Self-regulation strategies of emergency care practitioners

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SUMMARY

Emergency care practitioners (ECPs) are daily exposed to highly arousing and extremely traumatising medical emergencies including road accidents, assaults, and shootings (Erasmus & Fourie, 2008). These incidents present them with the reality of physical, emotional and relational impacts, as well as realities that impact on their own personal sense of safety. In addition to sensory overload, ECPs' assumptions about the world, meaning and the self could thus be seriously challenged. Intense emotional reactions, if unregulated, may interfere with the ability to think rationally and act purposefully (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003). ECPs therefore need to be able to regulate their thoughts and emotions, need to act purposefully, must be able to stabilise emergency situations as well as act responsibly and efficiently. Self-regulation involves deliberately altering or overriding one's unregulated responses (Baumeister, Vohs, & Tice, 2007; Muraven & Baumeister, 2000) and includes exerting control over one's actions and inner states so as to focus them into line with meaningful, purposeful outcomes and standards such as goals, values, and expectations (Carver, 2004).

As research data on this topic are nearly non-existent in the South-African context, the study aimed to explore the following: (i) what are the most important thoughts and emotions ECPs experience as a result of work-related exposure to human emergencies?; (ii) what are the self-regulation strategies ECPs apply as a result of work-related exposure to human emergencies? (iii) what are the perceived cause-effect relations between these thoughts, emotions and self-regulation strategies of ECPs?; and (iv) how could these perceived relationships be developed in a hypothetical model of self-regulation for ECPs?

The aim of this study was to explore the self-regulation strategies emergency care practitioners apply in relation to their high risk job context. A purposive sample of 15 emergency care practitioners took part in the study. Interactive Qualitative Analysis (IQA) was used to generate and analyse data. Seven themes were identified, namely i) be ready; ii) job satisfaction; iii) feeling uncertain and anxious; iv) self-coping strategies; v) rational and clear thinking; vi) formal debriefing and vii) feeling frustrated and angry. Based on the participant's perception of the relation between

these themes, a hypothetical cause-effect model was constructed, explaining 86.76% of variance in the data.

The model shows that participants experience strong negative emotions like uncertainty, anxiety, frustration and anger in relation to the risks and danger of their job, but these emotions also initiate the process of self-regulation. Carver and Scheier (2009) indicate that the purpose of emotions is to serve as part of a monitor feedback loop. When becoming aware of emotions, the possibility of reprioritising goals emerges. Participants in this study use knowledge and skills from formal debriefing sessions to reprioritise, apply learnt skills and to think more rationally by focussing on the task at hand and by blocking out distracting emotional responses. This may eventually end in job satisfaction, or result in the application of different constructive and destructive coping strategies that feeds back into the self-regulatory process. Rational thinking may result in denying and suppressing emotions in a way that is effective in the short term only. This causes the resurfacing of emotions that may interfere with effective job execution.

The main contribution of this study is to put forward a theoretical model of how self-regulation unfolds within a specific group of ECPs, as well as the advantages and challenges of their self-regulatory strategies. It illustrates the complexity of human self-regulation, specifically in a high risk job environment. The most important limitation of the study is that no individual interviews with participants could be conducted due to practical constraints. As a result, some richness of data may have been lost and results can subsequently not be generalised to other groups of ECPs. The study emphasizes the need for further research in the self-regulatory strategies of ECPs to be able to provide them with better training.

OPSOMMING

Nooddienspraktisyns (NDPs) word op 'n daaglikse basis blootgestel aan hoogs ontstellende en traumatiese mediese noodgevalle soos motorongelukke, aanrandings en skietwonde (Erasmus & Fourie, 2008). Hierdie voorvalle konfronteer hulle met die realiteite van fisiese-, emosionele- en verhoudingsimpakte, asook met werklikhede wat 'n impak het op hulle eie persoonlike gevoel van veiligheid. Behalwe vir sensoriese oorlading kan NDPs se aannames rakende die wêreld, betekenis en die self ernstig uitgedaag word. Ongereguleerde intense emosionele reaksies kan inmeng met die vermoë om rasioneel te dink en doelgerig op te tree (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003). Dus is dit nodig vir NDPs om hulle gedagtes en emosies te reguleer, om doelgerig op te tree, om noodgevalle te stabiliseer, asook om verantwoordelik en effektief op te tree. Selfregulering behels die doelbewuste verandering of oorheersing van ongereguleerde reaksies (Baumeister, Vohs, & Tice, 2007; Muraven & Baumeister, 2000) en sluit in die uitoefening van beheer oor optredes en innerlike toestande om dit te fokus in ooreenstemming met sinvolle, doelgerigte uitkomste en standaarde, soos doelwitte, waardes en verwagtinge (Carver, 2004).

Aangesien navorsingsdata rakende die onderwerp skaars is in die Suid-Afrikaanse konteks, het hierdie studie beoog om die volgende te verken: (i) wat is die belangrikste denke en emosies wat NDPs ervaar as gevolg van werkverwante blootstelling aan menslike noodgevalle?; (ii) wat is die selfreguleringsstrategieë wat NDPs toepas as gevolg van werkverwante blootstelling aan menslike noodgevalle?; (iii) wat is die waargenome oorsaak-gevolg verhoudings tussen die denke, emosies en selfreguleringsstrategieë van NDPs?; en (iv) hoe kan die waargenome verhoudings ontwikkel word in 'n hipotetiese model van selfregulering vir NDPs?

Die doel van hierdie studie was om die selfreguleringsstrategieë wat nooddienspraktisyns toepas in verband met hulle hoë-risiko werkskonteks te verken. 'n Doelgerigte steekproef van 15 NDPs het deelgeneem aan die studie. Interaktiewe kwalitatiewe ontleding is gebruik om data te genereer en te ontleed. Sewe temas is identifiseer, naamlik (i) om gereed te wees; (ii) werksbevrediging; (iii) onsekerheid en angstigheid; (iv) self-hanteringsstrategieë; (v) rasionele en helder denke; (vi) formele ontlonting en (vii) frustrasie en woede. 'n Hipotetiese oorsaak-gevolg model is

opgestel op grond van deelnemers se persepsie van die verbande tussen die temas, en hierdie model het 86.76% van die variansie in die data verklaar.

Die model wys dat deelnemers sterk negatiewe emosies ervaar met betrekking tot die risiko's en gevare van hulle werk, soos onsekerheid, angstigheid, frustrasie en woede, maar die emosies inisieer ook die proses van selfregulering. Carver en Scheier (2009) dui aan dat die doel van emosie is om te dien as deel van 'n monitor- en terugvoer kringloop. Saam met die bewustheid van emosies kom die moontlikheid van die herprioritisering van doelwitte. Deelnemers in hierdie studie gebruik kennis en vaardighede van formele ontlonting sessies om te herprioritiseer, om aangeleerde vaardighede toe te pas, en om meer rasioneel te dink deur te fokus op die taak op hande en deur afleidende emosionele reaksies te blokkeer. Dit kan uiteindelik lei tot werksbevrediging, of tot die toepassing van verskillende konstruktiewe en destruktiewe hanteringstrategieë wat terugvoer in die selfreguleringsproses. Rasionele denke mag lei tot ontkenning en onderdrukking van emosies op 'n manier wat oor die kort termyn effektief is. Dit veroorsaak die hertoetrede van emosies wat 'n hindernis kan wees vir effektiewe werksuitvoering.

Die hoof bydrae van hierdie studie is om 'n teoretiese model voor te stel rakende hoe selfregulering geskied binne 'n sekere groep NDPs, en om die voordele en uitdagings van hulle selfreguleringsstrategieë te ondersoek. Dit illustreer die kompleksiteit van menslike selfregulering, spesifiek in 'n hoë risiko werksomgewing. Die belangrikste beperking van die studie is dat geen individuele onderhoude met deelnemers gevoer kon word nie weens praktiese beperkinge. As gevolg daarvan het 'n mate van rykheid van data verlore gegaan, dus kan resultate nie veralgemeen word tot ander groepe NDPs nie. Die studie beklemtoon die behoefte vir verdere navorsing rakende die selfregulasiestrategieë van NDPs ten einde hulle beter op te lei.

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INTRODUCTION

Format of article

This mini-dissertation is part of the requirements for the completion of a Master's degree in Clinical Psychology. It has been prepared according to the article format regulations of the North-West University.

Journal: *Health SA Gesondheid*

PERMISSION TO SUBMIT ARTICLE FOR EXAMINATION PURPOSES

I, the study leader of this study, hereby declare that the article entitled: *Self-regulation of emergency care practitioners*, written by Wilme Steenekamp, reflects the research done about the subject.

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_____

Prof Karel Botha

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LITERATURE REVIEW

Introduction

This section presents a literature review on self-regulation to provide an overview of this interesting psychological strength. Different definitions of self-regulation and different models of how self-regulation strategies are applied to achieve different outcomes are examined. A brief conclusion and application to the article is also discussed.

Self-regulation

Defining self-regulation

Self-regulation is a dynamic process humans apply to alter their behaviour (Baumeister & Vohs, 2007). It is a process needed to set desirable goals, execute specific behaviour to attain these goals and to flexibly adjust to multiple challenges (Muraven & Baumeister, 2000). It is a complex, dynamic process that involves modulation of specifically emotions, thoughts and behaviours. Behncke (2002) describes self-regulation as a process that includes basic volitional factors of goal setting, self-monitoring, activation and use of goals, discrepancy detection and implementation, self-evaluation, self-consequation, self-efficacy, meta-skills, boundary conditions, and self-regulation failure. Maes and Gebhardt (2000, p. 345) define self-regulation as "a sequence of action and/or steering processes intended to attain a personal goal".

