Stress and Anxiety of
Irish Based Firefighters and
Their Coping Mechanisms

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ACKNOWLEDGEMENTS</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>ABSTRACT</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>INTRODUCTION</strong></td>
<td>4</td>
</tr>
<tr>
<td>Critical Incident Stress Management (CISM)</td>
<td>5</td>
</tr>
<tr>
<td>Stress and Anxiety</td>
<td>8</td>
</tr>
<tr>
<td>Coping Mechanisms</td>
<td>11</td>
</tr>
<tr>
<td>Hypotheses</td>
<td>16</td>
</tr>
<tr>
<td><strong>METHODOLOGY</strong></td>
<td></td>
</tr>
<tr>
<td>Participants</td>
<td>17</td>
</tr>
<tr>
<td>Design</td>
<td>18</td>
</tr>
<tr>
<td>Materials</td>
<td>18</td>
</tr>
<tr>
<td>Ethics</td>
<td>19</td>
</tr>
<tr>
<td>Procedure</td>
<td>19</td>
</tr>
<tr>
<td><strong>RESULTS</strong></td>
<td>21</td>
</tr>
<tr>
<td><strong>DISCUSSION</strong></td>
<td>29</td>
</tr>
<tr>
<td>Findings</td>
<td>29</td>
</tr>
<tr>
<td>Strengths and Limitations</td>
<td>34</td>
</tr>
<tr>
<td>Implications</td>
<td>35</td>
</tr>
<tr>
<td>Future Research/ Direction</td>
<td>35</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>37</td>
</tr>
<tr>
<td>APPENDIX</td>
<td>43</td>
</tr>
</tbody>
</table>
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Abstract

Anxiety and stress are both subjective experiences. An individual’s ability to cope with stressful situations will be determined by the individual’s perception of stress and their individual coping mechanisms. Critical Incident Stress Management (CISM) is used by the Irish Fire Services to manage stressful events. Age and longitude of service may influence a firefighters resistance to stress and anxiety levels. The objectives of this research are; to explore if there is a difference in age, longitude and coping mechanisms on stress and anxiety levels, and to determine is problem focused solving is predominantly used as a coping mechanism amongst respondents. Qualitative questions explore Psychological Debriefing/defusing after a stressful experience and aspects of CISM Fire Fighters currently engage in.

Method: A mixed method questionnaire based on CISS and DASS21 is being provided to participants from a full time urban based station providing EMS, and five retained stations. Participants were recruited through cross sectional convenience sampling.

Results: A moderate positive correlation between stress and avoidance and a weak positive correlation between stress and social diversion was found. There was a significant association in stress and avoidance distraction and also in stress and emotion orientated coping. Research also found no difference in age and longitude of service and the coping mechanism. Problem-focused coping is the predominant coping mechanism used for Irish based firefighters. Thematic analysis results are also provided.

Discussion: Review of findings, limitations of research and implications are discussed.

Key words: Critical Incident Stress Management, coping mechanisms, stress, anxiety levels
Emergency services personnel experience high levels of stress on a daily basis (Minnie, Goodman and Wallis, 2015). Anxiety and stress are both subjective experiences. An individual’s ability to cope with stressful situations will be determined by the individual’s perception of stress and their individual coping mechanisms. Mitchell (1983a; 1983b) first devised psychological debriefing as an intervention in the aftermath of a stressful or traumatic event. The aim of psychological debriefing is to assist individuals to return to a normal level of functioning after the event (Robinson and Mitchell, 1993).

Critical Incident Stress Management (CISM) is a seven step programme and is used by the Fire Service in Ireland to educate (e.g. through talks, handouts), build resilience and as a means of support to minimise the impact, which critical incidents may have on a person’s inability to cope with stressful events. It is an integrated, multi-factor model approach aimed at providing individual and social support in order to reduce psychological distress. There are a number of components involved and some of these include pre-crisis education on stress management, defusing, Critical Incident Stress Debriefing (CISD) and a follow up of support on an individual basis, if required (Regel, 2007; CISM Network Ireland, n.d.).

A lack of support or perceived support impacts an individual’s distress in a situation, which are often interrelated (Udwim, Boyle and Yule, 2000; Gibbs and Montagnino, nd). CISD or defusing is often used to provide this social support amongst colleagues who have experienced the same stressful incident. The working environment can provide barriers to this process and these concerns can focus on difficulties with management, heavy workloads and the rostering of shifts after a critical incident (Healy and Tyrrell, 2013). These can impact its implementation.

Passer, Smith, Holt, Bremner, Sutherland and Vliek define stress as, “a pattern of cognitive appraisals, physiological responses and behavioural tendencies that occur in
response to a perceived imbalance between situational demands and the resources needed to cope with them”(2009, p.722). Whereas, anxiety is described as, “the state of tension and apprehension that is a natural response to perceived threat”(Passer et al., 2009, p.787).

