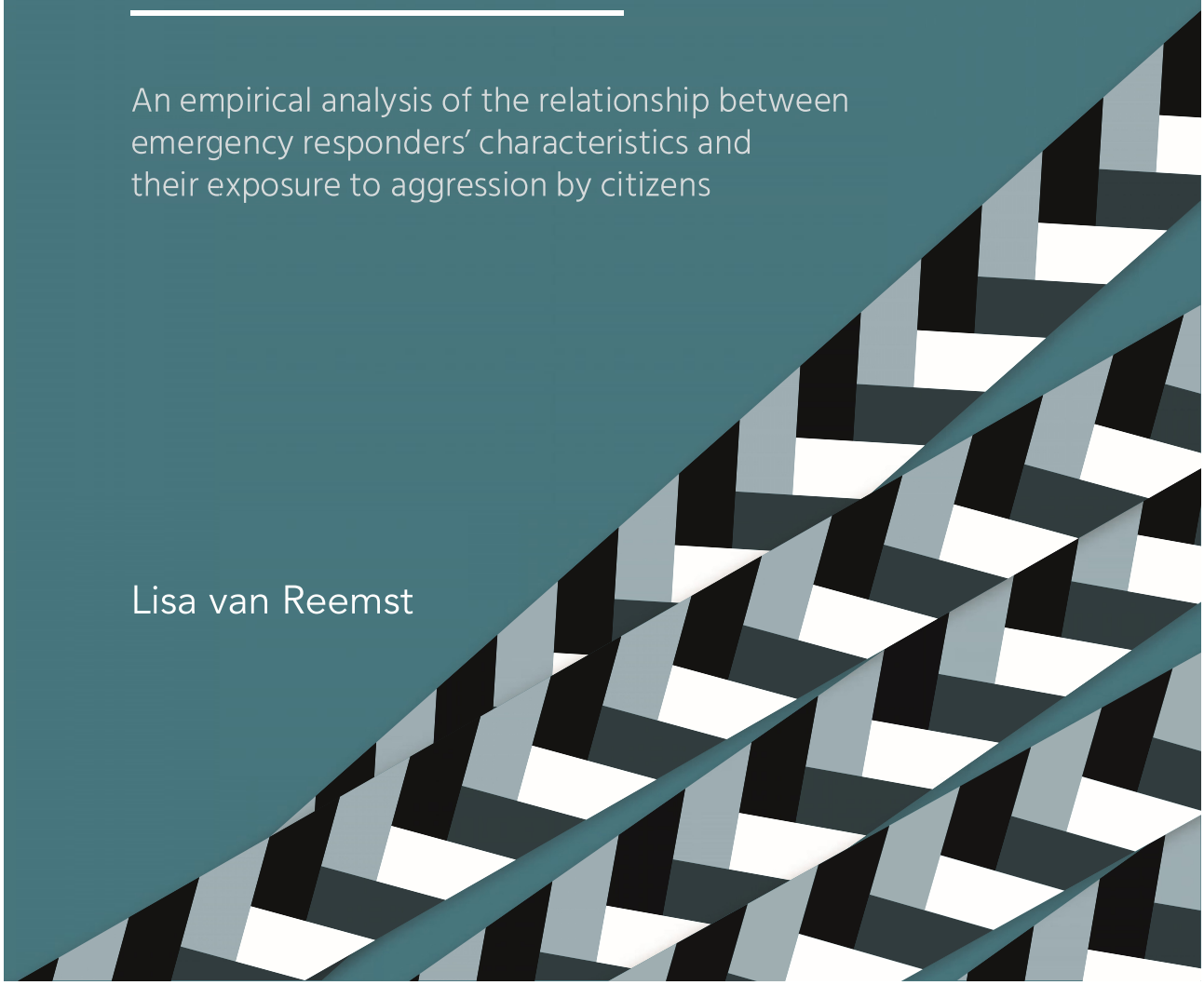
Emergency responders at risk

An empirical analysis of the relationship between emergency responders' characteristics and their exposure to aggression by citizens

Lisa van Reemst



Emergency Responders at Risk

An empirical analysis of the relationship between emergency responders' characteristics and their exposure to aggression by citizens

Lisa van Reemst

Emergency Responders at Risk
ISBN: 978-94-6375-780-5

Cover design by	Erwin Vos
Layout and design by	Birgit Vredenburg | www.persoonlijkproefschrift.nl
Printed by	Ridderprint BV | www.ridderprint.nl

In this book, a striping pattern has been used as decoration to indicate the topic of the thesis. We intentionally deviated from the official striping used by organisations.

Emergency Responders at Risk

An empirical analysis of the relationship between emergency responders' characteristics and their exposure to aggression by citizens

Hulpverleners in gevaar
Een empirische analyse van de relatie tussen kenmerken van hulpverleners en hun blootstelling aan agressie door burgers

Proefschrift

ter verkrijging van de graad van doctor aan de
Erasmus Universiteit Rotterdam
op gezag van de rector magnificus

Prof. dr. R.C.M.E. Engels

en volgens besluit van het College voor Promoties.
De openbare verdediging zal plaatsvinden op

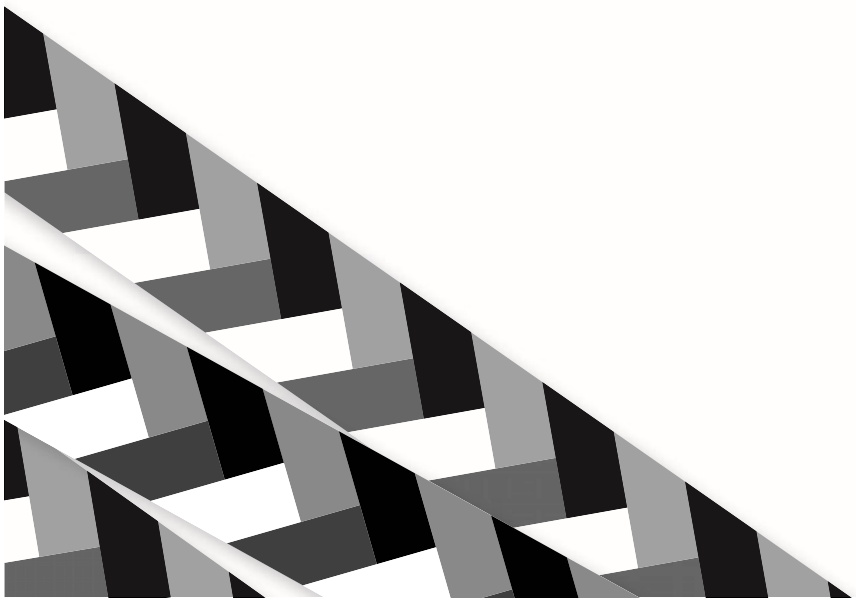
donderdag 5 maart 2020 om 15.30 uur

Lisa van Reemst
geboren te Utrecht

Erasmus University Rotterdam

Promotoren:	Prof. dr. Frank Weerman
	Prof. dr. Henk van de Bunt
Copromotor:	Dr. Tamar Fischer
Overige leden:	Prof. dr. Peter Mascini
	Prof. dr. Kees van den Bos
	Dr. Jaap Timmer

Table of Contents



CHAPTER 1

Introduction

This chapter is an adaptation and extension of the following publication:
Van Reemst, L. (2016). A theoretical framework to study variations in workplace violence experienced by emergency responders: Integrating opportunity and vulnerability perspectives. *Erasmus Law Review, 3,* 135-145. doi: 10.5553/ELR.000058.

Introduction

Emergency medical workers, firefighters and police officers (together: 'emergency responders') are important for the safety of society. They reduce the risk of crimes, deaths and diseases. They are not only tasked with monitoring compliance with regulations, but also with providing assistance and (health) care. They have frequent contact with citizens and can work 24 hours a day, seven days per week. Emergency responders are frequently exposed to aggression of citizens (Abraham, Flight, & Roorda, 2011; Fischer & Van Reemst, 2014). Thus, while they are important for reducing risks in society, they are also at heightened risk themselves.

Aggression against these occupational groups is a so-called 'hot topic'. It has received attention from media, policy and research. Some examples of articles that were published in Dutch media in the past years are 'Police officers injured in various incidents' (NOS, 2018), 'Fire departments in ten regions were confronted with aggression during New Year's Eve' (NU.nl, 2017), and 'Emergency medical worker attacked in Almelo; relieved by police' (NOS, 2017). Some say aggression against emergency responders has increased (RTL nieuws, 2018). However, estimates of the frequency and trends of exposure to aggression in these occupational groups vary between studies. For example, statistics presented by the National Police based on registrations suggest an increase in exposure to aggression over one year (Police Netherlands, 2019), while previous statistics of exposure to aggression based on self-reports of emergency responders have not convincingly shown an increase (Brekelmans, Van den Tillaart, & Homburg, 2013).[1]

Reducing workplace aggression against emergency responders has been a priority on political agendas. In the Netherlands, this is reflected by the programme *Veilige Publieke Taak* ('Safe Public Task') of the Ministry of the Interior and Kingdom Relations, which existed from 2007 to 2016 (Kennis Openbaar Bestuur, 2016). This programme was initiated to prevent aggression against public sector professionals, who work for the public interest, work in public services and/or work for or on behalf of a public body. This programme commissioned research about the topic and advised organisations

1 It is difficult to estimate the frequency of exposure to workplace aggression. For example, registrations do not reflect all incidents, as some people do not report incidents to others (e.g. Centrale Ondernemingsraad, 2019; Van Reemst & Fischer, 2017). In addition, it is difficult to compare statistics and draw conclusions about trends of exposure to workplace aggression. There are limitations in studying trends via registrations, as registrations may depend on factors that may vary over time, such as how much attention was drawn to registering. Also, there is a lack of longitudinal studies, asking the same people to report exposure to workplace aggression over time. It seems possible that it is merely the perception that has increased, due to the attention that the topic has received in media and organisations. The (perceived) increase is sometimes explained by societal developments, such as reduced authority and over-assertiveness in (Dutch) society (Van Stokkom, 2013).

to take measures to prevent or cope with workplace aggression against public sector professionals. These measures included communicating which behaviours of citizens are not acceptable, registering incidents of aggression,[2] providing training to professionals and offering aftercare to emergency responders (Ministry of the Interior and Kingdom Relations of the Netherlands, 2011).[3] In addition, the maximum sentence demanded for violence may now be three times the regular maximum sentence if the victim is a public sector professional (Rijksoverheid, 2015).[4] In the past years, also general training has been implemented, for example to enhance resilience ('mental strength') among police officers to deal with potential stressful work contexts (van der Meulen, Bosmans, Lens, Lahlah, & van der Velden, 2018).

Studies have suggested that exposure to workplace aggression has several, potentially severe, consequences.[5] For example, exposure to workplace aggression may result in increased feelings of distress (Leino, Selin, Summala, & Virtanen, 2011), emotional exhaustion and burnout symptoms (Bernaldo-De-Quirós, Piccini, Gómez, & Cerdeira, 2015), insecurity (Middelhoven & Driessen, 2001), sickness notifications, turnover intentions (Abraham et al., 2011, p. 36), and injuries or even death (FBI, 2019) of emergency responders, similar to exposure to workplace aggression in other populations (Grandey, Kern, & Frone, 2007; Pihl-Thingvad, Elklit, Brandt, & Andersen, 2019; Sliter, Pui, Sliter, & Jex, 2011). It seems possible that aggression against emergency responders also has symbolic consequences, such as less acceptance of authority.

Emergency responders have an overall heightened risk of workplace victimisation, but variations in the frequency of exposure to workplace aggression occur between emergency respondents. According to a survey study commissioned by the Veilige Publieke Taak programme among multiple occupational groups in the public sector, 68% to 73% of police officers, 79% to 89% of emergency medical workers and 44% to 48% of firefighters reported being exposed to some form of workplace aggression

2 During the data collection of this dissertation, ways to register occurrences of aggression against emergency responders were explored by organisations. This had not led to one single approach to register aggression against emergency responders yet, but intentions were reported to develop this. When reporting to the police, a system code was applied to incidents involving aggression against police officers (code GTPA) or people with a public service task (code VPT) in one of the police systems ('BVH'). However, there may be reasons not to report incidents to the police (Van Reemst & Fischer, 2017).

3 During the data collection of this dissertation, aftercare facilities had been developed, for example talking to colleagues or being referred to more specialised aftercare (such as therapy with a psychologist), although this was not formalised or practiced in all departments, and after all aggression incidents.

4 Although this is not common in practice (Lodewijks, Laxminarayan, Van der Aa, & Pemberton, 2010).

5 However, these studies do not have an experimental design and not all studies are longitudinal. Therefore, whether these characteristics are all actually caused by exposure to workplace aggression, rather than only correlating with exposure to workplace aggression, is often uncertain.

in the previous year (Abraham et al., 2011, p. 29).[6] Firefighters seem to be exposed to less workplace aggression than the other two occupational groups. In this study, police officers who work in other departments, including those who work mostly behind desks, were included, which means that the percentage of police officers being confronted with workplace aggression among those who respond to emergency calls might be even higher and comparing with emergency medical workers is difficult.

This unequal distribution of exposure to workplace aggression is also visible *within* specific occupational groups (Abraham et al., 2011; Ettema & Bleijendaal, 2010; Fischer & Van Reemst, 2014; Van der Velden, Bosmans, & Van der Meulen, 2015). Latent class analyses of the survey data (Fischer & Van Reemst, 2014) showed that a small proportion of emergency medical workers (13 percent), were exposed to a large proportion of all workplace aggression incidents involving emergency medical workers that were reported in the survey (72 percent). Among police officers, also an unequal distribution was found, as 9 percent of police officers were exposed to 56 percent of all workplace aggression incidents. On the other hand, relatively large groups of emergency responders (68% of emergency responders and 53% of police officers) were exposed to lower percentages of workplace aggression incidents (16% and 10% respectively). The analyses did not provide information about the distribution of exposure to aggression in firefighters, but a previous study also shows an unequal distribution of exposure to workplace aggression in this occupational group (Broekhuizen, Raven, & Driessen, 2005).

This unequal distribution of exposure to workplace aggression among emergency responders is the starting point of this dissertation. It raises the question: How can we explain variation in exposure to workplace aggression? More specifically: Which characteristics of the emergency responder are related to exposure to workplace aggression by citizens and to what extent? This dissertation will study the relationship between psychological characteristics of emergency responders on top of situational characteristics and exposure workplace aggression. It will use a longitudinal design and investigate differences between occupational groups to address limitations in existing research. The results will offer insight into the characteristics that are related to exposure to workplace aggression. They are also important to design effective measures to prevent and address workplace aggression and mitigate its consequences in the future.

6 Exposure to aggression, as measured in self-report surveys, is probably a combination of the actual frequency and the likelihood of people reporting this aggression in a survey (e.g. based on to what extent they remember it or have experienced harm because of it). This is generally considered a limitation of self-report surveys, as it does not allow the separation of actual and perceived exposure to aggression.

Definitions

Scholars often refer to the act of aggression against professionals as 'workplace aggression' or 'workplace violence'. Schat and Frone's (2011) definition of workplace violence is 'behaviour that a target wants to avoid, takes place in a work-related situation, and is potentially physically or psychologically damaging to the target' (also used by Dupré, Dawe, & Barling, 2014). In this definition, damaging the target may or may not have been the intention of the offender.

In this dissertation, I[7] prefer to use workplace 'aggression' instead of 'violence', in accordance with Hershcovis (2011). She argued that workplace aggression is a more general concept, including various behaviours such as incivility, harassment and violence. Inclusion of these behaviours decreases fragmentation in the literature. 'Workplace' refers to the type or context of the situation and does not necessarily relate to the office location or work hours. For example, workplace aggression can occur in public space or even outside work hours.

Regarding the nature of workplace aggression, studies have shown that it can be physical and psychological (Barling, Dupré, & Kelloway, 2009). This includes being hit, punched and grabbed (physical aggression), and being yelled at and being called names (psychological aggression). Threats are sometimes included in the definition of psychological workplace aggression or studied as a separate type. The same goes for sexual harassment (which could be psychological or physical) and being discriminated against. Overall, types of workplace aggression that have been addressed in studies have varied greatly (Barling et al., 2009). In this dissertation, I focus on aggression that is directed towards the emergency responder, excluding acts that occur in the presence of the emergency responder, for example vandalism. It can include aggression driven by general frustrations or negative affect experienced by the offender, or with the aim to reach a specific goal, for example to receive more or better care (Berkowitz, 1989; Dollard, Miller, Doob, Mowrer, & Sears, 1939; Felson, 2006; Feshbach, 1964).

This dissertation will not focus on *internal* workplace aggression, which is aggression initiated by an individual within the organisation, for example bullying or assault between workers or between a supervisor and a worker. Instead, it will focus on *external* workplace aggression only,[8] which is initiated by people outside the organisation, such as clients, patients, students, suppliers, intruders and citizens in general (Mayhew & Chappell, 2007; Yagil, 2008). The reason for studying external workplace aggression is

7 'I' is used to represent the author's view. It should be noted that part of the articles included in this dissertation are written with co-author(s), who helped in developing this view. In the chapters written with co-author(s), the view of the co-author(s) is (are) represented as well.

8 Also called 'public-initiated'.

that, generally, external workplace aggression occurs more frequently than internal workplace aggression (Bigham et al., 2014), also among emergency responders (e.g. LeBlanc, Dupré, & Barling, 2006). However, exposure to external workplace aggression is relatively understudied, while internal workplace aggression has more often been the focus of research (Aquino & Thau, 2009; Bowling & Beehr, 2006; Tepper, 2007).[9]

Victimological theories

Exposure to aggression at work can be considered victimisation of the emergency responder. The emergency responder is the target of the aggression and the aggression can potentially hurt the emergency responder. This is consistent with definitions of the victim as 'a person harmed' or 'a person duped' (McGarry & Walklate, 2015, p. 7-8).[10] In this dissertation, the concept of victimisation will be used, although emergency responders do not have to consider themselves victims. Victimological theories will be used to explain exposure to workplace aggression and identify and categorise possible 'risk factors'.[11] Using victimological literature, the dissertation will provide more insight into exposure to workplace aggression among emergency responders and gain theoretical depth.

In the mid-1940's, victimology emerged (for an historical overview, see Daigle & Muftic, 2015, p. 4). It started by studying the specific roles of victims in crime. Hans von Hentig was one of the first to argue that it is important to look at victimisation through the lens of the criminal-victim dyad: not looking at each actor in isolation, but together (Von Hentig, 1948). Benjamin Mendelsohn was also interested in the relationship between victim and offender (Mendelsohn, 1956). Early scholars on victimology, mainly originating from the area of the criminal law, were interested in to what extent victims could contribute to their own victimisation, called victim precipitation. The extent to which the victim performed physical force before the crime (such as homicide or rape) was therefore studied, alluring possible active participation by the victim (Amir, 1971; Curtis, 1973; Wolfgang, 1958).[12]

---

9 In addition, this dissertation will not focus on police use of force, about which other literature is available (Adang, Kaminski, Howell, & Mensink, 2006; Feys & Noppe, 2019; Van der Torre, Gieling, Dozy, Van Leeuwen, & Hamoen, 2011).

10 In these definitions, behaviour (in this case aggression) that the person was exposed to does not have to be criminal according to criminal law.

11 More specifically, this dissertation uses a 'positive victimology' framework, which focuses on (explaining) the non-random distribution of victimisation (Miers, 1989).

12 Studies about to what extent serious crime follows action from the victim are still conducted (Ganpat, van der Leun, & Nieuwbeerta, 2013; Muftić, Bouffard, & Bouffard, 2007).

Other studies that built on the idea that a victim might contribute to victimisation highlighted that some victims can be more 'victimisation prone' (see Goodey, 2005, p. 70). Sparks (1981) identified six types of victim proneness: *precipitation*, precipitating, in other words 'causing', or encouraging victimisation; *facilitation*, putting oneself consciously or subconsciously at risk, e.g. by forgetting to protect oneself; *vulnerability*, attributes which lead to less capability to preventing crimes against themselves (such as a very young age); *opportunity*, being in the same place as the offender; *attractiveness*, e.g. wearing jewellery in case of theft; *impunity*, unlikeliness to report to the police. Similarly, Finkelhor and Asdigian (1996) stated that victims may have characteristics that an offender may want to obtain or use, may arouse anger or jealousy, or may compromise the ability to resist or deter victimisation. Thus, the idea that some people are at more risk of victimisation than others remained, and different types of victim proneness were identified.

Since the 70s, victimisation surveys emerged, which attempted to give more insight into the 'real' number of crime (Rock, 2017, p. 42), including the amount of violence that is unreported. These surveys showed that victimisation is not equally distributed. Some people report to be more often a victim than others. Victimisation surveys also contributed to the development of criminal opportunity theories, like the lifestyle/exposure theory (Hindelang, Gottfredson, & Garofalo, 1978), and the routine activity theory (Cohen & Felson, 1979). These criminal opportunity theories were developed around the same time (late 1970s). In a nutshell, these theories assume that people vary in the exposure to crime because they differ in the opportunity to be exposed to crime, due to their lifestyle and the activities they perform.

The lifestyle/exposure theory (Hindelang et al., 1978) tries to explain differences in victimisation risks by focusing on the differences in lifestyle, consisting of routine daily activities, work/school or leisure activities. These lifestyles are said to explain the differences in exposure to dangerous times, places and other people. Hindelang and colleagues (1978) elaborate upon various demographic characteristics that may influence peoples' risk of victimisation indirectly. Gender, age or race may affect people's lifestyle and thus their risk of victimisation. The routine activity theory postulated that routine activities influence the convergence in time and space of three important elements for victimisation: a motivated offender, a suitable target and the absence of a capable guardian (Cohen & Felson, 1979). Even though, originally, the routine activity theory has been developed to explain differences in crime rates instead of victimisation risks, it has been applied across various units of analysis, including micro level victimisation (Meier & Miethe, 1993). Victimisation is considered more likely to occur if an individual is in the presence of a motivated offender, is a suitable target (is 'attractive') and lacks guardianship (e.g. lacks safety precautions).

The lifestyle/exposure theory and the routine activity theory have many similarities. In both theories, the main focus is on the opportunity for offenders, provided by their activities and lifestyle, instead of the personal motivations of offenders to commit crime. Because of the similarities, these theories have often been used in combination, as an integrated theory of criminal opportunity (Cohen, Kluegel, & Land, 1981). The idea that victimisation risks vary because of variations in activities and related socio-demographic characteristics is still dominant in many victimisation studies (see Holtfreter, Reisig, & Pratt, 2008; Landau & Bendalak, 2008; Taylor, T., Freng, Esbensen, & Peterson, 2008; Tillyer, Tillyer, Miller, & Pangrac, 2011).

Besides offering more opportunity for victimisation, being suitable as a target could also mean being more 'attractive' as a possible target.[13] This attractiveness is the core idea of proneness notions of victims, originating from the victim precipitation theory (Sparks, 1981; Wolfgang, 1958). Overlap exists between proneness notions and criminal opportunity theories, as both incorporate the role of opportunity and protection (in other words, guardianship), but proneness notions add the role victims may have in the motivation of the offender. They might encourage, facilitate or attract victimisation, besides being in the same space at the same time as offenders. In this way, the actual interaction between offender and victim receives more attention than in criminal opportunity theories, which seem limited in their understanding of what exactly motivates an offender (Cohen & Felson, 1979).

Victimisation as an outcome of interaction

Felson (1992) has previously explicitly described that victimisation may result from how people influence interactions, for example because they feel stress. "If distressed persons perform less competently, violate expectations, or annoy others, these others are likely to express grievances. This may foster aggressive interactions in which the distressed person is often, initially, the target" (p. 4). Interaction theories, which do not originate from victimology, describe social interaction more explicitly. For example, Goffman (1959; 1967) referred to face-to-face social interaction as a performance in which people try to save face – protect the image of themselves –, and as a game in which people strategically plan and execute behaviour to maximise recognition in response to the other person. Applied to aggression and criminal acts, Luckenbill (1977) built on the work of Goffman to describe the organisation and development of murder, by indicating that murders are often a product of victim and offender behaviour: the victim and offender interact. According to Luckenbill (1977), the victim typically makes an offensive move (according

13 Some researchers have highlighted the unwanted connotations of the word attractive (Finkelhor & Asdigian, 1996, p. 5).

to the offender), the offender retaliates verbally or physically, the victim response results in a working agreement favouring the use of violence, after which a battle follows with death as a result. In other words, the victim's behaviour influences the interaction and, eventually, the crime. According to Athens (2005), an important shortcoming of this theory is that there often is no mutual agreement to use violence. She offers an alternative by suggesting that violent crimes are committed during encounters that have several phases in which each party plays a role: role claiming (either superordinate or subordinate), role rejection, role sparring (using strategies to achieve the desired roles from previous stages), role enforcement (in which one of the actors decides to use force to settle the issue), and role determination (Athens, 2005).

Recently, interaction theories have been used to explain victimisation as an outcome of interaction between people, following actions and reactions of both parties (Muller & Zeestraten, 2015; Odekerken, 2017). Although the current study will not study interaction itself or stages of the interaction, these perspectives support the idea that a person and his or her characteristics can contribute to interactions that result in victimisation. In addition to situational characteristics (including the offender and general context), victim characteristics (such as emotional, cognitive and personality characteristics) may thus influence how interactions develop, and eventually the possible outcome of victimisation. Based on the theories described above, I assume that victimisation is often a result from an interaction between the (potential) victim and the (potential) offender, in a certain context. Therefore, studying characteristics of the victim and the context of the victim (including contact with potential offenders) is important to explain and possibly prevent exposure to workplace aggression.

Blaming the victim?

A risk in studying the relationship between victim characteristics and exposure to workplace aggression, and in using victim proneness notions (based on the victim precipitation theory), is that it might be considered as victim-blaming. Historically, this is what happened in the second half of the 20th century. In 1971, Amir (1971), a student of Wolfgang (1958), applied victim precipitation to rape and described characteristics of women that could trigger sexual assault. This study was conducted in a time when second-wave feminism arose to protest injustices inflicted on women. Soon, the study on victims of rape and the notion of victim precipitation were renamed victim-blaming (Rock, 2017, p. 37-38).

Although there are explanations for why people blame victims,[14] blaming the victim is not regarded politically correct or socially acceptable. This can result in the *fear* of blaming the victim and tendency to avoid blaming the victim (Zur, 1995). This could be the reason why the victim precipitation theory has received less attention at the end of the 20th century. Since then, victim precipitation has been mentioned more often in psychological journals, but Cortina and colleagues (2018, p. 87) argue that that is an unwanted development because of blaming the victim.

I would argue that studying victim characteristics, and using victim proneness theories, can be independent of attributing blame. Hamby and Grych (2014) have previously stated: 'Attribution of blame hinges on the intentionality of an action'. Victims may not have intended or freely chosen certain behaviour that leads to victimisation. In addition, they may be unaware of personal characteristics that influence exposure to aggression (c.q. Shaver, 2012). Therefore, I would argue that studying these behaviours or psychological characteristics and use related theories is not inherently related to attributing blame.

Cortina and colleagues (2018) propose an alternative: instead of interpreting results from the perspective of the victim, they propose to interpret it from the perspective of the offender, also called the perpetrator predation lens. For example, instead of 'people who .. are more likely to become a victim', authors should use 'offenders selectively target personnel perceived as ..' (p. 94). However, besides assuming that the offender is a rational actor, this suggestion seems to overlook the fact that offenders might not have offended, if this victim was not around. For these reasons, I consider it important not to ignore the role of the victim and his or her characteristics, because it may provide important information about victimisation.

Studying victim characteristics is important to find out which characteristics protect people from being victimised, even though being in risky situations at times. By allowing victim characteristics to be studied, more knowledge on how to prevent victimisation is gained and this knowledge can be used in selection, training and aftercare for emergency responders. However, careful and respectful communication about the topic remains important.

---

14 The explanation that is commonly given for blaming the victim is that people tend to believe in a just world (Hamby & Grych, 2014; Stel, van den Bos, & Bal, 2012): people have a basic need to believe that the world is just, that good things happen to good people and bad things happen to bad people (Lerner, 1980). This protects them from the idea that something bad could happen to them. As a response, they may believe that the victim has done something to deserve what happened to them, and therefore blame the victim. Hamby and Grych (2014) describe this as being related to the focus on risk reduction in Western cultures: it is generally thought that people have a responsibility and should take steps to protect themselves.

Links with other victim phenomena

An important victim phenomenon related to characteristics of the victim is repeat victimisation. Gottfredson (1984) showed the seemingly high rate of victims who were repeatedly victimised in the British Crime Survey. Since then, explanations for repeat victimisation were developed (Farrell, Phillips, & Pease, 1995). A first explanation focuses on the heterogeneity of characteristics: characteristics that explained the first victimisation also influence future victimisation, such as opportunity or proneness characteristics. For example, one can often visit the nightlife area, therefore having a higher risk of victimisation than someone who stays inside, before and after the first victimisation. The same factors explain previous victimisation and a higher risk of later victimisation. A second explanation focuses on state dependency. This means that victimisation and its direct consequences are possible risk factors for future victimisation. Previous victimisation could either 'boost' an elevated likelihood of subsequent victimisation or 'flag' an enduring risk of victimisation (Tseloni & Pease, 2003), therefore making victimisation more likely.[15]

Another relevant victim phenomenon is the victim-offender overlap. Victims are relatively often also offenders. Two explanations have been given for this phenomenon (see Rokven, Ruiter, & Tolsma, 2013). The first is a dynamic causal explanation, suggesting that after crime, the victim may want to restore feelings of injustice, which transforms the victim into the offender, and the offender into the victim (e.g. Ousey, Wilcox, & Fisher, 2011). The second is an explanation suggesting that victimisation and offending are influenced by the same characteristics, such as a risky lifestyle (Hindelang et al., 1978). Research on both phenomena offers information on characteristics that may explain victimisation: previous offending (derived from victim-overlap literature), previous victimisation, and situational and (other) personal characteristics (derived from literature on both phenomena).

Psychological characteristics

In this dissertation, two types of psychological characteristics, and their relationship with exposure to workplace aggression, will be studied: social information processing characteristics and personality characteristics. *Social information processing characteristics* are characteristics related to how people process information in social situations and how they develop a response. Crick and Dodge (1994; Dodge, 1986)

15 Victimisation has often been found to be the strongest correlate of subsequent exposure to aggression or (other) crimes, for many populations (Breitenbecher, 2001; Farrell & Bouloukos, 2001), which could be explained by both the heterogeneity of characteristics and state dependency.

developed the Social Information Processing (SIP) model and suggested that people process social information in (cyclic) steps. After encoding situational cues (perceiving and attending to specific cues in the situation), people interpret the information. Thereafter, they set a goal in the social situation and generate possible responses to the situation. Then, people are thought to evaluate the possible responses. This evaluation is based on whether they evaluate the response as positive or not, whether they think they can perform the response, what they think the outcome is of the response and which response they select. These evaluations and selection together are considered to reflect the response decision (Crick & Dodge, 1994). Afterwards, people enact the selected response, after which they start the steps again (encode information, interpret, etcetera). During all steps of the model, emotions are thought to influence the social information processing steps (Crick & Dodge, 1994; Orobio de Castro, 2004). For example, in a more negative emotional state, people are thought to evaluate hostile responses more positively. The relationship between social information processing and exposure to aggression has mainly been investigated in peer victimisation studies among children and adolescents (Van Reemst, Fischer, & Zwirs, 2016).

Personality characteristics include cognitive, behavioural and affective aspects of a person (Zillig, Hemenover, & Dienstbier, 2002). Regularly, personality traits, which are relatively stable personality characteristics, are studied together, such as the Big 5 personality traits (McCrae & Costa Jr, 1997).[16] In combination with each other, these traits are considered to represent the overall personality. Other studies consider single characteristics (e.g. the tendency to experience negative emotions, Watson & Clark, 1984). These single characteristics may be related to specific tendencies and behaviours and were therefore chosen for this research. Personality is considered to have a stable nature, meaning that characteristics are relatively consistent across situations and time (Costa Jr, Herbst, McCrae, & Siegler, 2000). Therefore, it seems likely that personality characteristics precede victimisation.

Emergency responders as victims

Emergency medical workers, firefighters and police officers share many work circumstances because they all respond to emergencies, have to be relatively fit (Kales, Tsismenakis, Zhang, & Soteriades, 2009), have frequent contact with citizens, and can repeatedly be confronted with traumatic events (e.g. Guidotti, 2015). However, there are also differences in work circumstances between these occupational groups. Police

16 The Big 5 personality traits are openness to experience, conscientiousness, extraversion, agreeableness and neuroticism (McCrae & Costa Jr, 1997).

officers enforce laws and de-escalate (potential) threats, firefighters safeguard people and objects, for example by rescuing people or extinguishing fires, and emergency medical workers provide medical care to people before arriving at the hospital. Police officers can legitimately use physical force and weapons, such as batons or a service weapon, in interaction with citizens, whereas firefighters and emergency medical workers cannot (Alpert, Dunham, & MacDonald, 2004; Timmer, 2005). Generally, firefighters leave for an emergency with more professionals than police officers and emergency medical workers. In addition, the frequency of contact of citizens varies between professions, with police officers having the most and firefighters having the least contact with citizens. Also, police officers are often present in work situations of firefighters or emergency medical workers in case of potential disruptions of public order and safety.[17] These differences in work situations may cause differences in professional-citizen interactions and exposure to workplace aggression.

Victimisation theories provide directions for how variations in exposure to workplace aggression among emergency responders can be explained. Firstly, criminal opportunity theories suggest that exposure to workplace aggression may be influenced by the situation the emergency responder is in, including *to what extent* they are in contact with a range of possible offenders. More specifically, the likelihood of exposure to workplace aggression can be related to the time and place of emergency responders' activities, the type of work they do, how often, when and where they work, and the type of citizens they work with. For example, having more contact with citizens would be a risk factor for emergency responders in exposure to workplace aggression based on these theories.

In addition, the likelihood of becoming a victim of external workplace aggression may be influenced by the individual emergency responder (and *how they* interact with possible offenders), as can be derived by victim proneness notions. Some emergency responders may be more prone to victimisation, which could influence the emergency responder-citizen interaction. Applying the idea that victimisation is an interaction between offender and victim in a certain context to emergency responders, it can be expected that psychological characteristics of the emergency responders (including their behaviour, cognition and emotions) are important to explain exposure to workplace aggression, in addition to situational characteristics (including what type of citizens – possible offenders- emergency responders are in contact with).

Social information processing characteristics may be relevant in the work of emergency responders, and more specifically police officers, as they frequently and

17 *Initially*, the people in the control room decide whether also other types of emergency responders are needed than the emergency responders that were called for.

sometimes quickly need to form response decisions in social (work) situations. In addition, personality characteristics may be relevant as personality characteristics may have strong similarities to its context-specific counterparts (Wang & Bowling, 2016, p. 174): people with certain behavioural tendencies will show more of this behaviour in the work context. Therefore, social information processing characteristics and personality characteristics of emergency responders may be related to exposure to workplace aggression.

The nature of the emergency responder-citizen interaction is different from other interactions. Emergency responders offer a service to specific citizens, such as medical help, practical assistance, informing about rules or protecting them from themselves, or to society in general, such as arresting a person who endangers others or extinguishing a fire that threatens a whole town. Therefore, the interaction differs from other interactions because there is a certain balance of power in the interaction: the employee that provides the service, and the citizen who is affected by this service (willingly, or, for example in case of arrest, unwillingly). In addition, as emergency responders respond to emergencies, interactions may be relatively brief, including quick decisions of the emergency responder. Furthermore, emergency responders are working, and therefore have organisational rules and protocols to comply to in interaction with citizens.

As the nature of the emergency responder-citizen interaction is different from other interactions, some factors that explain victimisation in other populations, may not or to a lesser extent apply to emergency responders. For example, according to the victim-offender overlap literature, being a criminal offender could be a risk factor for being exposed to aggression, as victims may retaliate. However, since emergency responders are at work, I do not consider it likely that emergency responders are criminal offenders, and therefore, this is not considered an important explanatory characteristic in this context. In addition, whereas 'hostile responses' are generally considered maladaptive (Crick & Dodge, 1994), a certain level of hostility might be needed in some emergency response situations. For example, having more hostile responses may be important when arresting someone or deescalating a threatening situation. Therefore, a 'hostile response' is not considered the same as abuse of authority, coercion or disrespect towards citizens.[18] Furthermore, work situations of emergency responders may contain important cues that lead to the behavioural expression of certain psychological characteristics (Tett & Guterman, 2000), but may also lead to the use of protocols, which would make it less likely that psychological characteristics are expressed in behaviour. General personality characteristics may thus be less directly linked to exposure to aggression in a work context than in other contexts.

18 About which other literature is available (Mastrofski, Reisig, & McCluskey, 2002; Terrill & Mastrofski, 2002).

As the emergency response context is different from other contexts, the fear of blaming the victim may be even more present than in other populations, as emergency responders are important for the safety of society. Being (perceived as) heroes of society and being sent to the front line, any possible disrespect such as 'trying to blame the professional' may be disapproved of. Therefore, careful communication about the topic is important.

Previous empirical studies on correlates of workplace aggression among emergency responders

Previous studies on correlates of exposure to workplace aggression have been published in various journals, varying from management (Fischer, Van Reemst, & De Jong, 2016) to nursing (Van der Velden et al., 2015), policing (Ellrich, 2018), and psychology (Bowling & Beehr, 2006) journals. Some studies focus more on practitioners (Koritsas, Coles, & Boyle, 2010; Mechem, Dickinson, Shofer, & Jaslow, 2002) and others on academic scholars (Bierie, 2017; Ellrich, 2018; Kaminski, Jefferis, & Gu, 2003). Most of the studies on this topic have a cross-sectional design, measuring exposure to workplace aggression and characteristics at the same time. Studies focus more on internal workplace aggression (Aquino & Thau, 2009; Bowling & Beehr, 2006; Tepper, 2007), than on external workplace aggression. Some studies have focused on one occupational group (e.g., Ellrich, 2018; Grange & Corbett, 2002), others included multiple occupational groups together (e.g., Dupré et al., 2014; LeBlanc & Kelloway, 2002). It is not surprising that the profession itself is an important characteristic to explain differences in exposure to workplace aggression in studies that include workers from multiple occupational groups (Abraham et al., 2011). The profession determines the situation professionals are in and the type of contact they have with citizens, but could also reflect psychological characteristics, as people with certain psychological characteristics may choose a specific profession. The profession thus explains differences in exposure to workplace aggression *between* occupational groups. However, studies that explicitly distinguish multiple occupational groups are scarce. Studies that focus on a single occupational group or multiple occupational groups together provide more information on characteristics that explain variations *within* occupational groups (e.g., Ellrich, 2018; Grange & Corbett, 2002).

Socio-demographic characteristics that have been studied in relation to exposure to workplace aggression of emergency responders are age and gender. Overall, studies find that men are more often exposed to workplace aggression than women (Abraham, van Hoek, Hulshof, & Pach, 2007; Grange & Corbett, 2002; Middelhoven & Driessen, 2001; Oliver & Levine, 2015), although not all studies find this association (Santos, Leather, Dunn, & Zarola, 2009). Women are more often exposed to sexual harassment (Boyle, Koritsas, Coles, & Stanley, 2007; Mayhew & Chappell, 2001). Studies show that younger

professionals are more likely to be confronted with workplace aggression than older professionals (Abraham et al., 2007; Grange & Corbett, 2002; Middelhoven & Driessen, 2001). As described, these characteristics are theoretically related to workplace aggression as professionals have specific lifestyles, in this case work styles, because of their socio-demographic characteristics. A possible explanation is that young professionals have had less years of experience and training (lacking safety precautions), because they have more contact with citizens – for example because they do less desk work or act less careful - (contact with possible motivated offenders) or because they behave more impatient with citizens (more suitable/vulnerable). However, studies have not investigated which lifestyle characteristics are mediating the relationship between age and gender, and exposure to workplace aggression.

Various situational characteristics have been found to be related to exposure to workplace aggression within occupational groups. Professionals who are more in contact with people are more likely to be victimised. Several studies found that working more hours per week and having more contact with citizens is related to external workplace aggression (Abraham et al., 2007; Broekhuizen et al., 2005; Gates, Ross, & McQueen, 2006; LeBlanc & Kelloway, 2002; Middelhoven & Driessen, 2001; Sikkema, Abraham, & Flight, 2007; Van Reemst, Fischer, & Zwirs, 2013). In addition, the type of contact with citizens (including location and time of contact) and the type of citizens professionals work with are related to exposure to workplace aggression. Professionals are exposed to more workplace aggression if they work in public spaces, on their own, during the evening or at night, or are more often in contact with citizens who are unknown to the professional (Boyle et al., 2007; Kaminski, 2008; Oliver & Levine, 2015). In addition, professionals who deal with more ‘incidents’ (such as arresting people) are more often confronted with workplace aggression (Timmer, 2005).

Also, the work location contributes to explaining differences in exposure to workplace aggression. Professionals who work in an urban area are more exposed to workplace aggression (Barrick, Hickman, & Strom, 2014; Jenkins, Rocke, McNicholl, & Hughes, 1998). Also, professionals who work with people who use alcohol or drugs, who have previously been in contact with the police or who have a mental illness are more likely to be exposed to external workplace aggression (Grange & Corbett, 2002; Jenkins et al., 1998; Loef, Heijke, & van Dijk, 2010; Naeye & Bleijendaal, 2008; Taylor, J. & Rew, 2011). All these characteristics seem to be related to how often professionals are in the presence of possible motivated offenders and in the absence of guardianship.

In addition, the prevention and aftercare measures of an organisation are found to be related to workplace aggression in other work populations than emergency responders (Kessler, Spector, Chang, & Parr, 2008; Spector, Coulter, Stockwell, & Matz, 2007). Prevention and aftercare measures of an organisation may affect the nature of

interaction between professionals and citizens, for example by training, which may provide safety precautions against exposure to workplace aggression. However, in some studies, relatively more exposure to workplace aggression has been found in organisations who have taken *more* aftercare measures. This is possibly indicative of a reverse causal relation: organisations with more victimisation risk have already taken measures (Fischer et al., 2016).

Regarding psychological characteristics, relatively little research has been done. Studies that have addressed psychological characteristics have mainly focused on police officers. These studies indicate that police officers who score higher on neuroticism and openness to experience (Ellrich & Baier, 2016), who experience more job-related stress (Zavala, 2013), or who show more disrespect (Dai, Frank, & Sun, 2011) are more often exposed to workplace aggression. So far, social information processing characteristics and personality characteristics thus received little attention in research about exposure to workplace aggression among multiple types of emergency responders.

In other work populations, also other psychological characteristics have been related to victimisation, such as having more general negative affect (Grandey, Dickter, & Sin, 2004), dominating behaviour and lower self-determination (Aquino & Bradfield, 2000; Aquino & Byron, 2002; Aquino, Grover, Bradfield, & Allen, 1999), emotional exhaustion (Grandey et al., 2004; Grandey et al., 2007; Hershcovis & Barling, 2010b; Winstanley & Hales, 2014), psychological distress (Gettman & Gelfand, 2007a), feelings of unsafety (Gates et al., 2006), risk perception (LeBlanc & Kelloway, 2002), mental and physical health (Dupré et al., 2014; Hershcovis & Barling, 2010b; Schat & Frone, 2011), and lower self-esteem (Bowling & Beehr, 2006). These characteristics could be related to exposure to workplace aggression of emergency responders as well.

Gaps in knowledge about workplace aggression against emergency responders

In summary, the current empirical knowledge about workplace aggression against emergency responders has three important gaps: 1) not much knowledge about the role of psychological characteristics, 2) unclear direction(s) of relationships and 3) not much information on specific occupational groups and differences between occupational groups.[19]

19 These limitations also broadly apply to literature on workplace aggression in other populations, but as this dissertation focuses on emergency responders, the limitations will be described in the context of emergency responders.

Psychological characteristics

The relationship between psychological characteristics and exposure to workplace aggression among emergency responders is clearly under-studied. Socio-demographic and situational characteristics, explain differences in exposure to workplace aggression to a limited extent (Abraham et al., 2011; Covington, Huff-Corzine, & Corzine, 2014; Fischer & Van Reemst, 2014; Naeye & Bleijendaal, 2008).[20] Psychological characteristics may improve the explanation of differences in victimisation.

This dissertation will use both situational and psychological characteristics as possible explanations of exposure to workplace aggression. Psychological characteristics will be the focus in the research questions as less is known about the relationship with exposure to workplace aggression among emergency responders. However, situational characteristics, including socio-demographic characteristics, will not be ignored. They will be controlled for to examine the contribution of psychological characteristics of the emergency responders in explaining exposure to workplace aggression on top of situational correlates.[21]

Direction of relationships

The design of most studies about workplace aggression against emergency responders is cross-sectional, measuring characteristics and workplace aggression at one point in time. This design cannot establish *how* characteristics are related, for example whether victim characteristics were present before victimisation or were developed after victimisation.[22] While the direction of psychological characteristics to exposure to workplace aggression is often assumed, some researchers suggested that there can also be psychological consequences of exposure to workplace aggression, e.g. burnouts (Bernaldo-De-Quirós et al., 2015). This would indicate a relationship in the other direction:

---

20 In addition, directly using socio demographic and situational correlates in measures to prevent workplace aggression is relatively difficult, as some are stable (e.g. gender) or unwanted to change. For example, even though working at night seems to pose more threat, it is not possible to stop emergency care at night. Indirectly addressing these characteristics in situational prevention strategies would be possible, such as more guardianship during nights, although these strategies need to be evaluated.

21 More is known about situational correlates among emergency responders, as was described above. To add to knowledge about situational characteristics, in the last dataset a measure will be used that was derived from international literature (LeBlanc & Kelloway, 2002). This measure may give a broad view of people's situational characteristics, including how often they have contact with citizens, and with which type of citizens. This gives the possibility to control for situational context using one variable and will help to examine the relationship between psychological characteristics and exposure to workplace aggression.

22 It should be noted that in a study with one measurement occasion, victimisation can be measured retrospectively (for example, in the past six months), which adds a difference in time between measurements, but in one specific direction: victimisation in previous months and psychological characteristics at the end of those months.

exposure to workplace aggression predicting psychological characteristics.[23] As most studies on exposure to workplace aggression were cross-sectional, it is possible that some of the characteristics that were described in the previous section were a *result from* exposure to workplace aggression and not present before exposure to workplace aggression.

Whether the lack of empirical insight into the direction of the relation is a problem may vary from one characteristic to the other. For examples, feelings of unsafety and less physical health may be more likely to be consequences of victimisation rather than indicators. On the other hand, it seems likely that stable personality characteristics, such as neuroticism and openness to experience, existed before exposure to workplace aggression. For some characteristics, the most probable direction of the relationship is less obvious. For example, one could experience more negative feelings as a result of victimisation (Nesdale & Lambert, 2007). However, by having negative feelings, people can approach a situation more 'negatively' (Nesdale & Lambert, 2007), which might result in being less able to de-escalate a potentially threatening situation (e.g. by not perceiving the threat on time) or allowing a situation to escalate sooner (e.g. by being less friendly).

The few longitudinal studies that are available on workplace aggression among emergency responders suggest that professionals can suffer from psychological consequences after exposure to workplace aggression (Grandey et al., 2007; Sliter et al., 2011). Studies about other forms of victimisation, in other populations, suggest that the relationship between psychological characteristics and exposure to aggression can work in both directions (Van Reemst et al., 2016). This implies that characteristics may also affect exposure to workplace aggression.