According to Griffin and Moorhead (2007), self-regulation refers to a person's capacity to balance anxiety, fear and anger so that these do not overly interfere with getting things accomplished. Baumeister and Vohs (2011) further describe it as the ability to attain, maintain and change one's level of arousal appropriately for a task or situation, thus the ability to control one's emotions and one's social interactions within the process of goal formulation and goal execution. It is therefore not surprising that Sokol and Müller (2007) view self-regulation as imperative for autonomic and adjustable psychological functioning.

Self-regulation includes regulation of thoughts, of motor behaviour, interpersonal behaviour and emotions. It sometimes implies inhibition (refraining from) and sometimes initiation of behaviour (deliberately doing something) (Muraven & Baumeister, 2000). It also involves deliberately altering or overriding one's unregulated responses (Baumeister, Vohs, & Tice, 2007) and emphasises exerting control over the individual's actions and inner states so as to bring them in line with meaningful, purposeful outcomes and standards such as goals, values, and expectations (Carver, 2004).

Some specific skills have been identified as being most valuable for emotional regulation, for example self-awareness (the ability to identify one's own emotions), self-management (the ability to modulate one's emotions), social awareness (the ability to understand others' emotions) and relationship management (the ability to co-regulate and manage interpersonal conflicts) (Goleman, 2004). For regulation of thoughts, metacognition is needed to evaluate thinking processes. Thinking errors, destructive thoughts, unrealistic thoughts or irrational thoughts can be replaced with thoughts that are more congruent with reaching pre-set goals. For regulation of motor behaviour, neurological feedback and adjustment rectifies movement to attain motoric goal achievement. For interpersonal behaviour, regulation of social competency skills enables the person to reach pre-set goals (Carver, 2004).

It is clear then that self-regulation reflects the complex ability to monitor emotions, thoughts and states of arousal, ensuring that it is at the appropriate level for the task at hand and to adjust behaviour to attain goals.

Self-regulation as an executive function

One has to look at the executive functions of the brain to fully understand self-regulation, these concepts are closely linked. Executive functions are a set of processes performed by the brain to regulate one's behaviour. Three main groups of executive functions are described, i.e. updating (monitoring, adding to and deleting working memory contents / updating of relevant, readily accessible information), mental set shifting (shifting attention in a flexible manner between tasks) and inhibition (deliberate overriding of dominant impulses) (Miyake & Friedman, 2012).

Self-regulation appears to be intertwined with the ability to apply the executive functions of the brain to attend to a task at hand. For the process of self-regulation. The executive functions of the brain have to be applied for the process of self-regulation (Posner, 2010). By applying the executive functions, the person exerts self-control, which provides a balance between inhibiting and activating behaviour. The optimal application of executive functions is developed from an early childhood up to the age of around 30, is referred to as effortful control (e.g., being able to inhibit one's impulses or ignore distractions) and is a critical element of self-regulation.

It is therefore clear that self-regulation and application of executive functions are processes and not a single event. These events can be viewed from different perspectives, for example from the perspective of phases, different modes and optimal versus sub-optimal self-regulation, as will be discussed in the ensuing sections of this literature review.

Phases of self-regulation

Zimmerman (2000) describes self-regulation as a cyclical process starting with a forethought phase (task analysis, goal setting, strategic planning, self-motivation beliefs, self-efficacy, outcome expectations, intrinsic value / interest, goal orientation), followed by a goal performance phase (self-control, imagery, self-instruction, attention focusing, task strategies, self-observation, self-recording, self-experimentation) and concluding with a self-reflection phase (self-judgement and - evaluation, causal attribution, self-reaction, self-satisfaction / affect and defence or adaptation). Zimmerman continues by describing goals in this context as attaining desirable outcomes, realising dreams, solving problems, achieving set upon outcomes (e.g. academic / career etc.), completing tasks and dealing with crises. Goals can also be things the individual does not want to do, e.g. not eating unhealthy food, not acting out when triggered.

Goal establishment phase

Goal-establishment or forethought may be regarded as a pre-regulation step, but is very important in the process of self-regulation, as it directs the whole process of persecution of the goal, putting it into action and giving it direction. Self-efficacy beliefs (Bandura & Locke, 2003) and intrinsic motivation (Ryan & Deci, 2000) are

some of the factors that play a role in this phase as they set the stage for successfully attaining goals.

Performance phase

In the next phase, that of performance, goal implementation or execution, the abilities of focussing attention and regulating distraction, as well as self-monitoring (Bandura, 2001) and self-control ("the capacity for restraining or overriding one's own responses", Baumeister, Vohs & Tice, 2007, p. 351), are applied to reach desired goals. The individual will check in different ways if they are still moving in the direction of the desired goal. During self-monitoring, keeping on track in the direction of reaching a goal and regulating emotions, thoughts and behaviour, continuous feedback about the process is available – feeling different emotions, getting feedback in the responses from others, as well as physical reactions of the individual's body. Self-control, on the other hand, refers to the ability to override desires, urges, impulses or temptations that are in conflict with reaching other goals (Hofmann, Baumeister, Forster, & Vohs, 2012).

Self-reflection and change phase

The next phase of self-reflection becomes apparent when a discrepancy is anticipated or occurs between the set goals. One of the ways that people become aware of the fact that they are not moving in the right direction is that they become aware of emotional discomfort. This discomfort may indicate that reaching the goal may be jeopardised and that changes need to be made to the goal plan. When the individual then notices some deviation from the goal plan, that person should then be able to apply different changes to get back on track in the direction of successful goal attainment. Flexibility is now needed to either promote positive outcomes or to prevent negative outcomes. Effective adjustment is achieved when a state of stability and sense of self is achieved after exposure to a life changing event or when flexible adjustment could be applied and the goal was reached. A model that explains how flexibility between two different types of self-regulation is applied, called the dual process model of self-regulation (Brandtstädter & Rothermund, 2002), is discussed later (see next section).

Types of self-regulation

Another way of examining self-regulation is by distinguishing types of self-regulation. A qualitative distinction between two types of self-regulation is that of autonomous self-regulation and controlled self-regulation (Moller, Deci, & Ryan, 2006). Autonomous self-regulation is characterised by the person feeling as though the specific behaviour, emotion, or cognition is being regulated for reasons that the person endorses, values and finds meaningful. Controlled self-regulation in contrast, is characterised by feelings of internal or external pressure that conflict with what the person would otherwise choose (e.g., avoiding shame, interpersonal rejection, or physical punishment). They (Moller et al) continue to argue that controlled self-regulation is more difficult and more depleting of these limited self-regulatory resources because it takes more effort to maintain, whereas autonomous self-regulation is driven by more automatic mechanisms, as mentioned above, and is therefore less depleting of self-regulation resources.

A dual process model of self-regulation

Brandtstädter and Rothermund (2002, p. 117-150) proposed a model in which two different modes of reducing discrepancies between desired and factual situations or outcomes are identifiable. These modes are:

i) The assimilative mode – this mode of behaviour is characterised by intentional, selective and self-regulatory behaviour with the aim of adjusting to changes. This is done to ensure stable adherence to plans to stay on a specific course and attain specific pre-set goals. It is driven by internal processes such as strategic thinking, self-perfection, self-cultivation and expanding personal competencies with the aim of maintaining desired levels of functioning. It relies on a tenacious perseverance to strive for reaching specific goals. When these internal resources have to be applied intensively for an extended period of time, it becomes a more taxing process and the internal resources' limits can be reached. Reserve capacities are then mobilised and during this late phase of assimilation, optimising of scarce internal resources and compensation for functional deficits are characteristic. At this stage, goals may no longer be achievable (due to limiting returns on these sub-optimal efforts). Feelings of helplessness and depression may become visible at this stage. Usually, the accommodation mode is what follows.

ii) The accommodation mode – this mode of behaviour is characterised by a focus on adjusting goals and ambitions (rather than enhancing resources to attain pre-set goals, as with the assimilation mode) to the resources available. During this phase disengagement from blocked goals, downgrading of ambitions, rescaling of set (self-) standards and shifting of perspectives are common. It is therefore seen in externally driven behaviour and aims to redirect the person's behaviour to explore alternative goals that may well be attainable or more feasible with the resources available.

According to Brandtstädter and Rothermund (2002) assimilation and accommodation function in *antagonistic*, but at the same time *complementary* ways. They can and should therefore mutually complement and support each other during coping with adverse situations. Effective self-regulation is dependent on adaptive flexibility, which Brandtstädter and Rothermund (2002, p.121) describe as "hinging on the interplay between these assimilative and accommodative processes".

Optimal / healthy self-regulation

It is not surprising that self-regulation have been proven to play a big role in success or failure in different situations that impact on the psychosocial well-being of individuals and society (Baumeister & Vohs, 2007; Worden et al., 1989). These authors argue that self-regulation increases an individual's ability to be flexible in behaviour and thus increases the person's ability to adapt and adjust to situational and societal demands often encountered. Self-regulation also places the person's social conscience over personal / selfish impulses, allowing people to do what is right and not just what they want to do and helps the individual to focus on long-term gains, rather than on short-term benefits. Baumeister and Vohs (2007) found that individuals with good self-regulatory skills more often have success in school, work, and relationships and have more positive mental health in general.

According to Baumeister and Vohs (2007), behaviours are changed in accordance to some standards, ideals or goals either stemming from the person's internal or societal (external) expectations. It appears that the quality of these actions are dependent on the person's motives and beliefs (Zimmerman, 2000) and that continuous self-regulation implies the pursuit of several different ideals, standards and goals (Shah & Kruglanski, 2000).