High levels of stress and anxiety can have negative implications on an individual’s cognitive functioning through poor memory retrieval and the inability to function even on a daily basis (Bryant, Sutherland and Guthrie, 2007; Biggs et al., 2010; Kehl, Knuth, Holubová, Hulse and Schmidt, 2014). This can have significant implications for firefighters, affecting their personal health and relationships. Anxiety levels can be raised in anticipation of an unpleasant future event. Not all stress may have a negative impact and an increase in stress levels or anxiety levels can also be used to enhance performance (Kehl, et al., 2014). This research seeks to explore the current levels of stress and anxiety amongst Irish Firefighters, their coping mechanisms and what aspects of CISM firefighters may find beneficial or effective at reducing the effects of stressful incidents.

3.1 Critical Incident Stress Management (CISM)

The World Health Organisation (as cited by HSE, 2012) refers to a critical incidents as a “an event out of the range of normal experience – one which is sudden and unexpected, makes you lose control, involves the perception of a threat to life and can include elements of physical or emotional loss”(p.4, 2012). They are “determined by how they undermine a person's sense of safety, security and competency in the world ” (Critical Incident Stress Management Network Ireland, n.d). In other words, critical incidents are events which have the capacity to overwhelm an individual and their ability to cope (Robinson and Mitchell,1993).
A ‘psychological first aid’ debriefing lasts between two to three hours and is a group process involving individuals who were involved in a particular incident. It is typically conducted within 24 to 72 hours of a stressful incident (Mitchell and Everly, 1993). Defusing involves an intervention within one hour up to four hours after the critical incident, which lasts from 30 minutes to an hour. It is a shortened version of the CISD process. Both debriefing and defusing are a group process and involve members directly involved in an incident. The process allows members of the group to communicate their thoughts and emotions about a critical incident and to receive support from colleagues. According to Robinson and Everly (1993) respondents who were debriefed reported that the stressful event had less of an influence on them post debrief and over time.

This element of the CISM model has divided researchers when determining if in fact this can be effective in solely reducing psychological stress involved in a critical incident, its effectiveness in reducing the development of acute and chronic stress and ultimately Post Traumatic Stress Disorder (PTSD). Whilst, some researchers support psychological debriefing after a stressful incident (Adler et al., 2008), others remain against it (Devilly and Cotton 2003; Rose, Bisson, Churchill and Wessely, 2002; Van Emmerik, Kamphuis, Hulsbosch and Emmelkamp, 2002). The Cochrane Review (Rose et al., 2002 and Van Emmerik et al., 2002) provided a devastating assessment of Critical Incident Stress Debriefing. Some researchers argue that it provided considerable distress for the individual where the individual involved were injured in the event (Bisson, Jenkins, Alexander and Bannister, 1997). However, criticisms of Critical Incident Stress Debriefing process were in itself flawed.

A randomised controlled experiment was one method used to test its effectiveness. Critical Incident Stress Debriefing and Defusing was never designed as a post intervention for individual debriefing. It was specifically designed for professional group debriefing
Stress, Anxiety and Coping Mechanisms

(Robinson, 2004; Mitchell and Everly, 1993). Several difficulties to Critical Incident Debriefing research which may have impacted results. These include; a lack of a baseline measure, the timing at which a critical incident occurs and intervention, the formation of a control group, and the ethical duties of a researcher not to withhold treatment if a member of the control group requires it. A number of other limitations include; a lack of appropriate training for those conducting the debrief, the debriefing of individuals who were injured in the incident, high rate of attrition where respondents did not participate in follow up reviews (Robinson and Mitchell, 1993; Regel, 2007; Robinson, 2004; Tuckey et al., 2007; Campfield and Hills, 2001).

Jeannette and Scobaria (2008) research on CISD and firefighters highlighted preferences of intervention, and how the type of post incident intervention implemented could depend on the severity of the event. Peer support and group discussion were favoured as the most desired forms of intervention. In incidents where the severity rose, a number of approaches were favoured with both approaches of one to one counselling and CISD being jointly favoured as an intervention. A specific aspect of social support which rated highly amongst firefighters was the reassurance of worth from their peers (Varvel et al., 2007).