As both directions seem possible, research is needed to determine whether characteristics are indicators or consequences of exposure to workplace aggression, or both. To investigate the direction of the relationship, an experimental study is not feasible as it is considered unethical and may lack in external validity in case of victimisation. Therefore, a specific longitudinal design that could approach the question of causality is more suitable, which is a cross-lagged panel design (Kenny, 1975). This dissertation will use this longitudinal design, which will be elaborated upon in the methods section, to give more information about the possible direction of relationships between psychological characteristics and exposure to workplace aggression among emergency responders.

23 For example, the schema theory suggests that the victimisation experience may not readily fit into existing beliefs, about self-esteem or other people being good, which are therefore altered (McCann, Sakheim, & Abrahamson, 1988).

Occupational groups

Correlates of exposure to aggression among specific emergency responders and differences between occupational groups are also understudied. Especially studies among firefighters on this topic are scarce. Correlates of aggression against police officers (e.g. Ellrich & Baier, 2016) have received more attention than against emergency medical workers and firefighters. Also, studies among nurses at hospital (including emergency departments) are relatively common in health care literature (e.g. Gates et al., 2006), but studies among ambulance workers are more scarce. Dutch studies, mainly commissioned by the Veilige Publieke Taak programme, have looked at emergency responders and other workers, but have predominantly studied the relationships between situational characteristics and exposure to workplace aggression (e.g. Abraham et al., 2011).

As has been discussed, the three groups of professionals working as emergency responders share many common work circumstances, but work circumstances also differ. Some differences seem particularly important because they might influence professional-citizen interactions: police officers can legitimately use physical force in interaction with citizens, whereas firefighters and emergency medical workers cannot; firefighters generally leave for an emergency with more professionals at a time than police officers and emergency medical workers; police officers generally have the most and firefighters have the least contact with citizens. Studies in other populations (i.e. general health care sector) have indicated that working in different occupations may result in differences in exposure to workplace aggression and different correlates with exposure to workplace aggression (Viitasara, Sverke, & Menckel, 2003; Winstanley & Whittington, 2002). However, little is known about this among emergency responders. Therefore, this dissertation focuses on these three groups of emergency responders. It will investigate to what extent characteristics explain exposure to workplace aggression within the occupational groups, and it will explore variations in the relationships between psychological characteristics and exposure to aggression between the three occupational groups.

Research questions

This dissertation will try to overcome these three gaps in the empirical literature by addressing psychological characteristics, while controlling for situational characteristics, by giving insight into the direction of relationships where possible and, finally, by exploring differences in the relationships between characteristics and exposure to aggression among occupational groups. The research questions of this dissertation are:

1. To what extent are psychological characteristics of emergency responders related to their exposure to aggression of citizens?

2. In which direction(s) are psychological characteristics of emergency responders and their exposure to aggression of citizens related?

3. To what extent do relationships between characteristics of emergency responders and their exposure to aggression of citizens vary between occupational groups?

Methodology

Data collection

Four sets of data will be used in this dissertation. Here, a short introduction will be given. The datasets will be described more elaborately in the following chapters.

1. VPT data: Secondary analyses of cross-sectional survey research on work characteristics and differences between emergency responders

A secondary analysis was conducted on the data of the Veilige Publieke Taak programme (VPT; Safe public task) of the Ministry of the Interior and Kingdom relations. Survey data were collected in 2010 with the aim to monitor the nature and extent of workplace aggression, and to explore possible correlates, and were first analysed by Abraham and colleagues (Abraham et al., 2011). Characteristics that were analysed in this dissertation were socio-demographic and work characteristics,[24] including the occupational group. Multiple occupational groups with a 'public task' participated, among which emergency medical workers (n = 264), firefighters (n = 255), and police officers (n = 296). This dataset was used to investigate the relationship between work and socio-demographic characteristics and exposure to workplace aggression, and to explore variations in correlates of exposure to workplace aggression between emergency medical workers, firefighters and police officers.

2. SIP data: Longitudinal survey research on social information processing among police officers

A longitudinal survey study on the relationship between social information processing (SIP) characteristics (Crick & Dodge, 1994) and aggression against police officers was

24 Some psychological characteristics were measured in this dataset, but these were considered less relevant for explaining exposure to aggression, as they are likely to be consequences of exposure to aggression (such as risk perception) and it would not be possible to gain more insight into the actual direction of relationships due to the cross sectional nature of the data (Fischer & Van Reemst, 2014).

conducted in 2012. This study was supervised by Tamar Fischer and Barbara Zwirs, and financially supported by *Politie & Wetenschap* (Police & Science, the Netherlands). Respondents were police officers working in 'Noodhulp/DHV' (similar to emergency response) or 'Handhaving/Wijkteam' (similar to community policing) in multiple police forces. Police officers were asked to complete two digital questionnaires (N = 815 in first questionnaire), six months apart. In both questionnaires, hypothetical situations were presented, and respondents were asked how they would process the social information in these hypothetical situations. In addition, questions were asked about the frequency of three forms of aggression at work: verbal, threats, and physical aggression.

3. Interview data: interview research on perspectives of emergency responders

Fifty semi-structured interviews were conducted between June 2014 and November 2016 with the aim to gain insight into the perceptions of employees about 1) the nature and extent of workplace aggression by citizens, 2) characteristics that might be related to being confronted with (more or less) workplace aggression, and 3) the current policies of their organisations to deal with workplace aggression, either preventive or afterwards. Respondents were front-line emergency medical workers, firefighters and police officers, and professionals working in emergency response organisations who have supervising-, education-, registration-, or aftercare-related responsibilities, sometimes in addition to their current or previous front-line work.

4. Personality data: Longitudinal survey research on personality characteristics among emergency responders

A three-wave survey study was conducted among emergency medical workers, firefighters and police officers in 2015 and 2016. The aim of this research was to gain insight into the relationship between personality characteristics and workplace aggression, and to compare this relationship between occupational groups. Multiple regions of ambulance organisations, fire department organisations and the National Police of the Netherlands gave permission to send the questionnaire to emergency responders with face-to-face contact with citizens ('rijdende dienst'/'Basisteams'). Questions were asked about personality characteristics, exposure to workplace aggression and socio-demographic and work characteristics. The sample consisted of 1200 respondents who completed all questions of the first survey, of which 354 emergency medical workers, 312 firefighters, and 534 police officers. The second and third questionnaire were sent six and twelve months after the first questionnaire and had the same content.

The SIP data, Interview data and Personality data were collected and analysed by me, the author of this dissertation, in addition to analysing the existing VPT data. As can be seen, the datasets have been developed in phases. Therefore, it was possible to learn

from previous data collection and analyses and apply the newly gained knowledge in the design, collection and analyses of other datasets. After using the VPT and SIP data, I decided more exploratory information was needed on relevant characteristics (other than socio demographic, work and SIP characteristics) among emergency responders. Therefore, interviews were conducted with emergency responders. The results of the interviews partially informed the quantitative personality data collection. Together, the different datasets resulted in data on multiple types of psychological characteristics.

Data-analyses

In the quantitative studies, SPSS and Mplus were used to analyse relationships. A cross lagged panel design was used for longitudinal analyses, which is a design to study associations between variables measured in multiple time waves, which are hypothesised to have a causal relationship (Kenny, 1975). In this longitudinal design, psychological characteristics and exposure to external workplace aggression are measured during multiple time points (for example, six or twelve months apart). The analysis takes the two characteristics at both measurement occasions (in case of two waves) into account. This way, insight is gained in the direction of relationships and it is considered to approach causality.[25]

This dissertation used advanced quantitative techniques to address the problem of survey drop out. Both multiple imputation (Rubin, 2004), and Full Information Maximum Likelihood and auxiliary characteristics (Graham, 2009) were used to handle missing values due to drop out. This leads to more correct estimates of relationships.

In the qualitative study, Atlas.ti was used, to code transcriptions of interviews. Furthermore, Atlas.ti was used to categorize codes, with a strategy that was based on Hennink, Hutter & Bailey (2010). Open codes were compared and categorised. These inductive findings were then compared to the existing literature. The analysis strategies will be described more elaborately in the following chapters.

Overview of the dissertation

Table 1.1 provides an overview of the topic of each chapter, and of which research question(s) the chapters address. The chapters are based on submitted or published

25 The relationship is estimated independently of influences on the characteristics before the first measurement occasion.

articles.[26] Chapter two discusses variations between occupational groups in general correlates of exposure to workplace aggression. For this, the VPT data were used in a secondary analysis. The chapter covers work and socio-demographic characteristics, and not psychological characteristics. The chapter provides insight into to what extent work and socio-demographic characteristics are related to exposure to workplace aggression. In addition, it explores variations in correlates of exposure to workplace aggression between emergency medical workers, firefighters and police officers. It provides a first insight into possible variations in relationships between characteristics and exposure to workplace aggression.

Chapter three provides insight into the relation between psychological characteristics derived from the Social Information Processing (SIP) model (Crick & Dodge, 1994) and victimisation of police officers. It specifically focuses on the response decision and emotions of the SIP model. Wave one of the SIP data were used. The chapter gives a first insight into the first research question and addresses to what extent psychological characteristics are related to exposure to aggression.

In chapter four, the relationship between the response decision of police officers and their exposure to workplace aggression is explored longitudinally, using both waves of the SIP data. Besides addressing the first research question, it also addresses the second research question. It thus provides first insight into the direction of the relationship between psychological characteristics and exposure to workplace aggression.

Chapter five describes the perspectives of emergency responders on possible determinants ('risk factors') for being exposed to workplace aggression. It uses interview data of emergency medical workers, firefighters and police officers. This chapter addresses all three research questions. It provides information on the possible relationship between psychological characteristics and exposure to workplace aggression by describing the perspectives of emergency responders on how psychological and other characteristics

26 Part of the articles have co-authors. For *chapter two*, Tamar Fischer and I received the grant and we were coworkers on the VPT research project, which resulted in a report. Based on knowledge derived from that project, I designed and analysed the study in chapter two and wrote the drafts of chapter two, and Tamar Fischer contributed to all aspects of the study.
For *chapter three and four*, Tamar Fischer and Barbara Zwirs received the grant and supervised the SIP research project. Under their supervision, I designed the questionnaire, collected and analysed the data, and wrote a report and articles, including chapter three. Tamar Fischer and Barbara Zwirs collaborated in all aspects of the study in chapter three.
For chapter four, data from the same project as chapter three was used. I designed the study in this chapter and drafted the text. Tamar Fischer contributed to all aspects of the study and Willem-Jan Verhoeven contributed in designing the analysis strategy, interpreting the outcomes, and providing text to chapter four.
For chapter six and seven, I conducted the study and collaborated with Joran Jongerling in designing the analysis strategy, conducting the analyses, and interpreting the outcomes. I drafted the text for these chapters and Joran Jongerling provided feedback.

possibly influence being exposed to workplace aggression. Results provide insight into the direction of characteristics predicting exposure to workplace aggression. In addition, the chapter describes differences between occupational groups in perceived correlates of victimisation.

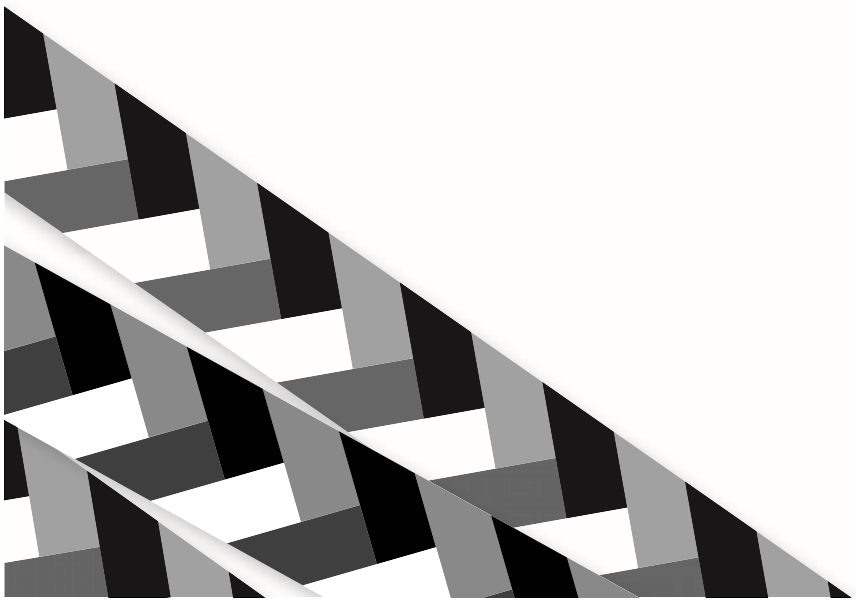
Chapter six discusses the extent to which exposure to workplace aggression can be measured similarly across occupational groups. This chapter is based on the first wave of the personality data. In addition, it explores how exposure to workplace aggression is measured best. Previous studies often measure the frequency of exposure to workplace aggression, and one of the questions in this chapter is whether adding the severity of exposure to workplace aggression into the measurement would improve the measurement of workplace aggression. This chapter gives more information on research question three, addressing differences in exposure to workplace aggression between occupational groups, even though not in relation to psychological characteristics. The chapter leads up to chapter seven.

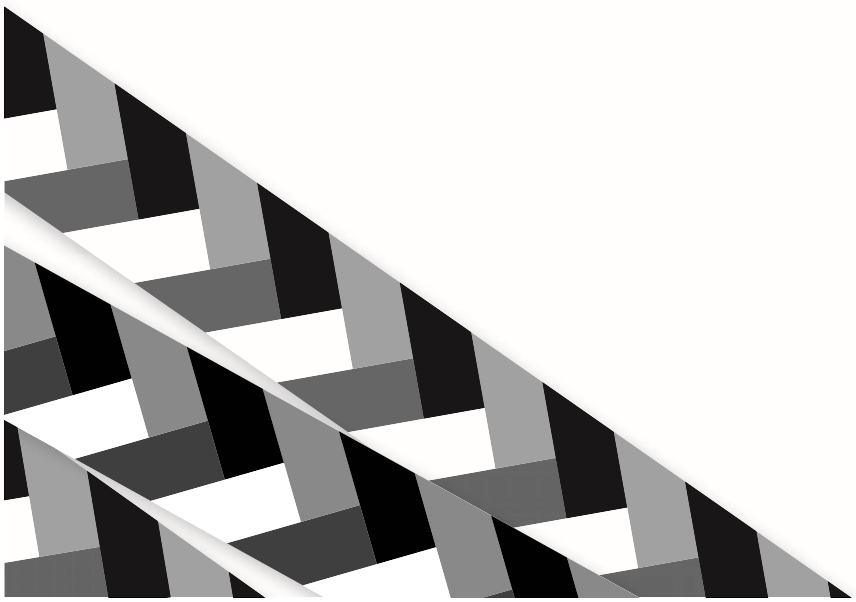
In chapter seven, the relationship between psychological characteristics and exposure to workplace aggression is addressed, based on the three waves of the personality data. Psychological characteristics addressed in this chapter are more general personality characteristics, which are less situation specific than the SIP characteristics. All three research questions are addressed in this chapter. The chapter investigates to what extent psychological characteristics add to the explanatory power of socio-demographic and situational characteristics. In addition, it explores the direction of relationships and differences between occupational groups. Chapter eight summarizes the results considering the research questions and discusses implications of the results of this dissertation.

Table 1.1 *Overview of dissertation.*

Chapter	Subject	Data	Research question
1	Introduction	-	1, 2 and 3
2	Exploring differences between occupational groups in work related risk factors of workplace victimisation	VPT data	Leads up to 1, 2 and 3
3	Relationship between response decision mechanisms and victimisation of police officers	SIP data	1
4	Relationship between response decision and victimisation of police officers over time	SIP data	1 and 2
5	Perspectives of emergency responders on risk factors of workplace victimisation	Interview data	1, 2 and 3
6	Measuring workplace victimisation of emergency responders	Personality data	Leads up to 1, 2 and 3
7	Relationship between psychological characteristics and victimisation of emergency responders over time	Personality data	1, 2 and 3
8	Discussion	-	1, 2 and 3


1





CHAPTER 2

Work characteristics and differences between occupational groups in exposure to workplace aggression among emergency responders

This chapter was published as:
Van Reemst, L. & Fischer, T. F. C. (2019). Experiencing external workplace violence: Differences in indicators between three types of emergency responders. *Journal of Interpersonal Violence, 34*(9), 1864-1889. doi: 10.1177/0886260516657913.

Data for this chapter were made available to us by the Veilige Publieke Taak programme of the Ministry of the Interior and Kingdom Relations.

Work characteristics and differences between occupational groups in exposure to workplace aggression among emergency responders

Police officers, firefighters and emergency medical workers are identified to have a relatively high risk of being confronted with aggression or violence at work in many countries (Gates et al., 2006; Health and Safety Executive, 2017; Rabe-Hemp & Schuck, 2007). This is considered to be due to the frequent face-to-face contact with the public (that is, patients and citizens in general), to working day, evening and night shifts, and to severe stress of the public in emergencies (cf. Landau & Bendalak, 2008, p. 98). Aggression against emergency responders can have serious negative consequences to professionals and organisations, such as increased mental health problems, physical injuries, or death of employees (FBI, 2019; Leino et al., 2011), but possibly also for the emergency care system. Hence, decreasing aggression at work is considered a priority by policymakers (Eurofound, 2013).

Aggression against professionals is often referred to in the literature as workplace aggression or workplace violence (e.g., Barling et al., 2009). The U.S.A. National Institute for Occupational Safety and Health (2002) defines workplace violence as 'violent acts (including physical assaults and threats of assaults) directed toward persons at work or on duty.' Types of workplace aggression that have been addressed have varied greatly (Barling et al., 2009). Overall, it can be of physical nature, such as hitting or kicking, or psychological nature, such as yelling, name-calling or threats (Dupré et al., 2014; Schat & Frone, 2011). Sometimes, studies focus on specific types of workplace aggression, such as experiencing racial discrimination or sexual harassment (Triana, Jayasinghe, & Pieper, 2015; Yagil, 2008). Many studies only address internal aggression, which is initiated by supervisors or co-workers. Workplace aggression initiated by people outside the organisation is higher in prevalence (Schat, Frone, & Kelloway, 2006). However, fewer studies seem to focus on this 'external' or 'public-initiated' workplace aggression, initiated by those they provide a service to (Mayhew & Chappell, 2007; Yagil, 2008). This workplace aggression is for example initiated by public, clients or patients, whereas another subtype of workplace aggression focuses on those who are in contact with employees for money gain (for example robbery) (Chappell & Di Martino, 2006; LeBlanc et al., 2006).

Similar to the unequal distribution of experiencing aggression in other populations, some emergency responders are at greater risk of exposure to workplace aggression than others (Fischer & Van Reemst, 2014). For example, Van der Velden, Bosmans & Van der Meulen (2015) showed that the majority of emergency medical workers who was

exposed to external workplace aggression, continued to be exposed to workplace aggression in the following months. Knowledge about indicators of exposure to workplace aggression is increasing, especially for nurses within hospitals, although the studies about emergency responders remain relatively scarce, despite their high risk of exposure to workplace aggression. Therefore, it is important to examine to what extent previously studied indicators also apply to emergency responders.

In general, studies about indicators provide information on indicators exposure to external workplace aggression in a population with the same profession (e.g., Ellrich, 2018; Grange & Corbett, 2002), or in a population with various professions, without distinguishing between them (e.g., Dupré et al., 2014; LeBlanc & Kelloway, 2002). Knowledge about to what extent indicators of exposure to external workplace aggression within a certain profession differ from indicators in other professions has been limited. Previously found indicators of exposure to external workplace aggression examined in a combined sample of multiple professions are important to gain knowledge about workplace aggression, but it is unclear to what extent these indicators (also) explain variations in exposure to external workplace aggression within specific professions, instead of variations between professions.

It seems likely that some work characteristics provide more risk for exposure to external workplace aggression in some professions than in others, because of differences in the situations professionals come across and in their job description, and thus the expectations the public may have of professionals. Studies suggest that differences in indicators of exposure to external workplace aggression seem to exist between professions (Winstanley & Whittington, 2002). However, to our knowledge, these differences in indicators between types of emergency responders have never been tested. This may be especially important for emergency responders, as emergency responders are a population at particular risk of workplace violence, while being important for society with regards to safety and varying in work situations. Therefore, knowledge about differences in indicators is needed to be able to prevent exposure to external workplace aggression by specifically targeting those at risk.

The present study thus aims to examine to what extent socio-demographic and work characteristics are related to exposure to external workplace aggression of emergency responders. In addition, this study will explore how these relations differ between three types of emergency responders. In the next section, possible indicators of being confronted with workplace aggression for emergency responders will be discussed, after which it will be described why differences in indicators between types of emergency responders may occur.

Indicators of exposure to external workplace aggression

Criminal opportunity theories (Cohen & Felson, 1979; Hindelang et al., 1978) are useful to explain why some professionals are more at risk to be exposed to external workplace aggression than others. Applications of these theories to victimisation describe that people differ in their likelihood to be exposed to aggression, because they perform different activities. Victimisation is thought to be more likely to occur if a person (a possibly suitable target) is in the presence of a motivated perpetrator and lacks guardianship (Cohen & Felson, 1979). Applied to work situations of emergency responders, if a professional is more often among possible perpetrators of aggression and less guardianship is present at work, one may be more likely to be exposed to external workplace aggression. Thus, according to criminal opportunity theories, people with certain socio-demographic and work characteristics are more likely to be exposed to external workplace aggression than others. These characteristics are probably inter-related: people with different ages and gender may self-select in job titles, causing different work tasks and aggression experiences. The characteristics that might have a relationship with exposure to external workplace aggression among emergency responders, which have been found in previous workplace aggression studies, will be described below.

Socio-demographic characteristics related to exposure to external workplace aggression

Previous review studies about exposure to external workplace aggression addressing socio-demographic characteristics suggest that male and younger professionals are more likely to be exposed to external workplace aggression, compared to female and older professionals (Ahmad, Al-Rimawi, Masadeh, & Atoum, 2015; Hahn et al., 2008; Hogh & Viitasara, 2005). According to the criminal opportunity theories, role expectations regarding being male or younger may be related to activities they perform and the aggression they are exposed to (Hindelang et al., 1978). This indicates that the relationship between these socio-demographic characteristics is likely to be explained by behaviour or work characteristics of males and younger professionals. Male and younger emergency responders might receive less respect from the public and younger professionals might have less skills in prevention or de-escalation of aggression than older professionals. In addition, they might have less beneficial organisational conditions, such as more competitive or stressful work environments and less control over work schedules (e.g., Aquino & Thau, 2009; Hills & Joyce, 2013). Being male and younger were also related to exposure to external workplace aggression among police officers specifically (Van Reemst, Fischer, & Zwirs, 2015, see chapter three). In this way, being male and being younger is thought to be related to being in the presence of more motivated offenders

and less guardianship and thus more exposure to external workplace aggression of emergency responders (*H1 & H2*).

Work characteristics related to exposure to external workplace aggression

Empirical studies about exposure to external workplace aggression found various related work characteristics, which can be categorised in characteristics predominantly concerning *the professional* and characteristics predominantly concerning the nature and frequency of *contact* with the public. Characteristics concerning the *professional* that may be related to exposure to external workplace aggression are the presence of guardianship against workplace aggression, reflected by the skills professionals have acquired and are able to display to prevent aggression. Previous studies about workplace aggression found that professionals who have gained more experience to avoid or de-escalate aggression, such as training, are exposed to less aggression at work (Ahmad et al., 2015; Gates et al., 2006; Mayhew & Chappell, 2007). Having a higher education and more years of service may have allowed them to acquire more skills to prevent workplace aggression (cf. Yagil, 2008). In addition, preventive policies of organisations might affect how professionals behave, thus which skills are displayed in practice, which may decrease the likelihood of workplace aggression. Preventive measures are found to be related to less workplace aggression (Ahmad et al., 2015; Spector et al., 2007). Therefore, having less years of service, having a lower level of education, and working in an organisation that uses less strategies to prevent workplace aggression are thought to be related to more exposure to external workplace aggression of emergency responders (*H3*).

Characteristics concerning the *contact* with the public are in accordance with criminal opportunity theories' argumentation about both the presence of motivated perpetrators and guardianship. According to general workplace aggression literature, professionals who have more face-to-face contact with the public, deal with 'difficult' people, or work more at night, are at increased risk of exposure to external workplace aggression (Dupré et al., 2014; Gates et al., 2006; LeBlanc & Kelloway, 2002; Mayhew & Chappell, 2007; Pinar et al., 2017). The mere presence of the public seems to create more opportunity for aggression, and working evenings and nights is recognised as a time to deal with 'difficult' public, such as people who have used substances or have psychiatric problems. (Yagil, 2008). In addition, less informal guardianship may be present, because more people are either asleep or intoxicated. Compared to their supervisors, professionals who work line jobs have more frequent and more direct contact with the public (Howard & Wech, 2012) and may have acquired less skills (guardianship) to deal with aggression if it occurs. Available research findings about emergency responders specifically suggest that working more hours per week and working in the evening or at

night are indicators of being confronted with aggression for police officers and firefighters (Broekhuizen et al., 2005; Van Reemst et al., 2013). Therefore, having more contact with the public, having contact in more public places, having a line job (versus supervisory duties), and working in the evening or at night are thought to be related to more exposure to external workplace aggression of emergency responders (*H4*).

Differences in indicators between emergency responders

Work situations of emergency responders have similarities. Police officers, firefighters and emergency medical workers respond to emergencies, work in periods of routine or relatively inactivity interrupted by periods of internal stress and activity, work on locations that vary greatly and are not always under their control (compared to workers in an emergency department of a hospital for example), protect public safety or (medical) safety of individuals but also expose themselves to personal danger, do a physically demanding job, have frequent contact with the public and frequently deal with negative emotions and frustrations of the public (Guidotti, 2015; Meadows, Shreffler, & Mullins-Sweatt, 2011, p. 41). However, work situations also vary between emergency responders. Police officers enforce laws, maintain order and de-escalate threats. Firefighters safeguard situations and people, extinguish fires, and rescue people. Emergency medical workers medically assist people.

Important differences for interaction with the public is the object of control for professionals. For police officers, the object of control is a human being, who is also the potential 'enemy'; for firefighters it is an external threat, such as a fire; for emergency medical workers it is a human being, similar to police officers, but this individual is considered a victim, not the enemy (Guidotti, 2015). In addition, police officers can legitimately use physical force, and they have various other tasks outside the police-station besides responding to emergency calls, such as general surveillance, handling traffic problems or working more community based (Dutch Police, 2019). In the Netherlands, it can vary between police officers what percentage of the time is dedicated to responding to emergency calls. Even if, formally, police officers do not work in the emergency service, such as community police officers, it is possible for them to be involved in emergencies in their local area. Furthermore, if emergency medical workers or firefighters assess a situation to be unsafe, the police will be involved to maintain order or de-escalate threats. If the three types of emergency responders work together in complex emergency situations, each profession has its own task. In these situations, the police officers are often the ones to have contact with the public. Firefighters work in larger groups of professionals at the same location (often four or more) than the other types of emergency responders (often two). In addition, compared to the other types of emergency responders, their work more frequently focuses on objects, such as fires

or constructions, instead of people, thereby having less personal or physical contact with people.

First, these differences in work situations are why differences in exposure to external workplace aggression between types of emergency responders are expected (*H5*). Results of monitoring studies in 2007 and 2009 in the Netherlands indicated that fire fighters were exposure to least workplace aggression (45%-52%), and emergency medical workers were exposed to most workplace aggression in the previous twelve months (83%-89%) (Jacobs, M., Jans, & Roman, 2009). Of police officers, 68% to 72% were exposed to workplace aggression in the previous year according to this study, which is less than other studies indicate (Van Reemst et al., 2015), suggesting that also those not working in public areas or responding to emergency calls were included in the sample. Therefore, we have slightly different expectations: We expect police officers to be exposed to more external workplace aggression than the other types of emergency responders. The reason is that police officers may have more negatively charged interactions with the public, compared to other emergency responders because of their task description. In addition and in correspondence with the outcomes of the previous studies, we expect emergency medical workers to be exposed to more external workplace aggression than firefighters, because they have more personal and physical contact with people.

These different work situations may also allow different characteristics to be of influence in interactions with the public. We will illustrate these possible differences with a specific example of differences in work situations between emergency responders in the Netherlands. Usually, supervisors of emergency medical workers are not emergency responders because they do not enter emergency situations, but they have office jobs. Many firefighters and police officers with supervisory duties do go to emergency situations. Professionals with supervisory duties working as a firefighter or police officer may, in practice, even more regularly communicate with the public or take the lead compared to other professionals, although this is not regulated by rules or guidelines. Therefore, it is possible that having supervisory duties provides equal or more risk for exposure to external workplace aggression for firefighters and police officers, whereas it might provide less risk to exposure to external workplace aggression for emergency medical workers, because those with supervisory duties generally do not provide emergency care (or may not be related due to not being included in the sample). In addition, as firefighters work in larger groups and may have less personal or physical contact with the public, it is possible that their individual (work) characteristics determine the likelihood of exposure to external workplace aggression less, and it may be more strongly determined by the quality of teamwork for example.

Individual empirical studies examining health care populations suggest that differences in indicators of exposure to external workplace aggression occur. For example, Viitasara, Sverke & Menckel (2003) indicate that characteristics that serve as a risk factor on one profession, may serve as a protective factor in other professions. For example, while often males are confronted with more workplace aggression, females are confronted more workplace aggression than males in some professions, such as assisting nurses. More often, studies find characteristics that are related in certain professions, but not or less in others. For example, Estryn-Behar et al. (2008) indicate that physical work load is related to exposure to workplace aggression in emergency departments and geriatrics, but not in psychiatrics, whereas uncertainty regarding treatments is related to exposure to workplace aggression in geriatrics and psychiatrics, but not emergency departments. Winstanley & Whittington (2002) indicated that working at night is a stronger correlate of workplace aggression against inpatient ward staff than workplace aggression against accident and emergency staff. As these are individual studies, it is unclear to what extent these findings are robust.

Although studies in other populations have previously identified differences in indicators of workplace aggression (Rasmussen, Hogh, & Andersen, 2013), to our knowledge, no comparative study of indicators of experiencing aggression among emergency responders is available at this point. Because of the lack of previous studies on differences in indicators between emergency responders, we will explore to what extent differences and similarities exist in work-related indicators of external workplace aggression across police officers, firefighters, and emergency medical workers *(H6)*.

Methods

Data

Data were analysed from a workplace aggression survey among Dutch professionals. This survey was conducted by the Ministry of the Interior and Kingdom relations of the Netherlands in 2011. The self-reported survey included questions about experiences of exposure to external workplace aggression, work related characteristics and socio-demographic characteristics. As the variables were measured at a specific moment in time (only exposure to workplace aggression was measured retrospectively), no conclusions can be drawn about the causality of the relationships. This should be kept in mind when interpreting the results of this study. However, as we selected relatively stable characteristics for this study, it is assumed that the socio-demographic and work characteristics are more likely to be indicators, than consequences of workplace aggression.

The data include answers from many public sector professionals. In the current study, only police officers, firefighters, and emergency medical workers were included to be able to compare emergency responders. Respondents were approached by an invitation to fill in the questionnaire via e-mail or intranet. All Dutch emergency medical workers (approximately 5,000) were approached by an invitation on their organisation's intranet and encouraged to fill in the survey by supervisors. A total of 272 emergency medical workers completed the questionnaire. Selected firefighters, based on the received permission from Dutch fire departments, were approached by an invitation by e-mail (N = 1,596). Twenty percent (N = 325) of firefighters completed the questionnaire. Almost 2000 (N = 1,950) police officers were approached by an invitation by e-mail to the web-based research panel about working in the (semi-)public sector of the Ministry of the Interior and Kingdom relations of the Netherlands. Twenty-nine percent (N = 561) of police officers completed the questionnaire.

As respondents anonymously filled in the questionnaire, it was not possible to examine differences between respondents and non-respondents on job functioning. Only for emergency medical workers, it was possible to compare percentage of males and the mean age of respondents to the population (Ambulancezorg Nederland, 2015). Respondents seemed quite similar to non-respondents, although slightly more often female and younger (73.9% vs. 76.0% males and age of $M_{respondents}$ = 43.2 vs $M_{population}$ = 44.9 years, *SD* unknown for the population). Differences between respondents and non-respondents could bias results, although for correlations, this seems rarer than for descriptive values (for example, Heggestad, Rogelberg, Goh, & Oswald, 2015).

For this study, only professionals who reported that their job was to enforce laws, to rescue or provide services to people ($N_{emergency\ medical\ workers}$ = 264, $N_{firefighters}$ = 255 and $N_{police\ officers}$ = 296; N_{total} = 815) were included. The sample primarily comprised of males (79.3%) and people who have a Dutch ethnic background (92.8%). The mean age of respondents in the sample was 42.7 years (*SD* = 9.8) and most respondents had finished a post-secondary education (70.3%). For emergency medical workers, age and gender of respondents seemed similar to the population.

Measures

Exposure to external workplace aggression

Two self-reported variables indicated confrontations with external workplace aggression: physical workplace aggression and psychological workplace aggression. In the questionnaire, it was described that questions addressed behaviour a) performed by people outside the organisation (excluding behaviour performed by colleagues or

supervisors), b) related to their profession or work activities, and c) that could occur during or outside work hours. Subsequently, by an open question, people were asked how often they were confronted with physical violence in the previous 12 months, to measure *physical workplace aggression*. The definition of physical violence was described as pushing, hitting, kicking, spitting, grabbing, wounding, physically hindering, throwing objects, destruction of property, theft of property and robbery.

Psychological workplace aggression was measured by three similar open questions: Questions about how often they had been confronted with verbal violence (e.g. "humiliating" or "yelling"), discrimination (e.g. "negative comments about color" or "negative comments about sexual orientation"), and other types of harassment (e.g. "threats" or "blackmail") in the previous 12 months. It was described that if multiple types of workplace violence occurred during one incident, respondents should only indicate the category which best described the incident. In this way, incidents were categorised as experienced by the emergency responders and not reported multiple times and therefore overestimated. The psychological aggression items were thus summed to create an overall score of *psychological workplace aggression* frequency.

Socio-demographic characteristics

Measured socio-demographic characteristics included *gender* and age. *Age* was measured by emergency responders' date of birth, which was recoded into age, so a higher number meant a higher age.

Work characteristics

Years of service was measured by the open question 'How many years do you work in this profession?' 'What is your highest completed education?' was asked to measure *education level*. Response categories included eight Dutch education levels, which were recoded into three categories because of few responses in some categories: Secondary education or lower (1), intermediate vocational education (2), and higher vocational education or higher (3). *Prevention strategies* were measured using self-reported items similar to the policies and procedures scale of Kessler et al. (2008). The prevention strategies scale was constructed using 6 items, such as 'organisational measures are taken to prevent incidents' and 'training is provided to deal with undesired behaviour'. Respondents answered using a 5-points Likert scale ranging from totally agree to totally disagree (*Cronbach's alpha* = 0.70). A higher score on the scale indicates more (perceived) prevention strategies.

The *contact frequency* between emergency responders and the public was addressed using an ordinal variable, which included face-to-face contact, but also contact by phone or e-mail. It is thus not possible to distinguish between the frequencies

of these different types of contact. Originally, the variable included five categories, but because of few responses in the lower categories (once a week or less), it was recoded into a variable with three categories (1 '10 persons per day or less', 2 '11-50 persons per day', and 3 'more than 50 persons per day'). *Working hours* was measured using the open question 'How many hours a week do you work (according to your contract)?', that indicated the amount of time someone is at risk of becoming a victim. *Supervisory duties* were measured by the question 'Do you have supervisory duties?', with response options 'Yes' (1) or 'No' (0). *Working in the evening or at night* was addressed by the question: 'When do you work?', with three answer options (working during the day, evening and night) and multiple answers possible. This was recoded into a dichotomous variable indicating working during the evening or night (19:00-7:00) (1) or not (0).

The type of contact with the public was addressed by the question: 'In your profession, how are you, usually, in contact with people outside your organisation?' Eleven options were provided (Answer categories 'Yes' = 1, or 'No' = 0), and multiple options were possible: 'At peoples' homes', 'On the street', 'In a public area', 'At another organisation', 'At events or during New Year's Eve', 'In public transport', 'By letter, e-mail, fax, etc.', 'By telephone', 'At the front desk', 'Elsewhere within my office building', 'In my (or someone else's) office'. The components of the eleven options were explored using principal component analysis for categorical items, which revealed two components (first six items and final five items; Eigenvalues: 3.11 and 2.64; % of variance: 28.26% and 23.99% respectively). Based on the first component, a variable indicating more *public contact* was constructed (6 items, *Cronbach's alpha* = .80).

Statistical Analysis

First, descriptive statistics of socio-demographic and work characteristics among the three professions were inspected (see Table 2.1 for descriptive values). Second, descriptive statistics of the workplace aggression variables were inspected. Frequencies of workplace aggression may have the limitation of being right skewed, violating linear regression analyses assumptions (Averdijk & Loeber, 2012; cf. Fischer et al., 2016). In addition, self-reported frequencies have the limitation of reporting an approximate number only (e.g., Alexander & Fraser, 2004, p. 379). This was also observed in this dataset. See Table 2.2 for a (categorised) description of physical and psychological exposure to workplace aggression variables in this sample. Therefore, the reported frequencies of confrontation with physical aggression were categorised, as often done in previous studies (see also Aquino & Bradfield, 2000; Dupré et al., 2014), based on optimal distribution of cell frequencies. Because of low physical workplace aggression frequencies of emergency medical workers and firefighters, exposure to physical external workplace aggression was dichotomised (0 versus 1 or more incidents). Exposure to

psychological external workplace aggression was categorised: No (0 incidents), some (1-4 incidents) and high (5 incidents or more) exposure to workplace aggression.

Table 2.1 *Frequency of confrontations with external workplace aggression of emergency responders in the past 12 months.*

	Emergency medical workers (*N* = 264)		**Firefighters (*N* = 255)**		**Police officers (*N* = 296)**	
	% Phy	***% Psy***	***% Phy***	***% Psy***	***% Phy***	***% Psy***
No incidents	65.2	21.2	86.3	52.5	39.2	12.2
1 incident	17.0	4.9	11.4	12.9	8.8	1.7
2-4 incidents	13.3	26.1	2.0	23.5	25.0	9.5
5-10 incidents	3.8	18.9	0.4	7.5	18.9	22.3
11 or more incidents	0.8	28.8	0.0	3.5	8.1	54.4

Note. Phy = exposure to physical external workplace aggression; Psy = exposure to psychological external workplace aggression.

Table 2.2 *Descriptive values of socio-demographic and work characteristics of emergency responders.*

		Emergency medical workers (N=264)	**Fire fighters (N = 255)**	**Police officers (N = 296)**	**Differences between professions**
		%	**%**	**%**	***Chi² (df)***
Gender	*Male*	73.9	91.4	73.6	33.11(2)**
Education level	*≤ Secondary*	19.7	28.6	38.5	98.02(4)**
	Intermediate vocational	30.7	50.2	47.0	
	≥ Higher vocational	49.6	21.2	14.5	
Contact frequency	*≤ 10*	40.9	84.3	34.8	156.63(4)**
	11-50	48.9	14.1	51.7	
	> 50	10.2	1.6	13.5	
Working evening or night	*Yes*	97.3	84.3	83.8	30.79(2)**
Supervisory duties	*Yes*	2.7	31.0	10.1	91.67(2)**
		M (SD)	***M (SD)***	***M (SD)***	***ANOVA***
Age[a]		43.15 (7.82)	40.29 (9.97)	44.35 (10.88)	12.37(2,803)**
Years of service		11.07 (7.00)	10.80 (8.63)	11.41 (10.75)	.32(2,812)
Prevention strategies		2.20 (.50)	2.10 (.50)	2.37 (.46)	22.67(2,812)**
Working hours[b]		34.02 (4.94)	22.44 (16.94)	35.32 (4.93)	123.55(2,794)**
Public contact		.82 (.26)	.62 (.24)	.60 (.34)	50.68(2,812)**

[a] Missings were identified for emergency medical workers (*n* = 3), firefighters (*n* = 1), and police officers (*n* =2); [b] only firefighters (*n* = 18) reported missings. *N* = 815. ** p < .001.

Third, separate bivariate analyses between the dependent and independent variables for the three professions were performed. Fourth, for each profession regression analyses were performed, using external workplace aggression as dependent variables. For exposure to physical workplace aggression, logistic regression was used because the variable was dichotomised, whereas for exposure to psychological workplace aggression, ordinal regression was used because the variable was at the ordinal level of measurement (three categories). The explained variance was calculated based on McKelvey & Zavoina (1975).

Additional regression analyses were performed including all three professions, using interaction terms of independent variables with dummy variables of the professions, to test for differences in associations. First, all interaction terms were added to test improvement of the models if interaction effects were taken into account. Thereafter, interaction terms were removed and added one-by-one (and then removed again) for interpretation of the individual effects. Because many moderation tests will be performed, we have to bear in mind that the likelihood of finding a statistical association, while no true relationship exists, is higher. However, we only use these interaction analyses for explorative goals and did not formulate hypotheses that could be accepted or rejected. Analyses were performed using SPSS version 22.

Results

Frequency of exposure to external workplace aggression

Approximately 38 percent and 72 percent of respondents had been confronted with physical and psychological aggression, respectively, in the previous 12 months. Forty-seven percent experienced 5 or more incidents of psychological aggression. A one-sample chi-square test indicated that, on average, respondents who were exposed to physical workplace aggression also were exposed to more psychological workplace aggression, χ^2 (df = 2, N = 815)= 241.33, *Cramer's V* = .54, p < .001).

Kruskal-Wallis tests[27] indicated that the three professions differed in experiencing psychological workplace aggression, χ^2_{phy} (2, 815)= 130.51, p < .001, χ^2_{psy} (2, 815)= 229.60, 2, p < .001.[28] Mann-Whitney U tests indicated that police officers were exposed to more external workplace aggression than emergency medical workers and firefighters, and that emergency medical workers were exposed to more external workplace aggression than firefighters, for both physical and psychological aggression (p < .001).

27 These tests were chosen because of the ordinal and dichotomous dependent variable (external workplace aggression) and a nominal independent variable (profession, three categories).

28 Phy = physical EWPV; Psy = psychological EWPV; Eme = emergency medical workers; Pol = police officers; Fir = firefighters.

Characteristics related to exposure to external workplace aggression

Table 2.3 shows the bivariate associations between exposure to external workplace aggression, work and socio-demographic characteristics for the three professions. Overall, having public contact (up to $r = .45$, $p < .01$) and working more hours (up to .29, $p < .01$) seem to be the strongest correlates of exposure to workplace aggression, which were positively related to exposure to workplace aggression. For firefighters, only one other significant relationship was found between independent and dependent variables (age, $r = -.13$, $p < .05$).

Table 2.3 *Pearson and Spearman correlations between exposure to physical (Phy) and psychological (Psy) external workplace aggression and independent variables.*

	Emergency medical workers		Firefighters		Police officers	
	Phy	***Psy^{s}***	***Phy***	***Psy^{s}***	***Phy***	***Psy^{s}***
Male	.11	-.13*	.00	.06	.29**	.08
Age	-.01	-.04	-.13*	-.06	-.19**	-.21**
Years of service	.07	.01	-.05	-.05	.11+	.02
Education – lower	-.07	-.08	.00	-.08	.08	.04
Education – medium	-.00	-.02	-.06	.06	-.01	.04
Education – higher	.05	.09	.07	.01	-.10+	-.11^{+}
Prevention strategies	-.06	-.12^{+}	.02	.07	.05	.04
Contact ≤ 10	-.01	-.21**	-.11^{+}	-.04	-.23**	-.32**
Contact 11-50	-.02	.06	.10	.02	.24**	.30
Contact > 50	.04	.23**	.04	.05	-.03	-.00
Working hours	.14*	-.02	.09	.13*	.29**	.07
Public contact	.17**	.00	.08	.17**	.45**	.26**
Supervisory duties	.13*	.03	.00	.07	.11	.04
Working evening and night	.07	.12	-.08	.04	.36**	.37**

Note. Phy = exposure to physical external workplace aggression; Psy = exposure to psychological external workplace aggression. $^{+}$ $p < .10$. * $p < .05$. ** $p < .01$. ^{S} Spearman (instead of Pearson) correlation.

Table 2.4a and 2.4b show the regression models for the two types of exposure to external workplace aggression, and the differences in relationships based on the added interaction terms. Exposure to physical workplace aggression of police officers are best explained by the model (R^2_{Phy} = .45; R^2_{Psy} = .32). For ambulance workers the explained variance was lower (R^2_{Phy} = .12; R^2_{Psy} = .17). The model seems to be of poor fit for explaining exposure to workplace aggression of firefighters, as the models did not prove to be better than the models without independent variables (R^2_{Phy} = .13 and R^2_{Psy} = .08; χ^2_{Phy} = 12.48 and χ^2_{Psy} = 18.10, *ns*). Adding all interaction terms in the same step resulted in an improvement of the models ($\chi^2_{diff\_phy}$ = 38.21, df = 24, p < .05; $\chi^2_{diff\_psy}$ = 61.03, df = 24, p < .01).

The tables show that for level of education, differences were found between police officers and the other types of emergency responders: While it was independently related to exposure to workplace aggression of police officers, with those with lower levels of education experiencing more workplace aggression, level of education was not related to exposure to workplace aggression of others. The relationship between contact frequency differed between police officers and emergency medical workers: Whereas having more contact with the public was related to more exposure to psychological workplace aggression of emergency medical workers, police officers having contact with 11-50 individuals per day were exposed to more workplace aggression than those having more contact. Additional analyses indicate that police officers who have contact with more than 50 individuals per day, work less in public spaces than those who have contact with 11 to 50 individuals. This is the only type of contact that was measured (see methods section) that was significantly related to these different contact frequencies (r = -.16, N = 193, p < .05). Having public contact was related to more exposure to psychological workplace aggression for firefighters and police officers, but this was different for emergency medical workers, where no relationship was found. Firefighters and police officers differed in the relationship between working evenings and nights and exposure to workplace aggression, as this was related to more exposure to workplace aggression for police officers, but not for others.

Table 2.4a *Logistic regression analyses predicting physical external workplace aggression of emergency medical workers (EMW), firefighters and police officers, and the differences (Dif.) in correlates, based on added interaction terms.*

	Marginal Effects (SD)			Dif.
	EMW (E)	**Firefighters (F)**	**Police officers (P)**	
Male	.04 (.01)	-.02 (.01)	.08 (.04)	ns
Age	-.00 (.00)	-.01* (.00)	-.01** (.00)	ns
Years of service	.01 (.00)	.00 (.00)	.01* (.00)	ns
Education (higher = ref)				
Secondary	-.11 (.02)	-.03 (.02)	.18* (.08)	E≠P, F≠P
Intermediate	-.06 (.01)	-.08 (.03)	.09 (.04)	E≠P, F≠P
Prevention	-.07 (.01)	.02 (.01)	.07 (.03)	ns
Contact (>50 = ref)				
≤ 10	-.16 (.03)	-.08 (.04)	.01 (.00)	ns
11-50	-.16 (.03)	-.03 (.01)	.12^{+} (.05)	E≠P
Working hours	.01 (.00)	.00 (.00)	.01 (.00)	ns
Public contact	.32* (.06)	.10 (.04)	.30** (.13)	ns
Supervisory duties	.30^{+}(.06)	.02 (.01)	.18* (.08)	ns
Evening or night	-.05 (.01)	-.04 (.02)	.20** (.09)	F≠P
N	258	236	294	
R^2	.12	.13	.45	
-2 Log likelihood	313.90	182.12	280.600	
$\chi^2(df)$	21.04* (12)	12.48 (12)	112.93** (12)	

Note. Interpretation of marginal effects: on average, the probability that professionals in a higher category are exposed to physical workplace aggression is (effect*100) percent higher (positive) or lower (negative effect) than those in a lower category of the independent variable. $^{+}$ p < .10. * p < .05. ** p < .01.