Successful self-regulation is dependent on the ability of the individual to utilise skills and resources to act pro-actively and to deal with obstacles and challenges that may become evident and contexts that change (Zimmerman, 2000). Individuals who are good self-regulators are those who can optimally manage the circumstances and impulses that obstruct goal attainment. They are more able to formulate clear goals, are more aware and mindful, can detect discrepancies between goal attainment and their position, they can anticipate possible discrepancies, can learn from previous experiences, can adjust flexibly to discrepancies. They have been found to be happier, healthier, more adjustable in inter-personal relationships and more productive (Tangney, Baumeister, & Boone, 2004).

Sub-optimal self-regulation

In contrast, insufficient self-regulation or ineffective regulation may lead to destructive behaviour, i.e. violent behaviour, gambling, abuse of substances (Quinn & Fromme, 2010), addiction, different types of eating disorders, high risk sexual behaviour leading to unwanted pregnancy and/or sexually transmitted diseases, (Pretorius, 2008), crime, anger management problems, academic underachievement, debt and bankruptcy or attention-deficit/hyperactivity disorder [ADHD] (Baumeister & Bushman, 2008). In addition, people who have poor self-regulatory skills often have more severe relational problems, career problems, and may even break the law. Sayette (2004) subdivides self-regulation failure into two categories: under-regulation and mis-regulation. Under-regulation refers to a failure to control oneself, whereas mis-regulation deals with regulation in a manner that does not bring about the desired goal. Sub-optimal self-regulation includes setting unrealistic or unattainable goals, inability to persevere and follow-through with goals, inability to evaluate completion of goals, procrastination and inflexibility (Sayette, 2004).

The importance of self-regulation in coping with stressful jobs

When it comes to self-regulation while performing duties in a job, several concepts have been identified as key (Porath & Bateman, 2006). Examples of these are feedback seeking (means of gathering information about how to develop one's skills and master tasks), pro-active behaviour (actions that could lead to constructive change, rather than adaption to circumstances), emotional control (keeping

performance anxiety, as well as other negative emotional influences from interfering with task performance), social competence (social skills used to interact with others effectively) and goal orientation (developing competence, new skills, mastering new situations and demonstrating and validating competence).

The assimilation and accommodation approach to pursuit stable goals of Brandtstädter and Rothermund (2002) gives more valuable information on this, stating that two critical parameters are of importance: firstly, the person's perceived control over the goal and secondly, the personal value or importance of the goal.

Also of importance, is an additional theoretical approach of self-regulation that compares it to muscle strength and contends that applying self-control and resisting temptation makes demands on a limited but renewable regulatory resource (Baumeister, Vohs, & Tice, 2007; Muraven & Baumeister, 2000; Inzlicht & Schmeichel, 2012; Kurzban, Duckworth, Kable, & Myers, 2013). According to these researchers, if an individual has to apply self-regulation (especially controlled) for an extended period of time, it is as if this ability tires (like a muscle that has been exercised for a long period of time). It can recover after a period of rest, but has a decreased ability to perform optimally until the ability has been replenished. Until regulatory capacity is restored, exerting restraint in one setting (e.g., not reacting on anxiety and uncertainty) can impair self-regulation in another (e.g., persistence in staying calm under taxing circumstances), even when the to-be-controlled activities are quite distinct (Baumeister, Bratslavsky, Muraven, & Tice, 1998).

The work duties of emergency care practitioners (ECP) are widely regarded as stressful in nature (Beaton, Murphy, Pike, & Corneil, 1997). Vettor and Kosinksi (2000) say that ECPs are often confronted with extremely demanding and stressful situations, day and night. They continue to argue that ECPs constantly face continuous stressors such as having to deal with shift work, variable availability of resources, dangerous work environments, as well as human tragedy, injury, mutilation and death. Frank and Ovens (2002) state that ECPs work can be both rewarding and demanding as these workers have little control over what they have to deal with and, in these circumstances often have to make life or death decisions under pressure very quickly.

Additionally, if one considers that ECPs work long shifts under stressful circumstances and that their self-regulatory capacity is often under continuous strain, this characteristic may become problematic if it is not continuously replenished.

Conclusion

The purpose of this literature overview was to set up a base of information regarding self-regulation, specifically of ECPs. It has been explained that SR is a complex process, involving different phases of planning, guiding and monitoring one's own thoughts, emotions and behaviour to be able to adjust to optimise goal attainability. Self-regulation includes the regulation of cognition, emotion, physical and interpersonal behaviour.

As a medical practitioner working together closely with ECPs, I became aware that they are repeatedly exposed to high intensity, fast-changing situations in which they have to make numerous (often life or death) decisions while they have to remain goal orientated. I also observed that they seldom seek help to deal with the emotional trauma they may experience and consequently are at risk of developing destructive behaviour or even mental conditions over periods of time. The researcher was interested in exploring their self-regulatory strategies as there is a lack of research regarding this in a South African context.

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Self-regulation strategies of emergency care practitioners

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ABSTRACT

The aim of this study was to explore the self-regulation strategies emergency care practitioners apply in relation to their high-risk job context. A purposive sample of 15 emergency care practitioners took part in the study. Interactive Qualitative Analysis was used to generate and analyse data. Seven themes were identified and a hypothetical cause-effect model, explaining 86.76% of variance in the data, was constructed. The model shows that participants experience strong negative emotions in relation to the risks and danger of their job, but these also initiate a process of self-regulation. Subsequently, they use knowledge and skills from formal debriefing sessions to reprioritise, apply learnt skills and to think more rational by focussing on the task at hand, and by blocking out distracting emotional responses. This may eventually end in job satisfaction, or result in the application of coping strategies that feeds back into the self-regulatory process. It is argued that rational thinking may result in denying and suppressing emotions in a way that is effective in the short term only. This causes the resurfacing of emotions that may interfere with effective job execution. The implications of this as well as the limitations of the study are discussed, while recommendations for further research are made.

Key words: emergency care practitioners, trauma workers, paramedics, post-traumatic stress disorder, self-regulation, coping strategies

Self-regulation strategies of Emergency Care practitioners

Key words: emergency care practitioners, trauma workers, paramedics, post-traumatic stress disorder, self-regulation, coping strategies

INTRODUCTION

This study aims to explore the self-regulation strategies of emergency care practitioners (ECPs) in the process of executing their duties as first responders to emergency situations of human trauma.

The typical work of ECPs consists of daily exposure to human trauma and medical emergencies, for example road accidents, drowning and near-drowning, cardio-vascular incidents, assaults, and shootings – incidents that are usually emotionally highly arousing, and extremely traumatising (Erasmus & Fourie, 2008). These incidents present ECPs not only with the reality of physical vulnerability, but also with emotional and relational impacts, as well as realities that impact on their own personal sense of safety. Not only are ECPs exposed to death and the dying of patients, they are often being confronted with high risk situations in which their own lives are at stake (Craggs & Blaber, 2008). Examples of this would include the dangers of extracting people from motor vehicles after accidents, having to rush to scenes of trauma at high speed, having to deal with aggressive or intoxicated members of the public, and being exposed to transmittable diseases. They also often have to make complex, high risk judgements on the spur of the moment and adjust appropriately as the situation abruptly changes (Patri, Pietrantoni, & Cicognani, 2011).

In South Africa, in comparison to developed countries, ECPs generally have to deal with relatively poor financial-, infrastructure- as well as human resources, long working hours and social challenges due to the interaction of many different culture groups. The country also has a high incidence of physical trauma, especially due to road accidents, violent crimes and physical abuse (Seedat et al. 2009; Norman, Matzopoulos, Groenewald & Bradshaw, 2007) and transmittable diseases.

In the North West Province, ECPs work in shifts, based on their qualifications, to cover the full 24 hours of each day (Anon., 2014). At least one Advanced Life Support (ALS) Paramedic is on duty in a response car that is called out to serious or potentially life threatening emergency situations. One Basic Ambulance Assistant (BAA) and one Intermediate Life Support (ILS) ECP work in an ambulance. Five BAA and Five ILS ECPs are on duty per shift and are called out to minor incidents of trauma, patients who need to be transported by ambulance (both non-life threatening), as well as to the serious / life threatening incidents of trauma to assist the ALS paramedics. In summary, BAA and ILS ECPs are exposed to a high volume of less serious scenes of trauma, as well as to serious scenes of trauma. ALS ECPs are exposed to high volumes of serious scenes of trauma, but at a less constant level. These different categories of ECPs work together as a team at the scenes of trauma, each performing the different responsibilities that they are trained to deal with.

At the scene of human trauma, individuals are often exposed to experiences very different from what they have been exposed to before, and they may experience sensory overload. The exposure and perception of what they are experiencing leads to a complex set of emotional and physiological reactions. Cohen, Janicki-Deverts, and Miller (2007) state that individuals experience stress when they have the perception that the environment demands or taxes or exceeds their adaptive ability. James and Gilliland (2013) describe such a situation as a crisis and argues that it contains a human dilemma in the form of both a danger (it overwhelms the individual to the extent that it may even cause psychopathology if not dealt with effectively), as well as an opportunity (the individual is placed in a position that he / she can make a difference to the outcome of the situation).

The exposed individuals perceive, integrate and then have to formulate plans to deal with whatever they have been exposed to. Intense emotional reactions have an effect on the behaviour of the individual in the situation. This process of perception, integration of perceptions and regulation of emotions should preferably enable the individual to behave in such a manner that the most constructive, effective, purposeful and beneficial outcome can be achieved. Inappropriate, extreme, unchecked or emotional reactions to these perceptions could impede functionality

suitable within society or in the specific situation – especially in the case of ECPs as providers of help and health care (Koole, 2009). In addition to the stimulus overload, ECPs assumptions about the world, meaning and the self are seriously challenged. In order to understand reactions to trauma, one needs to refer to Janoff-Bulman's (1992) classic view on assumptions. According to this view, people have three fundamental assumptions: the world is benevolent (safe), the world is meaningful (misfortune is not haphazard and arbitrary), and the self is worthy (essentially good, decent and moral). When these fundamental assumptions are challenged or damaged because of direct or indirect exposure to violence, physical trauma, threats of physical trauma or physical or emotional abandonment, people experience a feeling of severe loss. When a person is exposed to trauma, typical reactions include the experience of shock and disbelief. Many people would experience intense emotional reactions and, if unregulated, may not be able to think logically or rationally and still act purposefully – they may appear to be out of control, crying, shouting and exhibiting aimless, even destructive behaviour (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003). According to Regehr, Goldberg and Hughes (2002), exposure to these situations can lead to the development of post-traumatic stress disorder (PTSD), anxiety, compassion fatigue, numbing and eventually major depression.