The CISM model currently in place offers a multi-component approach and, at present, firefighters can engage in Critical Incident Debriefing or Defusing on a voluntary basis, however some previous research suggested that this should be mandatory (Ross-Adhie, Leslie and Gillman, 2007). The aim of this research is to explore, through open ended questions, if this should be a mandatory response towards critical incidents, and if participants ever participated in a debriefing or defusing.
3.2 Stress and Anxiety

Specific event types have been highlighted as being considerable stressors within the Emergency Services. Most noticeably these events are; incidents involving children, suicide of a colleague, events where the victim is known to the responder, events which have excessive media interest, that have been prolonged and which have a negative outcome, mass event or incident and events which have high levels of personal risk involved, not enough time to recover after incidents, not properly briefed about the incident before arriving on the scene or given false information (HSE, 2012; Alexander and Klein, 2001).

As a result of these incidents firefighters can experience a number of stress related responses; acute stress, episodic acute stress and chronic stress. The American Psychological Association (n.d) explains these types of stress. Acute stress is the most widely known stress, as it originates from the demands of everyday life and the anticipation of future events. It can cause a number of emotional and physiological symptoms such as anger, tension headache, and muscular pain. It is generally experienced in the short term. Episodic acute stress is an extension of acute stress, where the individual suffers acute stress on more of regular basis. There is a sense of chaos and individuals suffer from their somatic system being over-aroused. Chronic stress refers to the stress experienced in the longer term, where there is unrelenting stress experienced by individuals, and physically and mental provides significant demands on the body which can lead to depression, suicide and serious illness. Post Traumatic Stress Disorder (PTSD) is categorised as a more severe extension of a stress disorder where the individual experiences a numbing sensation, flashbacks, sleep disturbance and intrusive thoughts and is diagnosed at least four weeks after a traumatic or stressful incident. (The National Institute of Mental Health n.d).

As a result of these incidents, social support is regarded as creating a buffer towards negative stress and by increasing resilience towards stressful situations (Udwim, Boyle and
Stress, Anxiety and Coping Mechanisms

Yule, 2000; Gibbs and Montagnino, nd; Sudom, Lee and Zamorski, 2014; Meyer, Zimering, Daly, Knight, Kamholz and Gulliver, 2012; Pack, 2014).

Age has been a factor in higher stress levels with research indicating younger participants, the age the firefighter commenced service and longitude of service influencing stress levels (del Ben, Scotti, Yi-Cheun and Fortson, 2006; Fullerton and Wang, 2004). Longitude of service was positively correlated with the ability to cope with stressful events. More recent studies contradict this research, indicating that the ability to cope may be more specific to the level of stress and the coping strategy employed. Higher incidents of stress and anxiety were positively correlated with more experienced and older firefighters but the findings were not significant (Nydegger, Nydegger and Basile, 2011). This research will assess if there is a relationship in age and stress.

Biggs (2010) suggests that other extraneous variables such as early or historical exposure towards a stressful event may actually induce a stressful response, which may make a firefighter more susceptible to developing acute stress disorders after a particularly stressful experience. This appears to contradict some research (Fullerton and Wang, 2004) which claims that there is a relationship. Another object of this research is to explore if there is a relationship between either longitude of service and stress and anxiety.

Hyper-arousal is brought about by the Hypothalamic Pituitary Axis (HPA), which is comprised of the hypothalamus, the adrenal gland and the anterior lobe of the pituitary gland, and, when this is activated, the HPA governs the length and extent of physiological and behavioural response of the individual (Smith and Vale, 2006). A release of cortisol from the adrenal gland would bring about the sympathetic-adrenal medulla complex response by increasing heart rate (e.g. tachycardia), perspiring, breathing becomes faster and shallower, the digestive system slows down, muscles become tense and pupils become dilated. The hippocampus provides a negative feedback mechanism, confirming the perceived danger has
passed, the cortisol and somatic system react by to bringing the body back into a homeostasis, causing breathing and muscles to relax (Davis, Eshelman and McKay, 2008). High levels of hyper-arousal can bring about anxiety, loss of an internal locus of control and a sense of helplessness, and can also lead to muscular pain which is commonly experienced with firefighters (Sterud, Hem, Lau and Ekeberg, 2011; Vaulerin, d’Arripe-Longueville, Emile and Colson 2016). Meyer et al., (2012) reported low levels of anxiety amongst firefighters. The objective of this study is to explore current anxiety levels within an Irish context, for those who operate the dual role of firefighter/paramedic and to compare with those operating in the role of firefighter.

Practising mindfulness reduces stress and anxiety by increasing gray matter in the brain, and in older participants, it has been shown to promote neural plasticity in the limbic system (Hölzel et al., 2011; Lazar et al., 2005). An individual’s receptiveness to engagement in the practise of mindfulness impacts the significant benefits. Mindfulness has been found to provide; improvement in executive functioning and increasing in an individual’s ability to self-regulate and to control their emotions (Fatima and Hyland, 2014; Brown, Goodman and Inzlicht, 2013). A mindfulness based workplace intervention for firefighters was successfully introduced in Canada through the introduction of yoga. This research noted improvements with increased attention, less muscular pain and improvements in perceived stress amongst firefighters (Cowan, 2010).