Table 2.4b *Ordinal regression analyses predicting psychological external workplace aggression of professionals and the differences (Dif.) in correlates.*

	Marginal Effects (SD)									Dif.
	Emergency medical workers (E)			Firefighters (F)			Police officers (P)			
	0	***1-4***	***≥5***	***0***	***1-4***	***≥5***	***0***	***1-4***	***≥5***	
Male	.08 (.03)	.03 (.03)	-.11 (.02)	-.09 (.01)	.05 (.02)	.04 (.02)	-.01 (.01)	-.01 (.01)	.02 (.01)	E≠P
Age	.00 (.00)	.00 (.00)	-.00 (00)	.00 (.00)	-.00 (.00)	-.00 (.00)	.00* (.00)	.00* (.00)	-.01* (.00)	ns
Years of service	-.00 (.00)	-.00 (.00)	.01 (.00)	.00 (.00)	-.00 (.00)	-.00 (.00)	-.00 (.00)	-.00 (.00)	.00 (.00)	ns
Education (higher = ref)										
Secondary	.06 (.02)	.02 (.02)	-.08 (.02)	.07 (.01)	-.04 (.01)	-.03 (.01)	-.09* (.08)	-.06* (.04)	.15* (.08)	E≠P, F≠P
Intermediate	.00 (.00)	.00 (.00)	-.00 (.00)	.03 (.00)	-.02 (.00)	-.01 (.00)	-.07⁺ (.06)	-.04⁺ (.03)	.10+ (.06)	E≠P
Prevention	.06 (.02)	.02 (.02)	-.08 (.02)	-.06 (.01)	.03 (.01)	.02 (.01)	-.03 (.03)	-.02 (.01)	.05 (.03)	ns
Contact (>50 = ref)										
≤ 10	.32** (.12)	.13** (.13)	-.46** (.09)	.19 (.02)	-.10 (.03)	-.08 (.03)	.02 (.02)	.01 (.01)	-.03 (.02)	E≠P
11-50	.24** (.09)	.10** (.09)	-.33** (.06)	.25 (.02)	-.14 (.05)	-.11 (.04)	-.10* (.08)	-.05* (.04)	.15* (.08)	E≠P
Working hours	-.00 (.00)	-.00 (.00)	.00 (.00)	-.00* (.00)	.00* (.00)	.00* (.00)	.00 (.00)	.00 (.00)	-.01 (.00)	ns
Public contact	.13 (.05)	.05 (.05)	-.18 (.03)	-.27* (.02)	.15* (.05)	.12* (.05)	-.10* (.09)	-.06* (.04)	.16* (.09)	E≠F, E≠P
Supervisory duties	-.10 (.04)	-.04 (.04)	.14 (.03)	-.08 (.01)	.04 (.01)	.03 (.01)	-.07 (.06)	.04 (.03)	.11 (.06)	ns
Evening or night	-.15 (.06)	-.06 (.06)	.21 (.04)	-.10 (.01)	.06 (.02)	.04 (.02)	-.10** (.09)	-.06** (.04)	.16** (.09)	F≠P
Test of parallel lines	ns			ns			ns			
N	258			236			294			
R^2	.17			.08			.32			
-2 Log likelihood	504.83			437.22			343.31			
$\chi^2(df)$	35.61**	(12)		18.10	(12)		68.91**	(12)		

Note. Interpretation of marginal effects: on average, the probability that professionals in a higher category of the independent variable are exposed to this category of psychological workplace aggression is (effect*100) percent higher (positive effect) or lower (negative effect) than professionals in a lower category of the independent variable. Differences are based on interaction terms. ⁺ p < .10. * p < .05. ** p < .01.

Gender was not independently related to exposure to workplace aggression, although the relationship with psychological workplace aggression for emergency medical workers and police officers differed according to the moderation analysis. Bivariately, emergency medical workers who were female were exposed to more workplace aggression, and police officers who were male were exposed to more workplace aggression. However, this was explained by less males having contact with more than 50 individuals per day for emergency medical workers (r = -.17, p < .01), and by multiple characteristics for police officers, but mostly more males having public contact (r = .41, p < .01). No difference between professions was found for age and it appeared that younger professionals were exposed to more workplace aggression. Neither differences between professions nor (robust) relationships between exposure to workplace aggression and years of service, prevention strategies, working hours and supervisory duties were found.

Discussion and conclusion

The purposes of this study were to examine to what extent socio-demographic and work-related characteristics were related to exposure to external workplace aggression of emergency responders, and to explore how indicators of exposure to external workplace aggression differ between emergency medical workers, firefighters and police officers. Emergency responders frequently experience aggression and violence from the public, but this population was rarely addressed in workplace aggression literature. Descriptive results showed that the distributions of physical and psychological exposure to workplace aggression varied between professions, similar to expectations (*H5*). Police officers were exposed to most workplace aggression and firefighters were exposed to least workplace aggression.

Consistent with the criminal opportunity theories (Cohen & Felson, 1979; Hindelang et al., 1978) and previous studies, we found several socio-demographic and work-related characteristics to be related to exposure to workplace aggression of emergency responders. However, counter to expectations, some characteristics were not related. Besides testing to what extent characteristics were related to exposure to workplace aggression of emergency responders, we extended previous findings by studying differences in indicators between three types of responders. First, findings that differed for the three types of emergency responders will be discussed, after which findings that did not differ for the three types of emergency responders will be discussed, and directions for future research will be highlighted.

Differences were particularly found for relationships between having more frequent and risky contact and exposure to workplace aggression, although in general this idea seems supported (*H4*). For police officers, having contact with 11 to 50 individuals a day

seems most risky for exposure to psychological workplace aggression, even more so than having contact with more than 50 individuals a day, which is different from emergency medical workers who are exposed to more external workplace aggression as they have higher contact frequencies. Based on the measurements of contact frequency, it is not possibly to indicate contact frequency for different types of contact (face-to-face or via telephone, for example). However, the additional analyses revealed that for police officers, having contact with more than 50 individuals a day indicates *less* contact in the public space than having contact with 11 to 50 individuals. A possibility is that police officers who handle (sometimes complex) situations in the public space, that more often include aggression, spend more time on one situation and administrative procedures, having less time for additional contacts with people. Having a higher level of public contact was related to more exposure to psychological workplace aggression for firefighters and police officers, but for emergency medical workers, no relationship was found. Having a lower education and working evenings and nights was related to more exposure to workplace aggression for police officers, while it was not for other professions.

Bivariate analyses indicated that female emergency medical workers are more often exposed to external workplace aggression than males, and male police officers were more often exposed to external workplace aggression compared to females. This corresponds to a previous study that found varying results for the relationship between gender and exposure to workplace aggression in other professions (Viitasara et al., 2003). However, the relationships between gender and exposure to workplace aggression were explained by other characteristics, which are work characteristics related to contact frequency and nature. This is in accordance with the idea of criminal opportunity theories that the relationship between socio-demographic characteristics and victimisation works indirectly, through other characteristics of the person (Hindelang et al., 1978). Overall, the idea that male professionals are more often exposed to workplace aggression does not seem supported in these populations *(H1)*.

The explorative expectation that the relationships between characteristics and exposure to external workplace aggression differ between police officers, firefighters and emergency medical workers thus seems supported *(H6)*. Additionally, the models to predict exposure to external workplace aggression in the three professions using the same socio-demographic and work related characteristics varied in explanatory power. For police officers, the characteristics best explained variations in exposure to workplace aggression. As mentioned in the introduction of this chapter, police officers vary greatly in their jobs within the police organisation, even within the selection of professions who enforce laws (those selected for this study). Exposure to external workplace aggression could thus be more strongly predicted for police officers, because

work characteristics of police officers more strongly determine the general nature of their work situations, than in the other professions. The result that having more public contact is the strongest indicator for police officers supports this idea. This might be considered a limitation of the study, as we cannot check what amount of time police officers who were included in the sample worked in the emergency service or outside the police-station, due to limitations in measurements of the survey. In future research about emergency responders it would therefore be important to only select police officers who work outside the police-station or respond to emergency calls *more than a certain percentage of time*, which was not possible in this study, to be able to replicate the results of this study or give more accurate insight into indicators of exposure to external workplace aggression in emergency responders.

For emergency medical workers and firefighters, work tasks and work situations are more similar than for police officers, which could have led to less explanatory power of the characteristics. The models for exposure to external workplace aggression of emergency medical workers explained one-eighth of the variation in exposure to external workplace aggression. For firefighters, few selected characteristics proved relevant for explaining exposure to external workplace aggression, and consequently the models for exposure to workplace aggression of firefighters were not better than a model without taking the selected characteristics into account. As firefighters work with more professionals at a time, it could be that other characteristics are be more relevant, such as the tendency to step forward or be more avoidant in contact with the public compared to co-workers, or intragroup processes, such as working better or worse as a team, which has previously been found to be related to workplace aggression (Estryn-Behar et al., 2008).

In addition, many relationships do not seem to differ between professions. Results provide support for the relationship between being younger and experiencing more exposure to external workplace aggression *(H2)*. Although theoretically this should be an indirect relationship (Hindelang et al., 1978), this was not explained by other characteristics in this study. As we also controlled for the education and years of service, and thus experience, and working hours of professionals, it seems likely that younger professionals might be at a higher risk of exposure to external workplace aggression by receiving less respect or less beneficial organisational conditions (Aquino & Thau, 2009; Hills & Joyce, 2013), or by being less careful than older professionals. To confirm this idea, it should be addressed in future research.

No relationship between exposure to external workplace aggression and working in an organisation with less strategies to prevent workplace aggression were found. The possible protective effect of more preventive strategies could be lower (and therefore have disappeared) because of the increased knowledge of respondents who have become a victim about prevention strategies of an organisation, who would thus report more

preventive strategies (cf. Fischer et al., 2016). In addition, no independent relationship between exposure to external workplace aggression and working hours was found, possibly because the time responding to emergency situations may only be influenced by working hours to a limited extent. Relationships between exposure to external workplace aggression and supervisory duties and years of service seem to point in similar directions for professionals, while only being significantly related for police officers. Bearing in mind that education level was also only related to exposure to external workplace aggression of police officers, the expectation that those with less skills or experience to avoid workplace aggression were exposed to more external workplace aggression was not convincingly supported (*H3*). It is possible that our measured characteristics were not good indicators of having skills of preventing workplace aggression in these professions. Therefore different measures (e.g. psychological characteristics or behaviour) should be used in future research.

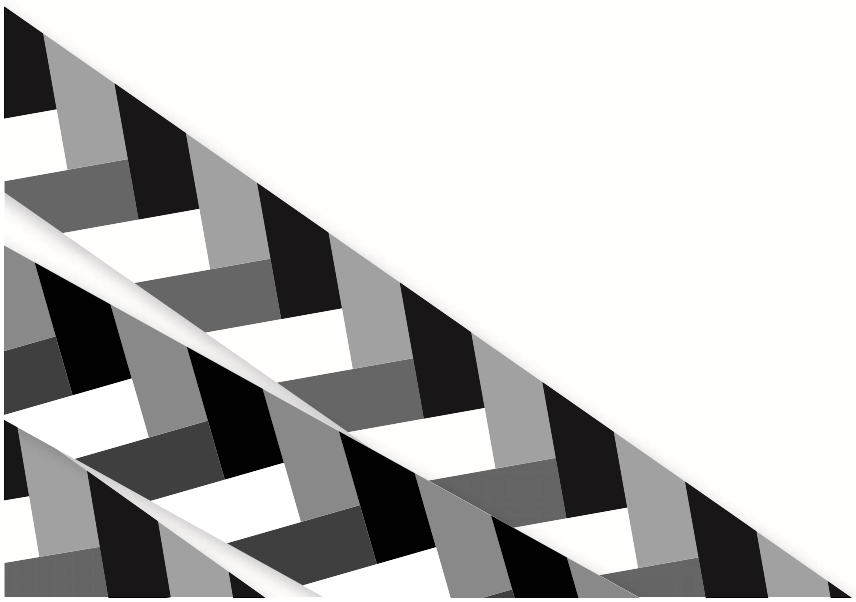
Bearing in mind its limitations, this study offers important directions for future studies and practice. First, it shows that predicting exposure to external workplace aggression should be improved, especially for emergency medical workers and firefighters. Many characteristics that were clear indicators of workplace aggression in other populations were not related to exposure to external workplace aggression for emergency responders. Other work characteristics that have not been included in this study could be relevant, such as the region professionals work in and the teamwork between co-workers. Professionals could be more at risk of exposure to external workplace aggression in regions that are known to be more violent (e.g., more arrests) or with a higher population density in general (e.g., Barrick et al., 2014; Kaminski et al., 2003). Unfortunately, no information was available about the regions of professionals in this study.

Furthermore, psychological characteristics of professionals could be related to exposure to external workplace aggression, such as behavioural characteristics (for example dominant behaviour) or personality characteristics. Criminal opportunity theories suggest that a possible victim should be ‘suitable’, that is ‘attractive’ or ‘vulnerable’. This was elaborated upon in previous and later proneness notions of victimisation (Sparks, 1981; Wolfgang, 1958). The contribution of psychological characteristics has been more widely studied in internal workplace aggression literature, for example showing that professionals higher in negative affect are exposed to more workplace aggression (e.g., Bowling & Beehr, 2006). For exposure to external workplace aggression of emergency responders, less is known about this topic. Knowledge about this topic would provide insight into possible directions for preventive measures as regards to training and selection of professionals.

In addition, the results highlight the importance of studying indicators of exposure to external workplace aggression separately for professions or of taking into account the differences between professions, as workplace aggression frequencies, model fits and related characteristics have been shown to differ between the three professions. For practice, the current study suggests that addressing the selected characteristics in prevention of exposure to workplace aggression will be especially relevant for police officers, and to lesser extent emergency medical workers, and should specifically target at younger police officers who have public contact and work during evenings and nights, and emergency responders who have more contact with the public, that takes place in public space.

To conclude, our study has shown that various socio-demographic and work characteristics are related to exposure to workplace aggression and that relationships vary between professions. These differences possibly occur because of variations in the nature of interaction with the public and context of work situations between professions, although research is needed to confirm these explanations. Thereby, this chapter has provided insight into the proneness to be exposed to workplace aggression of different types of professionals. To be able to direct preventive measures to the specific professionals at risk and to be reveal characteristics related to exposure to external workplace aggression of firefighters, future studies should further study a broader variety of indicators for separate professions.


2



CHAPTER 3

Response decision and exposure to workplace aggression among police officers: a cross sectional study

This chapter was published as:
Van Reemst, L., Fischer, T. F. C., & Zwirs, B. W. C. (2015). Response decision, emotions and victimization of police officers. *European Journal of Criminology, 12,* 635-657. doi: 10.1177/1477370815587767.

Financial support from *Police & Science* (Politie & Wetenschap) research programme in the Netherlands was received to conduct this study: number PW/OC/2011/15.

Response decision and exposure to workplace aggression among police officers: a cross sectional study

Being a police officer comes with inherent risks. Studies have found a relatively high rate of aggression against police officers in various countries such as the United Kingdom (Health and Safety Executive, 2017), the USA (FBI, 2019; Rabe-Hemp & Schuck, 2007), and the Netherlands (Naeye & Bleijendaal, 2008). Moreover, victimisation of police officers has serious negative consequences, such as psychological distress (Leino et al., 2011), depression, and physical health problems (Abdollahi, 2002) or even death (FBI, 2019). Some factors that determine victimisation risk, such as frequent confrontations with unpredictable and dangerous work situations or societal standards, affect all police officers. However, more risk factors exist, as victimisation is not distributed equally (Fischer & Van Reemst, 2014; Wilson & Zhao, 2008). Information as regards correlates of police victimisation may help in reducing victimisation by the application of this knowledge in the training and selection of police officers, or in their aftercare.

Explaining differences in victimisation

Theories about victimisation have focused mainly on *criminal opportunities*, such as the lifestyle/exposure theory (Hindelang et al., 1978) and the routine-activity theory (Cohen & Felson, 1979). Criminal-opportunity theories state that an offence is more likely to occur if a potential victim is exposed to motivated offenders, is an attractive target, and lacks safety precautions. Empirical studies that focused on characteristics related to criminal-opportunity theories have found that the likelihood of victimisation is higher for police officers who work in areas characterised by more violence, family disruption, economic problems, racial inequality, and a higher population size (Barrick et al., 2014; Jacobs, D. & Carmichael, 2002; Kaminski et al., 2003; Rabe-Hemp & Schuck, 2007). In addition, police officers with lower levels of education, who more often work at night, and who have received prior medical attention are more likely to experience victimisation (Kaminski & Sorensen, 1995; Rabe-Hemp & Schuck, 2007). According to studies performed in the USA (Ellis, Choi, & Blaus, 1993; Rabe-Hemp & Schuck, 2007), no association has been found between victimisation and an officer's gender, age, race, weight, or rank, although, according to Dutch studies (Driessen & Middelhoven, 2002), being male and being younger are risk factors. The studies on correlates of police victimisation related to criminal-opportunity theories have been able to explain to only a limited extent any differences in victimisation risk (between 7 and 15 percent of explained variance) (e.g. Covington, 2010). The *victim precipitation theory* (Wolfgang, 1958; see also Rock, 2017, p. 42) elaborates on the notion that victims contribute to the interaction between victim and perpetrator, and therefore to their own victimisation.

Early studies using this theory have focused on victims initiating violence (Amir, 1971; Wolfgang, 1958), evoking the notion that the victim precipitation theory blames the victim for being victimised. More recent empirical studies have paid less attention to attributing blame to one of the actors, while supporting the notion that some people are more likely to be victimised on the basis of certain characteristics or behaviour (Bowling, Beehr, Bennett, & Watson, 2010).

In a recent review of the literature, it was described that social information-processing approaches provide insights into dominant victimisation theories, because certain social information-processing (SIP) mechanisms may result in 'vulnerability' (proneness) to becoming a victim, owing to the behaviour people display, or may change as a result of victimisation (Van Reemst et al., 2016). According to that review, SIP mechanisms – namely, characteristics indicating how people process social information and arrive at a response – have been found to be related to victimisation. Qualitative studies among police officers in the Netherlands suggest that psychological characteristics of the victim related to the offender–victim interaction are associated with victimisation. Police officers who operate strictly according to the rules and are more dominant in interactions are suggested to be more likely to experience victimisation. However, police officers who have a very 'soft' or 'overly friendly' attitude are also more likely to experience victimisation (Abraham et al., 2007; Roeleveld & Bakker, 2010). However, this has not yet been systematically researched. Therefore, this study will examine the relationship between the process of response decision, emotions, and victimisation of police officers.

Response decision and emotions

The response decision and emotions are part of the leading theory in SIP, the Social Information Processing (SIP) model described by Crick and Dodge (1994; Dodge, 1986). According to the SIP model, people's responses in social situations are developed in different mental steps. People *encode* social cues (perceive the social information available), *interpret* the encoded information, *set a goal* for the situation, *generate responses,* and make a *response decision*, after which they carry out the selected response. The model is presented as a cyclical model. Emotions are related to the mental steps in the SIP model, as well as to behaviour or experiences. Negative emotional states such as anger and sadness are thought to increase the likelihood of both hostile SIP and hostile responses (Crick & Dodge, 1994, p. 81; Orobio de Castro, 2004). The response decision, the fifth step in the SIP model, consists of three evaluative dimensions and a selection dimension: evaluation (morality and appropriateness) of possible responses (*response evaluation*), expectations about the outcomes of possible responses (*outcome expectations*), and the perceived ability to carry out possible responses (*self-efficacy*). As

a result, one of the possible responses is selected (*response selection*). After the response decision step, the selected response is enacted (Crick & Dodge, 1994). The theoretical dimensions of the response decision are also empirically separate, as they have been shown to be independent predictors of the response undertaken (Fontaine, Burks, & Dodge, 2002).

In the response decision, one may evaluate and select different types of responses (Crick & Dodge, 1994); these responses may be related differently to the personal rights to being treated with respect, such as aggressive (that is, threatening, which may violate other people's personal rights to be treated with respect), passive (that is, withdrawn or avoidant, which may violate one's own personal rights to be treated with respect), and assertive responses (that is, active and confident, which takes into account one's own and other people's personal rights to be treated with respect). The evaluation and selection of responses may vary between situations and people. For example, people may consider an aggressive response to be more appropriate in threatening situations than in neutral situations, and one person may consider a passive response to be morally acceptable in order to protect oneself from violence, whereas another person might consider a passive response to be morally unacceptable, because it is part of his or her job to protect others.

Hypothesizing the relationship with victimisation of police officers

To date, the response decision and emotions have predominantly been used successfully to explain aggressive behaviour (for example, Kempes, Matthys, de Vries, & van Engeland, 2005). Moreover, in several recent studies, the SIP dimensions and emotions have also been found to be related to victimisation (Van Reemst et al., 2016). Because studies on response decision, emotions, and the victimisation of police officers are limited, we have based our expectations on victimisation studies in other populations. However, the situations for police officers are different from those of other populations, because police officers enforce laws and therefore often find themselves in threatening situations in which they must act in accordance with work protocols. Therefore, it remains to be seen whether the relationships that were found in victimisation studies in the general population apply to police victimisation.

We propose that the response decision dimensions are related to victimisation, because of the behaviour that people display. According to the SIP model (Crick & Dodge, 1994), people who apply more *positive* response decision mechanisms (that is, evaluations and expectations) as regards aggressive, assertive, or passive responses are *more* likely to display these types of responses. We propose that subsequent aggressive and passive behaviour may cause more conflict than assertive behaviour, and therefore result in victimisation. Displaying more aggressive behaviour has been found to give rise

to more conflict, possibly because other people's personal rights have been violated and therefore they respond more aggressively, resulting in victimisation (MacGreene & Navarro, 1998; Salmivalli & Helteenvuori, 2007). Acting more passively – for example, in a more avoidant or withdrawn manner – has also been found to be related to increased victimisation (Archer, Ireland, & Power, 2007; Kingery, Erdley, Marshall, Whitaker, & Reuter, 2010), possibly because these people are less likely to defend themselves physically or verbally when their personal rights are being violated. In general, we expect that positive evaluations and expectations of aggressive and passive responses as well as negative evaluations and expectations of assertive responses are related to higher risks of victimisation. Below, we discuss our expectations for the separate response decision dimensions.

Firstly, in line with our propositions based on the SIP model and on previous studies in other populations (Bettencourt & Farrell, 2013; Shahinfar, Kupersmidt, & Matzt, 2001), we expect that police officers who have positive evaluations of aggressive responses (H1a) and negative evaluations of assertive responses (H1b) are more likely to become victims. No studies are available regarding victimisation and the evaluation of passive responses; based on our propositions, however, we expect that people who have positive evaluations of passive responses are more likely to become victims (H1c).

Secondly, the idea, based on our propositions, that people who expect positive outcomes from aggressive and passive responses are more likely to be a victim was not supported by previous studies (Camodeca & Goossens, 2005; Pornari & Wood, 2010). It is possible that people are less aware of future consequences of behaviour than they are of current evaluations of responses. Therefore, expectations may influence behaviour and subsequent victimisation to a lesser degree. This is confirmed by the more mixed results for the relationship between outcome expectations and maladjustment than for the other dimensions of the response decision (Crick & Dodge, 1994). This leads to the hypothesis that police officers' expectations of outcomes are not related to victimisation (H2a). However, police officers are trained to de-escalate, and therefore to anticipate future responses to their own actions. Therefore, their responses might be influenced more by outcome expectations than by the responses of the general population. This leads to the expectation that police officers who have positive expectations of aggressive and passive responses, and who have negative expectations of assertive responses, are more likely to be victims (H2b). Clearly, H2a and H2b are competing hypotheses because this relationship is still largely unexplored.

Thirdly, based on our propositions and on previous empirical studies (Camodeca & Goossens, 2005; Singh & Bussey, 2011), we expect that people who have a higher perceived ability to carry out (higher self-efficacy of) aggressive responses (H3a) and lower self-efficacy to carry out assertive responses (H3b) are more likely to be victimised.

No studies are available concerning passive responses but, in line with our propositions, we expect that people with higher self-efficacy as regards a passive response are more likely to be victims (H3c). Finally, based on our propositions and on previous studies that confirm these ideas in the general population (for example, Kochenderfer-Ladd, 2004), we hypothesize that police officers who select more aggressive responses (H4a), less assertive responses (H4b), or more passive responses (H4c) are more likely to become victims.

The relationship between emotions and victimisation can be explained by way of multiple mechanisms. Being in a negative emotional state, such as feeling angry, is associated with more aggression (Anderson & Bushman, 2002). More indirectly, negative emotions may give rise to certain SIP mechanisms, which may subsequently result in aggression (Anderson & Bushman, 2002, p. 44-45). For example, if someone is very angry in a situation, he or she may be more likely to approve aggressive responses and behave in an aggressive manner. In studies on the relationship between situation-dependent emotions, SIP, and aggression, it has been suggested that situation-dependent anger is related to higher levels of aggression (Orobio de Castro, 2004, p. 92), but results have been inconsistent. Previous victimisation studies have often focused on general instead of situation-dependent emotions. For example, emotional exhaustion was associated positively with sexual harassment of police officers (de Haas, Timmerman, & Hoing, 2009), and studies in other populations have strongly supported the idea that anger, stress, fear, and sadness are linked to victimisation (Camodeca & Goossens, 2005; Fredstrom, Adams, & Gilman, 2011; Reijntjes, Kamphuis, Prinzie, & Telch, 2010). We expect that police officers who experience more situation-dependent negative emotions (H5) are more likely to become victims.

The SIP model seems to imply that aggression and victimisation result from specific social information mechanisms. However, SIP mechanisms are also influenced by previous experiences (Crick & Dodge, 1994). Therefore, it is possible that previous victimisation has influenced police officers' SIP mechanisms. For example, as a consequence of experiencing victimisation, people may develop lower self-efficacy in terms of assertive or aggressive responses, or more negative emotions. Like the present study, most previous research involving the SIP model was cross-sectional. Only a few studies have investigated the direction of the relationship between victimisation and both the response decision and emotions. These studies suggest that the relationship between SIP and victimisation is bidirectional (Bowling et al., 2010; Perren, Ettekal, & Ladd, 2013). The current study is not able to draw conclusions regarding the direction of associations, but it determines systematically whether the relationships that were hypothesised based on the SIP model and previous victimisation studies in other populations apply to police officers.

Methods

Participants

Police officers from 5 of the 25 former regional police forces in the Netherlands participated in this study. The selected police forces included two in urban regions and three in more rural regions. Police officers were approached by way of a message on the restricted computer network used by the selected police forces (intranet), containing a link to a digital questionnaire. The participants were recruited between December 2011 and March 2012, and they did not receive incentives for participating in the study. The questionnaire took approximately 15 minutes to complete (Median = 12:54, Interquartile range: 10:15–18:00 minutes).

Only police officers working on the streets qualified for participation (ranks: police trainee, police patrol officers, constable, constable first class, sergeant). Of the 1061 participants who opened the questionnaire, 815 met the qualification criteria. Of the qualified participants, 610 (74.8 percent) participants completed the questionnaire. The results of a non-response analysis showed that respondents were younger (M = 37.7 vs. M = 40.3, t (322.47) = -2.78, p < .01) and were more often female (26.4 percent vs. 18.1 percent, t (397.24) = 2.58, p < .01) than eligible police officers who did not complete the questionnaire, but they did not differ in terms of foreign-origin background or rank. In the analyses, information concerning all 815 eligible police officers was included, as multiple imputation (Rubin, 2004; Spratt et al., 2010) was used to impute missing data.[29] Respondents were younger (M = 37.7 vs. M = 40.2, t (609) = -5.70, p < .001) and more often female (26.4 percent vs. 20.6 percent, t (609) = 3.24, p < .001), but in terms of foreign-origin background they did not differ from the police population of one of the police forces. Comparable information relating to the police officers' ranks was not available.

Design and questionnaire

This cross-sectional study was conducted by means of a questionnaire. Part of the questionnaire was an adaptation of the Social Information Processing Interview (SIP-I, e.g. Crick & Dodge, 1996), and contained questions about SIP based on hypothetical situations (vignettes). The SIP-I was developed for the SIP model, and was shown to be a valid and reliable measure of SIP in previous studies in various populations (Orobio, Merk,

29 Respondents who did not complete the questionnaire were included in the analyses by means of multiple imputations if – *at the very least* – information about their age, gender, rank, and the area they worked in was available. More information was often accessible (see also Table 3.1). The number of cases with missing values on the different variables depended on the variable order in the questionnaire. The imputation model was specified using all variables in the present study, and 25 imputations were used.

Koops, Veerman, & Bosch, 2005; Van Nieuwenhuijzen et al., 2006). In addition, participants provided information on victimisation involving different types of aggression, and on socio-demographic and work-related characteristics.

Respondents were assigned randomly to one of the vignettes that had been developed for this study (see Appendix 1). The vignettes were based on previous studies on SIP (e.g. Verschuren, Fischer, & Zwirs, 2011), and had been adapted for police officers by deriving realistic work situations from a study dealing with police victimisation (Naeye & Bleijendaal, 2008). The situations were developed further by intensive consultation with experts regarding work situations in one of the police forces. Two situations were selected for the questionnaire. These were chosen based on the following criteria: the possibility of all respondents facing this situation during work; sufficient variation in responses to the questions; and no existence of a standard protocol for the situation. For both situations, an ambiguous (containing neutral and ambiguous signals) and an aggressive version (with added aggressive signals) were described, by varying one sentence in the hypothetical situation. In this way, possible differences between associations of response decision and victimisation in aggressive compared with ambiguous situations were able to be studied, as other signals, such as the location or the other person(s) in the situations, were held constant (Alexander & Becker, 1978; Goudriaan & Nieuwbeerta, 2007). However, because the type of situation had scant influence on the relationships between response decision, emotions, and victimisation, the results of the four vignettes were combined in this study.

Measures

Dependent variables: Types of victimisation.

Respondents indicated whether they had been a victim of (a) verbal abuse (five types, for example, 'insulting'), (b) threats (eight types, for example, 'seriously threatening'), and (c) physical violence (nine types, for example, 'hitting, punching, or kicking') (based on Hensbergen, 2002; similar to Schulte, Nolt, Williams, Spinks, & Hellsten, 1998) in answer to the question 'In the last six months, which types of violence have you come into contact with that was related to your job as a police officer?' Because dichotomous variables are often used in studies involving police victimisation (for example, Kaminski & Sorensen, 1995; Rabe-Hemp & Schuck, 2007), this was recoded into the dichotomous variables *verbal aggression*, *threats*, and *physical aggression* (0 = no, 1= yes).

Independent variables: Response decision and emotions.

After a description of the hypothetical situation was given, three potential responses were described: an aggressive (for example, prepare for a confrontation by taking out a

baton), passive (for example, ask the same question again), and assertive response (for example, try to persuade the person). Subsequently, for each response type, questions were asked about response evaluation, outcome expectation, and self-efficacy. For the three responses (assertive, aggressive, and passive), *negative response evaluation* was measured by the question 'What is your opinion about this response?' Answers were given on a three-point scale (1 = good, 2 = not bad, not good, 3 = bad). *Negative outcome expectation* was measured by the question 'Where do you think this response would lead?' Police officers were asked to select a more favourable outcome (for example, 'the boys walk away', which was coded as 1) or a more unfavourable outcome (for example, 'the boys call you names', which was coded as 2). *Low self-efficacy* with respect to the responses was measured by the question 'Would you be able to respond this way in this situation?' Answers were given on a three-point scale (1 = yes, 2 = a little bit, 3 = no).

Response selection was measured by the question 'If you were to perform one of these responses, which would you choose?' The options were the three responses previously described, representing a more assertive, passive, or aggressive response. Two types of situation-dependent emotions were measured by the questions 'Would you be relaxed?' and 'Would you be angry?' Answers were given on a three-point scale (1 = no, 2 = a little, 3 = yes). Answers about feeling relaxed were recoded, so higher scores on both questions implied more negative emotions (*tension* and *anger*).

Control variables: Socio-demographic characteristics and work-related characteristics.

Respondents also answered a number of questions relating to their social demographic and work-related characteristics. These are used as control variables, because the number of studies on the relationship between these characteristics and victimisation is limited, and, as described in the introduction, these characteristics may be related to victimisation according to previous studies. Respondents provided their year of birth, which was transformed to *age*, as well as their *gender* (0 = male, 1 = female). Respondents provided information about their *(non-)foreign background* by indicating whether one or more of their parents has been born in the Netherlands, following the definition of foreign backgrounds (1 = Dutch, 2 = Western foreign background, 3 = non-Western foreign background) in Statistics Netherlands (CBS, 2010). *Education* was measured by a closed question about the highest level of education they had attained, with response options being the four different levels of police training currently available in the Netherlands. A higher score indicated a higher education. In an open question, police officers indicated their *years of service*, including the years of practical experience they had gained during their training. In addition, police officers indicated the number of *hours* per week they worked *on the street*, and whether they worked more, the same, or less on weekends or at night compared with their co-workers. From these questions, the ordinal variables

working on weekends and *working at night* were derived, with higher scores indicating working relatively more on weekends and at night. Police officers also mentioned the location of the police force they worked within, from which the variable *working in an urban area* was derived.

Statistical analyses

Firstly, the descriptive statistics of the variables are shown. Secondly, the bivariate associations between all variables are explored in a correlation matrix, using dummy variables for nominal variables (that is, response selection – reference category is aggressive response selection, and ethnic background – reference category is having a Dutch background). Finally, the independent associations of the response decision variables and control variables are examined using logistic regression analyses to predict the likelihood of victimisation in the form of verbal aggression, threats, and physical aggression. All analyses were conducted using SPSS version 19.

Results

Table 3.1 shows descriptive statistics of both the dependent and independent variables. Of 815 police officers, 87.7 percent (N = 715) had been a victim of verbal aggression, 66.9 percent (N = 545) of threats, and 65.9 percent (N = 537) of physical aggression in the previous six months. Police officers were often negative about aggressive responses (68.6 percent, 86.8 percent, and 86.8 percent, respectively, for the evaluation, outcome expectancy, and self-efficacy), and were seldom negative about assertive responses (11.4 percent, 16.7 percent, and 10.4 percent, respectively). The groups of police officers with positive and negative opinions about passive responses were more equal in size (31.6 percent, 44.3 percent, and 33.1 percent were negative). As regards response selections, 14.1 percent selected an aggressive response, 20.7 percent chose a passive response, and 65.2 percent opted for an assertive response.

Table 3.1 *Descriptive statistics of dependent and independent variables.*

	Before imputatation			After imputation (N=815)
	N	***Value***	**%**	**%**
Verbal aggression	539	Yes	88.4	87.7
	610	*Total N*		
Threats	408	Yes	66.9	66.9
	610	*Total N*		
Physical aggression	399	Yes	65.4	65.9
	610	*Total N*		
Response evaluation/aggressive response	509	Negative	72.1	68.6
	158	Neutral	22.4	23.7
	39	Positive	5.5	7.6
	706	*Total N*		
Response evaluation/passive response	204	Negative	31.9	31.6
	147	Neutral	23.0	25.8
	289	Positive	45.2	42.6
	640	*Total N*		
Response evaluation/assertive response	35	Negative	5.5	11.4
	144	Neutral	17.7	25.2
	461	Positive	72.0	63.4
	640	*Total N*		
Outcome expectation/aggressive response	625	Negative	88.5	86.8
	706	*Total N*		
Outcome expectation/passive response	274	Negative	33.6	44.3
	640	*Total N*		
Outcome expectation/assertive response	87	Negative	10.7	16.7
	640	*Total N*		
Self-efficacy/aggressive response	634	Low	89.8	86.8
	39	Neutral	5.5	7.1
	33	High	4.7	6.1
	706	*Total N*		
Self-efficacy/passive response	233	Low	36.4	33.1
	75	Neutral	11.7	18.4
	332	High	51.9	48.5
	640	*Total N*		
Self-efficacy/assertive response	45	Low	7.0	10.4
	101	Neutral	15.8	20.7
	494	High	77.2	68.8
	640	*Total N*		
Response selection	37	Aggressive	5.8	14.1
	112	Passive	17.5	20.7
	491	Assertive	76.7	65.2
	640	*Total N*		
Tension	131	Yes	18.6	19.7
	337	A little	47.7	46.2
Anger	58	Yes	8.2	10.0
	241	A little	34.1	34.2
	407	No	57.6	55.8
	706	*Total N*		

Table 3.1 *Continued*

	Before imputatation				**After imputation (N=815)**
Gender	198	Female		24.3	24.3
	815	*Total N*			
Ethnic background	59	Non-Western		7.3	7.3
	50	Western		6.2	6.2
	703	Dutch		86.6	86.4
	812	*Total N*			
Level of education	68	Highest		9.1	9.6
	448	Higher		55.0	59.6
	197	Lower		26.4	25.9
	33	Lowest		4.4	4.9
	746	*Total N*			
Rank	268	Sergeant		32.9	32.9
	377	Constable first class		46.3	46.3
	77	Constable		9.4	9.4
	37	Police patrol officer		4.5	4.5
	56	Police trainee		6.9	6.9
	815	*Total N*			
Working at night	156	More		20.7	21.1
	483	Same		64.2	63.2
	113	Less		15.0	15.7
	752	*Total N*			
Working on weekends	68	More		9.0	9.4
	620	Same		82.4	81.5
	64	Less		8.5	9.0
	752	*Total N*			
Urban area	679	Urban		83.3	83.3
	815	*Total N*			
	M	***SD***	***N***	***Range***	***M***
Age	38.4	11.1	815	19–66	38.4
Years of experience	13.6	10.5	752	0–42	14.2
Hours on streets	30.5	8.3	752	0–40	30.4

Note. Before imputation, variables had different *N*s owing to dropouts during the questionnaire, related to the order of questions in the questionnaire. In the questionnaire, socio-demographic questions were presented first and questions about victimisation were presented last. After imputation, *N* = 815 for all variables.

Table 3.2 shows the correlations between dependent and independent variables. The *response evaluation* and *self-efficacy* variables were not associated with any of the types of victimisation in terms of aggression. Police officers with a negative *outcome expectation* of both an aggressive response and an assertive response were more likely to be a victim of threats. Outcome expectations regarding passive responses were not associated with any of the types of victimisation. *Response selection* was associated with being a victim of physical aggression. Police officers who selected an aggressive response were more likely to be a victim of physical aggression than those who selected an assertive or passive response. The response-decision mechanisms were intercorrelated.

Emotions (*tension* and in particular *anger*) were associated with the different dimensions of the response decision (see Table 3.3), but neither anger nor tension was associated with victimisation. Police officers who experience more tension in a situation have more negative outcome expectations, and have lower self-efficacy as regards aggressive responses. Police officers who experience more anger in a situation have more positive evaluations and outcome expectations of aggressive responses, and more negative evaluations and outcome expectations of passive and assertive responses. In addition, they have lower self-efficacy (for the three responses).

Most socio-demographic characteristics and work-related characteristics were associated with victimisation. Police officers who indicated that they were male, held a higher rank, had fewer years of experience, were younger, worked more hours on the street, at night, on the weekends, and in an urban area were more likely to be a victim. Police officers with a Western foreign background were also more likely, and those with a non-Western foreign background were less likely than others to become a victim of threats.

Table 3.2 *Correlations between dependent and independent variables.*

	Verbal aggression	Threats	Physical aggression
Victimisation variables			
Verbal aggression (0/1)			
Threats (0/1)	.47**		
Physical aggression (0/1)	.43**	.47**	
Response decision variables			
Negative response evaluation/aggressive (1–3)	-.01	-.04	-.08+
Negative response evaluation/passive (1–3)	-.03	.02	-.02
Negative response evaluation/assertive (1–3)	-.02	.06	.02
Negative outcome expectation/aggressive (1/2)	.11+	.12**	.01
Negative outcome expectation/passive (1/2)	-.01	.06	-.01
Negative outcome expectation/assertive (1/2)	.05	.14**	.09
Low self-efficacy/aggressive (1–3)	.03	-.02	-.05
Low self-efficacy/passive (1–3)	-.02	.03	-.01
Low self-efficacy/assertive (1–3)	-.01	.04	.05
Response selection/aggressive (0/1)	.05	.06	.16*
Response selection/passive (0/1)	.00	.03	-.03
Response selection/assertive (0/1)	-.03	-.06	-.09
Tension (1–3)	.03	.00	-.03
Anger (1–3)	-.00	.05	.05
Control variables			
Gender (0/1, female = 1)	-.03	-.08*	-.12**
Age (19–66)	-.13**	-.12**	-.22**
Ethnicity – Dutch	.03	.01	.01
Ethnicity – Western immigrant	.05	.10*	.06
Ethnicity – Non-Western immigrant	-.09+	-.11*	-.07
Level of education (1–4)	.03	-.00	-.06
Rank (1–5)	.02	.09*	-.07
Years of experience (0–42)	-.12**	-.08*	-.19**
Hours on streets (0–40)	.14**	.16**	.20**
Night (1–3)	.12**	.12**	.23**
Weekend (1–3)	.13**	.12**	.16**
Urban (0/1)	.12*	.06	.14**

Note. $N = 815$. $^{+}\ p < .10$. $^{*}\ p < .05$. $^{**}\ p < .01$.

Table 3.3 *Correlations between response decision and emotion variables.*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Negative response evaluation/aggressive (1–3)													
2. Neg. response evaluation/passive (1–3)	-.09+												
3. Negative response evaluation/assertive (1–3)	-.22**	.30**											
4. Negative outcome expectation/aggressive (1/2)	.32**	-.11*	-.16**										
5. Neg. outcome expectation/passive (1/2)	-.21**	.51**	.24**	-.09+									
6. Negative outcome expectation/assertive (1/2)	-.16**	.04	.33**	-.01	.35**								
7. Low self-efficacy/aggressive (1–3)	.51**	-.16**	-.22**	.28**	-.19**	-.13**							
8. Low self-efficacy/passive (1–3)	-.13**	.79**	.23**	-.10*	.49**	.02	-.15**						
9. Low self-efficacy/assertive (1–3)	-.23**	.28**	.74**	-.17**	.24**	.31**	-.23**	.27**					
10. Response selection/aggressive (0/1)	-.23*	.14*	.29	-.20**	.16*	.18*	-.24*	.13*	.28				
11. Response selection/passive (0/1)	.03	-.23**	.05	.01	-.16**	.07	.03	-.26**	.10	-.02			
12. Response selection/assertive (0/1)	.21**	.09	-.32**	.13*	.02	-.19*	.20	.12*	-.33**	-.40*	-.66**		
13. Tension (1–3)	-.07+	-.06	.01	.12**	.09**	.13**	-.14**	-.02	.05	.03	-.02	-.01	
14. Anger (1–3)	-.20**	.12**	.22**	-.09*	.25**	.19**	-.25**	.13**	.25**	.13	-.05	-.09+	.21**

Note. Neg = Negative. $N = 815$. $^{+}\ p < .10$. $^{*}\ p < .05$. $^{**}\ p < .01$.

Predicting victimisation

Table 3.4 shows the multivariate analyses. No multicollinearity problems were found (all variance inflation factor values were lower than 10, ranging from 1.05 to 6.05), despite high correlations between evaluations and self-efficacy regarding the same type of response (r = .51, r = .79 and r = .74 for aggressive, passive, and assertive responses, respectively; see Table 3.3) and age, rank, and years of experience (range from r = .64 to r = .87; see Appendix 2). The socio-demographic and work-related characteristics explained 16 percent, 19 percent, and 21 percent of the variance in exposure to verbal aggression, threats, and physical aggression, respectively. Adding response decision to the socio-demographic characteristics and work-related characteristics resulted in an increase of 37 percent to 44 percent in explained variance of exposure to aggression. The total models explained 23 percent, 26 percent and 29 percent of the variance in exposure to verbal aggression, threats, and physical aggression, respectively.

The negative *outcome expectation* of an aggressive response remained associated positively with victimisation in the form of verbal aggression and threats. For police officers who had negative outcome expectations, the odds of experiencing victimisation were more than three times larger (Odds Ratio (OR) verbal aggression = 3.08; OR threats = 3.26). The negative outcome expectation of an assertive response remained associated positively with threats. For police officers who had negative outcome expectations, the odds of experiencing victimisation were more than two times larger (OR threats = 2.24). In addition, the associations between the response selection and physical aggression remained significant. For police officers who selected an aggressive instead of passive or assertive response, the odds of experiencing physical victimisation were five times larger (OR passive response = 0.18; OR assertive response = 0.20). The evaluation, self-efficacy, and emotions of police officers were not related to the reported victimisation in the multivariate models.

Table 3.4 *Logistic regression analyses of victimisation of verbal aggression, threats, and physical aggression relating to response decision, emotions, socio-demographic, and work characteristics.*

	Verbal aggression		Threats		Physical aggression	
	B	***B***	***B***	***B***	***B***	***B***
Control variables						
Gender (0/1, female = 1)	-0.44	-0.52	-0.59**	-0.66**	-0.90**	-0.94**
Age (19–66)	-0.02	-0.02	-0.05**	-0.05**	-0.05**	-0.05**
Western foreign background (0/1)[a]	0.40	0.29	0.98+	0.89	0.16	0.06
Non-Western foreign background (0/1)[a]	-1.02*	-1.13*	-0.96**	-1.05*	-0.86*	-0.95*
Level of education (1–4)	0.13	0.14	-0.06	-0.02	-0.07	-0.05
Rank (1–5)	0.49**	0.48**	0.66**	0.67**	0.34**	0.34**
Years of experience (0–42)	-0.04	-0.04	-0.01	-0.01	-0.01	-0.01
Hours on streets (0–40)	0.02	0.03+	0.03*	0.04**	0.03**	0.04**
Night (1–3)	0.21	0.25	0.22	0.22	0.57**	0.61**
Weekend (1–3)	0.38	0.42	0.20	0.21	0.21	0.21
Urban (0/1)	0.47	0.65+	-0.12	-0.04	0.11	0.31
Response decision variables						
Negative response evaluation/aggressive (1–3)		-0.10		-0.03		-0.12
Negative response evaluation/passive (1–3)		-0.09		-0.06		-0.20
Negative response evaluation/assertive (1–3)		-0.19		0.26		-0.39
Negative outcome expectation/aggressive (1/2)		1.12**		1.18**		0.51
Negative outcome expectation/passive (1/2)		-0.17		-0.04		-0.39
Negative outcome expectation/assertive (1/2)		0.65		0.81*		0.74+
Low self-efficacy/aggressive (1–3)		0.11		-0.19		-0.03
Low self-efficacy/passive (1–3)		0.03		0.06		0.18
Low self-efficacy/assertive (1–3)		-0.08		-0.24		0.13
Response selection/passive (0/1)[b]		-1.20		-0.35		-1.70*
Response selection/assertive (0/1)[b]		-1.38		-0.50		-1.64*
Tension (1–3)		0.03		-0.08		-0.20
Anger (1–3)		-0.07		0.03		0.13
Constant	-0.33	-1.56	-0.54	-2.73	0.06	1.20
Nagelkerke R^2	.16	.23	.19	.26	.21	.29

Note. $N = 815$. [a.] Dutch is the reference category. [b.] Aggressive response selection is the reference category.
$^{+}$ $p < .10$. ** $p < .01$. * $p < .05$.

Discussion

The present study examined to what extent response decision and emotions in hypothetical social situations were related to differences in victimisation involving police officers, a population that experiences considerable victimisation (Health and Safety Executive, 2017; Naeye & Bleijendaal, 2008; Rabe-Hemp & Schuck, 2007). According to the SIP model of Crick and Dodge (1994), people generate a response decision by assessing four dimensions: appropriateness of possible responses (*response evaluation*), expectations about the outcomes of possible responses (*outcome expectations*), and the ability to perform a possible response (*self-efficacy*), which results in the selection of a response (*response selection*). Emotions are expected to be related both to response decision and to victimisation.