Whilst ECPs are exposed to emotionally and physically challenging situations, they have to deal with the immediate emotional impact so that they can carry out their high responsibility tasks to ensure the safety of their patients, bystanders and themselves. ECPs, as first responders to the scene, need to be able to regulate their thoughts and emotions, need to act purposefully, must be able to stabilise the situation and the victims, as well as act responsibly and with specific aims in mind. Their emotions have to be integrated and regulated and their behaviour has to be congruent with their aim of providing purposeful help to the victims.

Self-regulation is described as a dynamic process of goal-setting, execution of specific goals and flexible adjustability to multiple challenges (Muraven & Baumeister, 2000). It is a complex, dynamic process that involves modulation of emotions, thoughts and behaviour. It sometimes implies inhibition (refraining from) of behaviour and sometimes initiation of behaviour or deliberately doing something

(Muraven & Baumeister, 2000). It also involves deliberately altering or overriding one's unregulated responses (e.g., Baumeister, Vohs, & Tice, 2007; Muraven & Baumeister, 2000) and emphasises exerting control over one's actions and inner states to align them with meaningful, purposeful outcomes and standards such as goals, values, and expectations (Carver, 2004). For psychological wellbeing in general, and for ECPs in particular, emotional and thought regulation seem crucial. Emotional regulation entails controlling the influence of emotional arousal on the organisation and quality of thoughts, actions, and interactions (Bandura et al., 2003). Thought regulation involves monitoring a person's thinking patterns, adjustment of the individual's cognitive states, and challenging these thoughts / thinking patterns and shifting thoughts when necessary to stay on track to attain a specific goal (Shah & Kruglanski, 2000; Schmeichel, Baumeister, & Bruya, 2010).

It is thus clear that effective self-regulation should be extremely important to ECPs. Not only would it help them to focus on the immediate task at hand, but it would also help in the long-term to cope with the nature of their work. Studies have shown that ECPs are at high risk to develop psychopathology if their emotional experiences are not managed well (Naudé & Rothman, 2003). However, if their thoughts and emotions are managed effectively, ECP may develop unique psychological strengths.

Even though it was argued up to this point that effective self-regulation should be an essential coping skill for ECPs, intensive inquiry into the available literature shows that there is a lack of related research in the South African context. The question this study aimed to explore was: (i) what are the most important thoughts and emotions ECPs experience as a result of work-related exposure to human emergencies?; (ii) what are the self-regulation strategies ECPs apply as a result of work-related exposure to human emergencies? (iii) what are the perceived cause-effect relations between these thoughts, emotions and self-regulation strategies of ECPs?; and (iv) how could these perceived relationships be developed in a hypothetical model of self-regulation for ECPs?

The study could provide valuable information to start filling this gap in research. It may contribute to our knowledge of the self-regulating strategies applied by ECPs

and provide valuable information that can be implemented to improve their psychological health. Essentially though, the main contribution of this explorative study is to generate new hypotheses regarding ECPs self-regulatory skills, and in doing so, providing future researchers the opportunity to statistically test these new hypotheses.

AIM

The overall goal of this study was to explore the perceived self-regulation strategies ECPs apply in the process of performing their duties. The specific goals were to:

(i)   identify the most important thoughts and emotions ECPs experience as a result of work-related exposure to human emergencies;

(ii)   identify the self-regulation strategies ECPs apply in response to these thoughts and emotions;

(iii)   establish the perceived cause-effect relation between these thoughts, emotions and self-regulation strategies of ECPs; and

(iv)   develop a hypothetical model of self-regulation for ECPs.

METHODOLOGY

Design

Interactive Qualitative Analysis (IQA) (Northcutt & McCoy, 2004) was applied in this explorative study to generate data, analyse findings and to develop a model. IQA is a qualitative research approach that makes use of both deduction and induction, based on elements of concept mapping, grounded theory, action research and systems theory. It is a systems-based approach that relies on the presumption that humans construct their reality within social settings – it therefore aims to systematically facilitate a group process through which a perceived cause-and-effect mental model of that reality could be developed (Vogel & Van Petegem, 2008). IQA was deemed the best approach for this study because it provides a method to construct a model of the self-regulatory strategies of a specific group, deductible

from perceived cause-and-effect relations between different themes identified by the group itself.

PARTICIPANTS

Purposeful sampling (Palys & Fraser, 2008) was used to select participants for this study. The participants had to meet the following criteria: They had to be i) over the age of 18; ii) able to freely express themselves in either Afrikaans or English; iii) must have been exposed to average ECP responsibilities (similar to their participating colleagues) in performing their duties, most of the time; iv) registered as having at least one or more of the following qualifications:

a) Basic Ambulance Assistant (BAA): The minimum qualification to be a member of an ambulance service in South Africa. Training includes a 160-hour course of lectures and practical simulations.

b) Ambulance Emergency Assistant (AEA) or Intermediate Life Support (ILS): Candidates must have a minimum of 1,000 hours of practical experience as a BAA and they must pass an exam to before doing this course. Training consists of a 470-hour course, 240 hours of lectures and practical simulations, and 230 hours of experiential learning.

c) Critical Care Assistant (CCA) or Advanced Life Support paramedic (ALS) and "National Diploma" (ND). The ND is a three-year, full-time study at a college. CCA and ND are both registered as Paramedics with the Health Professions Council South Africa.

d) Emergency Care Technician (ECT), a mid-level course of two years duration, on a level just above ILS, but below ALS.

Participants were approached by means of an conversation which stipulated information regarding the aim of the study, inclusion criteria, and ethical guidelines (see under "Ethical Considerations") with the head of a private sector ambulance service in the North West Province. The possible participants were invited verbally, given enough time to integrate the information and were given the opportunity to ask questions about the study. Fifteen participants were willing to participate and then

notified as to when data collection would take place. For the purpose of this study, participants from all these categories were included as they are exposed to the same scenes of human trauma. Two of the participants had ALS training. One had 23 years and the other had 3,5 months of experience. Eight of the participants had ILS training with experience ranging between three and 18 years. The final five had BLS training with experience ranging from 5 to 13 years.

DATA GENERATION AND ANALYSIS

In IQA, data generation and data analysis are integrated processes. These processes take place simultaneously and follow a stepwise, integrated five-phase process (Northcutt & McCoy, 2004). The value of this whole process is that it provides precise steps and rules for developing the model, and can therefore be replicated by other researchers. Diagrammatically, the process could be illustrated as follows:
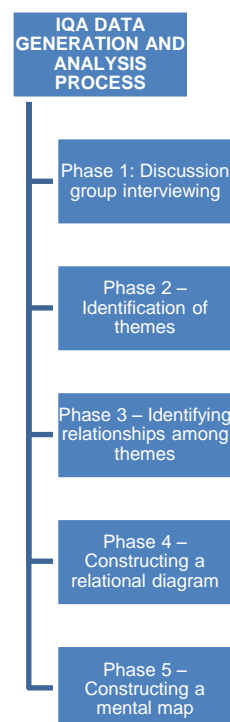
Figure 1. Interactive Qualitative Data Generation and Analysis Process

Phase 1 – Discussion group interviewing

The IQA research method uses discussion groups and if possible and appropriate, optional individual interviews to generate data (Northcutt & McCoy, 2004). A discussion group is a carefully strategic and deliberate discussion with a group, typically consisting of 6 to 12 members, in a non-threatening, facilitating environment (Massey, 2011). In this study, data was generated through a discussion group only, as participants were not available for further individual interviews. The discussion group provided the researcher with the opportunity to build a good relationship with the participants and to encourage them to express their authentic perceptions and experiences of self-regulation within their work-related exposure to human emergencies. The process was initiated with a brief discussion of what the day's procedures were going to entail. The intention of this was to set the participants at ease to some extent with regard to the basic outline of practical procedures (Northcutt & McCoy, 2004). They were then asked to individually think and write down their responses regarding the following questions:

i) What do you typically think and experience during and after performing your duties as an ECP? This was asked to explore the nature of the thoughts and emotions they experience and have to regulate to attain their goals.

ii) What do you typically do when you experience these thoughts and emotions? This was further clarified by asking: What do you do with the thoughts and emotions you experience while you are performing your duties as an ECP, as well as in afterthought about performing your duties? This question was asked to explore their self-regulation strategies.

Phase 2 – Identification of themes

During this phase, the group was divided into smaller groups of 2 to 3 participants each. These groups were asked to do 'silent brainstorming' (Northcutt & McCoy, 2004, p.47) by discussing their individual responses and then to identify and reach consensus among themselves on shared themes. The aim was throughout to elicit information from the participants and not from the facilitators. They had to write these down on note cards after which they were asked to tape the cards on a white board.

The facilitators then helped the group to clarify and reach consensus regarding the meaning of each response and to organise the cards into themes or groups of meaning (inductive coding). Subsequently, the group was facilitated to name each group of cards, as well as to do revision – based on general consensus - to recategorise previously misplaced cards (axial coding) (Northcutt & McCoy, 2004). Each group of cards represented a theme or 'affinity' as it is referred to in IQA.