The practise of mindfulness techniques amongst firefighters can decrease symptoms of anxiety and other symptoms associated with acute or chronic stress and PTSD (Smith et al., 2011; Setti and Argentero, 2014). The limbic system has an important role for emotional regulation and it is our emotional state that influences our attention, interpretation, memory and learning. However, hyper-arousal can impact its functioning and this can have significant
implications for individuals (Roxo, Franceschini, Zubaran, Kleber and Sander, 2011; Eysenck and Keane, 2015; Smith and Vale, 2006).

Stress can also have a positive impact on an individual. Yerkes–Dodson law refers to how a moderate level of arousal can actually improve performance for tasks which represent more of a challenge, but if the levels are too high, the effect will be counter-productive and hyper-arousal will impair functionality (Mair, Onos and Hembrook, 2011). This research will explore the current stress levels of firefighters, and what aspects of stress management firefighters may engage in on a personal basis.

### 3.3 Coping Mechanisms

Lazarus (1966) and Lazarus and Folkman (1984) (as cited in Maltby, Day and Macaskill, 2013) identify how an individual will, through a primary appraisal process, decide if the stressful event is a threat to the individual. An individual will then move to the secondary appraisal process or coping strategies and identify how to manage the stressful situation. Lazarus and Folkman (1984) (as cited in Maltby, Day and Macaskill) categorised two styles of coping mechanisms which an individual may employ to manage these situations, problem focused coping and emotion orientated coping, with avoidance coping being included as part of emotion orientated coping. Problem focused coping involves an individual identifying the issue or situation and deciding how the source of the stress can be alleviated. Emotion focused coping on the other hand is centred on a strategy employed by the individual which does not address the actual situation itself, but centres around the individual’s emotional response to the situation. (Maltby, Day and Macaskill, 2013).

Parker and Endler (1992) however, noted a limitation of the COPE questionnaire which had been used in research in this area, where avoidance can have both person oriented and task orientated responses. Therefore, avoidance was categorised as a separate coping
strategy and two subscales were devised for avoidance to measure this; avoidance distraction coping and avoidance social diversion coping. Avoidance distraction coping is referred to as an individual deflecting their attention from the event or incident (Maltby et al., 2013), whereas avoidance social diversion coping involves turning to others during stressful times. This research will explore if there is a correlation between the level of stress and anxiety and coping mechanisms.

A number of studies conducted concluded that the prevalent form of coping mechanism for firefighters was problem focused (Young, Partington, Wetherell, St Clair Gibson and Partington, 2014). The type of coping mechanism employed was also influenced by gender. In relation to research on emergency service workers, males were shown to be more orientated towards problem focused coping styles and females towards emotion focused coping (Robinson and Mitchell, 1993). Some research relating to firefighters has used COPE questionnaire (Meyer et al., 2012). One of the objectives of this research is to determine if CISS can provide the same conclusion for firefighters based in Ireland, providing consistency with existing research findings.

According to research by Leonard and Alison (1999) conducted on police officers after a stressful incident, it was noticed that there was a strong positive correlation between anger and the use of maladaptive coping such as mental disengagement (or avoidance). It was suggested in their research that this was used if the officers had experienced negative life events prior to the stressful work incident. Most significantly, the results indicated that all coping methods were used, and that there was no relationship between social support and avoidance coping.

Disengagement or avoidance as a coping mechanism should only be used as a short term solution as in the longer term, this can increase anxiety levels (Carver and Connor-Smith, 2010; Maltby et al., 2013). Critical Incident Debriefing, or defusing offers firefighters
this peer support to cope with a critical incident. A qualitative component to this research will explore what aspects of CISM firefighters engage in or find effective for coping with critical or stressful incidents.

Research with firefighters suggests that problem focused coping is predominantly used. Previous research implied that in fact a combination of coping styles can be employed, and in research completed with trainee firefighters it was proposed that a maladaptive (avoidance) self-appraisal could be considered a risk factor for an individual developing a more acute stress disorders such as PTSD (Bryant and Guthrie, 2007). However, longitude of service may impact the type of coping employed to deal with adverse situations.

An individual may have been more susceptible to developing acute or chronic stress disorders due to their inability to cope, however, posttraumatic growth can result from a change of perspective and a new found ability to cope with stressful situations (Kehl, Knuth, Holubová, Hulse and Schmidt, 2014; Linley and Joseph, 2004) This suggests coping mechanisms can change over time, and through years of experience effective coping strategies can develop (del Ben, Scotti, Yi-Cheun and Fortson, 2006) In contrast, other research contradicts these findings, where it was found that firefighters with more years on the job employed inefficient coping strategies (Nydegger, Nydegger and Basile, 2011) This research will explore if there is a correlation between longitude of service and the type of coping mechanism used by an individual.