Response decision is indeed related to victimisation, although observed relationships were not always in the expected direction. In the following paragraphs, the results are summarised and examined in more detail. Firstly, we discuss associations that are in keeping with our hypotheses. Secondly, we discuss results that are not in accordance with our hypotheses. These are: (a) associations in a direction other than expected, (b) significant associations although non-significant associations were expected, and (c) non-significant associations although significant associations were expected.

In keeping with our hypotheses 4a and 4b, results illustrate that police officers who *select* aggressive rather than passive or assertive *responses* are more likely to become a victim. In social interactions, aggressive responses may elicit aggressive responses from the other person, which increases the chance of victimisation. In the other direction, victimisation experiences may lead to selecting more aggressive rather than passive or assertive responses – for example, because people want to stand up for themselves.

On the basis of previous studies and theory, we formulated two competing hypotheses with respect to outcome expectations. Our finding that *outcome expectations* of aggressive and assertive responses are related to victimisation (H2b) suggests that police officers are aware of future consequences of aggressive and assertive responses, possibly as a result of their training. Interestingly, police officers with more negative outcome expectations of aggressive and assertive responses were found to be more likely to be a victim. Possibly, it is beneficial for a police officer to have more positive outcome expectations of aggressive responses, owing to aggressive work situations. The feeling that a situation will evolve positively if the officers have an active reaction (aggressive or assertive) may lead to less victimisation, because officers may come across as being more confident. Another possibility is that victimisation experiences lead to a

pessimistic view regarding assertive and aggressive responses. Additional studies are needed to verify these findings.

The association between selecting a passive response and victimisation was in contrast to the expected direction (H4c). We found that victims were less likely to select passive responses. For police officers, selecting passive responses may prevent victimisation because of dangerous work situations. Because one of the possible passive responses is to withdraw from the situation, this results in fewer criminal opportunities and therefore in a reduced likelihood of being victimised. In other populations, SIP studies have focused on interactions that last longer than those between police officers and citizens, such as interactions in peer groups in which withdrawal may be less effective or even impossible.

No associations with victimisation were found for *response evaluation* and for *self-efficacy* of any type of response (aggressive, passive, or assertive), and for *emotions*. This is not in line with our hypotheses (1, 3, and 5). Studies have found that victims have lower self-efficacy for assertive behaviour (Singh & Bussey, 2011) and higher self-efficacy for aggressive behaviour (Camodeca & Goossens, 2005). It is possible that police officers are influenced to a certain extent by police protocols and training. It is also likely that police officers have higher self-efficacy and more positive evaluations for responses that are addressed in training and that are written down in protocols. This could explain why no association was found, which is in contrast to previous studies on children and adolescents (Shahinfar et al., 2001; Warden & Mackinnon, 2003). Comparative research is necessary to test this possible explanation.

A comparable interpretation can be given for the unexpected (H5) absence of an association between victimisation and situation-dependent emotions (that is, tension and anger) in our study. Owing to the fact that police officers are trained to work in dangerous and possibly emotionally loaded situations (for example, eliciting anger), outcomes such as victimisation may be less likely a result of experiencing emotions than in other populations. This suggestion is supported by the fact that, as theorised (Crick & Dodge, 1994; Orobio de Castro, 2004), emotions are associated with the response decision process (for example, more positive evaluations, expectations, and self-efficacy for aggressive responses), but that no association is found between situation-dependent emotions and response selection. It appears that the final response is affected more than in previous research by factors from outside the evaluative dimensions of the response decision. As stated previously, such factors may be a result of training and work protocols.

Another more methodological reason for the absence of an association between emotions and victimisation is that situation-dependent emotions were measured instead of general or clinical emotions, as had been done in many previous studies. Because situation-dependent emotions are partially influenced by the hypothetical situation,

the variability between people in terms of experienced emotions might be indicated better by measuring general emotions rather than situation-dependent emotions. More importantly, measuring situation-dependent emotions may not reflect the realistic experience of emotions in social situations. Since the design of the questionnaire required police officers to subsequently, and reflectively, go through the mental sub-steps with regard to response decision, as a result the reflective nature of the response decision process may have affected the outcomes more than they do in real-life situations, while emotional or automatic aspects may have had less impact than in real-life situations. Therefore, this study informs us only about reflective SIP (Orobio de Castro, 2004), and future research is necessary with regard to emotional SIP, for example, in experimental studies.

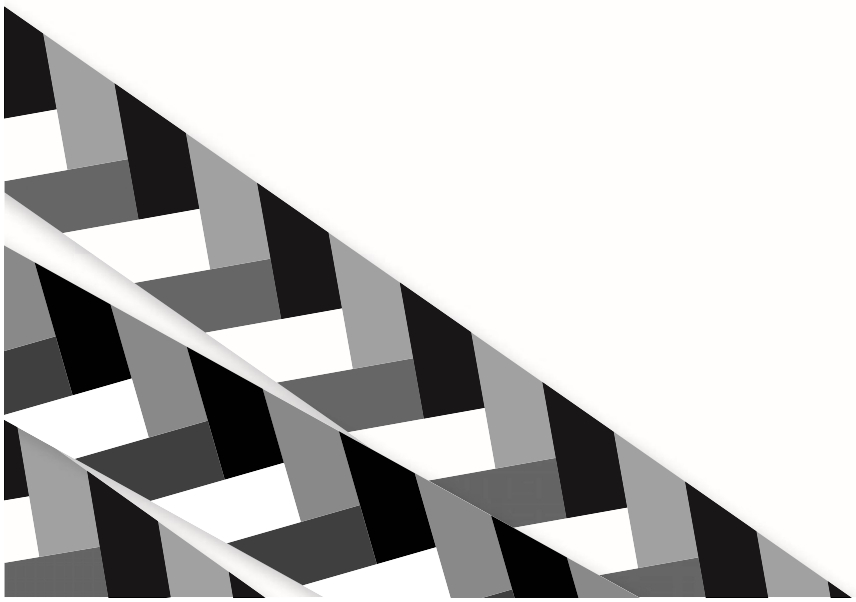
In general, characteristics that are related to one of the types of victimisation (verbal, threats, or physical) are also related to – or at least they indicate associations in the same direction – one of the other kinds of victimisation. However, some relations do vary between types, possibly because of differences in the frequency of occurrence and severity, as they more often do in research into aggression in the workplace (Hershcovis & Barling, 2010a; Schat et al., 2006). Outcome expectations are related to victimisation in the form of verbal aggression and threats, whereas the response selection is related to physical victimisation. It is likely that an aggressive behavioural response (as indicated by an aggressive response selection) invites a physical response from the citizen, and is thus related to physical victimisation rather than to verbal victimisation or threats. Outcome expectations may affect victimisation directly through the self-confidence displayed by police officers, which may prevent people from verbally abusing or threatening officers, although the influence may be too subtle for people with a tendency towards physical aggression. Future observational research could clarify these variations.

Thus, only certain aspects of the hypotheses were confirmed. The response decision process is related to victimisation, but in a different manner than in other populations. It is possible that the answers were influenced by our described situations and the question-and-answer options. For example, the response decision dimensions and emotions were measured by one item per situation. By using more items, we might have retrieved more reliable measures; therefore, future studies should include multiple items, which could result in determining more associations. However, because our type of design is often used in the SIP literature (for example, Orobio et al., 2005), this study suggests that relations between SIP and victimisation are population dependent.

In comparison with other studies on correlations of victimisation involving police officers, the explained variance is relatively high (23–29 percent compared with 6–12 percent) (Covington, 2010; Kaminski & Sorensen, 1995). Because the explained variances increased considerably as a result of adding the response decision, this study

demonstrates the relevance of including psychological and behavioural factors in future research as regards the victimisation of police officers, and of addressing these factors in training and follow-up procedures. Future longitudinal studies should elucidate the direction of the associations among police officers to be able to advise on whether and to what extent it is relevant for either training or aftercare. Furthermore, we should emphasize that this study addresses only situations where there is a possibility that police officers influence the situation by means of their response. In real life, there are many situations that are already 'determined' to escalate into aggression and violence, depending upon the moment in which a police officer enters a situation or because of the intentions of the perpetrator.

The current study increases our knowledge regarding correlates of victimisation concerning police officers. This chapter shows that not only situational characteristics but also psychological characteristics – namely, outcome expectations and response selection – are related to victimisation. Psychological characteristics should thus be considered in attempting to explain or address victimisation in future, preferably longitudinal research. Additionally, this chapter provides further insight into response decision in a population that is at high risk of experiencing victimisation. This is of theoretical interest, because the results illustrate that associations found among police officers sometimes differ from the traditional mechanisms found in other populations (Van Reemst et al., 2016). This offers a new perspective on the issue as well as fresh research opportunities within the field of SIP mechanisms and victimisation.



CHAPTER 6

Measuring exposure to workplace aggression among emergency responders

This chapter was accepted for publication as:
Van Reemst, L. & Jongerling, J. (2019). Measuring and Modelling Exposure to External Workplace Aggression in Three Types of Emergency Responders. *Journal of Interpersonal Violence.* Published online before print. doi: 10.1177/0886260519847780.

Measuring exposure to workplace aggression among emergency responders

Over the years, policy and research attention for experiencing aggression at work has increased (Barrick et al., 2014; Eurofound, 2013; Oliver & Levine, 2015), as being exposed to aggression at work can have a negative impact on workers and organisations (Hershcovis & Barling, 2010b; Nielsen & Einarsen, 2012). Various authors have discussed the differences in definitions and measurement of workplace aggression in academic research, which result in difficulties to compare results (Barling, 1996; Barling et al., 2009; Hershcovis, 2011; Hershcovis et al., 2007). However, few have focused on measurement properties of external workplace aggression indices. External workplace aggression is aggression caused by people outside the organisation, such as clients, patients, or citizens (the public) in general (e.g. Chappell & Di Martino, 2006), whether they are known to the emergency responders or not. It does not include aggression by colleagues, supervisors or subordinates (which is 'internal aggression'). It has previously been argued that the type of offender should be explicitly addressed in measures, and that consequences of exposure to workplace aggression may depend on the type of offenders (Hershcovis & Barling, 2010b). Therefore, it is important to study the measurement properties of indices about experienced external workplace aggression, to discover the most optimal way of measuring external workplace aggression. This study will focus on emergency responders, as they are frequently confronted with external aggression (e.g., Health and Safety Executive, 2017). Results will contribute in improving comparability between study results, which will increase effective knowledge building, and better prevention of workplace aggression and its consequences, which is especially important in this high-risk population.

In the present chapter, the measurement properties of an index about the exposure to external workplace aggression will be explored that has been developed by Dupré, Dawe & Barling (2014). This index will be used because it seems particularly appropriate for measuring the exposure to external workplace aggression, as it addresses a wide range of aggression, from non-verbal and non-physical (such as gestures someone makes), verbal to physical aggression, directed towards the employee (cf. Barling et al., 2009) in a workplace context, and was developed from previously used measures (that is, Greenberg & Barling, 1999; Rogers & Kelloway, 1997). The index of Dupré et al. consists of 24 items about the number of times employees encountered citizens enacting several types of aggressive behaviour in the past 6 months. The workplace context includes locations where workers need to go because of their work, such as citizens' homes or public space.

This chapter has three aims. Firstly, the aim is to explore the contribution of adding the perceived severity of workplace aggression to a measure of workplace aggression. Thus far, studies have mainly focused on the frequency of aggression experiences. However, the concept of exposure to aggression at work may not only entail the frequency of exposure to a variety of behaviours, but also the severity. This idea is supported by the notion that the perceived severity of workplace aggression might be related to the (severity of) psychological and physical consequences of workplace aggression (Barling, 1996). Therefore, it might be better to measure exposure to external workplace aggression by a combination of the frequency and severity. The first aim will thus be to inspect and compare external workplace aggression indices based on the frequency and a combination of the frequency and severity.

Secondly, Hershcovis & Reiss (2013) have discussed limitations of common indices of workplace aggression, which include weighting each aggressive incident equally. In fact, it is likely that not all types of aggression will contribute equally to the concept of exposure to aggression. Therefore, not all items may load equally on the latent construct exposure to external workplace aggression. In addition to unequal factor loadings, a construct may have a uni- or multidimensional structure. If different dimensions of exposure to workplace aggression exist, these dimensions may have different indicators and consequences (for example Van Reemst et al., 2015, see chapter three). This may result in dimension-specific results and policies. Therefore, the second aim of this chapter is to inspect the factor structure of indices of exposure to external workplace aggression.

Thirdly, the aim is to explore to what extent the index measures the same concept across occupational groups. In other words, to what extent is measurement invariance present when studying workplace aggression among occupational groups? This study will focus on emergency responders: emergency medical workers, firefighters and police officers. These occupational groups have several characteristics in common, such as protecting public safety, having frequent contact with the public in various locations, and working in periods of routine interrupted by periods of activity and stress. However, work situations, organisations and composition of employees may also differ. Therefore, the concept of exposure to workplace aggression could differ between the three occupational groups, and this will be explored.

By fulfilling these three aims, this study addresses the research question: how is exposure to external workplace aggression best measured and modelled in three types of emergency responders? The following paragraphs will discuss two main themes: 1) measurement of external workplace aggression: the frequency and severity, and 2) differences between occupational groups in measuring workplace aggression, and will present the current study.

Measuring external workplace aggression

Frequency

In general, quantitative studies measure external workplace aggression by the frequency of exposure to aggression, often self-reported. Content of the items, response options, and how those are used in analyses vary greatly. Items can include specific forms of aggression, such as items about being yelled at and being hit (e.g. Dupré et al., 2014), or item(s) about aggression in general (e.g. Estryn-Behar et al., 2008). Additionally, items often incorporate a certain period over which a respondent reports (Hershcovis & Reich, 2013), such as aggression experienced in the past 6 months, 12 months, or ever (in their career). In analyses, the frequency item (in categories or not) in itself is used or the frequency items are combined to obtain a total score of workplace aggression frequency (e.g., Rogers & Kelloway, 1997), with or without testing the coherence between items' scores.

An important assumption for testing the coherence between items is that aggression items are related to each other. Although one may think multiple experiences of aggression occur independent of each other, this assumption of relatedness can be motivated by theory and empirical data. Victimological theories suggest that some people are more prone to be confronted with aggression than others, for example due to characteristics related to regular contact with people who are motivated to offend, lacking guardianship, or being a suitable or 'attractive' target for some reason (Cohen & Felson, 1979; Hindelang et al., 1978; Sparks, 1981; Wolfgang, 1958). (Repeat) victimisation literature indicates that some individuals are indeed more often confronted with others (Hope & Norris, 2013; Kuijpers, van der Knaap, & Lodewijks, 2011; Tseloni & Pease, 2003), which was also found in studies about workplace aggression against emergency responders (Van der Velden et al., 2015).

Although workplace aggression is often considered to contain one dimension, some scholars have suggested that workplace aggression contains multiple dimensions. Theoretically, physical and psychological forms of workplace aggression (Barling, 1996; Barling et al., 2009), or more covert (subtle) and overt (more observable to others) forms have been distinguished (Baron, Neuman, & Geddes, 1999). Sometimes, threats are perceived to be a separate dimension of workplace aggression (Barling et al., 2009). Studies that have measured dimensions separately suggest that exposure to psychological and physical workplace aggression are moderately to strongly related to each other (r or *Cramer's V* > .35), but correlates of workplace aggression may differ between dimensions (Aquino & Bradfield, 2000; Schat & Kelloway, 2003; Van Reemst & Fischer, 2019, see chapter two). The scale in the present study has previously been used as if it contains one dimension (Dupré et al., 2014).

Most literature on workplace aggression and more particular about the measurement of exposure to workplace aggression has focused on internal workplace aggression (for an overview of indices, Jex & Bayne, 2017). For example, the Negative Acts Questionnaire is a questionnaire about the frequency of workplace aggression that is frequently used and validated (Einarsen, Hoel, & Notelaers, 2009).

Severity

It is important to explore the addition of severity in the measurement of workplace aggression, for the reason that the severity of acts of aggression is considered to vary. For example, physical aggression is generally considered to be more severe than psychological aggression (Schat & Kelloway, 2005). Varying severity of workplace aggression experiences was assumed to be related to its consequences: Being exposed to more severe aggression might be related to more harm afterwards (Barling, 1996). Even though frequency measures often are acceptable in reliability, at least regarding internal aggression (Jex & Bayne, 2017), being exposed to workplace aggression may theoretically include both the severity and the frequency of exposure to workplace aggression. Therefore, an index based on this combination might perform better than an index based on solely the frequency of exposure to workplace aggression. However, few studies have addressed the severity of workplace aggression (for internal workplace aggression: Escartín, Rodríguez-Carballeira, Zapf, Porrúa, & Martin-Pena, 2009; Meglich, Faley, & DuBois, 2012; and general violence: Osman, Pupic, & Baigent, 2017), let alone incorporated it in workplace aggression indices (cf. Hershcovis & Reich, 2013).

The study of Weiss et al. (2010) about trauma experienced by police officers (including, but broader than exposure to external workplace aggression) has previously tested whether indices based on frequency differ in reliability and validity from indices including the severity. The conclusion that was drawn was that none of the measured indices were preferred, comparing internal reliability, convergent and discriminant validity. However, the study did not focus on workplace aggression specifically and only focused on police officers. Therefore, the role of severity in exposure to external workplace aggression, specifically, in these three types of emergency responders remains unclear and will be explored.

Differences between occupational groups

Emergency responders all respond to emergencies, and therefore have many similarities. However, differences between occupational groups exist as well. Important differences for interaction with the public are that they have different tasks in case of an emergency, varying from law enforcing (police officers) to providing medical help (emergency medical workers), that police officers can legitimately use physical force and are most often

outside the office (police station), and that firefighters often work with more employees at a time and have least contact with citizens, in general. These differences may result in varying experiences of workplace aggression. The study of Van Reemst and Fischer (2019, see chapter two) among emergency responders shows that, in general, police officers experience most, and firefighters experience least workplace aggression. In addition, it shows that work and social demographic correlates of exposure to workplace aggression differ between occupational groups. Still, previous workplace aggression studies have often studied multiple occupational groups together (e.g. Gettman & Gelfand, 2007b). Because of potential differences, it is possible that the same workplace aggression index also measures a different latent construct between occupational groups, also known as measurement non-invariance (Vandenberg & Lance, 2000). For example, if an occupational group experiences more victimisation, such as police officers, it could be possible that all types of aggression are more similar to each other, and therefore more likely to be one dimension. As a competing hypothesis, it is possible that it is easier to distinguish between dimensions of workplace aggression, and therefore more likely to contain multiple dimensions. Other than differences in number of factors, measurement non-variance could also include different factor-indicator relationships, factor loadings, intercepts or residual variance (Van de Schoot, Lugtig, & Hox, 2012). Measurement invariance will be explored in measuring exposure to workplace aggression in these three occupational groups.

The present study

In this chapter, we will explore the contribution of each workplace aggression item (factor loadings) and dimensions of the measures of external workplace aggression among emergency responders, by conducting a factor analysis. In addition, we will explore an index combining the frequency and severity ('combination index'), and compare it with a frequency index of exposure to workplace aggression (as is the original scale of Dupré et al., 2014). Although a combination index could contain essential information, no explicit hypothesis will be formulated about this comparison, as only one study is known to compare frequency and combination indices, regarding a broader concept (general trauma), and this study does not show a preference for one of the indices (Weiss et al., 2010). To compare indices, the relationship between each index and employees' situational risk to experience workplace aggression (LeBlanc & Kelloway, 2002) will be tested. LeBlanc & Kelloway's (2002) measure captures this situational risk by addressing 'job characteristics' (p. 449), more specifically work contexts of employees, such as work task, time, location and type of citizens people work with. The situational risk for workplace aggression is considered a predictor of exposure to workplace aggression, and previously found to be cross-sectionally related to aggression initiated by the public

(LeBlanc & Kelloway, 2002). As we believe no objective measure of aggression would exist in this context, the situational risk for workplace aggression would be appropriate to relate to the aggression indices. Therefore, the relationship between the situational risk for violence and each index will be compared, and the strongest relationship will be considered the index that measures workplace aggression best.

Materials and Methods

This study was part of a longitudinal research project about workplace violence against emergency medical workers, firefighters, and police officers in the Netherlands. All regional organisations involved in ambulance care and firefighting (N = 25 each) were asked to participate in the study, of which thirteen ambulance regions and seven fire department regions agreed to participate. The National Police of the Netherlands provided permission to send the questionnaire to a random selection of 2250 police officers in three (out of ten) regional units, including a more urban and more rural region, and regions in which ambulance and fire departments also participated.

Emergency medical workers, firefighters, and police officers were invited to fill in the survey by email or through a message on the regional organisations' intranet. The inclusion criteria for respondents were that they were 1) a paramedic or driver (emergency medical technician), as, in the Netherlands, the paramedic and driver work as a team and both have frequent contact with citizens, 2) at least for 50% a firefighter (crew), supervisor in the field (crew commander) or officer on duty,[41] including those who work on voluntarily basis, or 3) a police officer working in primary policing (see Government of the Netherlands, 2016). This way, the selection of respondents had face-to-face contact with citizens in their work at the organisations. Out of 1916 people who opened the questionnaire, 1620 respondents (84.6%) reported to comply with the inclusion criteria, consisting of 462 emergency medical workers, 465 firefighters and 693 police officers. Respondents did not receive incentives for their participation in the study and the survey took about 25 minutes to complete.

The mean age of respondents was 44.4 years (*SD* = 8.2) for emergency medical workers, 44.2 (*SD* = 9.2) for firefighters, and 39.0 (*SD* = 11.2) for police officers. Most respondents were male (72.2%, 91.3% and 78.4%, respectively). Among respondents, 66.5% of emergency medical workers, 28% of firefighters and 35.2% of police officers completed a higher education level than secondary vocational education. The mode of contact with citizens was 1-10 times a work day for emergency medical workers (82.3%), between 1 and 4 times per 5 work days for firefighters (42.8%), and 11-50 times

41 Firefighters can have multiple job positions within the organisation.

a work day for police officers (47.8%). To test representability of the final sample, public (Ambulancezorg Nederland, 2017; Brandweer Nederland, 2017) and requested data (2017 Human Resource data of the National Police) was consulted on gender, age and job position of the three populations. Chi-square tests showed that the sample only weakly differed or did not differ in the distribution of these characteristics from the populations. The strongest difference was found for ranks of police officers (χ^2 (4) = 48.91, *Cramer's V* = .21, $p < .001$), but this was an inconsistent difference: the sample contained less employees in lowest ranks, but also in one of the highest ranks than the population of police officers.

Measures

Frequency, severity and combination measures were used to explore the exposure of workplace aggression. Items about the *frequency* of exposure to workplace aggression were derived from Dupré et al. (2014; based on Greenberg & Barling, 1999; Rogers & Kelloway, 1997). This measure consists of items about the number of times employees encountered citizens enacting several types of behaviour in the past six months, including forms of physical aggression, threats, and verbal and non-verbal/non-physical aggression (gestures and looks), from now on '(non-)verbal' aggression. These types of behaviour were described in terms of specific behaviour, which limits underreporting due to lack of recognition of behaviour as 'violence', for example. The period over which a respondent reported is therefore relatively short, which limits retrospective bias (for example due to the tendency to remember serious forms of aggression more than minor forms) (Hershcovis & Reich, 2013), although this bias could exist (Rubin & Wenzel, 1996). The accompanying seven answer categories were used: never (0), once (1), twice (2), 3-5 times (3), 6-10 times (4), 11-20 times (5), and more than 20 times (6). Examples of items are 'swore or cursed at you', 'hit or tried to hit you' and 'threatened to kill you'. One item of the original scale was not included in the survey ('destroyed something in presence of you') because it was not considered behaviour 'directed to' employees, resulting in 23 items. The Cronbach's alpha of the frequency measure in this study was .91, .89 and .94, which is good to excellent, for emergency medical workers, firefighters and police officers respectively (the cronbach's alpha was not reported in Dupré et al., 2014).

In addition, respondents were asked to rate the *severity* of possible exposure to the workplace aggression types in the previous paragraph, on a scale of 1 ('not severe at all') to 5 ('extremely severe'). This resulted in scores indicating the normative view of employees who are experts by experience on severity of the workplace aggression items (cf. Weiss et al., 2010). The Cronbach's alpha of the severity measure was .91, .95 and .94, and thus excellent, for emergency medical workers, firefighters and police officers respectively. *The combined score* multiplied people's own severity rating for each type

of aggression by the reported frequency on the same type of aggression (cf. Weiss et al., 2010). This only resulted in a score higher than zero if a person had experienced workplace aggression in the previous six months.[42]

The *situational risk for violence,* which will be used to test the relationship between indices and situational risk, was measured by the original items of the Risk for Violence Measure of LeBlanc & Kelloway (2002, see their appendix). These items address job characteristics identified as increasing employee risk of workplace aggression. Two adjustments in items were made, for the measure to fit the job of emergency responders. First, items that would not result in variation within an occupational group were excluded. For example, this resulted in deleting items about handling or selling items or goods, as this is not part of emergency responders' job. Second, response options were adjusted from relative (such as 'often') to concise ('1 to 4 times per duty'). Using relative response options, it would be unclear to whom one compares themselves with. For example, a respondent could compare themselves with other emergency responders in the same or also other occupational groups and regions. Concise response options do not need comparison and were therefore preferred and used in this study. The scale contains 18 items, for example 'In your job, how often do you take emotional care of others' and 'In your job, how often do you go to peoples' home'. Respondents were asked to rate items on a scale of 1 ('not at all') to 6 ('5 times or more per duty'). Response options of four items ranged from 1 to 5 ('every duty'), because it was not possible to experience these events multiple times per duty, such as 'working at night'. These were transformed to a 6-point scale (1 = 1; 2 = 2.25; 3 = 3.5; 4 = 4.75; 5 = 6), so each item could theoretically contribute the same to the factor.[43] The Cronbach's alpha of the situational risk for violence measure was .82, .81 and .87, and thus good, for emergency medical workers, firefighters and police officers respectively.

Data analysis

First, the data were inspected and described. Differences between occupational groups in frequency and severity of exposure to external workplace aggression were tested using bootstrap one-way ANOVA's (1000 resamples), and Bonferroni post-hoc pairwise comparisons. Bootstrap was used so that no assumptions had to be made about normality of the exposure to workplace aggression data. Second, the factor structure of the frequency of exposure to aggression index was inspected in exploratory factor

42 Another way of combining frequency and severity is multiplying reported frequency to the average severity rating for each type of aggression (see Weiss et al., 2010), but this is a multiplication of the frequency measure with a constant, and therefore not expected to show a meaningful difference in its measurement properties from the frequency measure, and therefore not used in this study.

43 Using the items without transforming the response scale led to the same conclusions.

analysis, with Promax rotation, and confirmatory factor analysis in Mplus version 7.11, using centred variables (which does not influence results, only sets the intercepts to 0). Both analyses were used to explore the data, but with CFA, we allowed items to load on one of the factors instead of on multiple. Full Information Maximum Likelihood (FIML) was used,[44] including auxiliary variables, to correct for possible selective missingness. Out of the employees who complied to the inclusion criteria, 74.5% (N_{total} = 1200, $N_{emergencymedicalworkers}$ = 354, $N_{firefighters}$ = 312, $N_{policeofficers}$ = 534) completed all exposure to external workplace aggression items used in this study. This means that there were missing values on variables. FIML uses all information available in the data, but in addition, we included auxiliary variables to use information from the data that is not part of the analytical model (Collins et al., 2001; Graham, 2009). Selected auxiliary variables were continuous correlates with values being missing in the variable exposure to workplace aggression.[45] This way, more respondents could be included in final factor models (N_e = 443, N_f = 463, N_p = 593).

A good model fit is considered to have a non-significant Chi^2 (Kline, 2005), CFI and TLI of at least .90 (Hu & Bentler, 1999), and RMSEA and SRMR values of at most .08 (Browne & Cudeck, 1989). As each goodness of fit index has its limitation, a set was reported and the combination of outcomes shows the goodness of the fit. To optimise models of the indices, modification suggestions by Mplus regarding the addition of covariates were inspected, and only applied if a good fit was not yet reached and if indicating covariance within factors (not between factors) for all occupational groups.

Third, information on the frequency factor structure was used in confirmatory factor analysis for a combined index, based on the frequency and severity of exposure to workplace aggression. As information about the severity was used to construct a combination index, also the severity index was presented, which was also based on the frequency factor structure. Fourth, as the scale to measure situational risk for violence

44 Bootstrapping was not used here, as that allowed for more analysis options, such as requesting modification indices. We compared results with and without bootstrapping, and it did not lead to differences in results.

45 The following variables were included as auxiliary variables in the exposure to workplace aggression indices as they were continuous and had a relationship with missing values in exposure to workplace aggression: age, years of work experience, education level, and average hostile attribution (Lobbestael, Cima, & Arntz, 2013) for emergency medical workers; population density and average hostile attribution for firefighters; average perspective taking (Davis, 1980) for police officers. For the situational risk for violence scale, auxiliary variables consisted of continuous correlates of missing values in situational risk for violence: age, years of work experience, education level, height and incidents per month for emergency medical workers; population density for firefighters; population density for police officers. We checked whether model fit statistics of the measurements were also good without using auxiliary variables, and in general they were. Only for firefighters, one of the model fit statistics of the Risk for Violence measure was slightly lower than good in a model without auxiliary variables (TLI = .88 versus TLI = .90).

was adjusted for these populations, the model fit indices of this (one factor) measure was described. Finally, linear regression models predicting the situational risk for violence were used to compare (using *Betas*) the relationship between situational risk and the frequency and combination indices. The severity index was taken into account in this model to control for the main effect of severity.

Results

To address the first aim of this chapter, which is the addition of severity information to frequency measures, first the frequency and severity of exposure to external workplace aggression will be described. Table 6.1 shows the descriptive statistics of the frequency and severity of various external workplace aggression types among emergency responders. The table suggests that, overall, police officers were most often and firefighters least often exposed to workplace aggression in the past six months, although in almost half of the types of aggression (10/23) frequencies did not differ between firefighters and emergency medical workers. For example, on average police officers were insulted more than two times (M = 2.20, SD = 1.85), emergency medical workers once (M = 1.00, SD = 1.29) and firefighters less than once (M = 0.42, SD = 0.79) in the past six months. Only the frequency of exposure to choking was similar among all occupational groups, and choking occurred only rarely (M = 0.02, SD = 0.18). Table 6.1 also indicates that most severity scores differed between at least two of the occupational groups. In general, emergency medical workers considered exposure to aggression most severe and police officers least severe. However, severity scores between police officers and firefighters did not differ significantly in about half of the items (12/23). Severity scores were only similar across all occupational groups for being insulted, which was on average considered little to quite severe (M = 2.63, SD = 1.13). The inter-item correlations for the frequency scores are presented in appendix 3.

Table 6.1 *Frequency and severity of exposure to aggression reported by emergency medical workers (EMW), firefighters, and police officers (PO), and in total (Total).*

Items	Frequency (0-6)								Severity (1-5)							
	Total (N = 1200)		EMW (N = 354)		Firefighters (N = 312)		PO (N = 534)		Total (N = 1192)		EMW (N = 352)		Firefighters (N = 309)		PO (N = 531)	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
1 Said to spite	2.20[a]	1.91	1.47	1.50	0.93	1.23	3.41	1.75	1.92[a]	0.83	2.08[b]	0.83	1.98[b]	0.89	1.77	0.78
2 Was rude	2.58[a]	1.91	2.07	1.54	1.15	1.27	3.74	1.73	2.05[a]	0.88	2.24	0.89	2.02[b]	0.88	1.95[b]	0.86
3 Transmitted damaging information	0.46[a]	1.03	0.36[b]	0.89	0.30[b]	0.77	0.62	1.21	3.83[a]	1.03	3.99[b]	1.00	3.67[c]	1.03	3.82[bc]	1.03
4 False accusation	0.69[a]	1.25	0.39[b]	0.82	0.33[b]	0.77	1.10	1.56	4.07[a]	1.03	4.29	0.90	4.04[b]	1.00	3.95[b]	1.11
5 Yelled	2.14[a]	1.96	1.56	1.52	0.70	1.08	3.35	1.86	2.13[a]	1.02	2.39[b]	1.06	2.25[b]	1.09	1.88	0.89
6 Swore	1.43[a]	1.85	0.71	1.18	0.27	0.69	2.58	2.00	2.62[a]	1.17	2.85[b]	1.17	2.75[b]	1.31	2.40	1.05
7 Insulted	1.39[a]	1.66	1.00	1.29	0.42	0.79	2.20	1.85	2.63	1.12	2.71	1.14	2.58	1.12	2.60	1.10
8 Name-calling[d]	1.48[a]	1.77	0.95	1.30	0.38	0.87	2.47	1.91	2.50[a]	1.13	2.66[b]	1.17	2.48[bc]	1.16	2.41[c]	1.08
9 Glared or dirty looks	2.27[a]	2.07	1.51	1.47	0.72	1.12	3.66	1.92	1.86[a]	0.94	2.15[b]	1.02	1.99[b]	1.00	1.59	0.76
10 Rude gestures	1.46[a]	1.77	0.99	1.34	0.50	0.94	2.33	1.96	2.14[a]	0.98	2.32	1.01	2.09[b]	1.01	2.05[b]	0.94
11 Threatened to hit	0.69[a]	1.15	0.43	0.80	0.06	0.34	1.22	1.39	3.31[a]	1.11	3.64	1.10	3.33	1.19	3.08	1.01
12 … to throw	0.46[a]	0.99	0.22[b]	0.60	0.13[b]	0.46	0.81	1.28	3.22[a]	1.11	3.57	1.11	3.20	1.19	3.00	1.01
13 … to kill	0.24[a]	0.74	0.08[b]	0.32	0.03[b]	0.22	0.47	1.02	4.24[a]	1.05	4.40	1.00	4.18[b]	1.20	4.17[b]	0.98
14 … with a weapon	0.16[a]	0.54	0.05[b]	0.27	0.02[b]	0.16	0.30	0.74	4.63[a]	0.74	4.80	0.56	4.55[b]	0.89	4.56[b]	0.74
15 Tried to hit	0.57[a]	1.02	0.42	0.79	0.03	0.19	0.99	1.25	3.85[a]	1.04	4.14	0.92	3.86	1.12	3.64	1.03
16 Bumped	0.39[a]	0.93	0.17[b]	0.58	0.07[b]	0.35	0.72	1.20	3.21[a]	1.05	3.58	1.01	3.24	1.12	2.96	0.95
17 Pushed	0.45[a]	0.94	0.25[b]	0.63	0.10[b]	0.41	0.78	1.18	3.16[a]	1.09	3.51	1.10	3.09[b]	1.14	2.96[b]	0.99
18 Spit	0.14[a]	0.53	0.17[b]	0.53	0.02	0.15	0.18[b]	0.65	4.25[a]	0.92	4.44[b]	0.80	3.91	1.06	4.32[b]	0.86
19 Threw	0.22[a]	0.68	0.07[b]	0.32	0.09[b]	0.39	0.40	0.90	3.77[a]	1.04	4.13	0.97	3.67[b]	1.10	3.59[b]	0.99
20 Grabbed	0.33[a]	0.80	0.26	0.64	0.04	0.21	0.54	1.02	3.95[a]	1.04	4.34	0.88	3.94	1.08	3.70	1.03
21 Hit	0.14[a]	0.52	0.08[b]	0.34	0.01[b]	0.08	0.26	0.71	4.30[a]	0.89	4.60	0.68	4.26[b]	0.97	4.13[b]	0.91
22 Kicked	0.12[a]	0.47	0.05[b]	0.24	0.01[b]	0.11	0.23	0.66	4.30[a]	0.90	4.62	0.67	4.22[b]	0.98	4.13[b]	0.93
23 Choked	0.02	0.18	0.08	0.08	0.01	0.13	0.02	0.24	4.72[a]	0.68	4.89[b]	0.43	4.60[b]	0.81	4.68[b]	0.70

[a] Bootstrap ANOVA showed a significant difference between occupational groups ($p < .01$). [bc] Bonferroni post-hoc test did *not* show a difference ($p \geq .05$) between occupational groups with the same annotation. [d] To accommodate for cultural differences, the Dutch translation resembled 'name-calling' rather than 'verbal abuse', as used by Dupre et al. (2014).

The second and third aim of this chapter were the inspection of the factor structure and inspection of differences between occupational groups. Addressing these aims, exploratory and confirmatory factor analyses showed that it was not possible to fit one factor structure for the frequency of exposure to external workplace aggression of emergency medical workers, firefighters and police officers. For example, the model fit of exploratory factor analysis for 1 factor for frequency for all occupational groups: Chi^2 = 7536.43, *df* = 230, $p < .001$; *CFI* = .69; *TLI* = .66; *RMSEA* = .16; *SRMR* = .12.[46] Fitting the same factor was also not possible if variation of factor loadings and intercepts was allowed between factor structures of occupational groups. This indicates that the factor structures of exposure to workplace aggression entail a different set of items among occupational groups. Therefore, subsequent analyses addressed each occupational group individually. Figures 6.1, 6.2 and 6.3 show the final frequency factor structures, using FIML. For emergency medical workers (Figure 6.1) and firefighters (Figure 6.2), final models of exposure to external workplace aggression consists of one factor. For firefighters, only items about (non-)verbal aggression remain to form a good factor model. For police officers (Figure 6.3), exposure to external aggression consists of two factors. One factor addresses exposure to (non-)verbal aggression, whereas the other factor addresses threats and physical aggression. For emergency medical workers and police officers, the same items were deleted to provide the best fit. Deleted items consist of transmitted damaging information, false accusations and having been choked. These items seem to have been perceived as more severe (*M* = 4.29, *SD* = .90, *M* = 3.99, *SD* = 1.00, *M* = 4.89, *SD* = .43 respectively for emergency medical workers; *M* = 3.82, *SD* = 1.03; *M* = 3.95, *SD* = 1.11, *M* = 4.68, *SD* = .70 for police officers) and to have occurred less often (*M* = .36, *SD* = .89, *M* = .39, *SD* = .82, *M* = .08, *SD* = .08 for emergency medical workers; *M* = .62, *SD* = 1.21, *M* = 1.10, *SD* = 1.56, *M* = .02, *SD* = 24 for police officers), compared to other items, see Table 6.1. However, for firefighters, transmitted damaging information and false accusations could still be included in the (non-)verbal aggression factor.

46 Without using auxiliary variables and modification indices, as this would have resulted in larger numbers of auxiliary variables and covariates to be included. More exploratory and confirmatory factor analysis were performed, of which the results are available from the corresponding author on request.

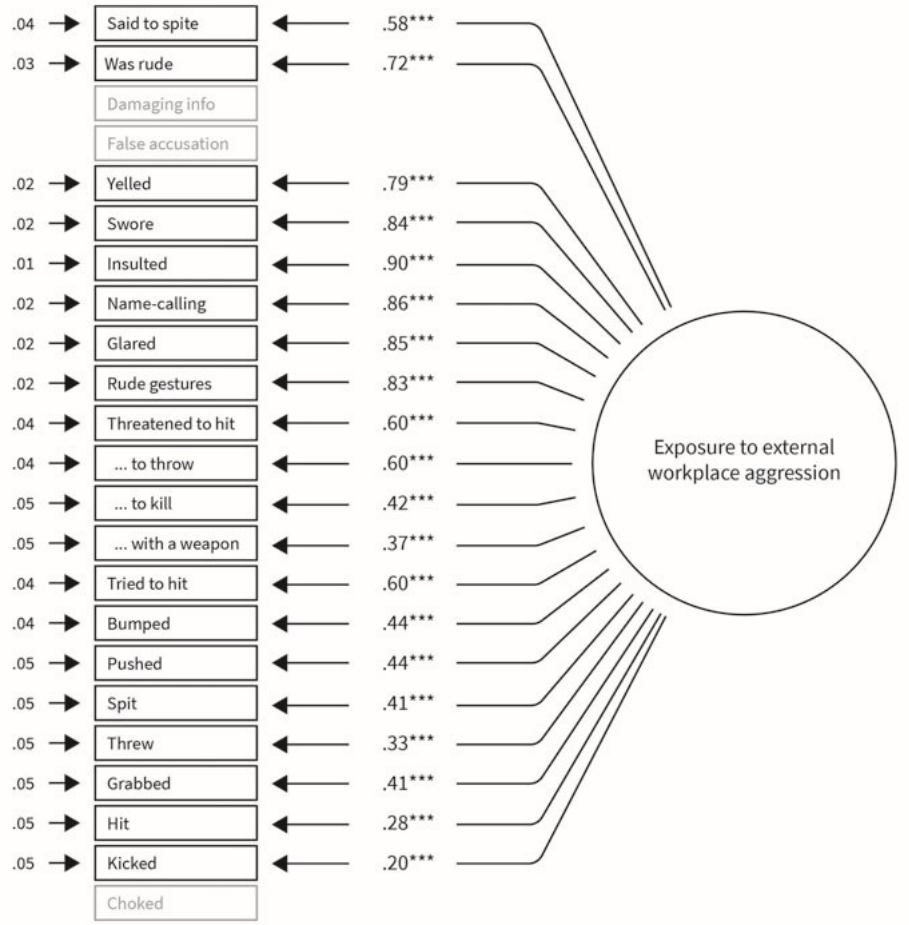


Figure 6.1 *Factor structure of exposure to external aggression among emergency medical workers (N = 443). Note.* *** $p < .001$.

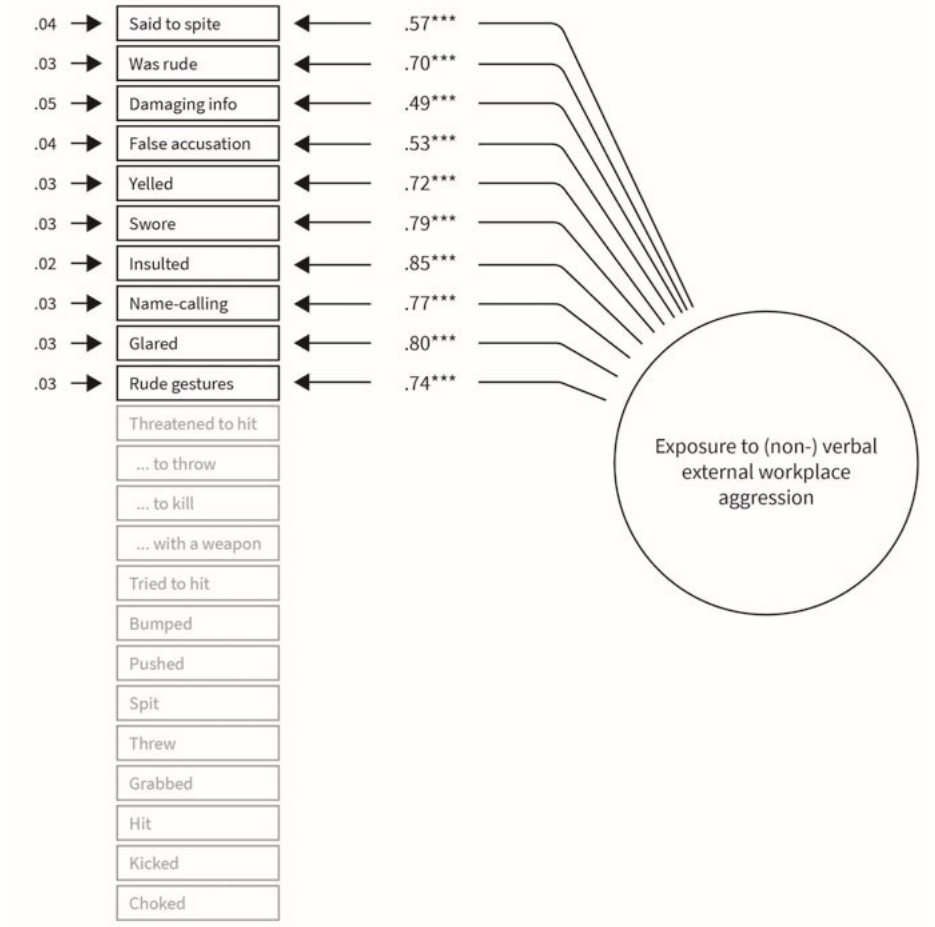


Figure 6.2 *Factor structure of exposure to external aggression among firefighters (N = 463).*

Note. *** $p < .001$.

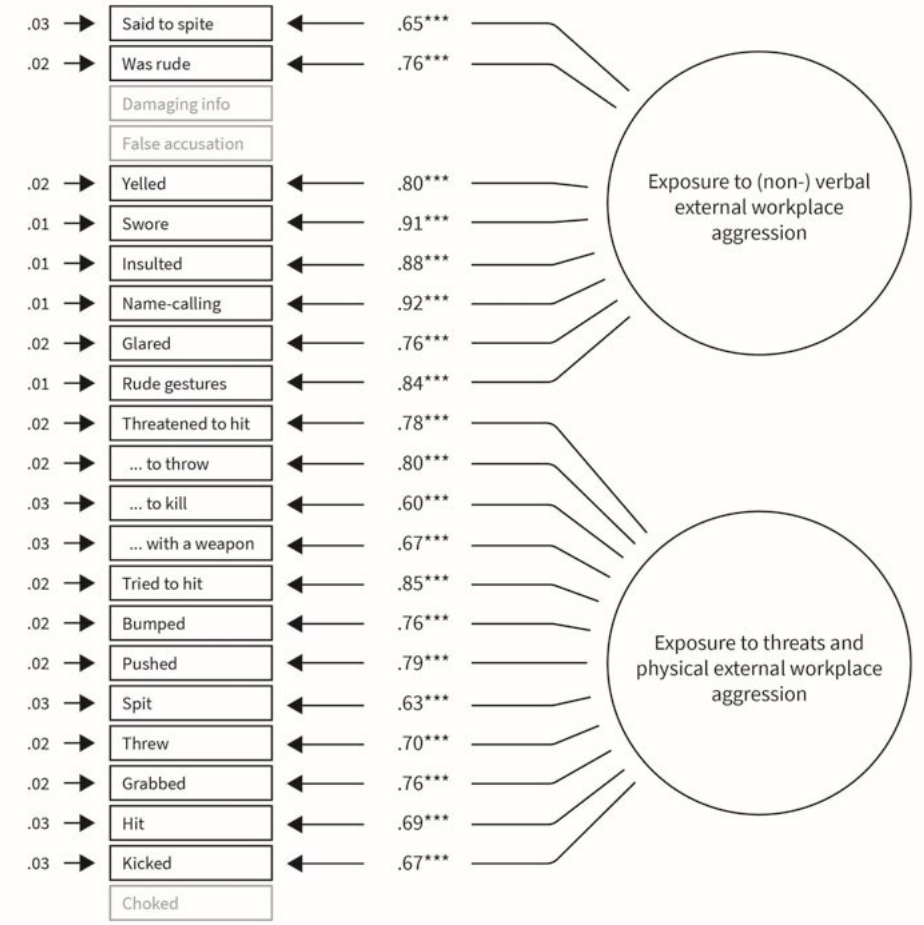


Figure 6.3 *Factor structure of exposure to external aggression among police officers (N = 593).*

Note. *** $p < .001$.

Table 6.2 shows good model fit according to most model fit indices for frequency indices of all occupational groups. Only the Chi^2 test was significant for all frequency indices. The same items were used in the severity and combination indices, which resulted in good fit according to the same goodness of fit indices. The severity index of emergency medical workers showed good fit in three out of five goodness of fit indices, as the SRMR was .09, not .08 or lower. In addition, Table 6.2 shows good model fit according to four out of five model fit indices for the situational risk for violence indices (resulting in one factor) of all occupational groups. Again, only the Chi^2 test was significant for all situational risk for violence indices.