Phase 3 – Identifying relations among themes

After the themes were clearly defined, the researchers compiled a questionnaire based on the systematic guidelines by Northcutt and McCoy (2004) to measure the perceived cause-and effect relationship (theoretical coding) between all the themes. If, for example, themes A, B and C were identified, the questionnaire would look like this:

In your experience, which of the following is most characteristic of your experience relating to dealing with emergency situations (choose one possibility only in each case):

1.   a. A causes B

      b. B causes A

      c. A and B don't influence each other
2.   a. A causes C

      b. C causes A

      c. A and C don't influence each other
3.   a. B causes C

      b. C causes B

      c. B and C don't influence each other

As seven themes were identified in this study, the questionnaire consisted of 21 items (each with a choice a, b or c.). Participants were then given time to complete the questionnaire individually.

Phase 4 – Constructing a relational diagram

The researcher, based on the questionnaire responses, then determined the following, as described and explained by Northcutt and McCoy (2004, p.160-163): the (i) cumulative frequency (CF); (ii) cumulative percent of relations (CPR); (iii)

cumulative percent of frequencies (CPF); and (iv) power analysis (P), which refers to the degree of optimisation of the system, as indicated by the difference between CPF and CPR. It was also determined which affinities attributed to the maximum variance of the data. Only those affinities that contributed to maximum power were used to develop the model. These values were then entered into an inter-relational diagram (IRD) that indicated the strength and direction of relations that were used in the final mental map. Incoming ($\leftarrow$) and outgoing ($\uparrow$) cause-effect relations were noted and the difference between these incoming and outgoing cause-effect relations were then calculated and shown as delta (Δ). The Δ value is used to position the themes in relation to each other in the first phase of constructing the model (Northcutt & McCoy, 2004). This is done by placing the themes from the highest to the lowest Δ from left to right and then to add the directive arrows between the themes. According to Northcutt and McCoy (2004) themes with higher deltas (more outgoing than incoming arrows) represent causal factors and are placed to the left of the model, while those with an equal number of incoming and outgoing arrows are placed in the centre of the model. Finally, themes with negative deltas (more incoming than outgoing arrows) represent outcomes and are placed to the right of the model.

Phase 5 – Constructing a mental map

The final step was to develop the System Influence Diagram (SID), which is a visual presentation or mind map of participants' perceived cause-and-effect relationship between thoughts, emotions and self-regulation strategies when dealing with emergency situations, as well as the positions of the themes in the model. The SID was construed according to a systematic process described by Northcutt and McCoy (2004). It includes the process of redundancy (Northcutt & McCoy, 2004), which dictates that redundant cause and effect indicators are removed from the model. This principle can be explained by the following: If, for instance, theme 1 causes theme 2 directly, but theme 1 also causes theme 2 indirectly via theme 3, the direct route from theme 1 to theme 2 is regarded as redundant and is removed from the model.

TRUSTWORTHINESS

For enhancing the trustworthiness of this study, Guba and Lincoln's four constructs (as discussed by Shenton, 2004) were applied. The constructs are i) Credibility ii) Transferability iii) Dependability and iv) Conformability.

Credibility refers to internal validity, which questions if the study investigates what it was intended to (Shenton, 2004). IQA has high internal validity, because the research questions are repeatedly asked and leads the way for the data analysis. The participants were given time to reflect on the questions and explain the meanings of their findings to establish clarity. In this way the researcher ensured that the research questions were answered. Further, the researcher is, as registered medical practitioner, already familiar with the culture of ECP, and, as suggested by Shenton (2004), made use of 'reflective commentary' and examined previous research to frame findings.

Transferability refers to external validity, which addresses the way in which the data can be generalised to the general population (Shenton, 2004). In this case transferability is not essential, because the aim of the study is to explore responses within this specific group, and to generate new hypotheses that could be tested later. The researcher did, however, provide detailed background data to establish the context of the study, and a detailed description of the phenomenon in question for comparative purposes.

Dependability implies reliability, which basically means that if the study should be done twice with the same method and the same participants, the results should be parallel (Northcutt & McCoy, 2004). IQA enhances dependability as it applies exact rules of rationalisation for developing the hypothetical model. The researcher provided an in-depth methodological description of the study so that it can be repeated by other researchers.

Conformability refers to objectivity – as participants to IQA identified the affinities themselves, the subjectivity of the researcher could largely be eliminated. The researcher as qualified medical doctor, also reflected on her own beliefs and

assumptions regarding ECP. In support of this, two other researchers, namely the study leader and a fellow masters' degree student were involved in the process of data gathering and observation, as well as in the process of constructing the model. In order to insure her own objectivity, the researcher reviewed the literature for other researchers' opinions and findings, and relied on the objectivity of her co-researcher and study leader to stay neutral and not to let her own perceptions and possible biases interfere with the findings. In addition, the researcher and her study leader analysed the data independently and compared findings to minimise any possible bias the researcher could have had due to her previous exposure to ECP.

Many of the relevant aspects of trustworthiness were addressed by the mere fact that the IQA method stipulates that participants in the discussion groups should identify themes themselves (not the researcher). Lloyd-Evans (2006) has also found the atmosphere created by discussion groups conducive for innovative participation and gathering of rich data.

ETHICAL CONCIDERATIONS

This research is a subproject within the research project "The nature and dynamics of Self-regulation in different South African Health Contexts", which was approved by the ethical committee of the North-West University (00103-11-S1). The subproject was also submitted for approval as a specific aim of the approved umbrella project to the Health Research Ethics Committee in the Faculty of Health Sciences of the North-West University (Potchefstroom Campus) and was approved (NWU 00103-11-A1). The researcher complied with the ethical rules and regulations as stipulated by the NWU as the potentially sensitive nature of this study was kept in mind at all times during the project. The aim was to focus on benevolence at all times. The following specifically applied:

- Each participant was informed thoroughly in order to obtain informed consent. They were informed about the nature and aim of the study, the manner in which data was to be collected, the manner in which their identities would be protected, as well as the possible applications and benefits for individuals in their profession in future due to application of the knowledge gained from the study (see attached informed consent letter).

- Each participant was treated with respect, honesty, sincerity, congruence and empathy throughout the study. This was accomplished by continuously reflecting on the nature and quality of interactions between researcher and participants, as well as by continuous feedback from and discussions with the study leader.

- The identities of the participants and confidentiality of the results are protected and maintained. It was explained to participants that the results will be submitted for publication, and that their identities will not be disclosed. Participant names were thus not recorded for data purposes - each participant was rather assigned a number for recording purposes. Data is kept on an external hard drive only in a safe in the study leader's office. Only the researcher and study leader have access to the data.

- By signing the informed consent each participant committed themselves to the research study. However, they were informed that they could withdraw from the study at any given moment (but not after data integration; see attached informed consent letter).

- They were also informed that, as it is possible that the discussions facilitated during the study may evoke emotional responses from them, a structure of counselling was put in place in order to deal with emotional needs should any arise. In order to avoid a dual relationship with participants, the researcher arranged this service with the Institute for Psychology and Well-Being (IPW) at the North-West University.

- Participants were not paid for participation. In this regard, the date, time and venue were arranged in such a way that participation did not incur any additional costs. They were, however, served with refreshments during execution of data collection.

- Participants will be given meaningful feedback about the results when the study is completed. The specific details regarding this were arranged during the discussion group.

RESULTS

Seven main themes were identified: 1) Be Ready; 2) Job satisfaction; 3) Feeling uncertain and anxious; 4) Self-coping strategies; 5) Rational and clear thinking; 6) Formal debriefing and 7) Feeling frustrated and angry.

A brief discussion of themes

This section presents a brief discussion of the themes without an in-depth integration with the literature. This is merely to introduce the themes – a review of the literature will be presented only when the model is discussed.

Be Ready

This theme can best be described as that the feeling of being prepared, focussed, qualified for a specific situation and anticipating challenges is of utmost importance. Participants experience that there are high expectations of them – from themselves and from the public. To them, being ready is a way of coping with the uncertainty and anticipation of challenges that may await them. Some of the statements made by participants include: "The first thing that I think of is what I am going to get at the scene; will I be prepared and able to deal with it?; "I have to think of all the possibilities of what I may find at the scene and prepare myself so that I am able to deal with it."; "According to the information I received, I work out a rough treatment plan or sequence while travelling to the scene so that I am ready when I get there." Finally, from their notes, the following concepts were related to this theme: "planning"; "expectation"; "preparation"; "ability"; "being confident"; "responsibility"; and "providing quality service".

Job satisfaction

Job satisfaction is described by this group as a feeling of contentment when they have been able to help victims and their families; when they were able to manage an emergency successfully, providing the best help they possibly could. ECPs experience a sense of relief when they have managed an emergency optimally. One participant, for example, said: "If you are passionate about your job, you feel

relieved, excited and satisfied when you were able to manage a scene successfully and help people." Another participant felt that: "If it is your passion to help people, you feel satisfied when you could help them in an emergency situation, no matter how difficult it was for you. If it is just a job for you, you won't feel like this." The comments were supported by key words from their notes like "relief"; "excitement"; "satisfaction"; and "passion versus just a job".

Feeling uncertain and anxious

Uncertainty and anxiety emerged as a prominent theme for this group of ECPs. They experience these emotions in response to the excitement and danger related to their work, as well of a fear of failure, of the unknown, and of incompetency. Some participants described their feelings as follows: "You have to concentrate very hard, driving at a high speed and you don't know how bad the scene is going to be. You are extremely nervous"; "Sometimes the environment you arrive at is a hostile environment"; and "You never really know what you are going to have to deal with when you get there." In addition, their notes included terms like "anxiety attack"; "feeling tense / squeezed into a box"; "panic"; "not knowing what to expect"; "lack of information"; "nervous"; and "scared to make mistakes and uncertainty of capability to deal with the situation".