There are however other variables which may account for coping strategies employed, people who are more optimistic may engage in more problem solving techniques and actively seek social support, whereas individuals who are more pessimistic adapted denial and avoidance coping strategies (Carver and Connor-Smith, 2010). The identification of this variable with coping mechanisms is significant as it is suggested that people who are optimists report fewer physical symptoms than someone who is more pessimistic (Scheier
and Carver, 1985). A limitation to self-reporting research in this regard is that optimists may not be accurately self-reporting and could be under-reporting their symptoms, whilst pessimistic individuals maybe over-reporting (Maltby et al 2013). A key component to self-reporting research is also self-awareness of the individual (Nes, Segerstrom and Sephton, 2005).

Firefighters engage in problem focused coping as opposed to avoidance coping or emotion coping (Young et al., 2014: Chamberlin and Green, 2010, Wagner and Martin, 2012). In Young et al.’s, (2014) recent qualitative study, it was estimated that half of firefighters engage in problem focused coping, a third of firefighters in emotion focused with further 17% engaging in both problem and emotion orientated responses. The most noticeable limitation of this research was that the methodology and analysis drew on the two tier coping mechanism as derived by Folkan and Lazarus (1984, as cited in Maltby et al., 2013) and the small sample size. Despite this a considerable strength to their research was that it provided a more in depth analysis to existing research.

Vaulerin et al., (2016) found alternative benefits of problem focused coping for firefighters in that deducing that firefighters who engaged in problem focused coping reported less muscular skeletal issues. Furthermore, Vaulerin et al., (2016) found that by firefighters having a problem focused coping mechanism and were less likely to report muscular skeletal problems suggesting that this style of coping acted as a buffer towards some physiological problems. A limitation of their research is that self-reported measures were used, so participants could be over-reporting or under-reporting their symptoms (Maltby et al 2013).

However, there is considerable conflicting research. Some research has found a positive correlation between firefighters who had high levels of work related stress and those who used problem focused coping mechanism (Baker and Williams, 2001). Other cross-
cultural research found firefighters adopted emotion focused coping mechanisms, and emotion focused coping was a risk factor to developing more serious stress related disorders such as PTSD (Chung, 2006; Minnie et al., 2015).

More recent studies reported that, for firefighters, there is more of a positive correlation with burnout, longitude of service and disengagement (or avoidance) coping which can be a risk factor for the development of chronic stress disorders such as PTSD (Sattler, Boyd and Kirsch, 2014; Bryant and Guthrie, 2007). It is becoming increasingly apparent through research that this is a complex area. It is suggested that firefighters can employ a number of coping mechanisms to be used in the context of a situation (Young et al., 2014). Problem focused, for example, can be used en-route to an incident and emotion focused in the aftermath. Young et al., (2014) also importantly acknowledges that it a combination of coping strategies, including humour are considered effective for managing stressful situations.

Longitudinal research has identified how coping mechanisms can change throughout the lifespan of an individual. Individuals with adaptive coping mechanisms from adolescence until middle age or early old age can revert to maladaptive coping strategies which can increase anxiety (Diehl et al., 2014). Another purpose of this research is to determine if there is a correlation between age and the level of stress and anxiety amongst Irish firefighters.

The ability to cope with more stressful situations is determined by the individual’s environmental factors such as the units’ facilities, in addition to the individual’s personal resources (Bacharach, Bamberger, Doveh, 2008). Perhaps most noticeable is research where group support was found that engagement in CISD led to a fall of alcohol misuse from 26% to 16% (Deahl, 2000). There is a correlation between firefighters drinking to cope however this was positively correlated with the intensity of direct involvement of the firefighter and the incident (Bacharach, Bamberger, Doveh, 2008). The qualitative aspect of this research
explores whether firefighters find CISM effective and what aspects they engage in on a personal basis.

3.4 Hypotheses

This research will seek to provide confirmation of the correlation between age, anxiety and stress and each coping mechanism in the context of Irish firefighters. Accordingly, the following hypotheses will be tested.