Table 6.2 *Model fit indices of conformity factor models of frequency (Freq), severity and combination (Combi) workplace aggression indices, and situational risk for violence (SRV), of emergency medical workers, firefighters, and police officers.*

	Emergency medical workers				Firefighters				Police officers			
Model fit indices	***Freq***	***Severity***	***Combi***	***SRV***	***Freq***	***Severity***	***Combi***	***SRV***	***Freq***	***Severity***	***Combi***	***SRV***
Chi²	439.85	500.55	285.60	281.47	70.69	92.64	75.88	297.83	529.05	693.47	463.00	448.01
df Chi²	144	145	121	125	29	32	31	126	151	161	150	118
p-value Chi²	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
CFI	.93	.95	.94	.92	.98	.97	.95	.92	.96	.94	.93	.93
TLI	.91	.93	.91	.91	.97	.96	.92	.90	.95	.93	.91	.91
RMSEA	.07	.07	.06	.06	.06	.06	.06	.05	.07	.08	.06	.06
SRMR	.08	.09	.05	.05	.04	.04	.05	.06	.06	.06	.06	.05
N	443	443	443	372	463	463	463	463	593	593	593	693

Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean square Residual.

Pearson correlations showed strongest correlations between situational risk for violence and the frequency indices (r = .35, p < .001 for emergency medical workers; r = .26, p < .001 for firefighters; r = .51, p < .001 for the first factor and r = .49, p < .001 for the second factor for police officers), in addition to a strong correlation between factors for police officers (r = .69, p < .001 for frequency, r = 61, p < .001 for severity, and r = .38, p < .001 for the combination index). Table 6.3 shows the results of the regression analyses for the relationships between the situational risk for violence and the frequency index, the severity index and the combination index. The Variation Inflation Factors (VIF) indicated that multicollinearity was not a problem, with VIF varying from 1.00 to 2.01. Comparison of the betas indicates that for all occupational groups, the frequency indices are stronger predictors of the situational risk for violence (β = .36, p < .001 for emergency medical workers; β = .26, p < .001 for firefighters; β = .34, p < .001 for factor 1 and β = .26, p < .001 for factor 2 of police officers) than the combination indices. The combination index does not explain the situational risk for violence (nor the severity index, but this was not part of the research's focus nor expected), except for the first, (non-)verbal, aggression factor of the combination index among police officers (β = .07, *ns* for emergency medical workers; β = .03, *ns* for firefighters; β = -.08, p < .05 for factor 1 and β = .02, *ns* for factor 2 of police officers[7])[47]. However, hierarchical regression analysis indicates that the combination index does not explain additional variance on top of the frequency and severity measure for police officers (not shown in table, ΔR^2 = .01, ΔF (2, 586) = 2.18, p = .11).

47 The Pearson correlation between risk for violence and the combination index of the first factor of police officers was .03, *ns*.

Table 6.3 *Linear regression analyses of the frequency, severity and combination measures predicting the situation risk for violence of emergency medical workers, firefighters, and police officers.*

	Emergency medical workers		Firefighters		Police officers	
	B (SE)	***β***	***B (SE)***	***β***	***B (SE)***	***β***
Frequency factor 1	.38 (.05)	.36***	.27 (.05)	.26***	.33 (.05)	.34***
Frequency factor 2					.26 (.05)	.26***
Severity factor 1	.07 (.05)	.07	-.03 (.05)	-.03	.01 (.05)	.01
Severity factor 2					.03 (.04)	.03
Combination factor 1	.08 (.06)	.07	.04 (.05)	.03	-.08 (.04)	-.08*
Combination factor 2					.02 (.04)	.02
Constant	.01 (.04)		.00 (.04)		.07 (.03)	
F-value	18.56***		11.38***		43.02***	
df regression	3		3		6	
df error	368		459		586	
R^2	.13		.07		.31	

Note. The frequency, severity and combination factors consist of different items, thus direct (statistical) comparison between occupational groups on these statistical results is not possible. * $p < .05$. *** $p < .001$.

Discussion

This study addressed the question how exposure to external workplace aggression was best measured and modelled in three types of emergency responders. The study was based on questionnaires filled in by emergency medical workers, firefighters and police officers (N > 300 for each occupational group). The study had three aims: 1) inspecting and comparing a frequency index (based on Dupré et al., 2014) with an index combining frequency and severity information of exposure to external workplace aggression, 2) inspecting the factor structure of these indices, and 3) inspecting the measurement invariance of indices between occupational groups. Results showed that the frequency index measured exposure to external workplace aggression best compared to indices combining the frequency and severity of workplace aggression. In addition, it showed that the factor structures of indices differed between emergency medical workers, firefighters and police officers. The factor structures of separate occupational groups were presented. This paragraph will first discuss differences in factor structures

between occupational groups, and then the preference of the frequency index over the combination index.

Firstly, the results regarding differences between emergency responders indicated that workplace aggression was measured best by only (non-)verbal aggression items for firefighters. For emergency medical workers and police officers, the indices also included threats and physical aggression items. Another variation was the amount of dimensions: for emergency medical workers and firefighters, indices consisted of one dimension, whereas for police officers, the indices consisted of two dimensions. The fact that models differed between occupational groups can potentially be explained by variations in the frequency of exposure to aggression. For example, firefighters were less often exposed to threats and physical aggression, and those types of aggression may therefore not be part of the concept of workplace aggression in this occupational group. The question is whether not incorporating these items in the measure of firefighters limits the external validity of the workplace aggression measure, as more severe forms of aggression are not represented in the index. However, the results suggest that these types of aggression are less relevant to measure as these seem to be rarely experienced by firefighters. It could be more relevant to measure threats and physical workplace aggression in larger samples of firefighters.

It is notable that the two statistical dimensions of workplace aggression of police officers do not seem to reflect physical versus psychological forms of workplace aggression, as has been distinguished theoretically by previous literature (Barling, 1996; Barling et al., 2009), but rather verbal aggression versus threats and physical aggression. As can be seen in Table 6.1, the items about threats and physical aggression seem more similar to each other in frequency than the items about (non)verbal aggression and threats.

Secondly, in all frequency and combination indices, four out of five goodness of fit indices indicated that models were good. Only the Chi-square test was significant in all indices. Therefore, we consider the overall fit to be adequate. The results of independent relationships with situational risk for violence showed that the frequency index was more strongly related than the index combining frequency and severity information. The result that the combination index was not preferred over a frequency index is in correspondence with the study of Weiss et al. (2010), addressing general trauma, instead of workplace aggression, among police officers. The present study was able to show that the frequency measure was even preferred in this study, by simultaneously regressing the situational risk for violence measure on all indices, which was not done in Weiss' study.

Methodological issues of the study should be addressed to correctly interpret the finding that the frequency measure was considered to be preferred. Firstly, the frequency index may have performed best as it is possibly the most reliable and valid measure.

Compared to the more objective frequency estimate, severity is a hypothetical and subjective concept. Therefore, the severity can be a less reliable measure and more strongly influenced by psychological characteristics. In addition, the severity and combination indices were not used before (although based on Weiss et al., 2010), which means that reliability and validity was not previously tested. However, the indices showed good fit indices, and the measurement error was taken into account by conducting factor analyses.

Secondly, the situational risk for violence measure (based on LeBlanc & Kelloway, 2002) could be considered to resemble the frequency of aggression, as it seems a measure of the likelihood of being exposed to aggression. Therefore, it could be more strongly related to the frequency of exposure to aggression. However, the situational risk for violence also contains information about how severe aggression could be, such as how often emergency responders deal with potential offenders of more severe aggression (for example, people with psychiatric illnesses). Therefore, the combination index could still have been more strongly related to the situational risk for violence measure, but it was not. The combination index multiplies the severity with the frequency of exposure, which may better reflect a possible cumulative effect of multiple aggression incidents. Therefore, it might be more strongly related to target consequences of aggression such as mental health issues (Nielsen & Einarsen, 2012), lower physical well-being (Hershcovis & Barling, 2010b) or turnover rates, than a variable such as the situational risk for violence, which is considered a predictor of exposure to aggression (LeBlanc & Kelloway, 2002). This could be studied in the future.

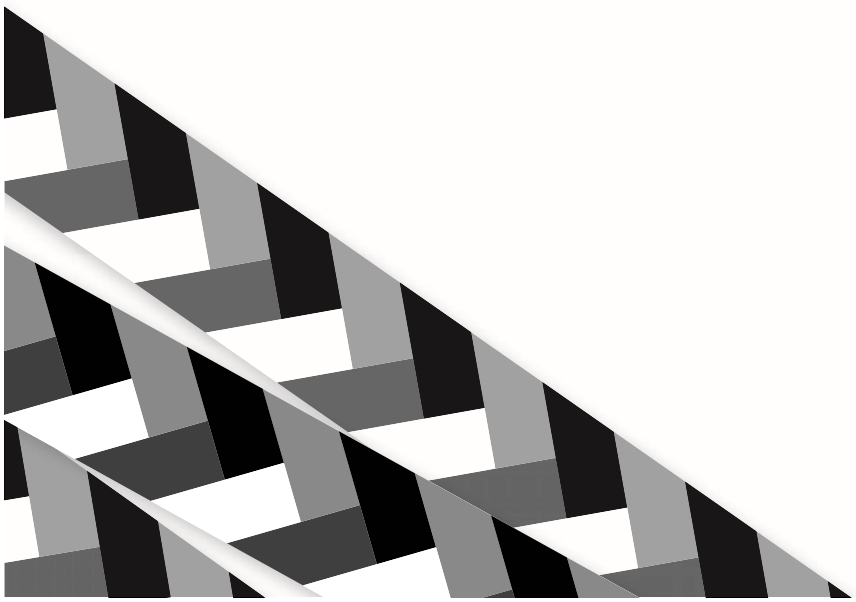
A general limitation is that we had to rely on self-report data, as registrations of workplace aggression against emergency responders in the Netherlands are incomplete and selective. As the study does not mean to claim causality, self-reported data in one measurement occasion were considered the best option for this study. The study did rely on memory, as exposure to workplace aggression was measured retrospectively, over the past six months. A future study could attempt to use a diary study, to limit retrospective bias more. Another general limitation is the samples, which depended on permission of organisations to cooperate. Therefore, the aggression in the region (either high or low) could influence the permission, and thus the descriptive statistics in this study. However, overall, organisations and units in both urban and rural regions participated and differences between occupational groups in frequencies of exposure to workplace aggression were similar to another sample of emergency responders (Van Reemst & Fischer, 2019, see chapter two).

The first implication of this study is that future research and policies should be directed towards the frequency of exposure to workplace aggression. This means workplace aggression can be measured in a simple way, rather than having to use

multiple scales and combining them. Secondly, occupational groups should be addressed separately, as results indicate that the concept of exposure to workplace aggression was different between occupational groups. The present study implies that occupational groups should be studied separately, which could potentially result in separate policy measures.

To strengthen the results about the indices to measure exposure to external workplace aggression best, studies are needed that test the indices and its measurement properties for more populations experiencing external workplace aggression. The results of the current study indicate that, even though the factor structure and used items may differ between populations, the frequency measure of exposure to external workplace of Dupré et al. (2014) is useful for multiple populations that are at (high) risk of exposure to external workplace aggression. By gaining more information on best ways to measure external workplace aggression and using these indices, the extent of the risk of exposure can be identified and results can be compared. Thereby, measures to decrease external workplace aggression in the future could be taken, improved upon, and become more evidence based.

6



CHAPTER 8

Discussion

Discussion

In this dissertation, the relationship between psychological characteristics and exposure to workplace aggression among emergency responders was investigated. Emergency medical workers, firefighters and police officers (together: 'emergency responders') are frequently exposed to aggression of citizens (Abraham et al., 2011; Fischer & Van Reemst, 2014). This exposure can be damaging to employees, organisations and society in general (Abraham et al., 2011; Bernaldo-De-Quirós et al., 2015; Hershcovis & Barling, 2010a; Van Stokkom, 2013). Previous research about the nature and extent of workplace aggression among emergency responders showed that some employees are more exposed to workplace aggression than others (Fischer & Van Reemst, 2014). This unequal distribution is also visible within specific occupational groups (Abraham et al., 2011; Broekhuizen et al., 2005; Ettema & Bleijendaal, 2010; Fischer & Van Reemst, 2014; Van der Velden et al., 2015). Knowledge about correlates of exposure to workplace aggression can offer more insight into what influences workplace aggression and how it can be prevented.

Existing studies about correlates of exposure to workplace aggression among emergency responders have mainly offered insight into situational correlates, such as how often employees are in contact with citizens. However, there was limited insight regarding psychological correlates of exposure to workplace aggression among emergency responders. In addition, limited insight has been provided in the possible direction of the relationship between characteristics and exposure to aggression, and limited insight has been offered in the differences between occupational groups. The studies in this dissertation tried to address these limitations.

In this dissertation, exposure to aggression among emergency responders was considered as victimisation, because emergency responders can potentially be hurt, even though they do not have to consider themselves victims. This dissertation took the victims' perspective by addressing the role of psychological characteristics of emergency responders. Victim proneness notions (Sparks, 1981; Wolfgang, 1958), criminal opportunity theories (Cohen & Felson, 1979; Hindelang et al., 1978), and interaction theories (Athens, 2005; Goffman, 1967), led to the assumption that exposure to aggression, in other words victimisation, is often an outcome from interaction between emergency responders, in other words victims, and offenders in a certain context. Emergency responders take their psychological characteristics to this interaction. The relationship between psychological characteristics of emergency responders and their exposure to workplace aggression was studied in this dissertation through research question 1.

Research question 1: To what extent are psychological characteristics of emergency responders related to their exposure to aggression of citizens?
Based on the previous line of thought, psychological characteristics were thought to *predict* exposure to workplace aggression. Exposure to workplace aggression could also *affect* psychological characteristics, as it can have severe consequences (Bernaldo-De-Quirós et al., 2015). Therefore, one of the aims of this dissertation was to provide more insight into the direction of the relationship between psychological characteristics of emergency responders and their exposure to workplace aggression. This was studied in this dissertation through research question 2.

Research question 2: In which direction(s) are psychological characteristics of emergency responders and their exposure to aggression of citizens related?
In this dissertation, emergency responders in three occupational groups were studied: emergency medical workers, firefighters and police officers. While all emergency responders are important for public safety and have work characteristics in common, each occupational group is unique. Differences occur in the legal framework an occupational group works with, the frequency of contact with citizens, and the number of professionals present in a work situation. Therefore, it is possible that differences exist between the three studied occupational groups in correlates of exposure to workplace aggression. These differences were explored in this dissertation through research question 3.

Research question 3: To what extent do relationships between characteristics of emergency responders and their exposure to aggression of citizens vary between occupational groups?
This dissertation specifically focused on two types of psychological characteristics: social information processing (SIP) characteristics and personality characteristics. Both types of characteristics seemed to be relevant for explaining exposure to workplace aggression yet understudied. SIP characteristics are characteristics on how people process social information and develop a response (Crick & Dodge, 1994), and include the response decision and emotions. Especially, the response decision and situation-dependent emotions could influence the emergency responder-citizen interaction, as emergency responders (and police officers specifically) frequently and sometimes quickly form decisions in social (work) situations on how to respond. Personality characteristics may be less directly linked to exposure to aggression than social information processing characteristics, as the work context may influence behaviour as well. Personality characteristics are thought to be relatively stable over time and situations, although literature suggests that they may still change (Roberts, Walton, & Viechtbauer, 2006). Due to their stable nature, it is likely that these characteristics precede victimisation.

In this dissertation a variety of characteristics related to the personality was studied: negative affect, dominance, self-evaluations, empathy and hostile interpretations. Both types of characteristics (social information processing and personality characteristics) were thought to predict exposure to workplace aggression, but also change due to experiences such as exposure to workplace aggression.

Various methods were used in this dissertation. Firstly, a secondary analysis was conducted on a cross-sectional dataset with survey data from public sector employees. This analysis explored the role of work characteristics and differences in exposure to workplace aggression between occupational groups. Secondly, a two-wave survey study was conducted among police officers, using hypothetical vignettes. This survey study investigated the relationship between the response decision of police officers, in other words how they come to a response, and situation-dependent emotions and exposure to workplace aggression. Thirdly, interviews were held with emergency medical workers, firefighters and police officers and other workers within their organisations. The interviews were used to explore characteristics related to exposure to workplace aggression. Interviews were analysed using open codes in Atlas.ti, which were then categorised and compared to the literature. Lastly, a three-wave survey study was conducted among emergency medical workers, firefighters and police officers. This study was conducted to investigate the role of psychological characteristics related to the personality in exposure to workplace aggression, and to investigate differences between occupational groups.

Answer to research question 1

Research question 1: To what extent are psychological characteristics of emergency responders related to their exposure to aggression of citizens?

To answer this research question, firstly, a cross-sectional analysis was conducted in chapter three, to explore to what extent response decision and situation-dependent emotions are useful in explaining differences in exposure to aggression among police officers. According to the social information processing (SIP) model (Crick & Dodge, 1994; Dodge, 1986), the response decision is based on how people evaluate the response, how well they think they could enact the response, what they think the outcome of the response would be and which response they select. Situation dependent emotions are thought to influence the response decision (and other steps of the cyclic SIP model, Crick & Dodge, 1994). In this chapter, the two-wave dataset was used, based on vignette surveys among police officers, but only the first wave of the questionnaire was included in the analysis of this chapter. In these surveys, a hypothetical work situation was described, after which respondents answered questions about three possible responses:

a more hostile, more passive, and more assertive response. In addition, questions were asked about exposure to verbal violence, threats and physical violence in the previous six months.

Results indicated that victimisation involving verbal violence, threats, and physical violence was associated with some response decision characteristics but not with situation-dependent negative emotions. Police officers who had more negative outcome expectations of aggressive or assertive responses were more likely to report being a victim of violence than were other police officers. In addition, police officers who selected an aggressive rather than a passive or assertive response, were more likely to report being a victim of violence than were other police officers. No associations with victimisation were found for response evaluation and for self-efficacy of any type of response (aggressive, passive, or assertive response).

Secondly, research question 1 was answered longitudinally in chapter four, using the same dataset as in chapter three, but focusing on all aspects of a hostile response decision as one concept (including the evaluation, self-efficacy, outcome expectations and selection of a hostile response) and using both waves. This chapter did not include passive or assertive response decision characteristics. The two waves of the questionnaire, conducted six months apart, offered the possibility to study the relationships between hostile response decision and exposure to workplace aggression over time. In this chapter, a cross lagged panel design was used, which is a design that can test associations between variables measured in multiple time waves, and can be used if causal relations are hypothesised (Kenny, 1975). The cross lagged panel models showed that exposure to threats was related to a more hostile response decision six months later. Exposure to physical aggression was marginally significantly related to a more hostile response decision six months later.

Thirdly, the question was also answered with qualitative data. For chapter five interviews were held with 50 emergency response employees in the Netherlands that were conducted to gain insight into their perspective on characteristics related to exposure to workplace aggression. Respondents included front-line practitioners, but also supervisors and other employees involved in aggression against emergency responders (e.g. involved in training, registration or aftercare). They mentioned both situational and psychological characteristics as characteristics related to exposure to workplace aggression. The four most important categories of psychological characteristics that were described by emergency respondents were empathy and adjusting, dominance, self-confidence and setting boundaries, and emotional resilience. Lower empathy and less adjusting, and higher and lower dominance (compared to moderate dominance) were described by respondents as characteristics possibly related to more exposure to aggression. In addition, lower self-confidence and setting

boundaries, and lower emotional resilience were characteristics that were described as characteristics possibly related to more exposure to aggression.

Lastly, the question was answered with a three-wave dataset about personality related characteristics: negative affect, empathy, self-evaluations, dominance and hostile attribution. In chapter seven this dataset was used to analyse the relationship between psychological characteristics and exposure to workplace aggression. Negative affect, dominance and lower patience were, at least in bivariate analysis, related to more exposure to aggression. This was found in all three occupational groups. Emergency responders who reported more negative affect, lower and higher dominance (compared to moderate dominance) and lower patience were on average more often exposed to workplace aggression. Least support was found for the hypotheses that lower empathy, lower self-evaluations and hostile attribution were related to more exposure to aggression. Results were inconsistent as relationships between psychological characteristics and workplace aggression were found, but not for all forms of workplace aggression (psychological and physical) and not for all occupational groups.

Comparing results between chapters

In general, results from the chapters about research question 1 are in line with each other. Both qualitative (chapter five) and quantitative methods (chapter seven) have shown that low dominance *or* relatively high dominance can explain exposure to workplace aggression, which is a curvilinear relationship (in correspondence with Aquino & Byron, 2002). In addition, aggressive response selection (chapter three) and lower patience at work (chapter seven), as an indicator of aggressiveness, were both found to be related to more exposure to workplace aggression, which is in accordance with victimisation literature (e.g. Schreck, Stewart, & Osgood, 2008). However, there are three differences between chapters that are important to note, regarding (1) empathy, (2) self-evaluations, and (3) negative emotions.

Firstly, in interviews, emergency responders (chapter five) mentioned less perspective taking (which is an aspect of empathy according to the literature, Davis, 1980) as a characteristic that could explain exposure to workplace aggression. According to respondents, taking perspective seemed related to a lower likelihood of exposure to workplace aggression. Quantitative results within this dissertation do not completely confirm this idea. Only for police officers a bivariate relationship was found, and in cross lagged models, empathy even predicted *more* exposure to workplace aggression (chapter seven).

The second difference is that, in interviews, emergency responders (chapter five) mentioned lower self-confidence (which is, according to the literature an aspect of self-evaluations, Judge et al., 2002) as a characteristic that could explain exposure

to workplace aggression. The survey studies show hardly any relationship between exposure to workplace aggression and self-evaluations, whether measured as general self-evaluations (chapter seven) or as self-efficacy of a specific response (chapter three). The exception is one small bivariate relationship between general self-evaluations and exposure to verbal aggression among police officers that was found in chapter seven. Chapter four measured a general hostile response decision, which did show a relationship with exposure to workplace aggression. This general response decision did include the self-efficacy of a hostile response, but as the hostile response decision was treated as once concept in that chapter, it is not possible to identify the unique contribution of self-efficacy of the response to the significant relationship with exposure to workplace aggression in that study.

The third difference is that negative emotions were not found to be related to exposure to workplace aggression in survey research described in chapter three. However, they were related in the interviews in chapter five. They were also related in the survey study in chapter seven.

The difference in the research methods, with interviews on the one and survey on the other hand, may explain the first two differences. The interviews measured perceptions of emergency responders. These were perceptions about characteristics of (anonymous) colleagues, regarding who is more likely and who is less likely to be exposed to workplace aggression. In these interviews, emergency responders are likely to mention characteristics of colleagues that are easily observable, or that are based on existing perspectives, for example developed by talking to others or by the media. Whereas perceptions are an interesting study object in itself, this is a limitation when studying to what extent actual characteristics are related to exposure to workplace aggression. People tend to search for and recall social information that confirms pre-existing beliefs more than non-confirming information (Klayman & Ha, 1987). It is possible that taking perspective (as part of empathy) and self-confidence are more observable, and therefore more often mentioned in interviews, while no relationship exists. Or, taking perspective and self-confidence are ‘soft skills’ that are more frequently addressed in education and therefore a pre-existing belief could exist that these characteristics decrease aggression, which is therefore more often mentioned by respondents.

In survey research, the relationship between psychological characteristics and exposure to workplace was not examined by respondents explicitly mentioning this relationship, but by testing to what extent variation in one measured characteristic explains the variation in the other characteristics. This does not mean that no bias could occur in this method. For example, it is possible that people show their best side when answering questions or that they over or underreport workplace aggression because memory is fallible. This could mean that reports of taking perspective in surveys do not

correctly represent perspective taking, and that therefore no relationship was found while there actually is a relationship. Still, the scale that was used to measure empathy was considered best for this research, given its content and previous use (see Gerdes, Segal, & Lietz, 2010, p. 2334).

In addition, the surveys measured self-reported characteristics, whereas interviews measured other-reported characteristics, as respondents often talked about colleagues instead of themselves. People may psychologically take perspective or have self-confidence, but it may be more difficult to observe this for colleagues. This means that the measurement of psychological characteristics differs between research methods. It also seems possible that general psychological characteristics such as self-evaluations are less visible in the workplace context of emergency responders. In the general population, personality at work seems to have strong similarities with people's general personality characteristics (Wang & Bowling, 2016, p. 174). However, emergency responders receive training and work with protocols and therefore, their work personality may differ from their general personality characteristics. This could be explored in future research.

As an explanation for the third difference, it is possible that no relationship between emotions and exposure to aggression was found in chapter three, because police officers are influenced by police protocols and training. Police officers are trained to work in dangerous and possibly emotionally loaded situations (for example, eliciting anger). Therefore, this result could indicate that it is less likely that police victimisation is a result from experiencing emotions than in other populations. However, a relationship was found between emotions and exposure to workplace aggression in interviews (chapter five) and survey research described in chapter seven, also among police officers. Possibly a better explanation is that measures of situation-dependent emotions were used in chapter three. Respondents were asked how they would feel in a hypothetical situation that was described. In interviews and in the survey research of chapter seven, general negative emotions were investigated. As described in chapter three, emotions depending on a hypothetical situation may inform us about reflective social information processing, rather than emotional social information processing (Orobio de Castro, 2004). General emotions may better indicate experienced emotions of emergency responders at all times, whereas training could have still affected the control of emotions in specific situations. This could explain why a relationship was found between general emotions and exposure to aggression, whereas no relationship was found for situation dependent emotions in chapter three.

Explanations of unexpected findings

Some findings were contrary to what was expected. Selecting passive responses was thought to be related to more exposure to workplace aggression based on peer

victimisation studies, because people who behave more passively were expected to protect themselves less. However, in chapter three, selecting passive responses was found to be related to less victimisation. An explanation could be that if a police officer enacts a passive response, a colleague may step forward in a possibly dangerous work situation, in which case the colleague, who interacts more with the citizen, is more exposed to workplace aggression. In addition, a positive outcome expectation of aggressive responses was found to be related to less exposure to workplace aggression among police officers, which was contrary to the expectation. The feeling that a situation will evolve positively if the officers have an active reaction (aggressive or assertive) may lead to less victimisation, because officers may come across as being more confident, independent of the response they enact. Another possibility is that victimisation experiences lead to a pessimistic view regarding assertive and aggressive responses. As the study was cross-sectional, no conclusion can be drawn about this, but chapter four, using a longitudinal analysis, suggests that it is more likely for victimisation to affect response decision, than the other way around.

In chapter seven, empathy and more specifically taking perspective was found to predict more exposure to workplace aggression over time among police officers. However, the hypothesis was that taking perspective would be related to less exposure to workplace aggression, because it was thought that professionals who take perspective show more patience with citizens, resulting in less aggression of the citizen towards the emergency responder (cf. Aquino & Thau, 2009, p. 723). This hypothesised relationship was found in bivariate analyses among police officers. However, over time, taking perspective predicted *more* exposure to workplace aggression among police officers. As many analyses were performed, it is possible that this is a coincidental result. It is also possible that more empathic colleagues are (self) selected to interact more with citizens in work situations in the following months, which results in empathy predicting more exposure to workplace aggression over time.

The additional contribution of psychological characteristics

Socio-demographic and work characteristics were used to analyse and control for mainly the situational risk of exposure to workplace aggression. Chapter two investigated to what extent socio-demographic and work characteristics are related to exposure to workplace aggression. Criminal opportunity theories were used to argue that these characteristics might explain variations in exposure to aggression. To analyse the relationship between socio-demographic and work characteristics, a secondary analysis was performed on data from a workplace violence survey of the Ministry of the Interior and Kingdom Relations of the Netherlands. The results of chapter two indicated that younger professionals and professionals who have more frequent and risky contact

experienced more external workplace violence. The expectations that emergency responders with less skills or experience to avoid exposure to aggression were more often victim of workplace violence than others were not convincingly supported in this chapter.

Other chapters also investigated the situational risk of exposure to aggression. Chapter three and seven used socio-demographic and work characteristics to control for situational risk. In chapter six and seven, a measure of situational risk (LeBlanc & Kelloway, 2002) was used to relate to exposure to workplace aggression. In addition, in chapter five, emergency responders who were interviewed described situational characteristics that are related to exposure to workplace aggression according to their perspective.

Overall, emergency responders who work more hours on the street, at night and in the weekend, who have more public contact or who work in an urban region are more often found to be exposed to workplace aggression (chapter two and chapter three). In addition, overall, general situational risk was related to exposure to workplace aggression (chapter six and chapter seven). The idea that situational risk is related to exposure to workplace aggression was supported by the interviews with emergency responders, who for example additionally mentioned certain events, such as New Year's Eve, as more risky work situations. In the quantitative studies, the situational risk combined with the age and gender of emergency responders explained more variance in exposure to aggression, at least in verbal aggression, among police officers than among other occupational groups. Only among police officers, males and younger professionals were found to be exposed to more workplace aggression.

The results also show to what extent psychological characteristics contribute to the explanation of exposure to aggression, on top of socio-demographic and work characteristics. For police officers, measured psychological characteristics contribute to the explanation on top of socio-demographic and situational characteristics. By taking into account the response decision and emotions (chapter three), the explained variance in exposure to workplace aggression among police officers increased with more than 36 percent (from 16 to 23 percent for verbal violence, 19 to 26 percent for threats, and from 21 to 29 percent for physical violence). In chapter seven, the explained variance varied from 34 (only situational risk, age and gender) to 38 (psychological characteristics included) percent for verbal violence and 20 to 24 percent respectively for threats and physical aggression. For emergency medical workers, the explained variance varied from 10 to 16 percent for verbal aggression and 7 to 11 percent for threats and physical aggression. For firefighters, the explained variance varied from 4 to 9 percent for verbal aggression.

For all occupational groups, the percentages of explained variance also suggest that socio-demographic and work characteristics explain more variance of exposure

to workplace aggression than psychological characteristics. This was not surprising. Work and socio-demographic characteristics indicate how often emergency responders are in potentially threatening situations. There are situations that could be already 'determined' to escalate into aggression and violence, depending on the moment in which an emergency responder enters a situation or because of the intentions of the offender. In those cases, psychological characteristics of the emergency responder will play a less important role in exposure to workplace aggression than the situation emergency responders are confronted with.

Socio-demographic characteristics, such as age and gender, may both be related to workplace aggression due to situational risk and psychological proneness, which means that situational and psychological characteristics could be mediators. For example, older employees may more often choose to work less night shifts, which would cause less situational risk. Alternatively, older employees may show more patience with citizens, which was found to be related with less exposure to aggression in chapter seven, and also in general acting aggressively is related to more victimisation (e.g. Orpinas, McNicholas, & Nahapetyan, 2015). Literature suggests that personality can change when becoming older (Roberts et al., 2006). Even though socio-demographic and situational factors explain part of the variance in exposure to workplace aggression, psychological risk can still add to the explanation of exposure to workplace aggression, according to the results of this dissertation.

General conclusion regarding research question 1

The conclusion is that only some psychological characteristics of emergency responders are related to their exposure to aggression by citizens. In summary, a hostile response decision was related to exposure to workplace aggression among police officers, and negative affect, dominance and lower patience were related to exposure to workplace aggression among all groups of emergency responders. Empathy, hostile attribution and self-evaluation were not consistently related to exposure to workplace aggression. It is also clear that socio-demographic and work characteristics explain more variance of exposure to workplace aggression than psychological characteristics. However, taking into account psychological characteristics, variations in exposure to workplace aggression seem to be explained to a larger extent than by only socio-demographic and work characteristics.

Answer to research question 2

Research question 2: In which direction(s) are psychological characteristics of emergency responders and their exposure to aggression of citizens related?

Both types of psychological characteristics (social information processing and personality characteristics) were explored to answer this research question. Chapter four explored the direction of the relationship between a hostile response decision process and exposure to workplace aggression over time (six months, two waves), using cross lagged models. Results indicated that exposure to aggression, in particular threats, has an effect on how police officers make a response decision at least six months later, although the effects are small. More specifically, exposure to threats significantly predicted a more hostile response decision six months later, and exposure to physical aggression predicted a more hostile response decision six months later, but this was marginally significant. Even though models including effects in both directions fit the data best, the effect of response decision on exposure to aggression six months later was not significant.

Chapter five used interviews to study which characteristics explain workplace aggression according to respondents working in emergency response organisations. Therefore, the findings from this chapter provide information about psychological characteristics that could predict exposure to workplace aggression, and not the other direction. According to respondents, lower empathy and adjusting, higher and lower dominance, lower self-confidence and setting boundaries and lower emotional resilience predict exposure to aggression.

Chapter seven explored the direction of the relationship between personality characteristics and exposure to workplace aggression over time (six months, two waves). For police officers, it was found that empathy predicts more exposure to workplace aggression over time, and exposure to workplace aggression predicts higher negative affect over time. In addition, exposure to workplace aggression was found to predict a more hostile attribution over time. For other characteristics no cross lagged relationships were found. For example, for dominance no cross-lagged relationship was found, whereas cross-sectional relationships were present. Therefore, it was not possible to identify an independent relationship over time between other personality characteristics and exposure to workplace aggression.

General conclusion and explanations regarding research question 2

Overall, the results addressing research question 2 suggest that psychological characteristics can both influence future exposure to workplace aggression and be influenced by exposure to workplace aggression. However, this was only found for police

officers, and only for a limited number of possible relationships. This conclusion is thus tentative and must be interpreted with caution.

The cross lagged panel designs that were used can be seen as conservative, as characteristics need to develop sufficiently in six months for a relationship to be found. This could also explain why more consistent cross lagged relationships were found for characteristics related to social information processing, which are generally thought to be more changeable. Psychological characteristics related to the personality were already assumed to precede victimisation, because they are relatively stable.

Another explanation for finding a limited number of cross lagged relationships could be that causal effects of psychological characteristics on exposure to aggression, or in the other direction of exposure to aggression on psychological characteristics, are in fact not occurring. Relationships that were found in cross sectional studies can be spurious: other (non-measured) characteristics could affect both psychological characteristics and exposure to workplace aggression. However, I do not consider this a likely explanation, given that multiple relevant other characteristics (socio-demographic and situational characteristics) were controlled for in cross-sectional studies. More research on longitudinal relationships is needed to provide more solid conclusions, such as studies with more measurement occasions.

Answer to research question 3

Research question 3: To what extent do relationships between characteristics of the emergency responder and their exposure to aggression of citizens vary between occupational groups?

To answer this research question, various chapters explored differences between occupational groups in correlates with exposure to workplace aggression. Chapter two showed clear differences between occupational groups in the relationships between socio-demographic and work-related characteristics and exposure to workplace aggression. For police officers, variations in exposure to workplace aggression were best explained by these characteristics. For firefighters, only a few selected characteristics appeared to be relevant for explaining exposure to workplace aggression, and consequently, the models for firefighters fitted worse than a model without taking the selected characteristics into account. Also, specific characteristics were related to exposure to workplace aggression in one profession, but not the other(s), possibly due to the nature of contact with citizens. The relationship between exposure to aggression and the extent of contact with citizens, having more public contact (e.g. face-to-face on the street, rather than in an office), having a lower education level and working during evenings differed between occupational groups.

Interviews in chapter five suggested that job position and lower dominance explain variations in the workplace victimisation of police officers more than in other occupational groups. Furthermore, empathy was more often mentioned as possibly explaining exposure to workplace aggression among emergency medical workers than among respondents working in other occupational groups. Fewer firefighters recognised variations in exposure to workplace aggression at all compared to other occupational groups.

In chapter six and chapter seven, the best way to measure and model exposure to workplace aggression was explored (chapter six for wave one, chapter seven for following waves). This analysis showed that the best measurement of exposure to workplace aggression differed between emergency medical workers, firefighters and police officers. For firefighters, exposure to workplace aggression was measured best by only (non-)verbal aggression items. For emergency medical workers and police officers, the workplace aggression indices also included threats and physical aggression items. Another variation was found in the number of dimensions: for firefighters, the indices of exposure to workplace aggression consisted of one dimension of verbal aggression, which includes verbal and non-physical and non-verbal types of aggression, such as gestures. For police officers, the indices consisted of two dimensions (verbal vs. threats and physical aggression). For emergency medical workers, one dimension was the best option for wave one, whereas two dimensions fitted better in wave two and three (verbal vs. threats and some physical aggression forms). Thus, these analyses showed that even the concept of workplace aggression itself varies between occupational groups. This implies that correlates of exposure to workplace aggression cannot be statistically compared between occupational groups.

However, despite this statistical incomparability between occupational groups, chapter seven does suggest that differences in relationships between psychological characteristics and exposure to workplace aggression exist. How well variations of exposure to workplace aggression are explained by psychological characteristics depended on the occupational group.[56] Response decision and situation-depended emotions added explained variance of exposure to workplace aggression in police officers. In addition, socio-demographic and work characteristics explained more variance in exposure to workplace aggression in police officers (a fifth to a third), than in emergency medical workers (approximately a tenth) and in firefighters (a twenty-fifth). However, it has to be kept in mind that exposure to aggression was operationalised differently between the occupational groups.

56 This was already described for research question 1.

Furthermore, among police officers, more measured characteristics seem to be related to exposure to workplace aggression, than among emergency medical workers and firefighters. In bivariate analyses, negative affect and dominance were related to exposure to workplace aggression in all occupational groups. But in multivariate analysis, negative affect was related to workplace aggression among police officers, but not among emergency medical workers and firefighters. Dominance was significantly and independently related to workplace aggression among emergency medical workers and firefighters, but not among police officers. Unfortunately, statistical comparisons to draw definite conclusions about these differences were not possible, because the concept and operationalisation of exposure to workplace aggression itself differed between occupational groups.

General conclusion and explanations regarding research question 3

We can conclude that differences between occupational groups in the relationship between characteristics of the emergency responder and exposure to workplace aggression exist. Socio-demographic and work correlates differ in how well they explain variations in exposure to workplace aggression. The concept of workplace aggression itself varies between emergency responders, which makes it more difficult to statistically compare differences in correlates of exposure to workplace aggression. And, the results suggest that psychological correlates and explained variance of models predicting exposure to workplace aggression do differ between emergency responders.

An explanation for the finding that socio-demographic characteristics explained variance in exposure to workplace aggression among police officers best, compared to emergency medical workers and firefighters, could be related to the job variation within the organisations. Police officers vary greatly in their jobs within the police organisation, even within the selection of professions who respond to emergencies. It is possible that work characteristics determine the general nature of work situations more strongly than among firefighters and emergency medical workers. Chapter two provided support for this idea as having more public contact was the strongest correlate for exposure to workplace aggression among police officers.

An explanation for the finding that the concept of workplace aggression varies between occupational groups, is the difference in work situation and contexts. For example, police officers are often present in potential risky situations of emergency medical workers and firefighters, and they are more likely to be the target of aggression in those situations. In addition, police officers can legitimately use physical force in interaction with citizens, firefighters generally leave for an emergency with more professionals, police officers have the most and firefighters having the least contact with citizens. Also, the frequency and the perceived severity of exposure to workplace

aggression varied for most forms of workplace aggression that were measured in chapter six.

An explanation for the finding that the characteristics in this research seemed to explain variance in exposure to workplace aggression among firefighters worse, compared to emergency medical workers and police officers, could be that they work in larger teams (in general situations). Emergency medical workers and police officers often work in couples, and the couples vary more often. It is possible that in case of larger, relatively stable, teams, individual characteristics influence the interaction with citizens less, or only characteristics of one of the team members matter, namely the member who tends to interact with citizens most. Alternatively, team characteristics, such as how firefighters work together (Estryn-Behar et al., 2008), could be related to exposure to aggression more. An additional explanation is that the people who choose different professions, or specific teams or job positions within the occupational groups, differ. For example, it is likely that the job of emergency medical workers attracts other people than firefighters and police officers, for example people who enjoy taking care of others more, and that they receive different training.

Implications for theory

This dissertation used criminal opportunity theories, proneness notions and interaction theories to explain variations in exposure to workplace aggression of emergency responders. Criminal opportunity theories (Cohen & Felson, 1979; Hindelang et al., 1978) suggest that people are more likely to become victims depending on their lifestyle. The routine activity theory distinguishes three elements: the presence of a motivated offender, being a suitable target and lacking a capable guardian. Victimisation is considered more likely to occur if an individual is in the presence of a motivated offender, is a suitable target (is 'attractive') and lacks guardianship, such as lacking safety precautions.

Emergency responders (possible target) who are more often among citizens (possible offenders) and lack safety precautions (guardianship) will be more often exposed to workplace aggression according to these theories. What exactly motivates offenders or makes a target suitable was less clearly defined. This could be specified with proneness characteristics, which were based on the victim precipitation theory (Amir, 1971; Wolfgang, 1958). This theory suggests that a victim can contribute to his or her victimisation. Thus, psychological characteristics of the emergency responders can make them more prone to being exposed to workplace aggression. Characteristics of the potential victim are important for the interaction between the offender and the victim, as interaction theories (e.g. Athens, 2005) and previous studies (cf. Muller & Zeestraten,

2015) suggest. This dissertation contributed to these theories by (1) specifying which characteristics are related to aggression, in other words 'pose more risk' and, in the other direction, 'protect from' aggression, and the extent to which they contribute to exposure to aggression, by (2) suggesting context specificity, and by (3) providing insights about the SIP theory.

Specifying victim characteristics

Overall, this dissertation confirms victim theories that suggest that victim characteristics can contribute to victimisation. In addition, it shows which *specific* characteristics of victims could make them more vulnerable or suitable and which do not. Emergency responders who have a more hostile response decision, have relatively low dominance *or* relatively high dominance (compared to moderate dominance) and have more general negative emotions are more often exposed to workplace aggression. Limited support was found for hypothesised effects of empathy, self-evaluations, and hostile interpretations of situations.

The results further suggest that psychological characteristics contribute to workplace aggression in addition to socio-demographic and situational characteristics. This is in line with the notion that victim proneness is not only situational, but also psychological. Psychological characteristics of emergency responders in these occupational groups thus seem to contribute to the interaction with citizens. Whereas the elements of criminal opportunity theories do matter (motivated offender, guardianship and suitable target), they also matter for how the opportunity is 'executed', with a role for the victim in the interaction with the offender in the context. In that sense, criminal opportunity theories are too narrow.

Sparks (1981) introduced several ways in which a person could be prone to victimisation: *precipitation, facilitation*, *vulnerability*, *opportunity*, *attractiveness*, and *impunity*. Impunity (unlikeliness to report to the police) was not addressed in this dissertation.[57] Situational characteristics offer more insight into the opportunity aspect: being in the same place as the offender. Psychological characteristics offer more insight into encouraging or causing victimisation (precipitation), putting oneself at risk (facilitation), less capability to preventing crime (vulnerability) and attractiveness. In addition, psychological characteristics could affect the opportunity as well, for example if employees can voluntarily decide to be part of a nightlife team or to be the first to respond to an emergency call. It is difficult to separate these ways in which a person can be prone to victimisation in the operationalisation of the psychological

57 According to another study, reporting exposure to aggression to the police was encouraged by organisations, although not always done (Van Reemst & Fischer, 2017).

characteristics that were used, and to identify which characteristics address which aspect (more), based on this study. In the studies in this dissertation, the situational risk (or indicators such as socio demographic and work characteristics) was controlled for when studying the relationship between psychological characteristics and exposure to workplace aggression, so psychological characteristics are less likely to reflect opportunity. Overall, this dissertation did not test the relation between specific types of proneness and exposure to workplace aggression, however it does support that victim proneness is relevant for victimisation among emergency responders. In addition, it shows the relevance of the theory today, whereas the risk that studies using this theory are perceived as blaming the victim remains.

The results do not provide clear suggestions for adjustments to the theories. The theories are very broad, which make it easy to fit information into them, although a focus on only opportunity may be too narrow according to the results. However, results do add information to the theories by specifying which characteristics make an individual more prone to victimisation. In the context of emergency response this is having a more hostile response decision (which was studied among police officers), negative affect, higher and lower dominance (compared to moderate) and lower patience. However, only a selection of characteristics was studied, so further research on how to specify the theories and operationalize the theoretical concepts remains needed.

The addressed theories assume a causal direction of relationships: victim characteristics are thought to explain victimisation. However, empirical support for this was limited, as most studies were cross-sectional. It was difficult to find convincing evidence for a causal direction in this dissertation. However, the results do suggest that the relationship between psychological characteristics and exposure to workplace aggression may work in both directions for police officers. For response decision, it was found that police officers who are exposed to workplace aggression, specifically threats, have a more hostile response decision six months later. Only for empathy it was found that it predicted exposure to workplace aggression over time. Nevertheless, respondents indicated in interviews that psychological characteristics explained differences in exposure to workplace aggression. Thus, support for the theory is limited.

This dissertation confirms that exposure to workplace aggression is often repeated, even within shorter periods of time, such as six months. For repeated exposure to workplace aggression among emergency responders, explanations of repeat victimisation in the general population could be used. The two explanations for repeat victimisation are the heterogeneity of characteristics and state dependency. The heterogeneity of characteristics means that characteristics that explained the first victimisation also influence future victimisation, and state dependency means that previous victimisation and its direct consequences are risk factors for future victimisation

(Farrell et al., 1995; Tseloni & Pease, 2003). This dissertation did not evaluate repeat victimisation theory specifically, as it did not assess responses to previous victimisation experiences over a longer period of time. Therefore, it is not possible to test which explanation is more likely for emergency responders.

The victim-offender overlap literature (Ousey et al., 2011; e.g. Rokven et al., 2013) suggests that victims are more likely than others to become offenders, offenders are more likely than others to become victims, and victimisation and offending are influenced by the same characteristics. The victim-offender overlap was not explicitly tested in this dissertation. However, the results in this dissertation did show that behaviour that citizens may *perceive as* offending, such as an aggressive response selection or lower patience of emergency responders, is related to exposure to workplace aggression. This supports the victim-offender overlap hypothesis.

Specifying context

The results in this dissertation suggest that the extent to which victims are prone or suitable to become a victim also depends on the context, in this case the occupational group to which one belongs. This is important because the interaction between psychological proneness and the context was only limitedly elaborated in existing victimisation theories. For example, criminal opportunity theories are general, not context specific.

The results of this dissertation indicate that the importance of each element of the theory, such as the suitableness of the target, may depend on the context: the occupational group. For example, results indicated that in the work context of police officers and emergency medical workers, psychological characteristics seem to explain variations in exposure to workplace aggression to a larger extent, than in the work context of firefighters. Among police officers, negative affect remained independently related to exposure to workplace aggression, whereas it did not for emergency medical workers and firefighters. For emergency medical workers and firefighters, dominance was independently related to exposure to workplace aggression, whereas it was not for police officers. Further studies could provide more information on this context specificity, for example whether also *within* occupational groups, certain psychological characteristics are only relevant in some work situations.

Due to context specificity, it is difficult to draw conclusions about how and to what extent these theories apply to other populations. However, the findings suggest that psychological characteristics may also contribute to explaining victimisation in other occupational groups that are at higher risk of workplace aggression, similar to police officers. High risk groups are for example occupational groups who are involved in law enforcing or more ‘bad news conversations’ with citizens, such as employees

at the Employee Insurance Agency (Sprado, Fischer, & Van Reemst, 2017). Possibly, psychological characteristics of employees contribute less to explaining victimisation in occupational groups that interact with citizens with more employees at a time or experience mostly verbal aggression, similar to firefighters.