Self-coping strategies

This theme relates to a wide array of self-coping strategies the participants report to apply and can be divided into 3 categories: i). doing things that make them feel better, including healthy and unhealthy activities for example: "I go for a walk or do some exercise."; "I hold on to my faith and pray"; and "I smoke"; ii). doing things that help them work through their emotions for example "I sit on my own and think of everything that happened. I try to figure out how I feel"; and iii). actively or automatically suppressing emotions for example: "You know you have to switch off your emotions, focus on the reality of the situation, so you can do what you have to do"; and "We have to make jokes to feel better."

Rational and clear thinking

This theme emerged as ECPs described that situations they have to deal with, challenge their ability to think clearly. They experience that it is easy to panic, feel shocked or sad when faced with human trauma. They describe that they cannot allow emotions to overwhelm them – they have to control their emotions and focus on thinking rationally and clearly, and apply their knowledge in order to perform their duties optimally. One participant said: "You have to think rationally and clearly, plan, coordinate, control and stay with the protocol that you have been trained to do"; while another expressed this as: "In my mind, I go through everything that is expected of me, step by step". Finally, another participant said "I have to shut out my emotions and think of what I have to do". Some of the notes they made include "reality vs emotions"; and "perceptions and expectations".

Some participants reported that they feel emotions like sadness and concern in sympathy with the victims' family members, but they are aware of the fact that they actively have to push these emotions aside to be able to help the victims effectively. A few of them stated that they find it especially difficult to push emotions aside when children are involved in any way in the emergency situation. It also appeared as if they had to be able to make focus shifts that were challenging, as can be seen from this quote from one of the participants: "Sometimes you get there and things are totally different from what you expected. Then you have to do things differently quickly."

Formal debriefing

This theme refers to both a need for access to lessons learnt during formal debriefing sessions, as well as a process through which feedback received and skills developed from these sessions are put into place. The participants have regular debriefing sessions during which they reflect on and review recent emergency incidents. These sessions are facilitated by the team leader and focus mostly on the technical and academic aspect of emergency procedures. Formal debriefing also serves as a way of training, pointing out mistakes, but also affirming and emphasising good decisions and efficient responses. It is clear, however, that the sessions also provide an opportunity to share their emotions and uncertainties, as

evident from statements such as: "We do have formal debriefing sessions when we talk about what happened, go through the steps, make sure we did the best we could have done" and "It is always good to talk about what happened and if we did the right things or point out what we could have done better."

Feeling frustrated and angry

This theme indicates feelings of frustration and anger triggered by different scenarios including lack of available resources, things going wrong on the scene, getting the wrong information regarding a scene of emergency, as well as being confronted with the severe impact on victims due to irresponsible behaviour of others. They expressed this in statements like "When things go wrong you feel so helpless"; "When you are unsuccessful, you become really disappointed". "I want to do it right, otherwise I become very frustrated". Their notes on this theme included concepts like "incorrect information & preparation"; "haphazard nature of some situations"; "wasting of time & resources"; "disappointment when not getting the desired effects"; and "dealing with colleagues who don't share your values".

Some general observations

It was very difficult for some of the participants to express their opinions, thoughts and emotions. Many of the participants could only express themselves in short phrases or even just stating a single word in an attempt to express a concept, this often also being vague. Some of the participants found it difficult to distinguish between thoughts, emotions and behaviour.

Some of the participants appeared to be playing a more dominant role in the process of expressing their thoughts and opinions, which clearly had the effect of other participants being less forthcoming regarding their opinions. Along with the tendencies described above, it was also noted that some participants clearly wanted to focus more on the detail of their self-coping strategies where others wanted to steer clear of the subject. Some made statements like: "No matter what it is called or what we are doing – we are just coping". Some participants stated that they were aware of the fact that long term exposure affects them negatively and that their new colleagues will change over time. They stated, for example that: "The new

colleagues are still laughing, joking and happy-go-lucky now, but will eventually become down, grumpy and tense and will start smoking and drinking."

Although these tendencies may have influenced the way in which they expressed themselves, as well as the amount of data obtained, it should not be regarded as a limiting factor. It should rather be added as additional information to how this group of ECPs function with regard to self-regulation.

Table 2 shows a summary of the frequency analyses of the relations between affinities reported by the participants.

Table 2: Frequency analysis of the relations between affinities

| AFFINITY PAIR (N=42)(42 pairs for 7 themes)	FREQUENCY	CF (Cumulative Frequency)	CPR (CUM. PERCENT) 100 / number of affinity pairs (N=42), added cumulatively(expected attribution)	CPF (CUM. PERCENT FREQUENCY) CF / total amount of frequencies (true attribution)	POWER CPF - CPR
2←5	12	12	2.38	5.88	3.50
4←7	12	24	4.76	11.76	7.00
5←6	12	36	7.14	17.64	10.50
1→2	11	47	9.52	23.04	13.52
3→4	11	58	11.90	28.43	16.53
2←4	10	68	14.29	33.33	19.05
4←6	10	78	16.67	38.24	21.57
3→7	9	87	19.05	42.65	23.60
1←4	9	96	21.43	47.06	25.63
2←6	9	105	23.81	51.47	27.66
1→5	8	113	26.19	55.39	29.20
3→5	8	121	28.57	59.31	30.74
6←7	8	129	30.95	63.24	32.28
3→6	7	136	33.33	66.67	33.33
4→5	7	143	35.71	70.10	34.38
1←3	7	150	38.10	73.53	35.43
4←5*	7	157	40.48	76.96	36.48
1←5*	5	162	42.86	79.41	36.55
1←6	5	167	45.24	81.86	36.62
3←7*	5	172	47.62	84.31	36.69
5←7	5	177	50.00	86.76	36.76
1→7	3	180	52.38	88.24	35.85
2→4	3	183	54.76	89.71	34.94
2→5	3	186	57.14	91.18	34.03
1→3	2	188	59.52	92.16	32.63
1→4	2	190	61.90	93.14	31.23
2→7	2	192	64.29	94.12	29.83
5→7	2	194	66.67	95.10	28.43
1←2	2	196	69.05	96.08	27.03
2←3	2	198	71.43	97.06	25.63
2←7	2	200	73.81	98.04	24.23
3←6	2	202	76.19	99.02	22.83
1→6	1	203	78.57	99.51	20.94

2→3	1	204	80.95	100	19.05
2→6	0	204	83.33	100	16.67
4→6	0	204	85.71	100	14.29
4→7	0	204	88.10	100	11.90
5→6	0	204	90.48	100	9.52
6→7	0	204	92.86	100	7.14
1←7	0	204	95.24	100	4.76
3←4	0	204	97.62	100	2.38
3←5	0	204	100.00	100	0.00

Note - * Affinity pairs not included in developing the final model.

Power analysis reached a maximum of 36.76 (see last column) and this explains 86.76% (CPF) of variance in the data. This is accounted for by 21 (50%) of the possible 42 pairs of affinities. Two of the affinity pairs (1←5; 3←7) were left out in constructing the final model because their converse directions (1→5; 3→7) showed higher frequencies and were rather used in constructing the model (Northcutt & McCoy, 2004). One affinity pair (4→5) also had a converse direction pair (4←5) and got the same amount of frequencies – therefore it was decided to use both in the model. However, 4←5 fell out in the construction of the model due to the redundancy principle mentioned earlier, therefore, only 4→5 was used in constructing the final model.

Figure 2 shows that power reached a maximum of 36.76 at the 21st affinity pair.
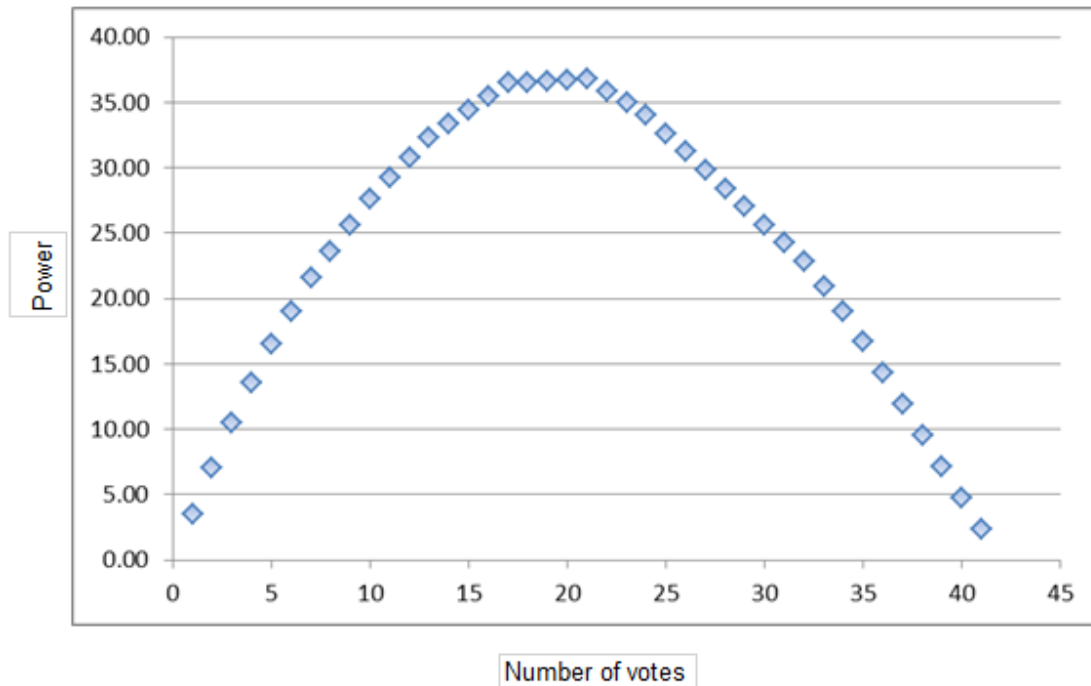
Figure 2: Power analysis

Table 3 shows the inter-relational diagram (IRD). The directions in which the affinity pairs affect each other are indicated with arrows. In the last three columns the amount of incoming (←) and outgoing (↑) cause-effect relations are shown. The difference between incoming and outgoing cause-effect relations are shown as delta (Δ) in the last column.