**Hypothesis 1:** There is a difference in stress levels between firefighter/paramedic group and firefighter group

**Hypothesis 2:** There is a difference of levels in anxiety between firefighter/paramedic group and firefighter group

**Hypothesis 3:** There is a relationship in age and stress levels

**Hypothesis 4:** There is a significant difference in longitude of service and anxiety/stress.

**Hypothesis 5:** There is a significant difference in longitude of service and coping mechanisms

**Hypothesis 6:** There is a relationship between stress levels/anxiety and coping mechanism

4.0 Methodology

4.1 Participants

A total of 72 participants participated in this study, 71 male and 1 female (N=72). The research was conducted in an urban area which uses an Emergency Medical Services (EMS) system and five retained stations. The EMS system comprises of individuals operating a dual role of firefighter/paramedic however, at retained stations individuals worked solely in a firefighter role. The mean age of the whole group was 42.37 years (M=42.37, Sd 7.878). The age ranged from 23 years to 57 years.
A representative from the county council in the region of the respective stations was approached for permission to conduct research and grant access. The representatives requested a sample of the questionnaire to be used in research for review. The questionnaire was submitted and permission was granted upon review of the questionnaire. The researcher liaised with a representative from the county council to access stations in order to approach potential participants and invite them to participate in the study which was to be completed at an agreed time and day at the fire stations. Times were arranged in order to obtain the adequate sample.

Firefighters at the retained stations are normally on call and are not stationed on a full time basis. Therefore, it was arranged with the respective contacts that participants could be approached in the evening time where weekly allocated training is scheduled. Five stations were selected to obtain the sample needed for the study. After the research it was agreed that a copy of the results would be provided to each of the respective county councils for review.

4.2 Design

This study is a mixed method correlational design with cross sectional analysis between groups. The research is based on non-probability convenience sampling. A questionnaire was comprised using quantitative and qualitative open and close ended questions. The independent variables are age, longitude of service and coping mechanisms. The dependent variables are stress and anxiety.

4.3 Materials

The survey is comprised of the DASS 21 (Lovibond and Lovibond, 1995) scale questionnaire using the sub-scales for anxiety and stress, and for the measurement of coping
mechanisms, the Coping Inventory for Stressful Situations (CISS) was used (Endler and Parker, 1990a, 1990b, 1994, 1999).

Two sub scales from the DASS 21, stress and anxiety were used. The Cronbach Alpha indicated excellent reliability for stress (.895) and anxiety (.855). The CISS also indicated excellent internal reliability with Cronbach Alpha readings for task orientated coping (.882), emotion orientated coping (.925), and avoidance coping (.89). There are two subs-scales within the avoidance coping scale which are distraction coping and social diversion coping. Distraction coping provides very good internal reliability (.809), and an acceptable reliability measure for social diversion (.753) was reported. These findings were supported by external research on reliability for DASS 21 (Osman, Wong, Bagge, Freedenthal, Gutierrez and Lozano, 2012) and CISS (McWilliams, Cox and Enns, 2003).

Participants are asked to circle their answers for both the CISS and DASS 21. Close ended questions were asked to provide additional information for descriptive statistics such as sex and longitude of service. The DASS 21 scale is a four point Likert scale with values ranging from ‘0’, the question does not apply to ‘3’ applying most of the time. In terms of this questionnaire, participants are asked to determine how likely each of the posed questions have applied to the respondents within the last seven days. The sub-scales relating to anxiety of which there are seven items such as, ‘I was aware of dryness of my mouth’ and a stress sub-scale, which there are also seven items such as, ‘I found it hard to wind down’.

The CISS has a five part Likert scale with the values ranging from ‘1’ to ‘5’ for individuals to specify how they react to stressful situations, with ‘1’ indicating not very much and ‘5’ meaning very much. Participants are asked to rate how they engage in certain situations when they experience a stressful or upsetting experience such as ‘Try to be with other people’ or ‘watch TV’. There are 48 items to this section.
The quantitative component will be analysed using SPSS whilst the qualitative part of the questionnaire involves two key questions around Critical Incident Stress Management. The means resulting from anxiety and stress will also be interpreted by the DASS 21 scorecard (Gomez, nd) to determine if their scores are high. Thematic analysis will be used to explore particular themes from participant responses.

4.4 Ethics

The proposed design of the research was submitted to the DBS Ethics committee for approval. The research was approved in principle subject to obtaining permission to access participants. The relevant persons were contacted to request permission to distribute a questionnaire in the workplace. A copy of the relevant questionnaire was provided, and after a few amendments the wording of the questionnaire was approved. Approval from the required persons granting access was obtained and forwarded to the Ethics committee. The participants were then approached at their relevant stations.

4.5 Procedure

Participants were invited to participate in research measuring anxiety/stress levels and coping mechanisms amongst firefighters. The researcher visited six stations in total (one urban based using EMS and five retained stations). The first station visited was one of the retained stations.