Insights about the SIP theory

Originally, the SIP model was developed to explain maladjustment among children. Our previous literature review has indicated that social information processing characteristics are also related to victimisation (Van Reemst et al., 2016). Until now, mostly peer victimisation among children and adolescents were studied. The studies in this dissertation show that SIP characteristics are also related to victimisation among police officers. The dissertation thus contributed to showing that the SIP model is relevant in more contexts than it was originally developed for.

For this theory, the results of this dissertation also show context dependencies. For example, in contrast to what was expected based on the SIP model, no relationship was found between victimisation and the separate response evaluation and self-efficacy of any response (aggressive, passive or assertive) among police officers. Possibly, the response evaluation and self-efficacy of responses of police officers are influenced by police training and protocols. On average, they may have higher self-efficacy and more positive evaluations for responses that are addressed in training and protocols, compared to those that are not. Comparative research with emergency responders and workers who do and who do not receive training or work with protocols could test this possible explanation.

Implications for future empirical research

This dissertation has implications for empirical research as well. It leads to suggestions for measurement improvements, for alternative methods and for new questions to be answered in future research.

Measurement improvements

Chapter six provided in-depth information on measuring victimisation, in this case exposure to workplace aggression. It explored to what extent the measurement of workplace aggression would improve if severity information was also considered. The measurement did not improve by taking into account severity information, implying that future research can be directed towards the frequency of exposure to workplace aggression only. This means that workplace aggression can be measured in a simple way, rather than with multiple scales.

Secondly, the results on measuring victimisation showed that research should address separate occupational groups, as they indicate that the concept of exposure to workplace aggression differed between occupational groups. Previous workplace aggression studies have often studied multiple occupational groups together (e.g. Gettman & Gelfand, 2007b). However, the present study implies that, to get most accurate results, occupational groups should be studied separately (see also Winstanley & Whittington, 2004).

This dissertation used a measurement instrument that gave a broad view of situational risk (LeBlanc & Kelloway, 2002). Among police officers and emergency medical workers specifically, this situational risk was related to exposure to workplace aggression. Together with socio-demographic characteristics, this explained almost a third of explained variance in exposure to verbal aggression among police officers. Compared to previous studies, this a large proportion. This measurement instrument could be used in further research that investigates situational risk of exposure to workplace aggression.

This dissertation used cross lagged panel designs. These designs offer some advantages: while conducting an observational study, found effects are considered to approach causality (Eby et al., 2015; Kenny, 1975). However, the designs also have limitations. Firstly, as was described, the cross lagged panel designs that were used can be seen as conservative, as characteristics need to develop sufficiently in six months for a relationship to be found. Therefore, it is uncertain whether only a limited number of effects were found because no relationships exist or because the characteristics and exposure to workplace aggression did not have the possibility to develop sufficiently. In addition, if the research design only includes two waves or if there are other reasons why the research only allows one between-waves analyses, it is not possible to account for (in)stability of individual differences (Hamaker et al., 2015). A better way to assess the direction of relationships would be to incorporate more measurement occasions, so developments *between* different waves, for example between wave one and two, and between wave two and three, could be compared. Future research could thus use more waves.

Alternative methods

In this dissertation, psychological characteristics were measured with explicit questions. For example, respondents had to indicate to what extent they would feel positive about certain responses (as part of the response decision, chapter three and chapter four), or (dis)agree with certain statements (as part of personality characteristics, chapter seven). However, this type of measures has limitations. It is possible that people show their best side when answering questions, which is called social desirability. This could both be part of self-deception and impression management (Paulhus, 1984). The bias of

impression management has been shown to be smaller in digital questionnaires (Crutzen & Göritz, 2010), such as those used in this dissertation, but it could still occur. In addition to social desirability, respondents could over or underreport workplace aggression, for example because memory is fallible, and relationships can be due to common method bias, a possible overestimation of relationships if concepts are measured using the same method (for example all self-reports) and at the same time.

An option for future research is to study psychological characteristics in an implicit manner. This means that psychological characteristics are not explicitly asked about in a survey. Instead, characteristics are measured by tools that assess characteristics indirectly. A well-known alternative measure of psychological characteristics is the Implicit Association Test (IAT) (Greenwald, McGhee, & Schwartz, 1998; Greenwald, Poehlman, Uhlmann, & Banaji, 2009). The IAT attempts to measure people's characteristics (biases) via reaction time on words and/or pictures. This test has been used in a broad variety of ways and topics (Greenwald et al., 1998; Wiers, Van Woerden, Smulders, & De Jong, 2002), including personality characteristics such as shyness (Asendorpf, Banse, & Mücke, 2002; Schnabel, Asendorpf, & Greenwald, 2008) and self-evaluations (Berger, Keshet, & Gilboa-Schechtman, 2017). Whereas it has been argued that implicit tests have their own limitations, such as potential decreased predictive validity (Blanton et al., 2009), measuring psychological characteristics of emergency responders using implicit measures could lower impression management and common method bias.

This dissertation also provides suggestions for future research on how to investigate relationships between psychological characteristics and exposure to workplace aggression. Diary studies could offer more insight into the direction of the relationship. In this type of method, both psychological characteristics and exposure to workplace aggression are measured at more time points. Another option would be to conduct systematic observational research, in which behaviour of emergency responders and citizens are observed, coded and analysed, to study the behaviour of employees and exposure to workplace aggression, and the ordering of behaviour and exposure.

In addition, future research could experiment with varying times between measurements. For the studies in this dissertation, a period of six months was thought to be ideal as it allowed enough time for characteristics, including both psychological characteristics and exposure to workplace aggression, to change. At the same time, this period was not too long, to increase the chance that respondents remember the frequency of exposure to workplace aggression correctly. However, it is possible that relationships between psychological characteristics and exposure to workplace aggression can be detected better if more time would be allowed between times of measurement, because there is more time for characteristics to develop. However, for the other direction, that is an effect of victimisation on characteristics, more time between

measurements could *decrease* the possibility to detect a relationship, as the impact of victimisation can diminish over time (Kilpatrick et al., 1987).

As was described, it was not possible to investigate whether heterogeneity of characteristics or state dependency better explains repeat victimisation among emergency responders (Farrell et al., 1995; Tseloni & Pease, 2003). To do that, it would be important to measure psychological characteristics before the first victimisation at work and over a longer period of time. Future studies should study the relationship between psychological characteristics and exposure to workplace aggression in the first period of working as an emergency responder. These studies can assess the psychological characteristics and the development of these characteristics before and after first victimisation experiences.

Furthermore, at the time of data collection, registrations of exposure to workplace aggression were not usable as a research method, because they differed between organisations and reports to the police were not always encouraged. However, current and future efforts to develop and improve registrations were mentioned by professionals in informal conversations and interviews. When they are improved, registrations can offer more information on variations in exposure to workplace aggression and could be used as an additional measure in the future.

Questions to be answered in future research

This dissertation leads to several remaining and new questions for future research. Firstly, future studies may address additional psychological characteristics. For example, sensation seeking tendencies of emergency responders could be relevant for exposure to workplace aggression. If an emergency responder has a high motivation to seek sensation, he or she could be the first to approach a potential aggressive citizen, therefore putting oneself at more situational risk than colleagues. Measuring sensation seeking was attempted in the study using the SIP model, but the measurement instrument had insufficient reliability to use it to test relationships (a Dutch and shorter version of Hoyle et al., 2002). Another measurement instrument needs to be used in future research. In addition, other characteristics that are associated with aggressiveness could be related to exposure to workplace aggression, as indicated by conflict and social interaction theories (e.g., Goffman, 1967). For example, low self-control is a characteristics that is often found to be related to aggression (Denson, DeWall, & Finkel, 2012), and is regarded as a failure to regulate behaviour. However, it has received little attention in workplace victimisation research.

Secondly, the question remains what the direction of the relationships between psychological characteristics and exposure to workplace aggression is. This question needs more research. For this, alternative methods may be needed, such as diary

studies or observational research (when studying behaviour instead of underlying characteristics), which were discussed above.

Thirdly, future research could study the moderating effect of work situations on the relationship between psychological characteristics and exposure to aggression further. Based on results of this dissertation, it seems possible that psychological characteristics of employees contribute less to explaining victimisation in occupational groups that interact with citizens with more employees at a time or experience mostly verbal aggression. This research could include a broader variety of occupational groups than this dissertation did, varying in the type of contact with citizens and the type of aggression. A related new question would be whether also *within* occupational groups, psychological characteristics prevent exposure to workplace aggression in some work situations but not in others. As has previously been suggested, some situations may be more 'determined' to result in aggression due to the situation and the people involved than others. The answer to this question can also contribute to the context specificity of victimological theories. This question is especially relevant in organisations in which work situations vary more strongly between employees, such as the police organisation.

Fourthly, future research can address the relationship between general psychological characteristics and behaviour of employees in interaction with citizens in trained and protocolled contexts. In this research it was assumed that general psychological characteristics predict behaviour at work. However, one explanation of the findings suggest general self-evaluations may not reflect self-confidence shown in a work situation. For example, due to training, employees could have self-confidence for specific behaviour at work, but not in general. Or, employees could feel insecure in (varying, including unfamiliar) work settings, but could be self-confident in general. Therefore, a study on general psychological characteristics and behaviour in specific work contexts would be interesting, especially in the emergency response context.

Fifthly, future research could further study which characteristics are related to exposure to workplace aggression among firefighters. This remains to a large extent unanswered in this dissertation. The frequency of exposure to firefighters is lower than the other occupational groups in this dissertation, however, also a single victimisation experience could have negative effects on the individual. A future study can investigate to what extent the size of a team affects the relationships between individuals' characteristics and exposure to aggression. As previously suggested, it seems possible that in larger teams, individual characteristics influence the interaction with citizens less. Alternatively, team characteristics, such as how firefighters work together, could be related to exposure to aggression. This question can be addressed by comparing larger and smaller teams.

Lastly, future research can address to what extent psychological characteristics of emergency responders can be trained. The results offer suggestions for training of employees (see following paragraph). To what extent characteristics are in fact changeable depends on the type of characteristics. Overall, social information processing characteristics, including attributions of intent, can develop over time. In fact, multiple training tools in other populations are available that change social cognitions (Milner, Wagner, & Crouch, 2017; Vassilopoulos, Brouzos, & Andreou, 2015). Personality characteristics are thought to be more stable over time, but training is also available to stimulate self-esteem and empathy in other populations (Feddes, Mann, & Doosje, 2015). To what extent psychological characteristics of emergency responders are changeable in training could be studied in future research.

Implications for emergency response policy and practice

This dissertation also aimed to offer suggestions for organisations involved in emergency response and for policy makers. It remains important to keep exploring possibilities to decrease risks of exposure to aggression. Some of these possibilities are related to the role of characteristics of the emergency responder, which I consider independent of attributing blame. Based on the results of this research, it is premature to develop firm and concrete suggestions. Therefore, a strong recommendation is to study some of the relationships further, particularly the direction between relationships. However, some tentative suggestions are already possible.

A first suggestion is to explore possibilities for prevention in the situational context, such as working with more employees at a time, more protective clothing or tools (e.g. bodycams, Flight, 2019), or interventions aimed at (possible) offenders. This suggestion derives from the conclusion that although psychological characteristics seem to add to the explanation of exposure to workplace aggression on top of socio-demographic and work characteristics, this added contribution seems only small. Socio-demographic and work characteristics explained a larger proportion of the variation in exposure to workplace aggression.

Another recommendation is to address workplace aggression differently in the three occupational groups. Besides different frequencies of experiences, also the correlates differ, meaning that each occupational group could benefit from its own policies. For firefighters, the usefulness of preventive policy measures at this stage seems limited, as we do not have detailed insight into the characteristics that are related to exposure to workplace aggression. The frequency of exposure to aggression is also lower than in other occupational groups. However, as each victimisation experience could have an

effect on the individual and the organisation, it remains important to be aware of the incidents that do occur and to offer aftercare measures.

In general, psychological characteristics could be monitored over time, before and after victimisation. In addition, these characteristics could be addressed in training. More specifically, lower negative affect, an optimal level of dominance, and non-aggressive response selection can be trained. However, these training programmes should be evaluated regarding the effect on decreasing workplace aggression and possible side effects. Possible side effects could be that alternative actions could take more time, which seems a key concept in effective emergency work. Characteristics could also be addressed in job selection as well, after evaluation.

The direction of relationships needs further study, but the result that exposure to workplace aggression predicts a more hostile response decision among police officers already suggests that previous work situations may have an impact on how police officers respond in later work situations. Aftercare facilities for workplace aggression could use this information. It is important to note that change in psychological characteristics after certain experiences may be beneficial or disadvantageous. Beneficial could be that employees learn from previous experiences about how to handle future experiences. Disadvantages could be that the change poses more risk of exposure to workplace aggression, but also other risks, such as decreased personal health or organisational commitment. In both cases, aftercare may evaluate to what extent workers and their cognitions or personality change due to certain work situations.

This study did not incorporate registrations of exposure to workplace aggression in systems of organisations, as these have important limitations up to now. However, registrations could provide more insight into the phenomenon in the future, if organisations do this in a similar manner and with similar communication towards workers. In that case, registrations could be compared and provide a total view for organisations. These registrations could also be used by researchers, to give more insight into the correlates of exposure to workplace aggression, or to answer other research questions regarding exposure to workplace aggression.

Another recommendation for organisations is to allow more large studies, for example among professionals in all regions. This would decrease the selection effect that can occur when some organisations cooperate with the study and other do not. In the current research, fortunately, a relatively large portion of the organisations participated, and relatively little differences were found between the samples and populations on general socio demographic and work characteristics. However, more certainty that no differences exist between the samples and populations on other relevant characteristics would benefit conclusions and suggestions for organisations in the future.

Final conclusion

This dissertation has contributed to the literature about characteristics related to exposure to workplace aggression, by focusing on psychological characteristics of the emergency responder, using a longitudinal design, and exploring differences between three occupational groups. The dissertation has shown that psychological characteristics contribute to explaining differences in workplace aggression, but only to a limited extent. In addition, clear differences were found between the three occupational groups, both in the experience of workplace aggression and in the correlates of workplace aggression.

In this discussion, I attempted to give meaning to these results and provided suggestions for future policies and research. The results suggested that it may be important to use different policies in the three occupational groups, that exploring policies related to the context or the offender remain important, and that specific characteristics could be addressed in training or selection, such as negative affect and dominance. Furthermore, more research is needed to disentangle the causal direction of relationships, and to explore the relationship with other characteristics. Overall, this dissertation has made a start on gaining information about psychological correlates of exposure to workplace aggression among emergency responders, and specified theory and knowledge which can be used in policies regarding external workplace aggression. By gaining more knowledge on this topic, workplace aggression can be addressed more effectively, which may not only benefit workers, but also organisations and society in general.

References

Abdollahi, M. K. (2002). Understanding police stress research. *Journal of Forensic Psychology Practice, 2*(2), 1-24. doi:10.1300/J158v02n02_01

Abraham, M., Flight, S., & Roorda, W. (2011). *Agressie en geweld tegen werknemers met een publieke taak. onderzoek voor veilige publieke taak 2007 - 2009 - 2011 [aggression and violence against employees with a public task. research for safe public task 2007 - 2009 - 2011].* Amsterdam: DSP-groep.

Abraham, M., van Hoek, A., Hulshof, P., & Pach, J. (2007). Geweld tegen de politie in uitgaansgebieden [violence against the police in entertainment districts]. *Amsterdam: DSP-Groep,*

Adang, O. M., Kaminski, R. J., Howell, M. Q., & Mensink, J. (2006). Assessing the performance of pepper spray in use-of-force encounters: The dutch experience. *Policing: An International Journal of Police Strategies & Management, 29*(2), 282-305. doi:10.1108/13639510610667673

Ahmad, M., Al-Rimawi, R., Masadeh, A., & Atoum, M. (2015). Workplace violence by patients and their families against nurses: Literature review. *International Journal of Nursing and Health Science, 2*(4), 46-55.

Alexander, C., & Becker, H. (1978). The use of vignettes in survey research. *Public Opinion Quarterly, 42*(1), 93-104. doi:10.1086/268432

Alexander, C., & Fraser, J. (2004). Occupational violence in an australian healthcare setting: Implications for managers. *Journal of Healthcare Management, 49*(6), 377-390.

Alpert, G. P., Dunham, R. G., & MacDonald, J. M. (2004). Interactive police-citizen encounters that result in force. *Police Quarterly, 7*(4), 475-488. doi:10.1177/1098611103260507

Ambulancezorg Nederland. (2017). Sector compass. Retrieved from https://www.ambulancezorg.nl/themas/sectorkompas-ambulancezorg/toelichting-sectorkompas

Amir, M. (1971). *Patterns in forcible rape.* University of Chicago Press Chicago.

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology, 53*, 27-51.

Andersson, L. M., & Pearson, C. M. (1999). Tit for tat? the spiraling effect of incivility in the workplace. *Academy of Management Review, 24*(3), 452-471.

Angland, S., Dowling, M., & Casey, D. (2014). Nurses' perceptions of the factors which cause violence and aggression in the emergency department: A qualitative study. *International Emergency Nursing, 22*(3), 134-139. doi:10.1016/j.ienj.2013.09.005

Aquino, K., & Bradfield, M. (2000). Perceived victimization in the workplace: The role of situational factors and victim characteristics. *Organization Science, 11*(5), 525-537. doi:10.1287/orsc.11.5.525.15205

Aquino, K., & Byron, K. (2002). Dominating interpersonal behavior and perceived victimization in groups: Evidence for a curvilinear relationship. *Journal of Management, 28*(1), 69-87. doi:10.1177/014920630202800105

Aquino, K., & Thau, S. (2009). Workplace victimization: Aggression from the target's perspective. *Annual Review of Psychology, 60*, 717-741. doi:10.1146/annurev.psych.60.110707.163703

Aquino, K., Grover, S. L., Bradfield, M., & Allen, D. G. (1999). The effects of negative affectivity, hierarchical status, and self-determination on workplace victimization. *Academy of Management Journal, 42*(3), 260-272. doi:10.2307/256918

Archer, J., Ireland, J., & Power, C. (2007). Differences between bullies and victims, and men and women, on aggression-related variables among prisoners. *British Journal of Social Psychology, 46*, 299-322. doi:10.1348/014466606X114083

Asendorpf, J. B., Banse, R., & Mücke, D. (2002). Double dissociation between implicit and explicit personality self-concept: The case of shy behavior. *Journal of Personality and Social Psychology, 83*(2), 380. doi:10.1037//0022-3514.83.2.380

Athens, L. (2005). Violent encounters: Violent engagements, skirmishes, and tiffs. *Journal of Contemporary Ethnography, 34*(6), 631-678. doi:10.1177/0891241605280570

Averdijk, M., & Loeber, R. (2012). The role of self-control in the link between prior and future victimization: An indirect test. *International Review of Victimology, 18*(3), 189-206. doi:10.1177/0269758012446982

Barling, J. (1996). The prediction, experience, and consequences of workplace violence. In C. I. Bernard (Ed.), *The function of the executives* (pp. 29-49). Cambridge: Harvard University.

Barling, J., Dupré, K., & Kelloway, E. (2009). Predicting workplace aggression and violence. *Annual Review of Psychology, 60*, 671-692. doi:10.1146/annurev.psych.60.110707.163629

Baron, R. A., Neuman, J. H., & Geddes, D. (1999). Social and personal determinants of workplace aggression: Evidence for the impact of perceived injustice and the type A behavior pattern. *Aggressive Behavior, 25*(4), 281-296.

Barrick, K., Hickman, M. J., & Strom, K. J. (2014). Representative policing and violence towards the police. *Policing, 8*(2), 193-204. doi:10.1093/police/pau013

Becker, G. S. (2013). *The economic approach to human behavior* University of Chicago press.

Berger, U., Keshet, H., & Gilboa-Schechtman, E. (2017). Self-evaluations in social anxiety: The combined role of explicit and implicit social-rank. *Personality and Individual Differences, 104*, 368-373. doi:10.1016/j.paid.2016.08.023

Berkowitz, L. (1989). Frustration-aggression hypothesis: Examination and reformulation. *Psychological Bulletin, 106*(1), 59.

Bernaldo-De-Quirós, M., Piccini, A. T., Gómez, M. M., & Cerdeira, J. C. (2015). Psychological consequences of aggression in pre-hospital emergency care: Cross sectional survey. *International Journal of Nursing Studies, 52*(1), 260-270. doi:10.1016/j.ijnurstu.2014.05.011

Bettencourt, A. F., & Farrell, A. D. (2013). Individual and contextual factors associated with patterns of aggression and peer victimization during middle school. *Journal of Youth and Adolescence, 42*(2), 285-302. doi:10.1007/s10964-012-9854-8

Bierie, D. M. (2017). Assault of police. *Crime & Delinquency, 63*(8), 899-925. doi:10.1177/0011128715574977

Bierie, D. M., Detar, P. J., & Craun, S. W. (2016). Firearm violence directed at police. *Crime & Delinquency, 62*(4), 501-524. doi:10.1177/0011128713498330

Bigham, B. L., Jensen, J. L., Tavares, W., Drennan, I. R., Saleem, H., Dainty, K. N., & Munro, G. (2014). Paramedic self-reported exposure to violence in the emergency medical services (EMS) workplace: A mixed-methods cross-sectional survey. *Prehospital Emergency Care, 18*(4), 489-494. doi:10.3109/10903127.2014.912703

Blanton, H., Jaccard, J., Klick, J., Mellers, B., Mitchell, G., & Tetlock, P. E. (2009). Strong claims and weak evidence: Reassessing the predictive validity of the IAT. *Journal of Applied Psychology, 94*(3), 567-582. doi:10.1037/a0014665

Bowling, N. A., & Beehr, T. A. (2006). Workplace harassment from the victim's perspective: A theoretical model and meta-analysis. *Journal of Applied Psychology, 91*(5), 998-1012. doi:10.1037/0021-9010.91.5.998

Bowling, N. A., Beehr, T. A., Bennett, M. M., & Watson, C. P. (2010). Target personality and workplace victimization: A prospective analysis. *Work & Stress, 24*(2), 140-158. doi:10.1080/02678373.2010.489635

Boyle, M., Koritsas, S., Coles, J., & Stanley, J. (2007). A pilot study of workplace violence towards paramedics. *Emergency Medicine Journal : EMJ, 24*(11), 760-763. doi:24/11/760 [pii]

Brandweer Nederland. (2017). Nulmeting BPV functies brandweer (baseline measurement personell in safety regions of the firefighter sector). Retrieved from http://docplayer.nl/29542430-Nulmeting-bpv-functies-brandweer.html

Breitenbecher, K. (2001). Sexual revictimization among women - A review of the literature focusing on empirical investigations. *Aggression and Violent Behavior, 6*(4), 415-432. doi:10.1016/S1359-1789(00)00014-8

Brekelmans, J., Van den Tillaart, J., & Homburg, G. (2013). *Metamonitor veilige publieke taak 2013 [metamonitor safe public task 2013]*. Amsterdam: Regioplan.

Broekhuizen, J., Raven, J., & Driessen, F. (2005). *Geweld tegen de brandweer [violence against the fire department]*. Utrecht: Bureau Driessen.

Browne, M. W., & Cudeck, R. (1989). Single sample cross-validation indices for covariance structures. *Multivariate Behavioral Research, 24*(4), 445-455.

Bunch, J., Clay-Warner, J., & Lei, M. (2015). Demographic characteristics and victimization risk: Testing the mediating effects of routine activities. *Crime & Delinquency, 61*(9), 1181-1205. doi:10.1177/0011128712466932

Buss, A. H. (1961). *The psychology of aggression*. New York: Wiley.

Buttle, J. W. (2006). Unravelling the 'Velcro effect': Is deterring assaults against the police indicative of a more aggressive style of policing? *International Journal of Police Science & Management, 8*(2), 133-142. doi:10.1350/ijps.2006.8.2.133

Camodeca, M., & Goossens, F. A. (2005). Aggression, social cognitions, anger and sadness in bullies and victims. *Journal of Child Psychology and Psychiatry, 46*(2), 186-197. doi:10.1111/j.1469-7610.2004.00347.x

Campbell, J. C., Messing, J. T., Kub, J., Agnew, J., Fitzgerald, S., Fowler, B., . . . Bolyard, R. (2011). Workplace violence: Prevalence and risk factors in the safe at work study. *Journal of Occupational and Environmental Medicine, 53*(1), 82-89. doi:10.1097/JOM.0b013e3182028d55

Caplan, J., Marotta, P., Piza, E., & Kennedy, L. (2014). Spatial risk factors of felonious battery to police officers. *Policing: An International Journal of Police Strategies & Management, 37*(4), 823-838. doi:10.1108/PIJPSM-04-2014-0045

CBS. (2010). *Standaarddefinitie allochtonen*. Den Haag: Centraal Bureau Statistiek.

Centrale Ondernemingsraad. (2019). Toch veel meer nieuwjaarsgeweld tegen politie. Retrieved from https://www.corpolitie.nl/nieuws/2019/toch-veel-meer-nieuwjaarsgeweld-tegen-politie.html?sid=2eb70338-df65-48d8-bdc4-5a6dbafce02a

Chappell, D., & Di Martino, V. (2006). *Violence at work*. Geneva: International Labour Organization.

Cima, M. (2014). Don't you dare look at me, or else: Negative and aggressive interpretation bias, callous unemotional traits and type of aggression. *Journal of Child & Adolescent Behavior, 2*(128), 1-9. doi:10.4172/jcalb.1000128

Cohen, L. E., Kluegel, J. R., & Land, K. C. (1981). Social inequality and predatory criminal victimization: An exposition and test of a formal theory. *American Sociological Review, 46*(5), 505-524.

Cohen, L. E., & Felson, M. (1979). Social change and crime rate trends: A routine activity approach. *American Sociological Review, 44*(4), 588-608. doi:10.2307/2094589

Collins, L. M., Schafer, J. L., & Kam, C. (2001). A comparison of inclusive and restrictive strategies in modern missing data procedures. *Psychological Methods, 6*(4), 330-351. doi:10.1037//1082-989X.6.4.330

Colquitt, J. A., Conlon, D. E., Wesson, M. J., Porter, C. O., & Ng, K. Y. (2001). Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology, 86*(3), 425-445. doi:10.1037/0021-9010.86.3.425

Cortina, L. (2017). From victim precipitation to perpetrator predation: Toward a new paradigm for understanding workplace aggression. In N. Bowling, & M. Hershcovis (Eds.), *Research and theory on workplace aggression* (pp. 121-135). New York: Cambridge University Press.

Cortina, L., Rabelo, V., & Holland, K. (2018). Beyond blaming the victim: Toward a more progressive understanding of workplace mistreatment. *Industrial and Organizational Psychology, 11*(1), 81-100. doi:10.1017/iop.2017.54

Costa Jr, P. T., Herbst, J. H., McCrae, R. R., & Siegler, I. C. (2000). Personality at midlife: Stability, intrinsic maturation, and response to life events. *Assessment, 7*(4), 365-378.

Covington, M. (2010). *Correlates and causes of violence against police officers: A criminal events analysis (unpublished doctoral dissertation)*. Florida: University of Central Florida.

Covington, M., Huff-Corzine, L., & Corzine, J. (2014). Battered police: Risk factors for violence against law enforcement officers. *Violence and Victims, 29*(1), 34-52. doi:10.1891/0886-6708.VV-D-12-00022

Craun, S. W., Detar, P. J., & Bierie, D. M. (2013). Shots fired: Firearm discharges during fugitive apprehensions. *Victims & Offenders, 8*(1), 56-69. doi:10.1080/15564886.2012.745459

Crick, N., & Dodge, K. A. (1994). A review and reformulation of social information-processing mechanisms in children's social adjustment. *Psychological Bulletin, 1*(115), 74-101.

Crick, N., & Dodge, K. A. (1996). Social information-processing mechanisms in reactive and proactive aggression. *Child Development, 67*(3), 993-1002. doi:10.1111/j.1467-8624.1996.tb01778.x

Crutzen, R., & Göritz, A. S. (2010). Social desirability and self-reported health risk behaviors in web-based research: Three longitudinal studies. *BMC Public Health, 10*(1), 720. doi:10.1186/1471-2458-10-720

Curtis, L. A. (1973). Victim precipitation and violent crime. *Social Problems, 21*(4), 594-605. doi:10.1525/sp.1974.21.4.03a00110

Dai, M., Frank, J., & Sun, I. (2011). Procedural justice during police-citizen encounters: The effects of process-based policing on citizen compliance and demeanor. *Journal of Criminal Justice, 39*(2), 159-168. doi:10.1016/j.jcrimjus.2011.01.004

Daigle, L. E., & Muftic, L. R. (2015). *Victimology.* Thousand Oaks, California: Sage Publications.

Davis, M. H. (1980). A multidimensional approach to individual differences in empathy. *Catalog of Selected Documents in Psychology, 10*, 85.

Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44*(1), 113-126. doi:10.1037/0022-3514.44.1.113

de Haas, S., Timmerman, G., & Hoing, M. (2009). Sexual harassment and health among male and female police officers. *Journal of Occupational Health Psychology, 14*(4), 390-401. doi:10.1037/a0017046

De Pater, I., Schinkel, S., & Nijstad, B. (2007). Validatie van de nederlandstalige core self-evaluations vragenlijst (validation of the dutch core self-evaluations questionnaire). *Gedrag & Organisatie, 20*(1), 82-100.

Denson, T. F., DeWall, C. N., & Finkel, E. J. (2012). Self-control and aggression. *Current Directions in Psychological Science, 21*(1), 20-25. doi:10.1177/0963721411429451

Dodge, K. A. (1986). A social information processing model of social competence in children. In M. Perlmutter (Ed.), *Minnesota symposium on child psychology: Vol. 18. cognitive perspectives on children's social and behavioral development* (pp. 77-125). Hillsdale, NJ: Erlbaum.

Dollard, J., Miller, N. E., Doob, L. W., Mowrer, O. H., & Sears, R. R. (1939). *Frustration and aggression.* New Haven, CT: Yale University Press.

Dormann, C., & Griffin, M. A. (2015). Optimal time lags in panel studies. *Psychological Methods, 20*(4), 489-505. doi:10.1037/met0000041

Driessen, F., & Middelhoven, L. (2002). Geweld tegen werknemers in de semi-openbare ruimte [violence against employees in the semi-public space]. *Tijdschrift Voor Veiligheid & Veiligheidszorg (1/2) 38, 47*

Dupré, K., Dawe, K., & Barling, J. (2014). Harm to those who serve: Effects of direct and vicarious customer-initiated workplace aggression. *Journal of Interpersonal Violence, 29*(13), 1-23. doi:10.1177/0886260513518841

Dutch Police. (2019). Politietaken [police tasks]. Retrieved from https://www.politie.nl/themas/politietaken.html

Eby, L. T., Butts, M. M., Hoffman, B. J., & Sauer, J. B. (2015). Cross-lagged relations between mentoring received from supervisors and employee OCBs: Disentangling causal direction and identifying boundary conditions. *Journal of Applied Psychology, 100*(4), 1275-1285. doi:10.1037/a0038628

Einarsen, S., Hoel, H., & Notelaers, G. (2009). Measuring exposure to bullying and harassment at work: Validity, factor structure and psychometric properties of the negative acts questionnaire-revised. *Work & Stress, 23*(1), 24-44. doi:10.1080/02678370902815673

Ellis, D., Choi, A., & Blaus, C. (1993). Injuries to police officers attending domestic disturbances: An empirical study. *Canadian Journal of Criminology and Criminal Justice, 35*, 149.

Ellrich, K. (2016). Burnout and violent victimization in police officers: A dual process model. *Policing: An International Journal of Police Strategies & Management, 39*(4), 652-666. doi:10.1108/PIJPSM-10-2015-0125

Ellrich, K. (2018). Violent victimisation, professional self-esteem, and punitivity of german police officers. *Policing and Society, 28*(7), 787-805. doi:10.1080/10439463.2016.1262363

Ellrich, K., & Baier, D. (2016). The influence of personality on violent victimization–a study on police officers. *Psychology, Crime & Law, 22*(6), 538-560. doi:10.1080/1068316X.2016.1168424

Escartín, J., Rodríguez-Carballeira, A., Zapf, D., Porrúa, C., & Martin-Pena, J. (2009). Perceived severity of various bullying behaviours at work and the relevance of exposure to bullying. *Work & Stress, 23*(3), 191-205. doi:10.1080/02678370903289639

Estryn-Behar, M., van der Heijden, B., Camerino, D., Fry, C., Le Nezet, O., Conway, P. M., & Hasselhorn, H. (2008). Violence risks in nursing--results from the european 'NEXT' study. *Occupational Medicine, 58*(2), 107-114. doi:10.1093/occmed/kqm142

Ettema, A., & Bleijendaal, R. (2010). *Slachtofferprofielen [victim profiles]*. Amsterdam: TNS nipo.

Eurofound. (2013). *Physical and psychological violence at the workplace*. Luxembourg: Publications office of the European Union.

Farrell, G., & Bouloukos, A. C. (2001). International overview: A cross-national comparison of rates of repeat victimization. *Crime Prevention Studies, 12*, 5-26.

Farrell, G., Phillips, C., & Pease, K. (1995). Like taking candy: Why does repeat victimization occur? *The British Journal of Criminology, 35*(3), 384-399. doi:10.1093/oxfordjournals.bjc.a048523

FBI. (2019). Law enforcement officers killed and assaulted. Retrieved from https://www.fbi.gov/services/cjis/ucr/leoka

Feddes, A. R., Mann, L., & Doosje, B. (2015). Increasing self-esteem and empathy to prevent violent radicalization: A longitudinal quantitative evaluation of a resilience training focused on adolescents with a dual identity. *Journal of Applied Social Psychology, 45*(7), 400-411. doi:10.1111/jasp.12307

Felson, R. B. (1992). "Kick'em when they're down": Explanations of the relationship between stress and interpersonal aggression and violence. *Sociological Quarterly, 33*(1), 1-16.

Felson, R. B. (2006). Violence as instrumental behavior. In E. Kelloway, J. Barling and J. Hurrell (Ed.), *Handbook of workplace violence* (pp. 7-28) Sage Publications, Inc.

Feshbach, S. (1964). The function of aggression and the regulation of aggressive drive. *Psychological Review, 71*(4), 257.

Feys, Y., & Noppe, J. (2019). Geweldgebruik door en tegen de politie in de huidige context [violence by and against the police in the current context]. *Cahiers Politiestudies, 50*, 91-97.

Finkelhor, D., & Asdigian, N. L. (1996). Risk factors for youth victimization: Beyond a lifestyles/ routine activities theory approach. *Violence and Victims, 11*(1), 3-19.

Fischer, T., & Van Reemst, L. (2014). *Slachtofferschap in de publieke taak [victimization in the public sector]*. Rotterdam: Erasmus University Rotterdam. doi:10.13140/RG.2.1.3231.2808

Fischer, T., Van Reemst, L., & De Jong, J. (2016). Workplace aggression toward local government employees: Target characteristics. *International Journal of Public Sector Management, 29*(1), 30-53. doi:10.1108/IJPSM-05-2015-0100

Fisk, R., Grove, S., Harris, L. C., Keeffe, D. A., Daunt, K. L., Russell-Bennett, R., & Wirtz, J. (2010). Customers behaving badly: A state of the art review, research agenda and implications for practitioners. *Journal of Services Marketing, 24*(6), 417-429. doi:10.1108/08876041011072537

Flight, S. (2019). *Focus: Evaluatie pilot bodycams politie eenheid amsterdam 2017-2018 [focus: Evaluation pilot bodycams police unit amsterdam 2017-2018].* Den Haag / Amsterdam: Politie & Wetenschap / Sander Flight Onderzoek & Advies.

Fontaine, R. G., Burks, V. S., & Dodge, K. A. (2002). Response decision processes and externalizing behavior problems in adolescents. *Development and Psychopathology, 14*(1), 107-122. doi:10.1017/S0954579402001062

Fredstrom, B. K., Adams, R. E., & Gilman, R. (2011). Electronic and school-based victimization: Unique contexts for adjustment difficulties during adolescence. *Journal of Youth and Adolescence, 40*(4), 405-415. doi:10.1007/s10964-010-9569-7

Fridell, L., Faggiani, D., Taylor, B., Brito, C. S., & Kubu, B. (2009). The impact of agency context, policies, and practices on violence against police. *Journal of Criminal Justice, 37*(6), 542-552. doi:10.1016/j.jcrimjus.2009.09.003

Ganpat, S. M., van der Leun, J., & Nieuwbeerta, P. (2013). The influence of event characteristics and actors' behaviour on the outcome of violent events. comparing lethal with non-lethal events. *British Journal of Criminology, 53*, 685-704. doi:10.1093/bjc/azt017

Gates, D. M., Ross, C. S., & McQueen, L. (2006). Violence against emergency department workers. *The Journal of Emergency Medicine, 31*(3), 331-337. doi:10.1016/j.jemermed.2005.12.028

George, J. M. (1991). State or trait: Effects of positive mood on prosocial behaviors at work. *Journal of Applied Psychology, 76*(2), 299-307. doi:10.1037/0021-9010.76.2.299

Gerdes, K. E., Segal, E. A., & Lietz, C. A. (2010). Conceptualising and measuring empathy. *British Journal of Social Work, 40*(7), 2326-2343. doi:10.1093/bjsw/bcq048

Gettman, H. J., & Gelfand, M. J. (2007a). When the customer shouldn't be king: Antecedents and consequences of sexual harassment by clients and customers. *Journal of Applied Psychology, 92*(3), 757-770. doi:10.1037/0021-9010.92.3.757

Gettman, H. J., & Gelfand, M. J. (2007b). When the customer shouldn't be king: Antecedents and consequences of sexual harassment by clients and customers. *Journal of Applied Psychology, 92*(3), 757-770. doi:10.1037/0021-9010.92.3.757

Gibbs, J. C., Lee, J., Moloney, J., & Olson, S. (2018). Exploring the neighbourhood context of serious assaults on police. *Policing and Society, 28*(8), 898-914. doi:10.1080/10439463.2017.1333120

Giumetti, G. W., Hatfield, A. L., Scisco, J. L., Schroeder, A. N., Muth, E. R., & Kowalski, R. M. (2013). What a rude e-mail! examining the differential effects of incivility versus support on mood, energy, engagement, and performance in an online context. *Journal of Occupational Health Psychology, 18*(3), 297-309. doi:10.1037/a0032851

Goffman, E. (1959). *The presentation of self in everyday life*. London, UK: Penguin Books.

Goffman, E. (1967). *Interaction ritual: Essays on face-to-face interaction.* New York: Anchor Books.

Goldberg, L. (2017). Dominance. preliminary IPIP items in each of the 33 scales measuring constructs similar tothose in gough's california psychological inventory CPI (on-line). Retrieved from http://ipip.ori.org/newCPIKey.htm

Goodey, J. (2005). *Victims and victimology: Research, policy and practice*. Harlow, UK: Pearson Education.

Gottfredson, M. R., & Grande-Bretagne. Home office. (1984). *Victims of crime: The dimensions of risk*. London: HM Stationery Office.

Goudriaan, H., & Nieuwbeerta, P. (2007). Contextual determinants of juveniles' willingness to report crimes. *Journal of Experimental Criminology, 3*(2), 89-111. doi:10.1007/s11292-007-9030-4

Government of the Netherlands. (2016). Tasks of the dutch police. Retrieved from https://www.government.nl/topics/police/contents/tasks-of-the-dutch-police

Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual Review of Psychology, 60*(1), 549-576. doi:10.1146/annurev.psych.58.110405.085530

Grandey, A., Dickter, D. N., & Sin, H. (2004). The customer is not always right: Customer aggression and emotion regulation of service employees. *Journal of Organizational Behavior, 25*(3), 397-418. doi:10.1002/job.252

Grandey, A., Kern, J., & Frone, M. (2007). Verbal abuse from outsiders versus insiders: Comparing frequency, impact on emotional exhaustion, and the role of emotional labor. *Journal of Occupational Health Psychology, 12*(1), 63-79. doi:10.1037/1076-8998.12.1.63

Grange, J. T., & Corbett, S. W. (2002). Violence against emergency medical services personnel. *Prehospital Emergency Care, 6*(2), 186-190. doi:10.1080/10903120290938526

Greenberg, L., & Barling, J. (1999). Predicting employee aggression against coworkers, subordinates and supervisors: The roles of person behaviors and perceived workplace factors. *Journal of Organizational Behavior, 20*(6), 897-913. doi:10.1002/(SICI)1099-1379(199911)20:63.0.CO;2-Z

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology, 74*(6), 1464-1480. doi:10.1037//0022-3514.74.6.1464

Greenwald, A. G., Poehlman, T. A., Uhlmann, E. L., & Banaji, M. R. (2009). Understanding and using the implicit association test: III. meta-analysis of predictive validity. *Journal of Personality and Social Psychology, 97*(1), 17. doi:10.1037/a0015575

Guidotti, T. L. (2015). Emergency and security services. In J. M. Stellman (Ed.), *Encyclopaedia of occupational health and safety* (4th ed.,). Retrieved from http://www.iloencyclopaedia.org

Hahn, S., Müller, M., Hantikainen, V., Kok, G., Dassen, T., & Halfens, R. J. (2013). Risk factors associated with patient and visitor violence in general hospitals: Results of a multiple regression analysis. *International Journal of Nursing Studies, 50*(3), 374-385. doi:10.1016/j.ijnurstu.2012.09.018

Hahn, S., Zeller, A., Needham, I., Kok, G., Dassen, T., & Halfens, R. J. G. (2008). Patient and visitor violence in general hospitals: A systematic review of the literature. *Aggression and Violent Behavior, 13*(6), 431-441. doi:10.1016/j.avb.2008.07.001

Hamaker, E. L., Kuiper, R. M., & Grasman, R. P. (2015). A critique of the cross-lagged panel model. *Psychological Methods, 20*(1), 102-116. doi:10.1037/a0038889

Hamby, S., & Grych, J. (2014). The complex dynamics of victimization: Understanding differential vulnerability without blaming the victim. In C. A. Cuevas, & C. Rennison (Eds.), *Handbook on the psychology of violence.* (pp. 66). Hoboken, NJ: Wiley-Blackwell.

Hanish, L. D., Eisenberg, N., Fabes, R. A., Spinrad, T. L., Ryan, P., & Schmidt, S. (2004). The expression and regulation of negative emotions: Risk factors for young children's peer victimization. *Development and Psychopathology, 16*(2), 335-353. doi:10.10170S0954579404044542

Health and Safety Executive. (2017). Violence at work: findings from the crime survey for england and wales and from RIDDOR. Retrieved from http://www.hse.gov.uk/Statistics/causinj/violence/index.htm

Hennink, M., Hutter, I., & Bailey, A. (2010). *Qualitative research methods.* London, UK: Sage Publications.

Hensbergen, B. (2002). *'De gevaarlijke klant': Een onderzoek naar sociale veiligheid op de werkplek ['the dangerous customer' A study on social safety in the workspace]*. Utrecht: FNV Bondgenoten.

Hershcovis, M. (2011). "Incivility, social undermining, bullying… oh my!": A call to reconcile constructs within workplace aggression research. *Journal of Organizational Behavior, 32*(3), 499-519. doi:10.1002/job.689

Hershcovis, M., & Barling, J. (2010a). Comparing victim attributions and outcomes for workplace aggression and sexual harassment. *Journal of Applied Psychology, 95*(5), 874-888. doi:10.1037/a0020070

Hershcovis, M., & Barling, J. (2010b). Towards a multi-foci approach to workplace aggression: A meta-analytic review of outcomes from different perpetrators. *Journal of Organizational Behavior, 31*(1), 24-44. doi:10.1002/job.621

Hershcovis, M., & Reich, T. (2013). Integrating workplace aggression research: Relational, contextual, and method considerations. *Journal of Organizational Behavior, 34*(S1), S26-S42. doi:10.1002/job.1886

Hershcovis, M., Turner, N., Barling, J., Arnold, K. A., Dupré, K., Inness, M., . . . Sivanathan, N. (2007). Predicting workplace aggression: A meta-analysis. *Journal of Applied Psychology, 92*(1), 228-238. doi:10.1037/0021-9010.92.1.228

Hills, D., & Joyce, C. (2013). A review of research on the prevalence, antecedents, consequences and prevention of workplace aggression in clinical medical practice. *Aggression and Violent Behavior, 18*(5), 554-569. doi:10.1016/j.avb.2013.07.014

Hindelang, M. J., Gottfredson, M. R., & Garofalo, J. (1978). *Victims of personal crime: An empirical foundation for a theory of personal victimization*. Cambridge, MA: Ballinger Publishing Company.

Hogh, A., & Viitasara, E. (2005). A systematic review of longitudinal studies of nonfatal workplace violence. *European Journal of Work and Organizational Psychology, 14*(3), 291-313. doi:10.1080/13594320500162059

Holtfreter, K., Reisig, M. D., & Pratt, T. C. (2008). Low self-control, routine activities, and fraud victimization. *Criminology, 46*(1), 189-220.

Hope, T., & Norris, P. A. (2013). Heterogeneity in the frequency distribution of crime victimization. *Journal of Quantitative Criminology, 29*(4), 543-578. doi:10.1007/s10940-012-9190-x

Hoppe, L., & Gerell, M. (2018). Near-repeat burglary patterns in malmö: Stability and change over time. *European Journal of Criminology, Online First*, doi: 10.1177/1477370817751382.

Houdmont, J., Elliott-Davies, M., & Donnelly, J. (2018). Single crewing in english and welsh policing: Frequency and associations with violence towards and injuries in officers. *Policing and Society, Published online before print* doi:10.1080/10439463.2017.1417990

Houshmand, M., O'Reilly, J., Robinson, S., & Wolff, A. (2012). Escaping bullying: The simultaneous impact of individual and unit-level bullying on turnover intentions. *Human Relations, 65*(7), 901-918. doi:10.1177/0018726712445100

Howard, J. L., & Wech, B. A. (2012). A model of organizational and job environment influences on workplace violence. *Employee Responsibilities and Rights Journal, 24*(2), 111-127. doi:10.1007/s10672-011-9181-3

Hoyle, R., Stephenson, M., Palmgreen, P., Lorch, E., & Donohew, R. (2002). Reliability and validity of a brief measure of sensation seeking. *Personality and Individual Differences, 32*(3), 401-414. doi:10.1016/S0191-8869(01)00032-0

Hu, L., & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55. doi:10.1080/10705519909540118

Jacobs, M., Jans, M., & Roman, B. (2009). *Aard en omvang van ongewenst gedrag tegen werknemers met een publieke taak [nature and extent of undesirable behavior against employees with a public task]*. Tilburg: IVA.

Jacobs, D., & Carmichael, J. T. (2002). Subordination and violence against state control agents: Testing political explanations for lethal assaults against the police. *Social Forces, 80*(4), 1223-1251.

Jenkins, M. G., Rocke, L. G., McNicholl, B. P., & Hughes, D. M. (1998). Violence and verbal abuse against staff in accident and emergency departments: A survey of consultants in the UK and the republic of ireland. *Journal of Accident & Emergency Medicine, 15*(4), 262-265. doi:10.1136/emj.15.4.262

Jex, S., & Bayne, A. (2017). Measurement of workplace aggression. In N. Bowling, & M. Hershcovis (Eds.), *Research and theory on workplace aggression* (pp. 9-33). New York: Cambridge University Press.

Jones, T., Robinson, A., Fevre, R., & Lewis, D. (2011). Workplace assaults in britain: Understanding the influence of individual and workplace characteristics. *The British Journal of Criminology, 51*(1), 159-178. doi:10.1093/bjc/azq064

Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2003). The core self-evaluations scale: Development of a measure. *Personnel Psychology, 56*(2), 303-331.

Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. (2002). Are measures of self-esteem, neuroticism, locus of control, and generalized self-efficacy indicators of a common core construct? *Journal of Personality and Social Psychology, 83*(3), 693-710. doi:10.1037/0022-3514.83.3.693

Judge, T. A., Locke, E. A., Durham, C. C., & Kluger, A. N. (1998). Dispositional effects on job and life satisfaction: The role of core evaluations. *Journal of Applied Psychology, 83*(1), 17-34.

Kales, S. N., Tsismenakis, A. J., Zhang, C., & Soteriades, E. S. (2009). Blood pressure in firefighters, police officers, and other emergency responders. *American Journal of Hypertension, 22*(1), 11-20. doi:10.1038/ajh.2008.296

Kaminski, R. J. (2008). Assessing the county-level structural covariates of police homicides. *Homicide Studies, 12*(4), 350-380. doi:10.1177/1088767908323863

Kaminski, R. J., Jefferis, E., & Gu, J. (2003). Community correlates of serious assaults on police. *Police Quarterly, 6*(2), 119-149. doi:10.1177/1098611103253446

Kaminski, R. J., & Sorensen, D. W. (1995). A multivariate analysis of individual, situational and environmental factors associated with police assault injuries. *American Journal of Police, 14*(3/4), 3-48. doi:10.1108/07358549510111938

Kass, R. E., & Raftery, A. E. (1995). Bayes factors. *Journal of the American Statistical Association, 90*(430), 773-795.

Kempes, M., Matthys, W., de Vries, H., & van Engeland, H. (2005). Reactive and proactive aggression in children - A review of theory, findings and the relevance for child and adolescent psychiatry. *European Child & Adolescent Psychiatry, 14*(1), 11-19. doi:10.1007/s00787-005-0432-4

Kennis Openbaar Bestuur. (2016). Veilige publieke taak [safe public task]. Retrieved from http://kennisopenbaarbestuur.nl/het-geheugen-van-bzk/veilige-publieke-taak/

Kenny, D. A. (1975). Cross-lagged panel correlation: A test for spuriousness. *Psychological Bulletin, 82*(6), 887-903.

Kessler, S. R., Spector, P. E., Chang, C., & Parr, A. D. (2008). Organizational violence and aggression: Development of the three-factor violence climate survey. *Work & Stress, 22*(2), 108-124. doi:10.1080/02678370802187926

Kilpatrick, D. G., Saunders, B. E., Veronen, L. J., Best, C. L., & Von, J. M. (1987). Criminal victimization: Lifetime prevalence, reporting to police, and psychological impact. *Crime & Delinquency, 33*(4), 479-489.

Kingery, J., Erdley, C., Marshall, K., Whitaker, K., & Reuter, T. (2010). Peer experiences of anxious and socially withdrawn youth: An integrative review of the developmental and clinical literature. *Clinical Child and Family Psychology Review, 13*(1), 91-128. doi:10.1007/s10567-009-0063-2

Klayman, J., & Ha, Y. (1987). Confirmation, disconfirmation, and information in hypothesis testing. *Psychological Review, 94*(2), 211-228. doi:10.1037/0033-295X.94.2.211

Klerx-Van Mierlo, F., & Bogaerts, S. (2011). Vulnerability factors in the explanation of workplace aggression: The construction of a theoretical framework. *Journal of Forensic Psychology Practice, 11*(4), 265-292. doi:10.1080/15228932.2011.562826

Kline, R. (2005). *Principles and practice of structural equation modeling*. New York: Guilford publications.

Kochenderfer-Ladd, B. (2004). Peer victimization: The role of emotions in adaptive and maladaptive coping. *Social Development, 13*(3), 329-349. doi:10.1111/j.1467-9507.2004.00271.x

Koritsas, S., Coles, J., & Boyle, M. (2010). Workplace violence towards social workers: The australian experience. *British Journal of Social Work, 40*(1), 257-271. doi:10.1093/bjsw/bcn134

Kuijpers, K. F., van der Knaap, L. M., & Lodewijks, I. A. J. (2011). Victims' influence on intimate partner violence revictimization: A systematic review of prospective evidence. *Trauma Violence & Abuse, 12*(4), 198-219. doi:10.1177/1524838011416378

Landau, S. F., & Bendalak, Y. (2008). Personnel exposure to violence in hospital emergency wards: A routine activity approach. *Aggressive Behavior, 34*(1), 88-103. doi:10.1002/ab.20214

Lau, J. B. C., Magarey, J., & Wiechula, R. (2012). Violence in the emergency department: An ethnographic study (part II). *International Emergency Nursing, 20*(3), 126-132. doi:10.1016/j.ienj.2011.08.001

LeBlanc, M., Dupré, K., & Barling, J. (2006). Public-initiated violence. In E. Kelloway, J. Barling & J. Hurrell (Eds.), *Handbook of workplace violence* (pp. 261-280) Sage Publications, Inc. Thousand Oaks, USA.

LeBlanc, M., & Kelloway, E. (2002). Predictors and outcomes of workplace violence and aggression. *Journal of Applied Psychology, 87*(3), 444-453. doi:10.1037//0021-9010.87.3.444

Leino, T. M., Selin, R., Summala, H., & Virtanen, M. (2011). Violence and psychological distress among police officers and security guards. *Occupational Medicine, 61*(6), 400-406. doi:10.1093/occmed/kqr080

Lerner, M. J. (1980). *The belief in a just world: A fundamental delusion*. New York: Springer.

Lobbestael, J., Cima, M., & Arntz, A. (2013). The relationship between adult reactive and proactive aggression, hostile interpretation bias, and antisocial personality disorder. *Journal of Personality Disorders, 27*(1), 53-66.

Lodewijks, I. A. J., Laxminarayan, M., Van der Aa, S., & Pemberton, A. (2010). *Straftoemeting bij geweld tegen kwalificerende slachtoffers [punishment for violence against qualifying victims]*. Tilburg: Intervict, Tilburg University.

Loef, L., Heijke, M., & van Dijk, B. (2010). Typologie van plegers van geweldsdelicten [typologies of offenders of violence]. *Amsterdam: DSP-Groep BV,*

Luckenbill, D. F. (1977). Criminal homicide as a situated transaction. *Social Problems, 25*(2), 176-186. doi:10.1525/sp.1977.25.2.03a00050

Lugtig, P. (2014). Panel attrition: Separating stayers, fast attriters, gradual attriters, and lurkers. *Sociological Methods & Research, 43*(4), 699-723. doi:10.1177/0049124113520305

MacGreene, D., & Navarro, R. L. (1998). Situation-specific assertiveness in the epidemiology of sexual victimization among university women. *Psychology of Women Quarterly, 22*(4), 589-604. doi:10.1111/j.1471-6402.1998.tb00179.x

Malti, T., Perren, S., & Buchmann, M. (2010). Children's peer victimization, empathy, and emotional symptoms. *Child Psychiatry & Human Development, 41*(1), 98-113. doi:10.1007/s10578-009-0155-8

Martinko, M. J., Harvey, P., Sikora, D., & Douglas, S. C. (2011). Perceptions of abusive supervision: The role of subordinates' attribution styles. *The Leadership Quarterly, 22*(4), 751-764. doi:10.1016/j.leaqua.2011.05.013

Mastrofski, S. D., Reisig, M. D., & McCluskey, J. D. (2002). Police disrespect toward the public: An encounter-based analysis. *Criminology, 40*(3), 519-552.

Mastrofski, S. D., Snipes, J. B., & Supina, A. E. (1996). Compliance on demand: The public's response to specific police requests. *Journal of Research in Crime and Delinquency, 33*(3), 269-305.

Mathisen, G. E., Øgaard, T., & Einarsen, S. (2012). Individual and situational antecedents of workplace victimization. *International Journal of Manpower, 33*(5), 539-555. doi:10.1108/01437721211253182

Mayhew, C., & Chappell, D. (2001). *Occupational violence: Types, reporting patterns, and variations between health sectors* School of Industrial Relations, University of New South Wales.

Mayhew, C., & Chappell, D. (2007). Workplace violence: An overview of patterns of risk and the emotional/stress consequences on targets. *International Journal of Law and Psychiatry, 30*(4–5), 327-339. doi:10.1016/j.ijlp.2007.06.006

McCann, I. L., Sakheim, D. K., & Abrahamson, D. J. (1988). Trauma and victimization: A model of psychological adaptation. *The Counseling Psychologist, 16*(4), 531-594. doi:10.1177/0011000088164002

McCrae, R. R., & Costa Jr, P. T. (1997). Personality trait structure as a human universal. *American Psychologist, 52*(5), 509-516.

McGarry, R., & Walklate, S. (2015). *Victims: Trauma, testimony and justice*. Abingdon: Routledge. Retrieved from https://eur.on.worldcat.org/oclc/866614722

McKelvey, R. D., & Zavoina, W. (1975). A statistical model for the analysis of ordinal level dependent variables. *Journal of Mathematical Sociology, 4*(1), 103-120.

Meadows, M. P., Shreffler, K. M., & Mullins-Sweatt, S. N. (2011). Occupational stressors and resilience in critical occupations: The role of personality. In P. Perrewé, & D. Ganster (Eds.), *The role of individual differences in occupational stress and well being* (pp. 39-61) Emerald Publishing.

Mechem, C. C., Dickinson, E. T., Shofer, F. S., & Jaslow, D. (2002). Injuries from assault on paramedics and firefighters in an urban emergency medical services system. *Prehospital Emergency Care, 6*(4), 396-401.

Meglich, P. A., Faley, R. H., & DuBois, C. L. (2012). The influence of actions and actors on the perceived severity of workplace bullying. *Journal of Management Policy and Practice, 13*(1), 11.

Meier, R. F., & Miethe, T. D. (1993). Understanding theories of criminal victimization. *Crime and Justice, 17*, 459-499. doi:10.1086/449218

Mendelsohn, B. (1956). A new branch of bio-psychological science: La victimology. *Revue Internationale De Criminologie Et De Police Technique, 10*, 782-789.

Middelhoven, L., & Driessen, F. (2001). *Geweld tegen werknemers in de (semi-) openbare ruimte [violence against employees in the (semi-) public space]*. Utrecht: Bureau Driessen.

Miers, D. (1989). Positivist victimology: A critique. *International Review of Victimology, 1*(1), 3-22.

Milner, J. S., Wagner, M. F., & Crouch, J. L. (2017). Reducing child-related negative attitudes, attributions of hostile intent, anger, harsh parenting behaviors, and punishment through evaluative conditioning. *Cognitive Therapy and Research, 41*(1), 43-61.

Ministry of the Interior and Kingdom Relations of the Netherlands. (2011). *Handreiking agressie en geweld [guide to aggression and violence]*. The Hague: Ministry of the Interior and Kingdom Relations of the Netherlands.

Morken, T., Alsaker, K., & Johansen, I. H. (2016). Emergency primary care personnel's perception of professional-patient interaction in aggressive incidents--a qualitative study. *BMC Family Practice, 17*(1), 54-59. doi:10.1186/s12875-016-0454-7

Muftić, L. R., Bouffard, L. A., & Bouffard, J. A. (2007). An exploratory analysis of victim precipitation among men and women arrested for intimate partner violence. *Feminist Criminology, 2*(4), 327-346. doi:10.1177/1557085107306429

Muller, T., & Zeestraten, R. (2015). 'Agressie in de tram': Het perspectief van trambestuurders ['aggression in the tram': The perspective of tram drivers]. *Tijdschrift Over Cultuur & Criminaliteit, 2015*(2)

Muthén, L., & Muthén, B. (1998-2017). *Mplus user's guide* (8th ed.). Los Angeles, CA: Muthén & Muthén.

Naeye, J., & Bleijendaal, R. (2008). *Agressie en geweld tegen politiemensen [aggression and violence against police officers]*. Amsterdam: Reed Business.

National Institute for Occupational Health. (2002). *Occupational hazards in hospitals.* (No. 2002-101). Washington DC: Centers for Disease Control and Prevention, Department of Health and Human Services. Retrieved from http://www.cdc.gov/niosh/docs/2002-101/#5

Nesdale, D., & Lambert, A. (2007). Effects of experimentally manipulated peer rejection on children's negative affect, self-esteem, and maladaptive social behavior. *International Journal of Behavioral Development, 31*(2), 115-122.

Newsom, J. (2017). Latent variable cross-lagged panel models. Retrieved from http://web.pdx.edu/~newsomj/semclass/ho_cross.pdf

Nielsen, M. B., & Einarsen, S. (2012). Outcomes of exposure to workplace bullying: A meta-analytic review. *Work & Stress, 26*(4), 309-332.

NOS. (2017). Ambulancebroeder belaagd in almelo; ontzet door politie [emergency medical workers attacked in almelo; secured by police]. Retrieved from https://nos.nl/artikel/2209149-ambulancebroeder-belaagd-in-almelo-ontzet-door-politie.html

NOS. (2018). Agenten gewond bij verschillende incidenten [police officers hurt in multiple incidents]. Retrieved from https://nos.nl/artikel/2229414-agenten-gewond-bij-verschillende-incidenten.html

NU.nl. (2017). Brandweer kreeg tijdens jaarwisseling in tien regio's te maken met agressie [firefighters were confronted with aggression during new year's eve in ten regions]. Retrieved from https://www.nu.nl/binnenland/4373040/brandweer-kreeg-tijdens-jaarwisseling-in-tien-regios-maken-met-agressie-.html

Odekerken, M. W. A. (2017). *Het incasseren van ongenoegen: Deurwaarders en schuldenaren [collecting discontent: Bailiffs and debtors]* Boom Juridisch.

Oliver, A., & Levine, R. (2015). Workplace violence: A survey of nationally registered emergency medical services professionals. *Epidemiology Research International, 2015*

Orobio de Castro, B. (2004). The development of social information processing and aggressive behaviour: Current issues. *European Journal of Developmental Psychology, 1*(1), 87-102. doi:10.1080/17405620444000058

Orobio, d. C., Merk, W., Koops, W., Veerman, J. W., & Bosch, J. D. (2005). Emotions in social information processing and their relations with reactive and proactive aggression in referred aggressive boys. *Journal of Clinical Child & Adolescent Psychology, 34*(1), 105-116. doi:10.1207/s15374424jccp3401_10

Orpinas, P., McNicholas, C., & Nahapetyan, L. (2015). Gender differences in trajectories of relational aggression perpetration and victimization from middle to high school. *Aggressive Behavior, 41*(5), 401-412. doi:10.1002/ab.21563

Osman, M., Pupic, D., & Baigent, N. (2017). How many slaps is equivalent to one punch? new approaches to assessing the relative severity of violent acts. *Psychology of Violence, 7*(1), 69-81. doi:10.1037/vio0000079

Ousey, G. C., Wilcox, P., & Fisher, B. S. (2011). Something old, something new: Revisiting competing hypotheses of the victimization-offending relationship among adolescents. *Journal of Quantitative Criminology, 27*(1), 53-84.

Paulhus, D. L. (1984). Two-component models of socially desirable responding. *Journal of Personality and Social Psychology, 46*(3), 598.

Peeters, F., Ponds, R., & Vermeeren, M. (1996). *Affectiviteit en zeltbeoordeling van depressie en angst* [affectivity and self-assessment of depression and anxiety]. *Tijdschrift Voor Psychiatrie, 38*, 240-250.

Perren, S., Ettekal, I., & Ladd, G. (2013). The impact of peer victimization on later maladjustment: Mediating and moderating effects of hostile and self-blaming attributions. *Journal of Child Psychology and Psychiatry, 54*(1), 46-55. doi:10.1111/j.1469-7610.2012.02618.x

Pich, J., Hazelton, M., Sundin, D., & Kable, A. (2010). Patient-related violence against emergency department nurses. *Nursing & Health Sciences, 12*(2), 268-274. doi:10.1111/j.1442-2018.2010.00525.x

Pihl-Thingvad, J., Elklit, A., Brandt, L. P. A., & Andersen, L. L. (2019). Workplace violence and development of burnout symptoms: A prospective cohort study on 1823 social educators. *International Archives of Occupational and Environmental Health, 1*, 1-11.

Pinar, T., Acikel, C., Pinar, G., Karabulut, E., Saygun, M., Bariskin, E., . . . Cengiz, M. (2017). Workplace violence in the health sector in turkey: A national study. *Journal of Interpersonal Violence, 37*(15), 2345-2365. doi:0886260515591976

Police Netherlands. (2018). Elk uur nieuw geval van geweld tegen poltiieambtenaren [every hour a new case of violence against police officers]. Retrieved from https://www.politie.nl/nieuws/2018/maart/27/00_elk-uur-nieuw-geval-van-geweld-tegen-politieambtenaren.html

Police Netherlands. (2019). Geweld tegen politieambtenaren [violence against police officers]. Retrieved from https://www.politie.nl/binaries/content/assets/politie/nieuws/2019/cijfers-geweld-tegen-de-politie.pdf

Pornari, C. D., & Wood, J. (2010). Peer and cyber aggression in secondary school students: The role of moral disengagement, hostile attribution bias, and outcome expectancies. *Aggressive Behavior, 36*(2), 81-94. doi:10.1002/ab.20336

Pratt, T. C., Turanovic, J. J., Fox, K. A., & Wright, K. A. (2014). Self-control and victimization: A meta-analysis. *Criminology, 52*(1), 87-116. doi:10.1111/1745-9125.12030

Rabe-Hemp, C. E., & Schuck, A. M. (2007). Violence against police officers. *Police Quarterly, 10*(4), 411-428. doi:10.1177/1098611107304326

Ramacciati, N., Ceccagnoli, A., & Addey, B. (2015). Violence against nurses in the triage area: An italian qualitative study. *International Emergency Nursing, 23*(4), 274-280. doi:10.1016/j.ienj.2015.02.004

Rasmussen, C. A., Hogh, A., & Andersen, L. P. (2013). Threats and physical violence in the workplace: A comparative study of four areas of human service work. *Journal of Interpersonal Violence, 28*(13), 2749-2769. doi:10.1177/0886260513487987

Reijntjes, A., Kamphuis, J. H., Prinzie, P., & Telch, M. J. (2010). Peer victimization and internalizing problems in children: A meta-analysis of longitudinal studies. *Child Abuse & Neglect, 34*(4), 244-252. doi:10.1016/j.chiabu.2009.07.009

Rijksoverheid. (2015). Geweld tegen werknemers met publieke taak [violence against employees with a public task]. Retrieved from www.rijksoverheid.nl/onderwerpen/geweld-tegen-werknemers-met-publieke-taak/inhoud/aanpak-geweld-tegen-werknemers-met-publieke-taak

Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin, 132*(1), 1.

Rock, P. (2017). Theoretical perspectives on victimisation. In S. Walklate (Ed.), *Handbook of victims and victimology* (2nd ed., pp. 30-58). Abingdon, Oxon: Routledge.

Roeleveld, W., & Bakker, I. (2010). *Slachtoffers van geweld binnen de publieke taak [victimization of violence within the public sector]*. Utrecht: Verwey-Jonker Instituut.

Rogers, K., & Kelloway, E. (1997). Violence at work: Personal and organizational outcomes. *Journal of Occupational Health Psychology, 2*(1), 63.

Rokven, J., Ruiter, S., & Tolsma, J. (2013). Dader, slachtoffer, of beiden? [offender, victim or both?]. *Tijdschrift Voor Criminologie, 55*(3), 278.

RTL nieuws. (2018). Ambulancebroeder ron stopt na bijna 40 jaar: 'Geweld is enorm toegenomen'. Retrieved from https://www.rtlnieuws.nl/nieuws/artikel/4463916/ambulancebroeder-ron-stopt-na-bijna-40-jaar-geweld-enorm-toegenomen

Rubin, D. (2004). *Multiple imputation for nonresponse in surveys*. New York: John Wiley & Sons.

Rubin, D., & Wenzel, A. (1996). One hundred years of forgetting: A quantitative description of retention. *Psychological Review, 103*(4), 734.

Salmivalli, C., & Helteenvuori, T. (2007). Reactive, but not proactive aggression predicts victimization among boys. *Aggressive Behavior, 33*(3), 198-206. doi:10.1002/ab.20210

Santos, A., Leather, P., Dunn, J., & Zarola, A. (2009). Gender differences in exposure to co-worker and public-initiated violence: Assessing the impact of work-related violence and aggression in police work. *Work & Stress, 23*(2), 137-154. doi:10.1080/02678370903087934

Schat, A. C., & Frone, M. (2011). Exposure to psychological aggression at work and job performance: The mediating role of job attitudes and personal health. *Work & Stress, 25*(1), 23-40. doi:10.1080/02678373.2011.563133

Schat, A. C., Frone, M., & Kelloway, E. (2006). Prevalence of workplace aggression in the US workforce: Findings from a national study. In E. K. Kelloway, J. Barling & J. J. Hurrell Jr. (Eds.), *Handbook of workplace violence* (pp. 47-89). Thousand Oaks: Sage Publications, Inc.

Schat, A. C., & Kelloway, E. (2003). Reducing the adverse consequences of workplace aggression and violence: The buffering effects of organizational support. *Journal of Occupational Health Psychology, 8*(2), 110-122. doi:10.1037/1076-8998.8.2.110

Schat, A. C., & Kelloway, E. (2005). Workplace aggression. In J. Barling, E. K. Kelloway & M. R. Frone (Eds.), *Handbook of work stress* (pp. 189-218). Thousand Oaks, CA: Sage Publications.

Schindeler, E. (2014). Workplace violence: Extending the boundaries of criminology. *Theoretical Criminology, 18*(3), 371-385. doi:10.1177/1362480613511980

Schnabel, K., Asendorpf, J. B., & Greenwald, A. G. (2008). Assessment of individual differences in implicit cognition: A review of IAT measures. *European Journal of Psychological Assessment, 24*(4), 210-217.

Schreck, C. J., Stewart, E. A., & Osgood, D. W. (2008). A reappraisal of the overlap of violent offenders and victims. *Criminology, 46*(4), 871-906.

Schulte, J. M., Nolt, B. J., Williams, R. L., Spinks, C. L., & Hellsten, J. J. (1998). Violence and threats of violence experienced by public health field-workers. *JAMA: The Journal of the American Medical Association, 280*(5), 439-442. doi:10.1001/jama.280.5.439

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Boston: Houghton Mifflin.

Shahinfar, A., Kupersmidt, J. B., & Matzt, L. S. (2001). The relation between exposure to violence and social information processing among incarcerated adolescents. *Journal of Abnormal Psychology, 110*(1), 136-141.

Shaver, K. G. (2012). *The attribution of blame: Causality, responsibility, and blameworthiness* Springer Science & Business Media.

Sikkema, C., Abraham, M., & Flight, S. (2007). *Ongewenst gedrag besproken [undesired behavior discussed]*. Amsterdam: DSP-groep.

Singh, P., & Bussey, K. (2011). Peer victimization and psychological maladjustment: The mediating role of coping self-efficacy. *Journal of Research on Adolescence, 21*(2), 420-433.

Sliter, M., Pui, S. Y., Sliter, K., & Jex, S. (2011). The differential effects of interpersonal conflict from customers and coworkers: Trait anger as a moderator. *Journal of Occupational Health Psychology, 16*(4), 424-440. doi:10.1037/a0023874

Sliter, M., Sliter, K., & Jex, S. (2012). The employee as a punching bag: The effect of multiple sources of incivility on employee withdrawal behavior and sales performance. *Journal of Organizational Behavior, 33*(1), 121-139.

Sparks, R. F. (1981). Multiple victimization - evidence, theory, and future-research. *Journal of Criminal Law & Criminology, 72*(2), 762-778. doi:10.2307/1143014

Spector, P. E. (2019). Do not cross me: Optimizing the use of cross-sectional designs. *Journal of Business and Psychology, 34*(2), 125-137. doi:10.1007/s10869-018-09613-8

Spector, P. E., Coulter, M. L., Stockwell, H. G., & Matz, M. W. (2007). Perceived violence climate: A new construct and its relationship to workplace physical violence and verbal aggression, and their potential consequences. *Work & Stress, 21*(2), 117-130. doi:10.1080/02678370701410007

Spector, P. E., Yang, L., & Zhou, Z. E. (2015). A longitudinal investigation of the role of violence prevention climate in exposure to workplace physical violence and verbal abuse. *Work & Stress, 29*(4), 325-340. doi:10.1080/02678373.2015.1076537

Sprado, N., Fischer, T., & Van Reemst, L. (2017). Effecten van informatieverstrekking op agressie van UWV-cliënten: Een experimentele scenariostudie [effects of providing information on aggression by clients of the employee insurance agency. an experimental scenario study. *Tijdschrift Voor Criminologie, 59*(1), 67-91.

Spratt, M., Carpenter, J., Sterne, J. A., Carlin, J. B., Heron, J., Henderson, J., & Tilling, K. (2010). Strategies for multiple imputation in longitudinal studies. *American Journal of Epidemiology, 172*(4), 478-487.

Stad, D., & Timmer, J. (2017). Geweld tegen politieambtenaren: Beweegredenen en rationalisering door verdachten [violence against police officers: Motivation and rationalization by suspects]. *Tijdschrift Voor Veiligheid, 16*(1), 17-35.

Stel, M., van den Bos, K., & Bal, M. (2012). On mimicry and the psychology of the belief in a just world: Imitating the behaviors of others reduces the blaming of innocent victims. *Social Justice Research, 25*(1), 14-24.

Sykes, R. E., & Brent, E. E. (1983). *Policing: A social behaviorist perspective.* New Brunswick, N.J.: Rutgers University Press.

Tang, C. S. (2007). Trajectory of traumatic stress symptoms in the aftermath of extreme natural disaster: A study of adult thai survivors of the 2004 southeast asian earthquake and tsunami. *The Journal of Nervous and Mental Disease, 195*(1), 54-59.

Tarraf, R., Hershcovis, M., & Bowling, N. (2017). Moving the field of workplace aggression forward: Thoughts and recommendations. In N. Bowling, & M. Hershcovis (Eds.), *Research and theory on workplace aggression* (pp. 350-369). New York: Cambridge University Press.

Taylor, J., & Rew, L. (2011). A systematic review of the literature: Workplace violence in the emergency department. *Journal of Clinical Nursing, 20*(7-8), 1072-1085. doi:10.1111/j.1365-2702.2010.03342.x

Taylor, T., Freng, A., Esbensen, F., & Peterson, D. (2008). Youth gang membership and serious violent victimization: The importance of lifestyles and routine activities. *Journal of Interpersonal Violence, 23*(10), 1441-1464. doi:10.1177/0886260508314306 [doi]

Tepper, B. J. (2007). Abusive supervision in work organizations: Review, synthesis, and research agenda. *Journal of Management, 33*(3), 261-289.

Terrill, W., & Mastrofski, S. D. (2002). Situational and officer-based determinants of police coercion. *Justice Quarterly, 19*(2), 215-248.

Tett, R. P., & Guterman, H. A. (2000). Situation trait relevance, trait expression, and cross-situational consistency: Testing a principle of trait activation. *Journal of Research in Personality, 34*(4), 397-423.

Thoemmes, F., & Rose, N. (2014). A cautious note on auxiliary variables that can increase bias in missing data problems. *Multivariate Behavioral Research, 49*(5), 443-459.

Tillyer, M. S., Tillyer, R., Miller, H. V., & Pangrac, R. (2011). Reexamining the correlates of adolescent violent victimization: The importance of exposure, guardianship, and target characteristics. *Journal of Interpersonal Violence, 26*(14), 2908-2928. doi:10.1177/0886260510390958

Timmer, J. (2005). *Politiegeweld: geweldgebruik van en tegen de politie in nederland [police violence: Use of force by and against the police in the netherlands]*. Alphen aan de Rijn: Kluwer.

Tremblay, P. F., & Belchevski, M. (2004). Did the instigator intend to provoke? A key moderator in the relation between trait aggression and aggressive behavior. *Aggressive Behavior, 30*(5), 409-424. doi:10.1002/ab.20027

Triana, M. d. C., Jayasinghe, M., & Pieper, J. R. (2015). Perceived workplace racial discrimination and its correlates: A meta-analysis. *Journal of Organizational Behavior, 36*(4), 491-513. doi:10.1002/job.1988

Tseloni, A., & Pease, K. (2003). Repeat personal victimization. 'Boosts' or 'Flags'? *The British Journal of Criminology, 43*(1), 196-212. doi:10.1093/bjc/43.1.196

Tummers, L., & Musheno, M. (2015). *Coping during public service delivery: Developing a measurement instrument for survey research.* Unpublished manuscript. Retrieved 26th April 2019, Retrieved from http://larstummers.com/wp-content/uploads/2012/01/Paper-EGPA-Tummers-Musheno-FINAL.pdf

Van de Schoot, R., Lugtig, P., & Hox, J. (2012). A checklist for testing measurement invariance. *European Journal of Developmental Psychology, 9*(4), 486-492.

Van den Bos, K. (2015). Humans making sense of alarming conditions: Psychological insight into the fair process effect. In R. Cropanzano, & M. Ambroso (Eds.), *The oxford handbook of justice in the workplace* (pp. 403-418). Oxford, United Kingdom: Oxford University Press.

van der Meulen, E., Bosmans, M., Lens, K., Lahlah, E., & van der Velden, P. (2018). Effects of mental strength training for police officers: A three-wave quasi-experimental study. *Journal of Police and Criminal Psychology, 33*, 385-397. doi:10.1007/s11896-017-9247-8

Van der Torre, E., Gieling, P., Dozy, M., Van Leeuwen, F., & Hamoen, W. (2011). *Veilig politiewerk. de basispolitie over geweldgebruik*. Apeldoorn: Politieacademie.

Van der Velden, P., Bosmans, M., & Van der Meulen, E. (2015). Predictors of workplace violence among ambulance personnel: A longitudinal study. *Nursing Open, 3*(2), 90-98. doi:10.1002/nop2.38

Van Nieuwenhuijzen, M., De Castro, B. O., Van der Valk, I., Wijnroks, L., Vermeer, A., & Matthys, W. (2006). Do social information-processing models explain aggressive behaviour by children with mild intellectual disabilities in residential care? *Journal of Intellectual Disability Research, 50*(11), 801-812.

Van Reemst, L. (2016). A theoretical framework to study variations in workplace violence experienced by emergency responders: Integrating opportunity and vulnerability perspectives. *Erasmus Law Review, 9*(3), 135-145. doi:10.5553/ELR.000058

Van Reemst, L. (submitted). Determinants of external workplace victimisation: The perspectives of three types of emergency responders.

Van Reemst, L., & Fischer, T. (2017). Meld- en aangiftegedrag bij agressie tegen hulpverleners [reporting behaviour in case of aggression against emergency workers]. In R. H. Staring, R. Van Swaaningen & C. van Wingerde (Eds.), *Over de muren van stilzwijgen - liber amicorum henk van de bunt* (pp. 227-240). Den Haag: Boom Criminologie.

Van Reemst, L., Fischer, T., & Zwirs, B. (2015). Response decision, emotions, and victimization of police officers. *European Journal of Criminology, 12*(6), 635-657. doi:10.1177/1477370815587767

Van Reemst, L., Fischer, T., & Zwirs, B. (2016). Social information processing mechanisms and victimization: A literature review. *Trauma, Violence, & Abuse, 17*(1), 3-25.

Van Reemst, L., Fischer, T., & Zwirs, B. (2013). *Geweld tegen de politie: De rol van mentale processen van de politieambtenaar [violence against the police: The role of mental processes of the police officers]*. Apeldoorn: Politie en Wetenschap.

Van Reemst, L., & Jongerling, J. (2019). Measuring and modelling exposure to external workplace aggression in three types of emergency responders. *Journal of Interpersonal Violence, Published online before print.* doi:10.1177/0886260519847780.

Van Reemst, L., & Fischer, T. (2019). Experiencing external workplace violence: Differences in indicators between three types of emergency responders. *Journal of Interpersonal Violence, 34*(9), 1864-1889. doi:101177/0886260516657913

Van Stokkom, B. (2013). *Met gezag! Agressie tegen werknemers met een publieke taak: Inzicht en uitzicht [with authority! aggression against employees with a public task: Insight and view]*. Den Haag: Boom Lemma uitgevers.

Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational Research Methods, 3*(1), 4-70.

Vassilopoulos, S. P., Brouzos, A., & Andreou, E. (2015). A multi-session attribution modification program for children with aggressive behaviour: Changes in attributions, emotional reaction estimates, and self-reported aggression. *Behavioural and Cognitive Psychotherapy, 43*(5), 538-548.

Verhoeven, W., & Duinhof, E. (2017). *Effectiviteit van het verdachtenverhoor: Een veldstudie naar de relatie tussen verhoortechnieken, de verklaring van verdachten en de aanwezigheid van de advocaat in zware zaken [effectiveness of the suspects hearing: A field study of the relationship between interviewing techniques, the statement of suspects and the presence of the lawyer in severe cases]*. Apeldoorn, the Netherlands: Politie en Wetenschap.

Verschuren, S., Fischer, T., & Zwirs, B. (2011). Slachtofferschap onder treinconducteurs [victimization among train conductors]. *Tijdschrift Voor Criminologie, 53*(3), 194-2013.

Viitasara, E., Sverke, M., & Menckel, E. (2003). Multiple risk factors for violence to seven occupational groups in the swedish caring sector. *Industrial Relations, 58*(2), 202-231. doi:10.7202/007302ar

Von Hentig, H. (1948). *The criminal & his victim: Studies in the sociobiology of crime.* Oxford, UK: Yale University Press.

Waddington, P., Badger, D., & Bull, R. (2004). Appraising the inclusive definition of workplace 'violence'. *The British Journal of Criminology, 45*(2), 141-164. doi:10.1093/bjc/azh052

Wang, Q., & Bowling, N. A. (2016). A comparison of general and work-specific personality measures as predictors of organizational citizenship behavior. *International Journal of Selection and Assessment, 24*(2), 172-188.

Warden, D., & Mackinnon, S. (2003). Prosocial children, bullies and victims: An investigation of their sociometric status, empathy and social problem-solving strategies. *British Journal of Developmental Psychology, 21*, 367-385.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*(6), 1063.

Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive emotional states. *Psychological Bulletin, 96*(3), 465-490. doi:10.1037/0033-2909.96.3.465

Weiss, D. S., Brunet, A., Best, S. R., Metzler, T. J., Liberman, A., Pole, N., . . . Marmar, C. R. (2010). Frequency and severity approaches to indexing exposure to trauma: The critical incident history questionnaire for police officers. *Journal of Traumatic Stress, 23*(6), 734-743.

Wiers, R. W., Van Woerden, N., Smulders, F. T., & De Jong, P. J. (2002). Implicit and explicit alcohol-related cognitions in heavy and light drinkers. *Journal of Abnormal Psychology, 111*(4), 648.

Wilson, S., & Zhao, J. (2008). Determining the correlates of police victimization: An analysis of organizational level factors on injurious assaults. *Journal of Criminal Justice, 36*(5), 461-468. doi:10.1016/j.jcrimjus.2008.07.009

Winstanley, S., & Hales, L. (2014). A preliminary study of burnout in residential social workers experiencing workplace aggression: Might it be cyclical? *British Journal of Social Work, 45*(1), 24-33. doi:10.1093/bjsw/bcu036

Winstanley, S., & Whittington, R. (2002). Violence in a general hospital: Comparison of assailant and other assault-related factors on accident and emergency and inpatient wards. *Acta Psychiatrica Scandinavica, 106*(412), 144-147. doi:10.1034/j.1600-0447.106.s412.31.x

Winstanley, S., & Whittington, R. (2004). Aggression towards health care staff in a UK general hospital: Variation among professions and departments. *Journal of Clinical Nursing, 13*(1), 3-10. doi:10.1111/j.1365-2702.2004.00807.x

Wittebrood, K., & Nieuwbeerta, P. (2000). Criminal victimization during one's life course: The effect of previous victimization and patterns of routine activities. *Journal of Research in Crime and Delinquency, 37*, 91.

Wolf, L. A., Delao, A. M., & Perhats, C. (2014). Nothing changes, nobody cares: Understanding the experience of emergency nurses physically or verbally assaulted while providing care. *Journal of Emergency Nursing, 40*(4), 305-310. doi:10.1016/j.jen.2013.11.006

Wolfgang, M. E. (1958). *Patterns in criminal homicide*. Oxford, England: University of Pennsylvania Press.

Wortley, R. (2012). Exploring the person-situation interaction in situational crime prevention. In N. Tilley, & G. Farrel (Eds.), *The reasoning criminologist: Essays in honour of ronald V. clarke* (pp. 184-193). London: Routledge.

Yagil, D. (2008). When the customer is wrong: A review of research on aggression and sexual harassment in service encounters. *Aggression and Violent Behavior, 13*(2), 141-152. doi:10.1016/j.avb.2008.03.002

Zavala, E. (2013). Examining the offender–victim overlap among police officers: The role of social learning and job-related stress. *Violence and Victims, 28*(4), 731-748. doi:10.1891/0886-6708.VV-D-12-00066

Zellars, K. L., Tepper, B. J., & Duffy, M. K. (2002). Abusive supervision and subordinates' organizational citizenship behavior. *Journal of Applied Psychology, 87*(6), 1068-1076. doi:10.1037//0021-9010.87.6.1068

Zietlow, B. (2016). Violence against police officers: The victims' perspective. In D. Baier, & C. Pfeiffer (Eds.), *Representative studies on victimization: Research findings from germany* (pp. 163-184). Baden-Baden, Germany: Nomos Verlagsgesellschaft.

Zillig, L. M. P., Hemenover, S. H., & Dienstbier, R. A. (2002). What do we assess when we assess a big 5 trait? A content analysis of the affective, behavioral, and cognitive processes represented in big 5 personality inventories. *Personality and Social Psychology Bulletin, 28*(6), 847-858.

Zur, O. (1995). Rethinking 'Don't blame the victim' the psychology of victimhood. *Journal of Couples Therapy, 4*(3-4), 15-36.

Appendices

Appendix 1: Hypothetical situations

Situation 1a – Ambiguous. Together with a colleague, you are driving a car along a quiet street in a nightlife area. The bars are already closed. About 10 young people, clearly intoxicated, are talking loudly. They point to you, and come straight at you and your colleague.

Situation 2a – Ambiguous. It is evening. You stop the driver of a car because of a traffic violation. The man in the car opens his window. You notice that there are no other occupants. The man raises his eyebrows. You ask for his licence, but he refuses to hand it over. Then you see he grabs his steering wheel.

Situation 1b – Aggressive. Together with a colleague, you are driving a car along a quiet street in a nightlife area. The bars are already closed. About 10 young people, clearly intoxicated, are talking loudly. They point to you and come straight at you and your colleague. One of the boys slams his hand on your car.

Situation 2b – Aggressive. It is evening. You stop the driver of a car because of a traffic violation. The man in the car opens his window. You notice that there are no other occupants. The man raises his eyebrows. You ask for his licence, but he refuses to hand it over. He gives you the middle finger, and you see he grabs his steering wheel.

Appendix 2: Additional table chapter 3

Table A2 *Correlations between control variables.*

	1	2	3	4	5	6	7	8
1. Gender (0/1, female=1)								
2. Age (19–66)	-.24**							
3. Level of education (1–4)	-.06	.31**						
4. Rank (1–5)	-.17**	.64**	.44**					
5. Years of experience (0–42)	-.23**	.87**	.35**	.76**				
6. Hours on streets (0–40)	-.02	-.24**	-.16**	-.17**	-.23**			
7. Night (1–3)	.01	-.17**	.02	-.10*	-.11**	.14**		
8. Weekend (1–3)	-.07*	-.06	-.02	-.02	-.05	.11**	.39**	
9. Urban (0/1)	-.05	-.13**	-.11**	.01	-.14**	.18**	.08*	.13*

Note. $N = 815$. + $p < .10$. * $p < .05$. ** $p < .01$.

Appendix 3: Additional tables chapter 6

Table A3a *Correlation matrix of frequency of external workplace aggression reported by emergency medical workers (N = 354).*

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Said to spite																
2 Was rude	.65***															
3 Transmitted damaging information	.31***	.22***														
4 False accusation	.35***	.32***	.64***													
5 Yelled	.51***	.70***	.07	.20***												
6 Swore	.42***	.54***	.15**	.26***	.64***											
7 Insulted	.58***	.67***	.21***	.32***	.70***	.77***										
8 Name-calling[d]	.48***	.60***	.12*	.27***	.67***	.75***	.82***									
9 Glared or dirty looks	.53***	.67***	.25***	.26***	.72***	.64***	.76***	.71***								
10 Rude gestures	.49***	.64***	.20***	.27***	.68***	.70***	.74***	.71***	.78***							
11 Threatened to hit	.31***	.37***	.10+	.20***	.45***	.47***	.52***	.52***	.49***	.46***						
12 … to throw	.31***	.35***	.19***	.25***	.39***	.53***	.49***	.49***	.44***	.51***	.67***					
13 … to kill	.17**	.20***	.08	.19***	.23***	.45***	.35***	.40***	.27***	.33***	.44***	.54***				
14 … with a weapon	.17**	.19***	.09+	.15**	.25***	.33***	.30***	.28***	.29***	.35***	.23***	.30***	.42***			
15 Tried to hit	.36***	.35***	.11*	.19***	.43***	.43***	.51***	.49***	.47***	.45***	.69***	.54***	.39***	.32***		
16 Bumped	.26***	.29***	.25***	.25***	.28***	.36***	.35***	.32***	.37***	.39***	.41***	.51***	.30***	.30***	.53***	
17 Pushed	.23***	.26***	.09	.16**	.29***	.33***	.39***	.37***	.34***	.34***	.47***	.44***	.26***	.33***	.55***	.60***
18 Spit	.19***	.20***	.04	.07	.28***	.36***	.33***	.38***	.31***	.32***	.39***	.39***	.26***	.22***	.42***	.31***
19 Threw	.18***	.14**	.01+	.25***	.18***	.34***	.30***	.24***	.23***	.28***	.31***	.44***	.28***	.40***	.44***	.42***
20 Grabbed	.22***	.29***	.06	.09+	.30***	.31***	.31***	.36***	.35***	.32***	.47***	.38***	.25***	.31***	.48***	.35***
21 Hit	.10+	.11*	.10+	.11*	.16**	.22***	.25***	.26***	.17**	.21***	.46***	.22***	.28***	.20***	.54***	.22***
22 Kicked	.06	.07	.04	.06	.17**	.18***	.14**	.15***	.08	.16**	.28***	.26***	.25***	.36***	.33***	.28***
23 Choked	.03	-.00	-.03	-.04	-.00	.05	.03	.03	.00	.06	.05	.04	.22***	.41***	.15**	.04

Continued after Table A3c

Table A3b *Correlation matrix of frequency of external workplace aggression reported by firefighters (N = 312).*

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Said to spite																
2 Was rude	.68***															
3 Transmitted damaging information	.40***	.39***														
4 False accusation	.39***	.40***	.73**													
5 Yelled	.40***	.56***	.25***	.28***												
6 Swore	.42***	.49***	.41***	.39***	.58***											
7 Insulted	.45***	.57***	.43***	.47***	.61***	.71***										
8 Name-calling[d]	.42***	.52***	.30***	.36***	.55***	.64***	.76***									
9 Glared or dirty looks	.50***	.64***	.42***	.46***	.65***	.59***	.66***	.61**								
10 Rude gestures	.45***	.54***	.35***	.40***	.52***	.58***	.62***	.66***	.76***							
11 Threatened to hit	.29***	.34***	.30***	.28***	.38***	.60***	.49***	.47***	.37***	.37***						
12 … to throw	.26***	.27***	.16***	.14*	.38***	.47***	.37***	.36***	.41***	.43***	.47***					
13 … to kill	.17***	.20***	.37***	.31***	.24***	.42***	.38***	.27***	.29***	.30***	.61***	.37***				
14 … with a weapon	.14*	.11*	.08	.08	.15*	.24***	.17**	.18**	.10+	.15**	.34***	.19***	.52***			
15 Tried to hit	.21***	.26***	.35***	.30***	.32***	.51***	.42***	.37***	.32***	.32***	.75***	.42***	.72***	.40**		
16 Bumped	.22***	.24***	.28***	.20***	.27***	.33***	.39***	.36***	.39***	.38***	.45***	.28***	.50***	.26***	.49***	
17 Pushed	.21***	.24***	.31***	.21***	.27***	.41***	.38***	.44***	.43***	.46***	.39***	.36***	.31***	.22***	.40***	.66***
18 Spit	.13*	.07	.21***	.18**	.11+	.24***	.19***	.15**	.14*	.17**	.17**	.21***	.66***	.66***	.43***	.29***
19 Threw	.11+	.08	.01	.03	.18**	.15**	.08	.15**	.21***	.21***	.03	.56***	.15**	.23***	.09	.21***
20 Grabbed	.16**	.17**	.15**	.12*	.24***	.33***	.27***	.31***	.28***	.23***	.38***	.25***	.32***	.27***	.37***	.36***
21 Hit	.14*	.09	.13*	.12*	.13*	.26***	.21***	.20***	.13*	.17**	.22***	.24***	.53***	.75***	.40***	.44***
22 Kicked	.05	.04	.13*	.12*	.06	.14*	.11*	.11+	.07	.09	.16**	.23***	.50***	.71***	.28***	.15**
23 Choked	.03	.01	.10+	.10+	.04	.12*	.09	.08	.04	.07	.14*	.20***	.44***	.63***	.25***	.13*

Continued after Table A3c

Table A3c *Correlation matrix of frequency of external workplace aggression reported by police officers (N = 534).*

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Said to spite																
2 Was rude	.78***															
3 Transmitted damaging information	.32***	.29***														
4 False accusation	.49***	.49***	.49***													
5 Yelled	.70***	.80***	.26***	.52***												
6 Swore	.63***	.71***	.31***	.50***	.76***											
7 Insulted	.53***	.64***	.31***	.49***	.67***	.81***										
8 Name-calling[d]	.59***	.70***	.30***	.48***	.74***	.83***	.87***									
9 Glared or dirty looks	.66***	.78***	.23***	.48***	.79***	.70***	.63***	.71***								
10 Rude gestures	.55***	.64***	.31***	.49***	.67***	.75***	.74***	.78***	.72***							
11 Threatened to hit	.42***	.49***	.31***	.46***	.51***	.60***	.63***	.62***	.48***	.60***						
12 … to throw	.33***	.39***	.31***	.35***	.42***	.49***	.51***	.52***	.39***	.52***	.72***					
13 … to kill	.32***	.32***	.26***	.28***	.29***	.42***	.46***	.45***	.30***	.41***	.57***	.51***				
14 … with a weapon	.20***	.25***	.20***	.27***	.25***	.34***	.39***	.36***	.27***	.40***	.55***	.61***	.44***			
15 Tried to hit	.35***	.41***	.24***	.31***	.44***	.53***	.58***	.57***	.40***	.53***	.78***	.69***	.51***	.58***		
16 Bumped	.32***	.40***	.22***	.32***	.38***	.44***	.49***	.46***	.38***	.48***	.55***	.53***	.47***	.43***	.64***	
17 Pushed	.34***	.41***	.20***	.32***	.39***	.44***	.48***	.49***	.36***	.47***	.61***	.59***	.45***	.45***	.69***	.75***
18 Spit	.12**	.18***	.10*	.19***	.10*	.20***	.31***	.25***	.15***	.28***	.43***	.48***	.35***	.51***	.49***	.54***
19 Threw	.25***	.30***	.21***	.26***	.29***	.35***	.36***	.38***	.30***	.39***	.51***	.67***	.43***	.53***	.60***	.56***
20 Grabbed	.26***	.35***	.14***	.27***	.35***	.37***	.42***	.42***	.30***	.37***	.54***	.49***	.43***	.43***	.62***	.68***
21 Hit	.14**	.23***	.10*	.20***	.23***	.28***	.33***	.33***	.23***	.31***	.52***	.54***	.34***	.54***	.57***	.52***
22 Kicked	.13**	.23***	.08+	.17***	.20***	.26***	.32***	.31***	.20***	.30***	.48***	.50***	.36***	.52***	.53***	.53***
23 Choked	.06	.08+	-.02	.03	.07+	.09*	.14***	.11**	.08+	.13**	.20***	.21***	.23***	.33***	.22***	.21***

Table A3a *Continued.*

Items	17	18	19	20	21	22
18 Spit	.31***					
19 Threw	.27***	.32***				
20 Grabbed	.43***	.34***	.18***			
21 Hit	.29***	.26***	.05	.28***		
22 Kicked	.34***	.27***	.18***	.27***	.37***	
23 Choked	.09+	-.02	.10+	.15**	.20***	.14**

Note. + $p < .10$; * $p < .05$, ** $p < .01$, *** $p < .001$.