Table 3: Inter-Relational Diagram (IRD)

|	1	2	3	4	5	6	7	OUT	IN	DELTA
1		↑	←	←	↑	←		2	3	-1
2	←			←	←	←		0	4	-4
3	↑			↑	↑	↑	↑	5	0	5
4	↑	↑	←		← ↑*	←	←	3	4	-1
5	←	↑	←	← ↑*		←	←	2	5	-3
6	↑	↑	←	↑	↑		←	4	2	2
7			←	↑	↑	↑		3	1	2

Note*: The direction in which the affinity pair 4-5 affect each other got the same number of votes in both directions, i.e. 4→ (causes) 5 and 4 (is caused by) ←5 both were used in initially developing the model.

Table 4 shows which routes were deleted, as well as the presence of alternative indirect routes. In the first row, for example, 3 to 5 was deleted, the reason being that there was an indirect route from 1 to 5, that being via 1, as indicated by "3 via 1 to 5".

Table 4 - Deleted routes of direction between affinities and reason for being deleted

Deleted route	Alternate indirect routes			
3 to 5	3 via 1 to 5	3 via 6 to 5	3 via 7 to 5	3 via 4 to 5
3 to 4	3 via 7 to 4	3 via 6 to 4		
3 to 1	3 via 6 to 1	3 via 6 via 4 to 1		
3 to 6	3 via 7 to 6			
7 to 5	7 via 6 to 5	7 via 4 to 5	7 via 6 via 4 to 5	
7 to 4	7 via 6 to 4			
6 to 2	6 via 4 to 2	6 via 5 to 2	6 via 1 to 2	
6 to 5	6 via 4 to 5	6 via 1 to 5		
6 to 4	6 via 1 via 5 to 4			
1 to 2	1 via 5 to 2	1 via 5 to 4 to 2		
4 to 2	4 via 5 to 2	4 via 1 via 5 to 2		
4 to 5	4 via 1 to 5			

Figure 3 is a graphical depiction of the final model constructed by using all of the above data.
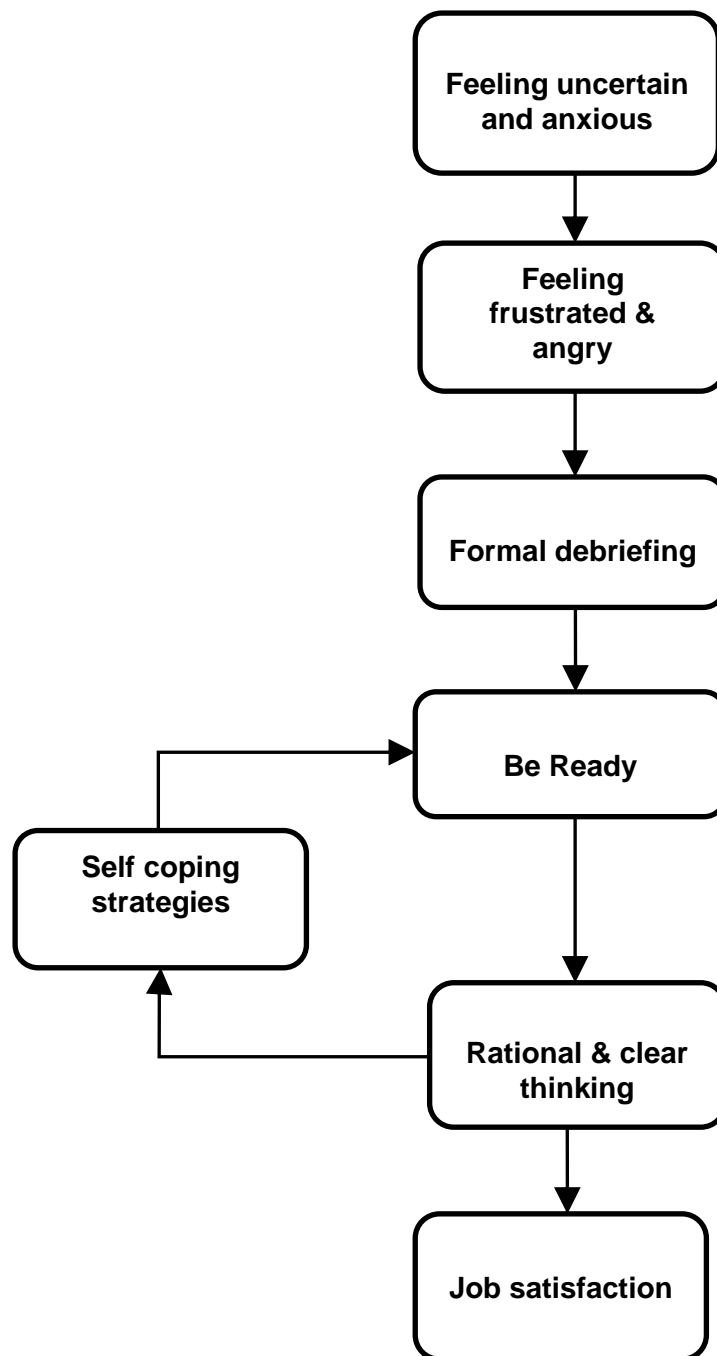
Figure 3 – The final hypothetical model of self-regulation in ECP

According to figure 3, ECPs initially experience anxiety and uncertainty when they get a call to attend to an emergency. This is followed by frustration and anger if their ability to reach their goal (that of providing optimal care for victims in challenging circumstances) is compromised. As a result, they experience the need to access lessons learnt from formal debriefing sessions and to put these in place to deal with new emergencies and to prevent mistakes from happening again.

This subsequently leads to the experience they have to be absolutely ready and prepared, followed by thinking clearly and rationally about the task at hand. This in turn elicits two possibilities: one is to use self-coping strategies (whether healthy or unhealthy), which then feeds back into be being better prepared (a loop that may go on indefinitely). The other possibility is a direct perception of job satisfaction, which may also be the final outcome of going through the loop of being ready / thinking rationally and clearly and applying self-coping strategies.

DISCUSSION

From the model developed in this research, it appears as if negative emotions like anxiety and uncertainty at first, and later frustration and anger, play an important role in initiating the process of self-regulation in this group of ECPs. Emergency situations, characterised by high levels of excitement and danger, elicit a general fear of failure, of the unknown, and of incompetency. From a self-regulation perspective uncertainty relates to anticipation of a discrepancy between achieving a goal and progress towards the goal at the time of evaluation (Hirsh, Mar & Peterson, 2011). As ECPs are continuously challenged with relative high levels of uncertainty, it is not surprising that they experience anxiety regarding the nature of their work and of being efficient in what they do.

Uncertainty and anxiety, however, should not necessarily be negative. Otto (2014) and Botha (2014), for example, found negative affect to be a crucial phase in the effective self-regulation of blocked life goals and in the self-regulation of relational conflict respectively. Carver (2002; 2003) and Carver and Scheier (1998) argue that affect arises from a feedback process and that the response to negative feelings is usually to try harder, assuming that increased effort would enhance the rate of

movement towards achieving the intended goal or movement away from a perceived threat. However, the ECP in this research subsequently experience frustration and anger. From the discussion group, as well as participants' notes on this theme, this seems to be the case because they are often, in addition to their anxiety, faced with further challenges, for example a lack of resources, receiving wrong information on emergency scenes, as well as being confronted with the severe impact on victims due to irresponsible behaviour of others. This correlates with literature (Naudé & Rothman, 2006; Regehr et al., 2002), confirming that a lack of resources and feelings towards irresponsible perpetrators have an impact on ECP, their level of functionality and their behaviour. The findings further support literature by pointing to the fact that individuals often experience emotions like anger when goals cannot be reached (Carver & Scheier, 2009). This may cause a difficult self-regulatory conflict, as the uncontrolled expression of anger may jeopardise the task at hand even further. In this regard, Griffin and Moorhead (2007) emphasise the importance of self-regulation by referring to it as a person's capacity to balance anxiety, fear, and anger so that these do not overly interfere with getting things accomplished.

Generally, people have a limited ability to refrain from aggressive and other antisocial or problematic impulses. To inhibit acting out on feelings of aggression and frustration is effortful, which means that the individual uses energy that is limited in supply (Dewall et al., 2007). This view correlates with the idea that self-regulation is comparable to muscle strength that can become overexerted or depleted if used in an attempt to resist temptation to act on impulses for a long period of time, or if the situation needs it to be applied very intensely (Baumeister, et al., 2007). Within the context of emergency care, ECPs thus need to regulate this dilemma to be able to be effective despite feelings of anxiety, frustration and anger.

As mentioned earlier, Carver and Scheier (2009) indicate that the purpose of emotions is to serve as part of a monitor feedback loop. When becoming aware of emotions, the possibility of reprioritising goals emerges. This process seems to be especially important for ECPs as they often need to monitor their progress within very limited time-frames and high risk scenarios. As they cannot easily change their goals as such, they are perhaps more challenged to continuously reprioritise the steps or activities towards goal achievement. Carver (2003) argues that if a person is going too slowly or ineffectively towards a set goal, they will become aware of

negative emotions and adjust their behaviour to improve their ability to reach their goal, or they may shift to a new goal as part of reprioritisation. The phase that follows frustration and anger, formal debriefing, is perhaps a form of reprioritisation as it involves re-affirming knowledge, expertise and newly adopted skills. To a certain extent this may be regarded as a mind-set that allows awareness of learnt skills and protocols to emerge and which makes the ECPs feel more prepared for future emergencies.