At this station, the participants had gathered for an evening training workshop. The researcher provided pens and left them on the table and briefed participants that the questionnaires asked questions relating to stress/ anxiety and how individuals may manage stressful situations. It was explained that there was useful information of the front of the questionnaire and on the last page. Participants were invited to complete the questionnaire, it
was advised that responses would be anonymous and participation was completely voluntary. The researcher remained in the room in case the participants had any questions. The completion of the questionnaire for the participants took between 10-15 minutes, however the researcher spent approximately 20-25 minutes in total at the location briefing participants, distributing questionnaires and collecting all questionnaires.

During the session, the participants talked amongst each other and one of the participants noted the question on whether the firefighters worked full time or voluntary. The wording used was in line with previous literature referencing. At this point, the participants highlighted that they were in fact working at a retained station where they were constantly on call, so this would not be technically correct. In light of this, the researcher decided it would be best to amend the wording of the questionnaire to this effect. Subsequent questionnaires reflected the amended wording.

For the remaining retained stations the same procedure was followed visiting each station either before or just after the training workshop. At each station, the researcher found the participants to be interested in the subject matter, though some individuals did appear to dismiss the concept of stress. However, all participants willingly participated in completing the questionnaires. Some participants intermittently spoke amongst themselves. It was noted that some participants did comment to the researcher that they found the questionnaire to be quite long.

The researcher contacted the representative for the urban based station which used the EMS system, and was provided with contacts for two separate groups. A suitable time was agreed for each group so the researcher could access the stations and participants. On both occasions, the researcher met with the contact and the group of participants group who were on duty assembled in the canteen area. The researcher provided pens and left them on the table, and briefed participants that the questionnaires asked questions relating to
stress/anxiety and how individuals may manage stressful situations. It was highlighted that there was useful information of the front of the questionnaire and on the last page. Participants were invited to complete the questionnaire, it was advised that responses would be anonymous, and participation was completely voluntary. Questionnaires were passed around and participants were asked to take one if they wished to participate. Some of the participants discussed a few of the questions, and used humour to demonstrate how particular questions maybe particularly suitable to individuals. The atmosphere was relaxed and participants engaged with the questionnaire. Participants took between 10-15 minutes to complete the questionnaire. Once completed the researcher collected all questionnaires and left the premises.

All firefighters were on call at the time of completing the survey. The station officer was briefed that if they had to attend a call, the questionnaires could be taken with them to be completed at a later date. Envelopes, which the researcher had, would also be left at the station for the completion of the questionnaires at a more suitable time. However, no call was received at the time of completing the questionnaires.

5.0 Results

The total number of participants who participated in this study was 72 (N=72). The average age was 42 years. There were 27 (n= 27) paramedic/ firefighter group participants and 45 (n=45) in the firefighter group. A significant number of participants had (87.70%) had ten years in service or more. The highest proportion of respondents totalling 64.80% had 15 years or in service. Figure 1.1 depicts the breakdown of years in service for the participants.
It was found that the mean value of anxiety for the participants was 2.99 (M=2.99, Sd=4.17) with the range of scores from zero to seventeen being reflected. The mean level is within the normal range for anxiety. The mean level of stress levels for the group was 6.24 (m=6.24, Sd= 5.405) which shows the mean score to be within the normal range. The range of the scores for stress varied from zero to twenty.

Figure 1.1 Years of Service for the respondents.

Table 1 outlines the mean level values for anxiety, stress and the coping mechanisms.
Table 1 *Descriptive Statistics of Psychological Measures*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Participants</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>71</td>
<td>2.99</td>
<td>4.17</td>
</tr>
<tr>
<td>Stress</td>
<td>71</td>
<td>6.24</td>
<td>5.41</td>
</tr>
<tr>
<td>Task Orientated</td>
<td>72</td>
<td>52.49</td>
<td>10.28</td>
</tr>
<tr>
<td>Emotion Orientated</td>
<td>67</td>
<td>34.37</td>
<td>13.59</td>
</tr>
<tr>
<td>Avoidance (Total)</td>
<td>66</td>
<td>42.64</td>
<td>12.85</td>
</tr>
<tr>
<td>Avoidance Distraction</td>
<td>68</td>
<td>19.78</td>
<td>6.87</td>
</tr>
<tr>
<td>Social Diversion</td>
<td>71</td>
<td>14.54</td>
<td>4.46</td>
</tr>
</tbody>
</table>

The qualitative component to the research provided clarification on how many participants had participated in debriefing/defusing. A total of 41 participants had participated in this, 17 had never participated and 14 did not answer. Figure 1.2 outlined below depict these as percentages.

