement. Differential analyses show that the higher the score on critical incidents is, the lower the score will be on giving meaning and positivity. Age was a negative predictor for the life task household and finance and positivity.

Practical recommendations stress the importance of incorporating preventive tools in the daily routines in the professional and the private life of the rescue workers (Chapter 7).

These may comprise of recovery time, sources of energy, appreciation, acquiring more control and influence in work (e.g. work schedules), improving work organization, giving meaning and maintaining positivity (professionally and personally). In practical terms this implies the monitoring of accumulation and arrangement of recovery time (to be initiated by management and/or the rescue worker); setting limits to time served in the front line (3 to 5 years at most for the heaviest duties); limiting irregular work shifts (no more night shifts over the age of 55); discussing with colleagues what one did correctly and what went well. It is recommended that maintaining self-care and self-management are incorporated in the professional training courses, at a time when the professional and private environment is secure and safe. One of the great pitfalls of this type of profession is the fact that actions and behaviors are dictated by dangerous circumstances and then they are transferred to the private life.

In treating psychological problems, it is recommended to integrate the reinforcement of life tasks in the course of treatment. Improving the effectiveness in life tasks contributes to recovery. Additionally, while evaluating a regular list of complaints, one should take the 'underscore' response into consideration, due to the tendency of a strong self-representation among this population. The Life Task Test can transcend this issue and provide more insight into the actual functioning levels of the rescue worker.

Prior to trauma treatment, it is recommended to determine the level of erosion and functioning in life tasks by means of a diagnostic interview and the Life Task Test, since intensive trauma treatment may lead to even more serious disturbance of an already fragile balance.

Nederlandse samenvatting

Nederlandse samenvatting

Het doel van deze promotie is het onderzoeken van de impact van reddingswerk op mentale gezondheid en het functioneren in het priveleven. Verder is het doel het ontwikkelen en onderzoeken van preventieve tools om mentale gezondheid en effectief functioneren in het priveleven te versterken.

In het onderzoek wordt een theoretische onderbouwing gegeven van het begrip levenstaken en worden vier studies behandeld.

Levenstaken worden gedefinieerd als de ervaren effectiviteit in het opbouwen van het leven en het onderhouden van deze pijlers van mentale gezondheid (hoofstuk 2). De levenstaken zijn ervaren effectiviteit in; sociaal leven, onderhouden van mentale gezondheid, huishouden en financien, betekenis geven, positiviteit. De ervaren effectiviteit van levenstaken gaat over het zorgen voor en nemen van verantwoordelijkheid om deze pijlers te onderhouden. Wanneer deze pijlers goed worden onderhouden hebben ze de werking van bronnen van mentale gezondheid en welzijn. Het onderhouden van deze pijlers vraagt discipline en proactief gedrag. In deze promotiestudie wordt de ontwikkeling van een levenstaken test beschreven. Het blijkt een betrouwbaar en valide instrument met de schalen; sociaal leven, mentale gezondheid, huishouden en financien, betekenis geven, positiviteit en hoop.

De eerste studie (hoofdstuk 3), onderzoekt de impact van stapeling van kristische incidenten en werklast van 67 reddingswerkers (politiemensen en huisarts chauffeurs). Het onderzoek laat geen significant effect zien voor meer gezondheidsklachten. Echter bij stapeling van kritische incidenten is er wel sprake van een hoger ervaren werkdruk. Er werd geen moderend effect gevonden van sociale steun door leidinggevenden en collega's.

In studie 2 (hoofdstuk 4) wordt een betrouwbaar en valide meetinstrument ontwikkeld over de ervaren effectiviteit in levenstaken. Deze studie wordt uitgevoerd bij agenten welke met psychische klachten zijn uitgevallen in het werk. De volgende bevindingen zijn het waard te vermelden; ervaren werklast hangt samen met minder ervaren effectiviteit in het onderhouden van de mental gezondheid en positief blijven. Het ervaren van weinig steun van leidinggevenden en collega's hangt samen met minder ervaren effectiviteit in mentale gezondheid en positief blijven. Piekeren over het werk hangt samen met afgenomen effectiviteit in de levenstaken, mentale gezondheid, betekenis geven, positief blijven. Politiemensen die meer gezondheidsklachten ervaren voelen zich minder effectief in positief blijven en minder effectief in het onderhouden van de mentale gezondheid. Persoonlijk negativisme en somatisatie hangt samen met een minder ervaren effectiviteit op alle levenstaken. Een uitzondering is dat negativisme niet samenhangt met een verminderde ervaren effectiviteit op sociaal leven.