Table A3b *Continued.*

Items	17	18	19	20	21	22
18 Spit	.29***					
19 Threw	.18**	.25***				
20 Grabbed	.44***	.50***	.08			
21 Hit	.27***	.80***	.29***	.37***		
22 Kicked	.26***	.76***	.28***	.26***	.71***	
23 Choked	.23***	.67***	.24***	.35***	.63***	.89***

Note. N = 313 for correlations between items 1-10. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table A3c *Continued.*

Items	17	18	19	20	21	22
18 Spit	.53***					
19 Threw	.54***	.59***				
20 Grabbed	.68***	.50***	.48***			
21 Hit	.51***	.62***	.54***	.61***		
22 Kicked	.55***	.64***	.51***	.59***	.81***	
23 Choked	.20***	.37***	.29***	.21***	.30***	.36***

Note. N = 540 for correlations between items 1-10. + < .10. * p < .05. ** p < .01. *** p < .001.

English summary

This dissertation studied the relationship between emergency responders' personal characteristics and exposure to aggression by citizens.[58] Three occupational groups were included in the study: emergency medical workers, firefighters and police officers. Workers in these groups are relatively frequently exposed to aggression of citizens, which can be damaging to employees, organisations and society in general. Previous research about the nature and extent of workplace aggression among emergency responders showed that some employees are exposed to workplace aggression relatively often, and others relatively little. This unequal distribution is also visible within specific occupational groups. To address exposure to workplace aggression effectively in prevention and aftercare measures, knowledge about correlates of exposure to aggression is needed.

Existing studies about exposure to workplace aggression among emergency responders have mainly offered insight into situational correlates, such as how often employees are in contact with citizens. These appeared to explain exposure to workplace aggression only to a relatively small extent. In contrast, psychological correlates have been understudied, and it is unknown to which extent they add to the explanation. In addition, limited insight has been provided in the direction of the relationship between characteristics and exposure to aggression (do characteristics predict exposure to aggression, does exposure to aggression predict characteristics, or both), and limited insight has been offered in the differences between occupational groups. The studies in this dissertation tried to address these limitations of the existing literature.

Chapter one of this dissertation introduces the dissertation and provides the theoretical framework. Victim proneness notions (Sparks, 1981; Wolfgang, 1958), criminal opportunity theories (Cohen & Felson, 1979; Hindelang et al., 1978), and interaction theories (Athens, 2005; Goffman, 1967), were addressed. Victimisation was suggested to be an outcome from interaction between victim and offender in a certain context, and emergency responders take their psychological characteristics to this interaction. Without the intention to blame the emergency responder, it is posited that the emergency responders may thus contribute to victimisation, either knowingly or unknowingly. This led to research question one: *To what extent are psychological characteristics of emergency responders related to their exposure to aggression of citizens?*

Based on this theoretical framework, it is hypothesised that psychological characteristics can influence exposure to workplace aggression. However, exposure to workplace aggression could also affect psychological characteristics, as it can have

58 The structure of this summary is based on the order of the chapters. For a summary structured by the three research question, see the discussion chapter.

severe consequences. Therefore, one of the aims of this dissertation was to provide more insight into the direction of the relationship between psychological characteristics of emergency responders and their exposure to workplace aggression. This led to research question two: *In which direction(s) are psychological characteristics of emergency responders and their exposure to aggression of citizens related?*

In this dissertation, emergency responders in three occupational groups were studied: emergency medical workers, firefighters and police officers. While all emergency responders are important for public safety and have work characteristics in common, each occupational group is also unique. They differ in the legal framework they work with, the frequency of contact with citizens, and the number of employees present in a work situation. Therefore, the question is whether differences exist in correlates of exposure to workplace aggression among the three studied occupational groups. Previous literature on this topic was limited, and therefore research question three was formulated: *To what extent do relationships between characteristics of emergency responders and their exposure to aggression of citizens vary between occupational groups?*

Chapter one also introduces the variety of methods that were used in this dissertation. Firstly, a secondary analysis was conducted of a cross-sectional dataset with data from many public sector employees to explore the role of work characteristics and differences in exposure to workplace aggression between occupational groups. Secondly, a two-wave survey study among police officers was conducted, using hypothetical vignettes, to investigate how police officers come to a response and how this is related to exposure to workplace aggression. Thirdly, interviews were held with employees in ambulance, fire and police departments. These interviews were conducted to explore which characteristics they perceive to be related to exposure to workplace aggression. Lastly, a three-wave survey study was conducted among emergency medical workers, firefighters and police officers to investigate the role of personality characteristics in exposure to workplace aggression, and to investigate differences between occupational groups.

Results of the empirical studies

Chapter two investigated to what extent socio-demographic and work characteristics are related to exposure to workplace aggression. In this chapter, criminal opportunity theories were used to argue that these characteristics might explain variations in exposure to aggression. In addition, the chapter explored how the relationships between these characteristics and exposure to aggression differ between the three types of emergency responders. Data from a workplace violence survey of the Ministry of the Interior and Kingdom Relations of the Netherlands were used and secondary analyses were performed. From this dataset, emergency medical workers (N = 264), firefighters

(N = 255) and police officers (N = 296) working in direct contact with citizens were selected for the analysis. The data included information about professionals' socio-demographic characteristics and a broad variety of work characteristics.

The results of chapter two indicated that police officers experienced most, and firefighters experienced least external workplace violence. Younger professionals and professionals who have more frequent and risky contact experienced more external workplace violence. The expectations that males and those with less skills or experience to avoid exposure to aggression were more often victim of workplace violence than others were not convincingly supported. The results further showed clear differences between types of emergency responders. The relationships between characteristics and external workplace violence differed between types of emergency responders and there were also differences in explanatory power of the models. Comparing the explained variance of exposure to workplace aggression in models, the studied characteristics explained variations in external workplace violence of police officers best. Therefore, prevention of external workplace violence by addressing these characteristics will be most successful for police officers. Especially for firefighters and emergency medical workers, predicting external workplace violence should be improved. Possibly, psychological characteristics of professionals could explain exposure to workplace violence more. Because of the differences in correlates of exposure to workplace violence between occupational groups, this chapter also suggests that research about indicators and prevention of external workplace violence should be aimed at separate professions.

Chapter three explored whether response decision and situation-dependent emotions contribute to the explanation of differences in victimisation of police officers. According to the social information processing (SIP) model (Crick & Dodge, 1994; Dodge, 1986), a response decision is based on how people evaluate the response, how well they think they could enact the response (self-efficacy), what they think the outcome of the response would be and which response they select. Situation dependent emotions are thought to influence the response decision. To study this, the first wave of a two-wave dataset was used, in which vignette surveys were completed by police officers from five regional police forces in the Netherlands. In these surveys, a hypothetical work situation was described, after which respondents answered questions about three possible responses: a more hostile, more passive, and more assertive response. In addition, questions were asked about exposure to verbal violence, threats and physical violence in the previous six months.

The results indicated that victimisation involving verbal violence, threats, and physical violence were associated with some response decision characteristics but not with situation-dependent negative emotions. Together, the response decision and emotions added explained variance of victimisation on top of socio-demographic and

work characteristics. Police officers who had more negative outcome expectations of aggressive or assertive responses, or who selected an aggressive rather than a passive or assertive response, were more likely to report victimisation of violence than other police officers. However, no associations with victimisation were found for response evaluation and for self-efficacy of any type of response (aggressive, passive, or assertive).

Chapter four studied the direction of the relationship between a hostile response decision and victimisation of police officers. The hostile response decision included the evaluation of the more hostile response, the self-efficacy of this response, the outcome expectation of this response, and the selection of this response. This chapter used the same dataset as chapter three, but treated a hostile response decision, including the evaluation, self-efficacy, outcome expectations and selection of a hostile response, as one concept. In addition, it used both waves of the dataset. The two waves of the questionnaire were conducted six months apart, which gave the possibility to study the relation between a hostile response decision and exposure to workplace aggression over time. A cross lagged panel analysis enabled us to explore the direction of the relation. Does response decision in wave one predict victimisation reported in wave two, or does victimisation reported in wave one predict response decision in wave two, or both?

Cross lagged panel models including both directions fit the data best, which means that both directions (hostile response decision as a predictor and an effect) are probable. The results particularly showed that exposure to threats was related to a more hostile response decision at least six months later. For physical aggression, the effect on a more hostile decision six months later was marginally significant. The results thus indicate that exposure to aggression, in particular threats, can have an effect on how police officers work.

Chapter five explored which possible characteristics are related to exposure to workplace aggression. For this chapter, interviews were conducted with 50 emergency response employees in the Netherlands to gain insight into their perspective on the question which characteristics are related to workplace aggression. Respondents included front-line practitioners, but also supervisors and employees involved in dealing with aggression against emergency responders (e.g. involved in training, registration or aftercare). Interviews were analysed using open codes in Atlas.ti. These open codes were further categorised and compared to the literature, with the aim to identify characteristics that are related to workplace victimisation, according to emergency responders themselves.

Respondents perceived both situational and psychological characteristics as important. Regarding psychological characteristics, respondents mentioned lower empathy and adjusting and higher and lower dominance (compared to moderate) as

characteristics that may be related to more exposure to aggression. In addition, lower self-confidence and setting boundaries, and lower emotional resilience were mentioned.

Chapter six investigated how exposure to external workplace aggression is best measured and modelled in three types of emergency responders. Data from the first wave of the three-wave longitudinal dataset was used in this chapter. The data on self-reported exposure to verbal and non-verbal, threats and physical aggression from 1499 emergency medical workers, firefighters, and police officers were analysed using factor analyses in Mplus. Also, the usefulness of adding severity information to an existing measure of frequency of exposure to workplace aggression was explored. In addition, the relationships between workplace aggression indices and a measure of the situational risk for violence were investigated.

The results show that a frequency index measured exposure to external workplace aggression better than an index combining the frequency and severity. Factor structures of indices differed between the three groups of emergency responders, regarding number and content of factors. For firefighters, exposure to workplace aggression was measured best by only (non-)verbal aggression items (meaning verbal and both non-verbal and non-physical items, such as gesturing). For emergency medical workers and police officers, the workplace aggression indices also included threats and physical aggression items. For police officers, the indices consisted of two dimensions (verbal vs. threats and physical aggression). For emergency medical workers, the indices consisted of one dimension. Thus, these analyses showed that even the concept of workplace aggression itself varies between occupational groups. This implies that differences between occupational groups in correlates of exposure to workplace aggression cannot be statistically compared.

Chapter seven examined the relationship between multiple psychological characteristics and exposure to workplace aggression among emergency responders, taking into account socio-demographic and situational characteristics. For this chapter, the three-wave longitudinal study was used. Emergency medical workers, firefighters and police officers completed a survey during three measurement moments (six months apart). Results from the three occupational groups were presented separately.

The results of this chapter show that, in general, psychological characteristics explain exposure to workplace aggression over and above situational characteristics. However, they also show that the contribution of these characteristics in the explanation of exposure to workplace aggression is limited. Among the three occupational groups, most consistent results were that negative affect, dominance and impatience were, at least in bivariate analysis, related to more exposure to aggression. Emergency responders who reported more negative affect, lower and higher dominance (compared to moderate dominance) and more impatience (as an indicator of aggression) were on average more

often exposed to workplace aggression. Least support was found for the hypotheses that lower empathy, lower self-evaluations and hostile attribution are related to more exposure to aggression. Furthermore, socio-demographic and work characteristics explain more variance of exposure to workplace aggression than psychological characteristics. In addition, there were differences between the occupational groups in the models, although these differences could not be tested statistically. For example, variations in exposure to aggression among police officers seemed to be explained best by socio-demographic, situational and psychological characteristics, while variations in exposure to aggression among firefighters was explained worst.

Answers to the research questions

Chapter eight summarised and discussed the results with regard to the research questions. The first research question was: To what extent are psychological characteristics of emergency responders related to their exposure to aggression of citizens? The answer of this dissertation to this research question is that only some psychological characteristics of emergency responders are related to their exposure to aggression by citizens. Negative affect, dominance and aggression/impatience were related to exposure to workplace aggression among all groups of emergency responders, and a hostile response decision was related to exposure to workplace aggression among police officers. It is also clear that socio-demographic and work characteristics explain more variance of exposure to workplace aggression than psychological characteristics.

The second research question was: In which direction(s) are psychological characteristics of emergency responders and their exposure to aggression of citizens related? The answer of this dissertation to the second research question is that the relationship between psychological characteristics and victimisation of emergency responders can be bidirectional. The results suggest that psychological characteristics can both influence future exposure to workplace aggression and be influenced by it. However, this was only found for police officers. In addition, longitudinal relationships were only found for a limited number of possible relationships. For police officers, empathy was found to predict more exposure to workplace aggression. In addition, for police officers, exposure to workplace aggression was found to predict a more hostile attribution and more hostile response decision over time. For other characteristics no cross lagged relationships were found. For example, for dominance and negative affect no cross-lagged relationship was found, whereas cross-sectional relationships were found. These conclusions about the direction are tentative. The cross lagged panel designs that were used can be seen as conservative, as characteristics need to develop sufficiently in six months for a relationship to be found. This could also explain why more consistent cross lagged relationships were found for characteristics related to social

information processing, which are probably more changeable than other characteristics. Theoretically, personality characteristics can be assumed to precede victimisation, because they are relatively stable.

The third research question was: To what extent do relationships between characteristics of emergency responders and their exposure to aggression of citizens vary between occupational groups? The answer of this dissertation to the third research question is that, firstly, the three occupational groups differ in how well socio-demographic and work correlates explain variations in exposure to workplace aggression. Secondly, the concept of workplace aggression itself varies between the three groups emergency responders. Statistical comparisons of differences in correlates of exposure to workplace aggression are therefore not possible. Nevertheless, the results do suggest that correlates and the explained variance of models predicting exposure to workplace aggression differ between occupational groups of emergency responders.

Implications of the findings

Chapter eight also discussed the implications of the findings, for theory, future empirical research and policy and practice. Regarding theory, the results provide specification about the nature of characteristics that contribute to victimisation, the extent of the contribution, and about context specificity. Overall, this dissertation confirms victimisation theories' assumption that victim characteristics can contribute to victimisation. Psychological characteristics of emergency responders in different occupational groups were found to explain victimisation among emergency responders, suggesting that these characteristics contribute to the interaction with citizens. Whereas the important elements of criminal opportunity theories (motivated offender, guardianship and suitable target) do matter, also how the opportunity is 'executed' matters, with a role for the victim in the interaction with the offender in the context. In that sense, criminal opportunity theories are too narrow. Victim vulnerability notions are thus supported, even though the psychological contribution seems limited.

In addition, the results in this dissertation suggest that the extent to which victims are vulnerable or suitable to become a victim depend on the context, in this case the occupational group to which one belongs. This is important because the interaction between psychological vulnerability and the context was only limitedly elaborated in existing victimisation theories. It may not be needed to develop separate theories for separate contexts, but the results of this dissertation do indicate that the importance of each element of theories may depend on the context. The results have also shown that elements of the social information processing theory may be relevant for more contexts than the theory was developed for.

Regarding future empirical research, the results of the dissertation offer suggestions for methodological improvements, for alternative methods and for new questions to be answered in future research. Methodologically, future research can be directed towards the frequency of exposure to workplace aggression, without including the severity of victimisation in the measure. In addition, future research should address separate occupational groups, as results indicate that the concept of exposure to workplace aggression was different between occupational groups. An option for future research is to study psychological characteristics in an implicit manner, instead of asking explicit questions. This could lower social desirability in answers and prevent common method bias, a possible overestimation of relationships if concepts are measured using the same method and at the same time. Time-series analyses, diary studies or systematic observational research could offer more insight into the direction of the relationship. Future studies can address other psychological characteristics and their relationships with exposure to workplace aggression among emergency responders, such as sensation seeking and self-control. Especially for firefighters, exposure to aggression remains to a large extent unexplained in this dissertation, and possibly the role of team characteristics could be explored in future research. In addition, in all occupational groups, it would be important to examine how relationships depend on other characteristics.

Regarding policy and practice, it seems premature to develop firm and concrete recommendations based on results. First, it is important to further study some of the relationships, and particularly the direction between relationships. It also remains important to explore possibilities regarding the situational context, such as, but not limited to, working together with other (more) employees, protective clothing and interventions aimed at (possible) offenders. In addition, the results suggest that each occupational group could benefit from its own policies. In general, psychological characteristics could be monitored over time, before and after victimisation, and relevant characteristics could be addressed in training and aftercare. More specifically, lower negative affect, an optimal level of dominance, and non-aggressive response selection could be useful to train. Training programmes should be evaluated regarding the effect on decreasing workplace aggression and on possible side effects. Characteristics could be addressed in selection as well, but it is premature at this moment to provide directions which characteristics could be used for this purpose. Furthermore, aftercare could address a hostile response decision, although it should be noted that a change in this may be beneficial or disadvantageous. Aftercare may also evaluate to what extent workers and their cognitions or personality change due to certain work situations. Finally, registrations of exposure to workplace aggression within the organisations could provide more insight regarding the phenomenon in the future, for both organisations

and researchers, especially if organisations do this in similar manner and with similar communication towards workers.

Concluding remarks

To conclude, this dissertation has contributed to the literature by focusing on psychological characteristics of the emergency responder, using a longitudinal design, and exploring differences between three occupational groups in exposure to workplace aggression. The dissertation has shown that psychological characteristics contribute to explaining differences in workplace aggression, but only to a limited extent. In addition, clear differences were found between the three occupational groups, both in the experience and correlates of workplace aggression. By gaining more knowledge about exposure to workplace aggression, workplace aggression can be addressed more effectively, which may not only benefit workers, but also organisations and society in general.

Samenvatting (summary in Dutch)

Dit proefschrift gaat over de relatie tussen de persoonlijke kenmerken van hulpverleners en hun blootstelling aan agressie door burgers. Deze relatie werd onderzocht onder ambulance-, brandweer- en politiemedewerkers. Deze werknemers worden relatief vaak blootgesteld aan agressie van burgers, en dit kan schadelijk zijn voor henzelf, hun organisaties en de samenleving in het algemeen. Eerder onderzoek naar de aard en omvang van agressie op het werk onder hulpverleners heeft aangetoond dat sommige hulpverleners relatief vaak agressie op het werk meemaken en anderen relatief weinig. Deze ongelijke verdeling is ook zichtbaar binnen één en dezelfde beroepsgroep. Om blootstelling aan agressie op het werk effectief aan te pakken door middel van preventie- en nazorgmaatregelen, is kennis nodig over welke kenmerken samenhangen met het meemaken van agressie.

Bestaande studies over agressie op het werk onder hulpverleners hebben vooral inzicht gegeven in de samenhang met situationele kenmerken, zoals hoe vaak hulpverleners contact hebben met burgers. Deze kenmerken bleken agressie-ervaringen, waarmee de frequentie van het *meemaken* van agressie bedoeld wordt, op het werk te verklaren, maar in beperkte mate. Psychologische kenmerken zijn in eerder onderzoek minder vaak bestudeerd en het is onbekend in welke mate ze bijdragen aan deze verklaring. Bovendien is er beperkt inzicht in de richting van de relatie tussen kenmerken van de werknemer en blootstelling aan agressie (voorspellen bepaalde kenmerken het meemaken van agressie, voorspelt het meemaken van agressie bepaalde kenmerken of beide?) en is er beperkt inzicht in mogelijke verschillen tussen beroepsgroepen. De studies in dit proefschrift probeerden meer inzicht te geven in deze gaten in de bestaande literatuur.

Hoofdstuk één van dit proefschrift introduceerde het proefschrift en bood het theoretische kader. Slachtoffer- (Sparks, 1981; Wolfgang, 1958), criminaliteits- (Cohen & Felson, 1979; Hindelang, Gottfredson, & Garofalo, 1978) en interactietheorieën (Athene, 2005; Goffman, 1967), waaronder de victim precipitation theorie en gelegenheidtheorieën, kwamen daarbij aan bod. Slachtofferschap wordt gepresenteerd als een uitkomst van een interactie tussen slachtoffer en dader in een bepaalde context. Hulpverleners nemen hun psychologische kenmerken mee naar deze interactie. Zonder daarmee de schuld bij de hulpverlener te willen leggen, werd gesteld dat hulpverleners op die manier zouden kunnen bijdragen aan slachtofferschap, bewust of onbewust. Slachtofferschap is hierbij het meemaken van agressie en is onafhankelijk van hoe dit precies ervaren wordt. De eerste onderzoeksvraag die hieruit voortvloeide was: *In hoeverre zijn psychologische kenmerken van hulpverleners gerelateerd aan hun blootstelling aan agressie van burgers?*

Op basis van dit theoretische kader werd verondersteld dat psychologische kenmerken het meemaken van agressie op het werk zouden kunnen voorspellen. Het meemaken van agressie op het werk kan, in de andere richting, echter ook psychologische kenmerken voorspellen. Slachtofferschap kan namelijk psychische gevolgen kan hebben, zoals het ontwikkelen van negatieve gevoelens of het krijgen van een hoger risico op een burn-out. Daarom was een van de doelstellingen van dit proefschrift om meer inzicht te geven in de richting van de relatie tussen psychologische kenmerken van hulpverleners en hun agressie-ervaringen op het werk. Dit leidde tot de tweede onderzoeksvraag: *In welke richting(en) zijn psychologische kenmerken van hulpverleners en hun blootstelling aan agressie van burgers gerelateerd?*

In dit proefschrift zijn hulpverleners in drie beroepsgroepen onderzocht. Hoewel alle hulpverleners belangrijk zijn voor de openbare veiligheid en daarnaast werkkenmerken gemeen hebben, is elke beroepsgroep ook uniek. Ze verschillen bijvoorbeeld in het juridische kader waarmee ze werken, de frequentie van het contact met burgers en het aantal werknemers dat aanwezig is in een werksituatie. De vraag was daarom of er tussen de drie onderzochte beroepsgroepen verschillen bestaan voor wat betreft samenhangen tussen situationele en psychologische kenmerken en slachtofferschap op het werk. Eerdere literatuur over dit onderwerp was beperkt en de analyses in dit proefschrift waren daarom verkennend. De derde onderzoeksvraag was: in *hoeverre verschillen relaties tussen kenmerken van hulpverleners en hun blootstelling aan agressie van burgers tussen beroepsgroepen?*

Hoofdstuk één introduceerde ook de verschillende methoden die in dit proefschrift zijn gebruikt. Ten eerste werd een secundaire analyse uitgevoerd met een bestaande dataset met gegevens van werknemers in de publieke sector om de rol van werkkenmerken en verschillen in blootstelling aan agressie op het werk tussen beroepsgroepen te onderzoeken. Ten tweede is een longitudinaal vragenlijstonderzoek met twee meetmomenten onder politiemedewerkers uitgevoerd. Dit werd uitgevoerd met behulp van vignetten met hypothetische werksituaties, om te onderzoeken hoe politiemedewerkers psychologisch tot een reactie komen en hoe dit verband houdt met het meemaken van agressie op het werk. Ten derde zijn interviews gehouden met ambulance-, brandweer- en politiemedewerkers. Deze interviews werden gehouden om te verkennen welke kenmerken zij ervaren als gerelateerd aan blootstelling aan agressie op het werk. Ten slotte is een longitudinaal vragenlijstonderzoek met drie meetmomenten uitgevoerd onder ambulance-, brandweer- en politiemedewerkers. Hiermee kon de rol van psychologische kenmerken bij het meemaken van agressie op het werk over tijd worden onderzocht, alsmede verschillen tussen beroepsgroepen.

Resultaten van de empirische studies

In hoofdstuk twee is onderzocht in hoeverre sociaal-demografische en werkkenmerken verband houden met slachtofferschap van agressie op het werk. Gelegenheidstheorieën geven aan dat deze kenmerken van belang zijn. Daarnaast is in het hoofdstuk onderzocht hoe de relaties tussen deze kenmerken en het meemaken van agressie verschillen tussen de drie beroepsgroepen. Een bestaande dataset van het programma Veilige Publieke Taak van het ministerie van Binnenlandse Zaken en Koninkrijksrelaties van Nederland werd gebruikt om secundaire analyses uit te voeren. Uit deze dataset werden ambulancemedewerkers (N = 264), brandweermedewerkers (N = 255) en politiemedewerkers (N = 296) die in direct contact met burgers werken, geselecteerd voor de analyse. De gegevens omvatten informatie over de sociaal-demografische kenmerken van de hulpverleners en een breed scala aan werkkenmerken.

De resultaten van hoofdstuk twee gaven aan dat politiemedewerkers het vaakst en brandweermedewerkers het minst vaak geweld door burgers meemaakten. Jongere medewerkers en medewerkers die vaker en risicovoller contact hebben, maakten meer geweld op het werk mee. De verwachtingen dat mannen en mensen met minder ervaring of vaardigheden om blootstelling aan agressie te vermijden vaker slachtoffer werden van geweld op het werk dan anderen, werden niet overtuigend ondersteund. De resultaten lieten verder duidelijke verschillen zien tussen soorten hulpdiensten. De relaties tussen kenmerken en slachtofferschap op het werk verschilden en er waren ook verschillen in de verklarende kracht van de modellen. De onderzochte kenmerken verklaarden variaties in het meemaken van geweld op het werk van politiemedewerkers het beste. Daarom zal het voorkomen van geweld op het werk door het aanpakken van deze kenmerken het meest succesvol zijn voor politiemedewerkers. Vooral voor brandweermedewerkers en daarnaast ambulancemedewerkers moet het voorspellen van geweld op het werk echter nog verbeterd worden. Vanwege de verschillen in samenhangen tussen beroepsgroepen, suggereerde dit hoofdstuk ook dat onderzoek naar indicatoren en preventie van geweld op het werk gericht moet zijn op afzonderlijke beroepsgroepen.

Hoofdstuk drie onderzocht of de responsbeslissing en situatie-afhankelijke emoties bijdragen aan de verklaring van verschillen in slachtofferschap van politiemedewerkers. Volgens het model van de sociale informatieverwerking (SIP) (Crick & Dodge, 1994; Dodge, 1986), is een responsbeslissing gebaseerd op hoe mensen een reactie evalueren, hoe goed ze denken dat ze een reactie kunnen uitvoeren (self-efficacy), wat ze denken dat de uitkomst van een reactie zou zijn en welke reactie ze selecteren. Ook wordt gedacht dat situatie-afhankelijke emoties de responsbeslissing beïnvloeden. Voor dit onderzoek werd het eerste meetmoment gebruikt van het longitudinale vragenlijstonderzoek waarin vignetten werden voorgelegd. Politiemedewerkers van vijf voormalige korpsen in Nederland namen deel aan het onderzoek. In de vragenlijsten werd een hypothetische

werksituatie beschreven, waarna de respondenten vragen beantwoordden over drie mogelijke reacties: een meer vijandige, passieve en assertieve reactie. Daarnaast werden vragen gesteld over het meemaken van verbaal geweld, bedreigingen en fysiek geweld in de voorgaande zes maanden.

De resultaten gaven aan dat blootstelling aan verbaal geweld, bedreigingen en fysiek geweld geassocieerd was met enkele kenmerken van de responsbeslissing, maar niet met situatie-afhankelijke emoties. Samen verklaarden de responsbeslissing en de toegevoegde emoties variatie in het ervaren van agressie, bovenop sociaal-demografische en werkkenmerken. Politiemedewerkers die meer negatieve uitkomstverwachtingen hadden van agressieve of assertieve reacties, of die eerder een agressieve dan een passieve of assertieve reactie kozen, gaven aan vaker agressie mee te maken dan andere politiemedewerkers. Er werden echter geen associaties gevonden tussen de responsevaluatie en self-efficacy van elk type respons (agressief, passief of assertief) en het meemaken van agressie.

Hoofdstuk vier onderzocht de richting van de relatie tussen een vijandige responsbeslissing en het meemaken van agressie onder politiemedewerkers. De vijandige responsbeslissing omvat de evaluatie van een meer vijandige reactie, de self-efficacy van deze reactie, de verwachte uitkomst van deze reactie en het selecteren van deze reactie. Dit hoofdstuk gebruikte dezelfde dataset als hoofdstuk drie, maar behandelde de vijandige responsbeslissing als één concept, in tegenstelling tot dat hoofdstuk. Bovendien gebruikte dit hoofdstuk beide meetmomenten van de dataset. De vragenlijsten waren zes maanden na elkaar afgenomen, waardoor de relatie tussen een vijandige reactie en blootstelling aan agressie op het werk in de tijd kon worden onderzocht. Door middel van een cross-lagged panelanalyse kon de richting van de relatie verkend worden. Daarmee kon worden nagegaan of de responsbeslissing in het eerste meetmoment de meegemaakte agressie die gerapporteerd is in het tweede meetmoment voorspelt, of dat de meegemaakte agressie die gerapporteerd is in het eerste meetmoment de responsbeslissing in het tweede meetmoment voorspelt, of de effecten in beide richtingen plaatsvinden.

Cross-lagged panelmodellen waarin beide richtingen opgenomen zijn, passen het beste bij de data, wat betekent dat beide soorten effecten (vijandige responsbeslissing als voorspeller en als gevolg) waarschijnlijk zijn. De resultaten toonden aan dat met name het ervaren van bedreigingen gerelateerd was aan een meer vijandige responsbeslissing ten minste zes maanden later. Voor fysieke agressie was het effect op een vijandigere responsbeslissing zes maanden later marginaal significant. De resultaten geven dus aan dat blootstelling aan agressie, in het bijzonder bedreigingen, een effect kan hebben op de manier waarop politiemedewerkers werken.

In hoofdstuk vijf is onderzocht welke kenmerken mogelijk verband houden met het meemaken van agressie op het werk volgens medewerkers zelf. Voor dit hoofdstuk zijn interviews gehouden met 50 medewerkers van ambulance-, brandweer- en politieorganisaties in Nederland om inzicht te krijgen in hun perspectief op de vraag welke kenmerken verband houden met agressie op het werk. Respondenten waren medewerkers die op straat werken, maar ook supervisors en werknemers die betrokken zijn bij het omgaan met agressie tegen hulpverleners, zoals bij training, registratie of nazorg. Interviews werden geanalyseerd met behulp van open codes in Atlas.ti. Deze open codes werden gecategoriseerd en vergeleken met de literatuur, met als doel kenmerken te identificeren die gerelateerd zijn aan slachtofferschap op het werk, volgens de medewerkers zelf.

Respondenten benoemden zowel situationele als psychologische kenmerken. Met betrekking tot psychologische kenmerken noemden respondenten lagere empathie en minder aanpassing, bijvoorbeeld aan de persoon of situatie, en hogere en lagere dominantie (vergeleken met middelmatige) als kenmerken die mogelijk verband houden met meer blootstelling aan agressie. Daarnaast werden lager zelfvertrouwen en minder grenzen stellen en lagere emotionele veerkracht genoemd.

Hoofdstuk zes onderzocht hoe het meemaken van agressie op het werk door hulpverleners het beste kan worden gemeten en gemodelleerd. Gegevens van de eerste meting van de longitudinale dataset met drie meetmomenten zijn voor dit hoofdstuk gebruikt. De mate waarin 1499 ambulance-, brandweer- en politiemedewerkers in de afgelopen zes maanden verbale agressie, inclusief non-verbale en non-fysieke agressie (zoals onbeleefde gebaren die men maakt), bedreigingen en fysieke agressie had meegemaakt, werd geanalyseerd met behulp van factoranalyses in Mplus. Ook werd onderzocht of informatie over hoe erg men agressie vindt een bestaande index voor het meten van de frequentie van blootstelling aan agressie op het werk verbetert. Daarnaast zijn de relaties tussen deze indexen van het slachtofferschap op het werk en een maat voor het situationele risico op geweld onderzocht.

De resultaten lieten zien dat de frequentie-index het meemaken van agressie op het werk beter meet dan een index die de frequentie en ernst combineert. De factorstructuren van indexen verschilden tussen de drie beroepsgroepen, zowel wat betreft het aantal factoren als de inhoud van factoren. Voor brandweermedewerkers werd het ervaren van agressie op het werk het beste gemeten aan de hand van alleen verbale agressie-items, inclusief enkele non-verbale en non-fysieke agressie-items zoals gebaren (vanaf nu: (non-)verbale agressie). Voor ambulancemedewerkers en politiemedewerkers omvatten de agressie-indexen ook bedreigingen en fysieke agressie-items. Voor politiemedewerkers bestonden de indexen uit twee dimensies ((non-) verbale agressie versus bedreigingen en fysieke agressie). Voor ambulancemedewerkers

bestonden de indices uit één dimensie. Deze analyses toonden dus aan dat zelfs het concept van agressie op het werk inhoudelijk varieert tussen beroepsgroepen. Dit houdt in dat verschillen tussen beroepsgroepen in samenhangen met blootstelling aan agressie op het werk niet direct statistisch kunnen worden vergeleken.

Hoofdstuk zeven onderzocht de relatie tussen meerdere psychologische kenmerken en het meemaken van agressie op het werk, waarbij rekening werd gehouden met sociaal-demografische en situationele kenmerken. Voor dit hoofdstuk is de longitudinale studie met drie meetmomenten gebruikt. Ambulance-, brandweer- en politiemedewerkers hadden een vragenlijst ingevuld tijdens drie meetmomenten met zes maanden tussenposen. Resultaten van de drie beroepsgroepen werden afzonderlijk gepresenteerd.

De resultaten van dit hoofdstuk lieten zien dat enkele psychologische kenmerken nog steeds samenhangen met de blootstelling aan agressie op het werk, als rekening gehouden wordt met situationele kenmerken. Ze laten echter ook zien dat de bijdrage van deze kenmerken in de verklaring van agressie-ervaringen op het werk beperkt is. Onder de drie beroepsgroepen waren de meest consistente resultaten dat negatief affect, dominantie en ongeduld bivariaat gerelateerd waren aan meer agressie-ervaringen. Hulpverleners die meer negatief affect, lagere en hogere dominantie (vergeleken met matige dominantie) en meer ongeduld (als indicator voor agressie) rapporteerden, maakten gemiddeld vaker agressie op het werk mee. De minste steun werd gevonden voor de hypothesen dat lagere empathie, lagere zelfevaluaties en vijandige attributie verband houden met meer blootstelling aan agressie. Bovendien verklaarden sociaal-demografische en werkkenmerken meer variantie van het ervaren van agressie op het werk dan psychologische kenmerken. Ook waren er verschillen tussen de beroepsgroepen in de modellen, hoewel deze verschillen niet statistisch konden worden getest. Variaties in het meemaken van agressie leken bijvoorbeeld het best te worden verklaard door sociaal-demografische, situationele en psychologische kenmerken bij politiemedewerkers, terwijl variaties het slechtst werden verklaard door deze kenmerken bij brandweermedewerkers.

Antwoorden op de onderzoeksvragen

Hoofdstuk acht vatte de resultaten met betrekking tot de onderzoeksvragen samen en bediscussieerde deze. De eerste onderzoeksvraag was: in hoeverre zijn psychologische kenmerken van hulpverleners gerelateerd aan hun blootstelling aan agressie van burgers? Het antwoord van dit proefschrift op deze onderzoeksvraag is dat slechts enkele psychologische kenmerken van hulpverleners gerelateerd zijn aan het meemaken van agressie van burgers. Negatief affect, dominantie en ongeduld waren gerelateerd aan het ervaren van agressie op het werk bij alle groepen hulpverleners, en een vijandige reactie

was gerelateerd aan het ervaren van agressie op het werk onder politiemedewerkers. Sociaal-demografische en werkkenmerken verklaren meer variantie van het meemaken van agressie op het werk dan psychologische kenmerken.

De tweede onderzoeksvraag was: in welke richting(en) zijn psychologische kenmerken van hulpverleners en hun blootstelling aan agressie van burgers gerelateerd? Het antwoord van dit proefschrift op de tweede onderzoeksvraag is dat de relatie tussen psychologische kenmerken en slachtofferschap van hulpverleners twee richtingen op kan werken. De resultaten suggereren dat psychologische kenmerken zowel toekomstig slachtofferschap op het werk kunnen voorspellen, als erdoor kunnen worden voorspeld. Dit werd echter alleen gevonden voor politiemedewerkers. Bovendien werden longitudinale relaties slechts gevonden voor een beperkt aantal mogelijke relaties. Voor politiemedewerkers bleek empathie meer blootstelling aan agressie op het werk te voorspellen. Voor politiemedewerkers bleek bovendien dat blootstelling aan agressie op het werk een meer vijandige toeschrijving en een meer vijandige reactie in de tijd voorspelde. Voor andere kenmerken werden geen cross-lagged relaties gevonden, zoals voor dominantie en negatief affect, terwijl daarvoor wel cross-sectionele relaties werden gevonden. Het was dus niet mogelijk om een richting van deze verbanden vast te stellen. De conclusies over de richting zijn bovendien voorlopig. De cross-lagged panelmodellen die werden gebruikt, kunnen als conservatief worden beschouwd, omdat kenmerken zich binnen zes maanden voldoende moeten ontwikkelen om een relatie te vinden. Dit zou ook kunnen verklaren waarom meer consistente cross lagged-relaties werden gevonden voor kenmerken die verband houden met sociale informatieverwerking, die waarschijnlijk meer veranderlijk zijn dan kenmerken gerelateerd aan de persoonlijkheid. Theoretisch kan echter worden aangenomen dat kenmerken die meer gerelateerd zijn aan de persoonlijkheid voorafgaan aan en niet het gevolg zijn van het meemaken van agressie, omdat ze relatief stabiel zijn.

De derde onderzoeksvraag was: in hoeverre verschillen de relaties tussen kenmerken van hulpverleners en hun blootstelling aan agressie van burgers tussen beroepsgroepen? Het antwoord van dit proefschrift op de derde onderzoeksvraag is ten eerste dat de drie beroepsgroepen verschillen in hoe goed sociaal-demografische en werkcorrelaties variaties in agressie-ervaringen op het werk verklaren. Ten tweede varieert het concept van agressie op het werk zelf tussen de drie groepen hulpverleners. Statistisch vergelijken van samenhangen met het ervaren van agressie op het werk is daarom niet precies mogelijk. Desalniettemin suggereren de resultaten dat de samenhangen en de verklaarde variantie van modellen die blootstelling aan agressie op het werk voorspellen, verschillen tussen de drie beroepsgroepen.

Implicaties van de bevindingen

Hoofdstuk acht besprak ook de implicaties van de bevindingen voor theorie, toekomstig empirisch onderzoek en beleid en praktijk. Theoretisch, specificeren de resultaten welke kenmerken kunnen bijdragen aan slachtofferschap, zij geven een indicatie van de omvang van de bijdrage en zij geven aan in welke contexten relaties wel en niet gelden. Over het algemeen bevestigt dit proefschrift de veronderstelling van de gebruikte theorieën dat kenmerken van het potentiele slachtoffer kunnen bijdragen aan slachtofferschap. Een aantal psychologische kenmerken van hulpverleners in verschillende beroepsgroepen bleken slachtofferschap onder hulpverleners mede te verklaren, wat suggereert dat deze kenmerken bijdragen aan de interactie met burgers. Terwijl de elementen van gelegenheidstheorieën (gemotiveerde dader, gebrek aan toezicht en geschikt doelwit) ertoe doen, is ook van belang hoe de gelegenheid 'tot uitvoering komt', met een rol voor het slachtoffer in interactie met de dader in een bepaalde context. In die zin zijn gelegenheidstheorieën te beperkt. Opvattingen over de bijdrage van slachtoffers aan slachtofferschap worden dus ondersteund, hoewel de bijdrage van psychologische kenmerken beperkt lijkt te zijn.

Bovendien suggereren de resultaten in dit proefschrift dat de mate waarin mensen 'vatbaar' zijn om slachtoffer te worden, afhankelijk is van de context, in dit geval de beroepsgroep waartoe men behoort. Dit is belangrijk omdat de interactie tussen psychologische vatbaarheid en de context slechts beperkt werd uitgewerkt in bestaande theorieën over slachtofferschap. Het is misschien niet nodig om afzonderlijke theorieën te ontwikkelen voor afzonderlijke contexten, maar de resultaten van dit proefschrift geven wel aan dat het belang van elementen van theorieën afhankelijk kan zijn van de context. De resultaten hebben ook aangetoond dat elementen van de sociale informatieverwerkingstheorie relevant kunnen zijn voor agressie tegen de politie, ook al is de theorie oorspronkelijk ontwikkeld voor gedrag onder kinderen.

Met betrekking tot toekomstig empirisch onderzoek bieden de resultaten van het proefschrift suggesties voor methodologische verbeteringen, voor alternatieve methoden en voor nieuwe vragen die in toekomstig onderzoek moeten worden beantwoord. Een methodologische aanbeveling is dat toekomstig onderzoek gericht kan zijn op de frequentie van blootstelling aan agressie op het werk, zonder de ernst van slachtofferschap in het meetinstrument op te nemen. Bovendien moet toekomstig onderzoek betrekking hebben op afzonderlijke beroepsgroepen, aangezien de resultaten aangeven dat het concept van blootstelling aan agressie op het werk verschilde tussen beroepsgroepen. Een optie voor toekomstig onderzoek is om psychologische kenmerken op een impliciete manier te bestuderen, in plaats van expliciete vragen te stellen. Dit kan de sociale wenselijkheid in antwoorden verminderen en de common method bias, een mogelijke overschatting van relaties als deze op dezelfde wijze en gelijktijdig gemeten

zijn, voorkomen. Dagboekstudies of systematisch observationeel onderzoek kunnen bovendien meer inzicht bieden in de richting van de relatie. Toekomstige studies kunnen ook aanvullende psychologische kenmerken en hun relaties met het ervaren van agressie op het werk onder hulpverleners onderzoeken, zoals sensatie-zoeken en zelfcontrole. Voor brandweermedewerkers, voor wie blootstelling aan agressie grotendeels onverklaard blijft in dit proefschrift, kan mogelijk ook de rol van teamkenmerken in toekomstig onderzoek worden onderzocht. Bovendien kan het in alle beroepsgroepen belangrijk zijn om te onderzoeken hoe relaties tussen psychologische kenmerken en het meemaken van agressie afhangen van andere kenmerken, zoals de regio of precieze werktaak.

Voor wat betreft beleid en praktijk lijkt het voorbarig om op basis van de resultaten krachtige en concrete aanbevelingen te ontwikkelen. Het blijft belangrijk om enkele van de relaties verder te bestuderen, en met name de richting tussen relaties. Het blijkt op basis van de resultaten wel aan te bevelen om mogelijkheden te verkennen voor interventies die betrekking hebben op situationele kenmerken. Voorbeelden zijn het samenwerken met meer werknemers tegelijk en het informeren van burgers (mogelijke daders) over de hulpdiensten. De resultaten suggereren ook dat elke beroepsgroep zou kunnen profiteren van zijn eigen beleid met betrekking tot agressie en geweld. Bovendien kan het nuttig zijn om een lager negatief effect, een optimaal niveau van dominantie en een niet-agressieve responsselectie te trainen. Trainingsprogramma's moeten wel worden geëvalueerd met betrekking tot het effect op het verminderen van agressie op het werk en op mogelijke bijwerkingen. Psychologische kenmerken zouden in de toekomst ook in selectie kunnen worden gebruikt, maar dat is op dit moment nog voorbarig. Tevens kan nazorg aandacht hebben voor een veranderde vijandige responsbelissing, al kan een wijziging hierin zowel gunstig als nadelig zijn, omdat dit kan betekenen dat men leert dat soms meer vijandig reageren nodig is om agressie te voorkomen, als het ware een leereffect, of dat men meer onnodig vijandig gaat reageren na het meemaken van agressie. In nazorg kan ook geëvalueerd worden in welke mate hulpverleners hun cognitieve of persoonlijkheidskenmerken veranderen als gevolg van bepaalde werksituaties. Ten slotte zouden registraties van blootstelling aan agressie op het werk binnen de organisaties meer inzicht in het fenomeen in de toekomst kunnen bieden, voor zowel organisaties als onderzoekers, vooral als organisaties dit op dezelfde manier en met vergelijkbare communicatie naar werknemers doen.

Slotopmerkingen

Resumerend: dit proefschrift heeft bijgedragen aan de literatuur door zich te concentreren op psychologische kenmerken van de hulpverlener, een longitudinaal ontwerp te gebruiken en verschillen tussen drie beroepsgroepen in het meemaken van agressie

op het werk te onderzoeken. Het proefschrift heeft aangetoond dat psychologische kenmerken bijdragen aan het verklaren van verschillen in agressie-ervaringen op het werk, maar slechts in beperkte mate. Daarnaast werden er duidelijke verschillen gevonden tussen de drie beroepsgroepen, zowel in het concept van agressie zelf als in de samenhangen met het meemaken van agressie op het werk. Door meer kennis te vergaren over blootstelling aan agressie op het werk, kan agressie op het werk effectiever worden aangepakt, wat niet alleen werknemers, maar ook organisaties en de samenleving in het algemeen ten goede kan komen.

Curriculum Vitae and portfolio of author

Lisa van Reemst was born on 8 March 1987 in Utrecht. She received her high school ('gymnasium') diploma in 2005 from the Werkplaats Kindergemeenschap in Bilthoven. After spending time abroad, she studied Psychology, with a specialisation in Social Psychology at Utrecht University. Lisa received her bachelor's degree in Psychology in 2009. In 2009-2010 she did an internship and wrote her master thesis at the National Centre in HIV Social Research (now: Centre for Social Research in Health) of the University of New South Wales in Sydney, Australia. She received her master's degree in Social Psychology (cum laude) from Utrecht University in 2010.

Thereafter, Lisa was employed by the Faculty of Social Science of Utrecht University. She soon combined this with the position of academic (junior) researcher at the Criminology department of Erasmus School of Law, Erasmus University Rotterdam, and in the summer of 2011, she became a fulltime academic (junior) researcher and teacher at Erasmus School of Law, until December 2013. During this time, she co-authored two successful grant proposals, and contributed to three externally funded research projects: Violence against the police (Politie & Wetenschap), Risk factors for repeat victimisation (WODC, Ministry of Safety and Justice), and Repeat victimisation of people with a public task (Veilige Publieke Taak, Ministry of the Interior and Kingdom Relations).

In 2013, Lisa wrote a PhD research proposal, and she applied for and was granted a PhD position at the Erasmus Graduate School of Law. Her PhD project was supervised by dr. Tamar Fischer, prof. dr. Frank Weerman and prof. dr. Henk van de Bunt. In addition to her PhD research, Lisa continued lecturing in and coordinating several courses within the Erasmus School of Law education, attended national and international conferences, published other publications and co-authored a successful grant proposal. Furthermore, she is a member of the editorial board of the Tijdschrift voor Criminologie, and was responsible for arranging book reviews and chronicles, since 2016, she is a member of the Education Committee of the Bachelor and Master in Criminology since 2018, and she is a member of the board of the Nederlandse Vereniging voor Criminologie since 2018.

Lisa is currently working as an Assistant Professor at the Criminology department of the Erasmus School of Law and as a Postdoctoral Researcher at the Netherlands Institute for the Study of Crime and Law Enforcement (NSCR).