It makes sense that this change in mind-set is then followed by an experience of "being ready" as characterised by a feeling of being prepared and focussed, and anticipating challenges that await them in their job as of utmost importance given the high expectations being placed on them. Both formal debriefing and being ready seems to reflect an assimilative mode of self-regulation (Brandtstädter & Rothermund, 2002) because it indicates intentional expanding of personal competencies to achieve goals. This is in contrast to the accommodative mode of self-regulation in which goals are changed or disengaged from.

Having committed themselves to stay on track then demands the ability to think clearly and rationally in order to focus on their duties. This involves at least two aspects, evident from the group discussions, namely (i) focussing on the task at hand, for example going through check lists of necessary protocols and (ii) blocking out emotional response while they are actively dealing with an emergency situation – especially overwhelming fear and anger. This supports research by Regehr, Goldberg and Hughes (2002), who found that ambulance paramedics deliberately use cognitive techniques like concentrating on blocking out their own emotional responses and those of family members of victims so that they do not become emotionally involved. The fact that these ECPs show clear attempts to focus on their duties and protocols to reach their goal of optimising victims' condition in an emergency situation, can also be regarded as productive behaviour. Productive behaviour is also regarded as a self-regulatory strategy, which is often applied in reaction to frustration and disappointment (Larsen & Prizmic, 2004). This is a strategy that steers away from emotions and provides more concrete methods to enable the individual to attain their goals. It appears as if this strategy also develops from their clear attempts to focus on their work and protocols to effectively manage emergency situations.

From the model it appears as if job-satisfaction may be one direct outcome of rational thinking and the previous phases, if culminating in goal achievement, described earlier as a feeling of contentment and relief when participants were able to successfully help victims and their families. However, participants may also, after engaging in clear and rational thinking and before job satisfaction emerges, go into a feedback loop of applying different coping strategies, which then feeds back into being ready, and rational and clear thinking. The reason for this feedback loop is not obvious; one therefore has to consider different possibilities. One explanation could be that a consequence of having to think rationally and clearly, especially if in an overly controlled manner, and by implication suppressing or denying emotions, is the re-emergence of those emotions in a way that jeopardises goal achievement. This is supported by literature stating that denial is not an effective long-term self-regulatory strategy (Kassin, Fein, & Markus, 2008) and that it will eventually lead to additional uncertainty, frustration and disappointment. Suppressing emotions over an extended period of time depletes internal resources according to Webb, Miles and Sheeran (2012), because it requires self-control, which is an expendable commodity. Larsen and Prizmic (2004) further emphasise that denial, as an energy consuming strategy, leads to increased physiological arousal and impacts negatively on adaptability in optimal functioning. This may lead to a new perception of discrepancy between current states and goal achievement, and the person may thus need further adaptive strategies. Most of the strategies participants in this study apply, constructive or destructive, are related to coping and dealing with the re-emergence of these emotions.

It thus appears as if the process goes back into the loop of being ready and thinking clear and rationally, perhaps because the self-regulating strategies they apply are effective in the short-term only. This is confirmed by the fact that some participants mentioned that their new colleagues who are still laughing and joking would over time, like themselves, become tense and grumpy and will start smoking and drinking, by implication acknowledging that their self-regulation strategies are not effective in protecting them over the long-term. They then become at risk of not being able to attain their goals and thus not experiencing job satisfaction. This in turn may cause them to become indefinitely stuck in this loop and having to revert to coping

strategies as a result of not being able to effectively integrate their emotions within the demands of their job.

CONCLUSION

The aim of this study was to explore the self-regulation strategies that ECPs apply in relation to their high risk job context. A purposive sample of 15 qualified ECPs took part in the study. Seven themes were identified in a discussion group session using IQA. A model was constructed to reflect participants' perceived cause-effect relation between the seven themes. The model showed that negative emotions like uncertainty, anxiety, frustration and anger play an important role in initiating the self-regulation of participants. From a self-regulation perspective, negative affect acts as important feedback regarding the success of goal achievement. In this study, it was indicated that participants' negative affect regarding the risks of their job possibly cause them to use their knowledge and skills from formal debriefing sessions to reprioritise and to allow awareness of learnt skills and protocols to make them feel better prepared for current and future emergencies.

It was further indicated that being ready demanded that they think more rationally by focussing on the task at hand, and by blocking out distracting emotional responses. This finding supports earlier research and confirms the importance of effective emotional regulation within the emergency care context. Theoretically, an effective self-regulatory process through experiencing anxiety and even anger, recognising the negative affect as motivation to address discrepancies between current and goal states, reprioritising and being more prepared for the job, and finally rational thinking, may eventually end in job satisfaction. However, the presence of an alternative feedback loop that emerges from rational thinking into self-coping strategies and then finally back into being ready for the job, suggests that the process may not be effective in all cases or to all participants. This may be due to the fact that the initial process of self-regulation, but specifically the final phase of rational thinking, may result in denying and suppressing emotions in a way that is effective in the short term only. This causes energy depletion and the resurfacing of emotions that may interfere with effective job execution, and finally a re-entry into the whole process. This loop may be followed indefinitely until ECPs are able to apply effective long-term coping strategies.

In essence, the results of this study should be seen as explorative, and not as final. It once again illustrates the complexity of human self-regulation, specifically in a high risk job environment.

LIMITATIONS AND RECOMMENDATIONS

Some limitations of this study should be highlighted. The most important is that individual interviews with participants (as recommended by Northcutt and McCoy, 2004) were not conducted due to practical restraints. The constructed model could therefore not be discussed and confirmed with the participants and some richness of data may therefore have been lost. As such, the results cannot be generalised to other groups of ECPs. The study should, however, be regarded as exploratory in nature. In this regard, the study put forward a theoretical model of how self-regulation unfolds within a specific group of ECPs, as well as the advantages and challenges of their self-regulatory strategies. The study emphasises the need for further research of the self-regulatory strategies of ECPs, for example: Can this model be applied to other groups or even large random samples of ECPs? Does the importance of negative affect hold statistically true for ECPs? What would be the most effective way of dealing with emotions in emergency care contexts?

It was noted that it appeared as if most participants thought that formal debriefing happened much less often and was much shorter than needed and that only technical procedures and protocols were discussed during these sessions. Participants reported that they would like to have these sessions of formal debriefing more often and would prefer it to include talking about the emotional impact of what they had been exposed to. This is an aspect of their working circumstances that should be addressed as part of moral and legal duties to consider the psychological needs of personnel following exposure to traumatic events (Regel, 2007). Specific individuals who need individual management of emotional responses should be identified through a so called "screen and treat" model (National Institute for Clinical Excellence, 2005). This concurs with meta-analyses of literature studies that have revealed that specific types of long-term therapy (rather than once-off individual

sessions) did have a significant effect on posttraumatic stress disorder and depression symptoms in victims of traumatic experiences (Regehr et al., 2013). Some of the areas that may be explored include more detail of the specific self-regulation strategies used by specific members and other personality traits that predict which individuals will use which strategies.

It is my personal recommendation that effective self-regulation skills should be taught during the training of ECPs. The motivation for this recommendation is that it appeared that this specific group of ECPs were not sensitised to the importance of self-regulation and also showed a lack of skill with constructive emotional self-regulation – especially regarding long-term self-regulation of emotional responses after the emergency situation has been dealt with. Emotional self-regulation should be encouraged, their awareness towards it should be cultivated and the overall attitude towards emotional self-regulation of ECP should be improved. Training in this regards may prevent the development of psychopathology over time, make them more resilient and able to apply their self-regulation resources more effectively. This awareness may also point out to authorities that more formal debriefing (including emotional debriefing) should be provided and an attitude encouraging constructive emotional-regulation strategies should be cultivated.

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Critical self-reflection

The self-regulation of emergency care practitioners were explored in this study. The participants participated with enthusiasm and exposed themselves to a process that was new to them. They reported that they experience fear and uncertainty, anger and frustration, recollect lessons learnt from formal debriefing, want to be ready, have to think clearly and rationally, apply self-coping strategies and want to experience job satisfaction.

As a medical practitioner, I have often had to deal with emergency situations and traumatic human emergencies and have had to deal with traumatised patients, as well as with their family members. I have also been exposed to working closely together with ECPs in the past and know that these colleagues do apply coping strategies, but did not have the insight to understand the mechanisms involved. I only realised that they were exposed to very challenging, often traumatising situations, in which they had to manage their own vulnerability and human reactions very effectively to execute their duties effectively. They clearly had to focus intensively on getting their jobs done, helping victims and staying professional. However, it did appear to me as if they hid some of their real emotions - afterwards, when I thought that they might acknowledge that what they had experienced was traumatising to them at times.

I also observed that they seldom seek help to deal with emotional trauma they experienced but do sometimes develop destructive behaviour or even mental conditions over the course of time.

When I studied Psychology and was exposed to the concept of self-regulation, I became inquisitive to explore self-regulation of ECPs in order to explore this phenomenon in their behaviour. I also found that there was very little research to be found on self-regulation, specifically of ECPs.

This group of ECPs attended the data gathering event with enthusiasm and they did expose themselves – some more than others. It was a good experience to see them thinking, talking and sharing. I do have the hope that by just taking part in this study, that they were to some extent also motivated to do more introspection and to seek professional help if they acknowledged that they needed it.

Addendum A: Letter of consent