Studie 3 (hoofdstuk 5) onderzoekt het medierende effect van mentale gezondheid op de effectiviteit in levenstaken. De predictors zijn kritische incidenten en werklast. Het onderzoek wordt gedaan bij 166 agenten welke vanwege psychische klachten verzuimen in het werk. Het onderzoek bevestigd het proces van erosie, de mentale gezondheid wordt uitgehold door stapeling van kritische incidenten en verslechterd het functioneren in levenstaken. Het mediatie model van werklast blijkt niet significant.

Studie 4 (hoofdstuk 6) onderzoekt het effect van een preventieve training, mentale conditie in veeleisend werk met zelf-management tools. De onderzoeksgroep betreft 67 reddingswerkers bestaande uit ambulance en politiemensen. De training bestaat uit twee dagdelen. Er worden geen significante effecten gevonden van verbetering. Een verklaring kan zijn dat het een oudere groep reddingswerkers betreft, waarbij een preventieve training mogelijk minder effect heeft. Daarnaast kan een preventieve training reddingswerkers bewuster maken van gezonde stress signalen, welke kunnen leiden tot lagere scores in ervaren verbetering. Differentiele analyses laten zien dat hoe hoger de score op kritische incidenten, hoe lager de score op de levenstaak betekenis geven en positief blijven. Leeftijd was een negatieve voorspeller voor de levenstaak huishouden en financien en positief blijven.

In de aanbevelingen voor de praktijk (hoofdstuk 7) wordt het belang benadrukt van het opnemen van preventieve tools in het dagelijkse werk- en priveritme. Voorbeelden zijn: hersteltijd, energiebronnen, steun, waardering, versterken van controle en invloed op het werk (zoals roosters), een goede werkorganisatie, betekenis geven/hoopvol blijven (zowel in leiderschap als persoonlijk). Enkele praktische acties zijn: bijhouden van stapeling van kritische incidenten en op initiatief van betrokkene en/of leidinggevende hersteltijd afspreken, grenzen aan lengte in de frontlinies (zware frontlinie functies tot maximal 3-5 jaar), grenzen aan jaren in onregelmatige diensten (vanaf 55 jaar nachtdienstontheffing), in collegiaal en teamgesprek benoemen wat men wel heeft kunnen betekenen en wel heeft goed gedaan. Het wordt aangeraden tijdens de opleiding te trainen in het behouden van zelfzorg en zelfmanagement op het moment dat er veiligheid is in de werk- en privesituatie. Een grote valkuil van het beroep is dat omgevingsgestuurd handelen wat nodig is in onveiligheid, wordt doorgezet in het persoonlijke en priveleven.

Wanneer het gaat om behandeling van psychische problematiek wordt aanbevolen het versterken van functioneren in levenstaken op te nemen als onderdeel van de behandeling. Het versterken van effectiviteit in levenstaken draagt bij aan herstel. Verder moet op gewone klachtenlijsten rekening gehouden worden met een "underscore" respons, vanwege een sterke zelfpresentatie. De levenstakentest geeft daarom meer inzicht in het daadwerkelijke functioneren.

Aanbevolen voorafgaand aan traumabehandeling de mate van erosie en functioneren in levenstaken te onderzoeken met een diagnostisch interview en de levenstaken test. In situaties van erosie en verminderd functioneren in levenstaken, kan het wankele evenwicht door intensieve traumabehandeling nog verder ondermijnt worden.

Met dank aan

Met dank aan

Dit onderzoek is mede tot stand gekomen door veel reddingswerkers en hun partners in de praktijk. Het is onmogelijk al hun namen te noemen, maar veel dank voor jullie betrokkenheid en meedenken. Het is jullie inzet voor orde, gezondheid en veiligheid, wat me steeds aanspoorde met het onderzoek door te gaan. Wens dat dit onderzoek jullie ervaringen weergeeft en houvast geeft voor preventie van gezondheid en privéleven in de praktijk.

Daarnaast hebben veel professionals meegedacht die betrokken zijn bij het welzijn van reddingswerkers en hun gezinnen. In het bijzonder de collega's van team Balans & Impuls. Veel dank voor jullie aanmoedigingen, support en kritisch meedenken.

In het bijzonder wil ik noemen de conferentie en hun leden van de World Veteran Federation te Montenegro. Zij hebben laten zien dat je leed kan overstijgen en ondanks alles kan samenwerken.

Tijdens het onderzoek waren vaste assistenten Margot Feenstra en Remy Hertogs. Mijn dank is groot voor jullie meedenken en doorzettingsvermogen.

Verder gaat mijn dank uit naar Marc Veldhoven en Tony Gaillard voor het begeleiden van het promotie onderzoek.

Voor de Engelse redactie is mijn dank aan Cees Coenen en Paul van der Woerd.

De volgende organisaties werkten mee aan het onderzoek:

- Nationale Politie
- Dutch Medical Group
- Witte Kruis

- Kustwacht Den Helder
- Jacobs Engineering/Worley

Veel dank voor jullie bijdrage, stimulans en meedenken. Ik wens toe dat het onderzoek houvast geeft om in een veeleisende werkomgeving gezondheid en privéleven te behouden van jullie zelf en jullie medewerkers.

Veiligheid, orde en gezondheid is een groot goed, maar de inzet hiervoor mag niet ten kostte gaan van de reddingswerker, hun gezin en priveleven.

Tot slot dank voor de steun en aanmoeding van mijn gezin en vrienden.

Curriculum Vitae

Curriculum Vitae

Personalia:

Naam	Bakker
Voornamen	Alice Heilwine Marieke (Heilwine)
Geb. plaats	Santpoort (gemeente Velsen)
Burg.st.	Gehuwd. Moeder van twee zonen en een dochter.
Registratie	Nederlands Instituut van Psychologen
Geregistreerd	A&O psycholoog
BIG geregistreerd	GGZ psycholoog nr 8905146325

Opleidingen:

- HAVO diploma behaalt in 1985 te Amersfoort
- Propaedeuse aan de Sociale Academie te Zwolle in 1986
- Doctoraal examen psychologie aan de Rijksuniversiteit Utrecht in aug. 1992 Studierichting “psychosociale depressiviteit en victimologie”, vakken op het gebied van de klinische psychologie.
- Cursus projectmanagement aan de RINO Utrecht in november 1996
- Basiscursus hypnotherapie aan de NvvH Utrecht in oktober 1995
- School voor Psychodrama opleiding 1996 t/m 1998.
- Diverse vakgerichte opleidingen in structurele diagnostiek, EMDR, interventies.

Werkervaring binnen de hulpverlening:

- Stage gelopen bij de RIAGG Stad Utrecht op de afdeling volwassenzorg, gedurende de periode van september 1990 tot juni 1991 vier dagen per week. Ervaring opgedaan met intake, individuele- en relatietherapie, assertiviteitstraining in groepsverband en testdiagnostiek. Onder supervisie van een gedragstherapeut in grote mate zelfstandig aan deze taken gewerkt.
- Werkzaam geweest in een aanloopcentrum voor harddruggebruikers van St. de Regenboog (een interkerkelijk instelling voor verslavingszorg) te Amsterdam van september t/m november 1992 en werkzaam geweest als groepsbegeleider van een buddygroep van november 1992 t/m november 1995.
- Vanaf november 1992 tot en met augustus 1994 gewerkt als projectcoördinator/case-manager op het project Kinderen (0-18jaar) van Verslaafde Ouders (KVO-project). Het takenpakket bevatte o.a.: case-management van de hulp rond ouders en kinderen, intake, registratie, netwerkontwikkeling, schrijven van projectplan en jaarverslagen, deskundigheidsbevordering en consultatie.
- Part-time werkzaam als psycholoog op de polikliniek van het Psychiatrisch Ziekenhuis te Bosch en Duin van mei 1994 t/m juni 1996. Werkzaamheden waren assertiviteitstrainingen geven in groepsverband, individuele- en relatietherapie.
- Van november 1994 t/m april 1995 werkzaam geweest als part-time docent verslavingsproblematiek aan de Hogeschool te Zwolle.
- Van mei 1995 t/m februari 1996 gewerkt op de afdeling psychologie van het Westeindeziekenhuis te Den Haag. Werkzaamheden waren, intake, psychodiagnostiek, behandeling van kinderen en volwassenen met zowel lichamelijke als psychische problematiek. Vanaf mei 1995 werkzaam als gastdocent aan de specialistische verpleegkundige opleiding t.b.v. aantekening obstetrische en gyneacologische verpleging van de Haagse ziekenhuizen en regio.
- Bij Stichting de Regenboog vanaf mei 1996 – oktober 1997 werkzaam geweest als projectverantwoordelijke voor het preventieproject “Kick en Kerk”. Taken waren het ontwikkelen van cursus- en voorlichtingsactiviteiten voor ouders en jeugdwerkers in kerken op het gebied van middelengebruik en gokken onder jongeren.
- Vanaf februari 1997 gestart met een eigen bureau “Balans & Impuls”, gericht op versterken medewerkers en werkgevers om mentaal effectief en gezond te functioneren in veel eisend werk. Uitgegroeid tot een landelijke onderneming.
- Publicaties: Hoe mensen werken, een praktijkgids voor leidinggevenden Kluwer 2007
- i.s.m. Prof. Dr. E.H.M. Eurelings-Bontekoe en Prof. Dr. A.W.K. Gaillard (nominatie beste HRM boek van het jaar).
- Jezelf besturen, zelfsturing naar je persoonlijke gebruiksaanwijzing Tatra Media 2007
- Weerbaarheid voor reddingswerkers, uitgave SDU 2007
- Diverse publicaties in vaktijdschriften zie www.balans-en-impuls.nl
- Een van de initiatiefnemers voor maatschappelijke erkenning en waardering voor reddingswerkers. O.a. in samenwerking met SIRE campagne “handen af”. De tweede carrière markt om reddingswerkers welke om medische redenen niet meer werkzaam kunnen zijn binnen hun beroep een nieuwe toekomst te bieden.
- Verder betrokken bij de World Veteran Federation sinds 2013, Psychosociale hulpverlening Veteranen.
- Internationale presentatie in Montenegro op congres van de World Veteran Federation 2013.
- Promotieonderzoek Weerbaarheid voor reddingswerkers start in 2012, Universiteit Tilburg. Promotoren zijn; Prof. Dr.A.W.K. Gaillard, Prof. Dr. M.P.J.M. van Veldhoven
- Voorzitter International Stress Management Association (vanaf 2018)

Nederlandstalige publicaties

Nederlandstalige publicaties

Bakker, A. H. M. (2007). *Weerbaarheid voor reddingswerkers. Voor professionals die zich inzetten voor orde, gezondheid en veiligheid*. Den Haag, SDU Uitgevers B.V.

Bakker, A. H. M. (2007, may). Praktische handvatten voor reddingswerkers en hun leidinggevenden. *Alert, 5*, 28 - 29. Retrieved from http://www.civh.nl/uploads/media/78_ALERT_-_reddingswerkers.pdf

Bakker, A. H. M. (2007). Ziekteverzuim door psychische klachten: begeleiding op basis van de persoonlijke gebruiksaanwijzing. *Tijdschrift voor Bedrijfs- en Verzekeringsgeneeskunde, 5*, 211 – 215.

Bakker, A. H. M., Eurelings-Bontekoe, E.H.M. & Gaillard, A.W.K. (2007). *Hoe mensen werken. Een praktijkboek voor leidinggevenden*. Alphen aan den Rijn: Wolters Kluwer Nederland B.V.

Bakker, A. H. M. (2009). *Jezelf besturen. Zelfsturing naar je persoonlijke gebruiksaanwijzing*. Uitgave: Tatra Media

Bakker, A. H. M. (2010). Whitepaper 'Gelukkig en toch ontevreden'. *Gids online*. Uitgave Kluwer

Bakker, A. H. M. & Gaillard, A.W.K. (2010). Aandacht voor levenstaken draagt bij aan preventie en interventie bij reddingswerkers. *Tijdschrift voor Bedrijfs- en Verzekeringsgeneeskunde, (25) 2*, 64 - 65.

Verstegen, M., Lanser, J. & Bakker, A. H. M. (2010). Herkennen en hanteren van hersenschadein de werksituatie. *Tijdschrift voor Bedrijfs- enVerzekeringsgeneeskunde,* 5, 18.

Bakker, A. H. M. (2011). Weerbaarheid in hoog-risico beroepen. *Kwartaalblad voor Recht, Bestuur en organisatie van Hulpdiensten*. Nr. 4. Pg. 147-155

Bakker, A. H. M. (2013). De impact van een loopbaan als reddingswerker. De betekenis van bedrijfsartsen om scheefgroei te voorkomen en bij te sturen. *Tijdschrift voor Bedrijfs- en Verzekeringsgeneeskunde,* (21) 7, 319 - 322.