![Debriefing/Defusing Participation](chart.png)

Figure 1.2 Participant who have engaged in the Debriefing/Defusing

Participants were asked if debriefing/defusing should be mandatory, 45 participants believed it should be, 24 believed that it shouldn’t be with 3 participants providing no response. Figure 1.3 portrays these results.
Should Debriefing/ Defusing Be Mandatory

No Response 4%
No 33%
Yes 63%

Figure 1.3 Participants Responses to Implementation of Mandatory Debriefing/ Defusing

5.2 Inferential Statistics

Checks for normality were performed and based on these results the following tests were run to test the hypotheses.

Hypothesis 1:

A Mann-Whitney U test revealed that stress for firefighter/ paramedics (mean rank=30.81) and firefighters (mean rank=39) did not differ significantly ($z=-1.62$, $p=.106$).

There is no difference in the stress levels for the firefighter/ paramedic and firefighter group. The alternative hypothesis is rejected.

Hypothesis 2:

A Mann-Whitney U test revealed that anxiety for firefighter/ paramedic (mean rank=30.96) and firefighters (mean rank=39.09) did not differ significantly ($z=-1.66$, $p=.097$).

There is no difference in anxiety between firefighter/paramedic and firefighter group. Therefore, the alternative hypothesis is rejected.
Hypothesis 3

A Kendall’s tau b correlation found that there was no significant association between age and stress (tau b (70) = -0.03, p = .737). There is no difference between age and stress, so the alternative hypothesis is rejected.

Hypothesis 4

A Kruskal-Wallis one-way ANOVA showed that stress scores and longitude of service did not differ significantly ($X^2 (3) = 3.95, p = .267$) and that anxiety scores and longitude of service also did not differ significantly ($X^2 (3) = 1.468, p = .69$). There is no relationship in anxiety/stress and longitude of service. The alternative hypothesis is therefore rejected.

Hypothesis 5

In the context of longitude of service, the avoidance coping scale and its sub-scales avoidance distraction coping and social diversion coping satisfied the assumptions for normality and a One Way Anova was run. However, emotion orientated and task orientated violated assumptions and a Kruskal-Willis was run.

A One Way Anova analysis of variance showed that there was no significant difference in the use of Avoidance Coping Mechanism amongst the longitude of service groups (Group 1: 0-4 years, Group 2: 5-9 years, Group 3: 10-14 years, Group 4: 15 years +) ($F(3,61) = 1.35, p = .266$), and that there was no significant difference in the use of avoidance distraction mechanism amongst the longitude of service groups ($F(3,63) = 1.30, p = .284$).

A One Way Anova analysis of variance showed that there was no significant difference in the use of avoidance distraction mechanism amongst the longitude of service groups ($F(3,66) = 1.29, p = .287$). A Kruskal-Willis One-Way ANOVA test revealed a statistically non-significant relationship for Emotion Orientated Coping and longitude of service ($X^2 (3) = .66, p = .883$), and for Task Orientated Coping and longitude of service ($X^2 (3) = .92, p = .82$).
The alternative hypothesis is rejected.

**Hypothesis 6**

A Pearson correlation coefficient found that there was a moderate positive correlation between stress (M=6.24, SD=5.41) and avoidance (M=42.64, SD=12.85) \((r(65) = .37, p<0.01)\). The relationship can account for 13.69% of variation of scores. A Pearson correlation coefficient also found that there was a weak positive correlation between stress (M=6.24, SD=5.41) and social diversion (M=14.54, SD=4.46) \((r(70) = .28, p<0.05)\). The relationship can account for 7.84% of variation of scores. There is a relationship between avoidance, social diversion and stress. As there were violation to assumptions, Kendall Tau tests for stress and avoidance distraction, emotion orientated and task orientated were run.

A Kendall’s tau b correlation found that there was a significant association with stress and avoidance distraction \((\tau_b (67) = .29, p<0.01)\) and between stress and emotion orientated coping \((\tau_b (66) = .41, p<0.01)\). However, a Kendall’s tau b correlation found that there was no significant association between stress and task orientated coping \((\tau_b (71) = .05, p=.53)\). There is a relationship with stress and avoidance distraction and emotion orientated coping, but no relationship between stress and task orientated coping.

A Kendall’s tau b correlation found that there was a significant association with anxiety and avoidance \((\tau_b (65) = .19, p<0.05)\) and between anxiety and emotion orientated coping \((\tau_b (66) = .40, p<0.01)\). Within the avoidance sub scale, there was a correlation between anxiety and avoidance distraction \((\tau_b (67) = .24, p<0.01)\). However, a Kendall’s tau b correlation found that there was no significant association between anxiety and task orientated coping \((\tau_b (71) = .04, p=.656)\) and anxiety and social diversion \((\tau_b (70) = .10, p=.256)\). The alternative hypothesis is partially accepted.

**Thematic Analysis**

A thematic analysis process was used in coding and deciding major themes.
Table 2 depicts an outline and definition of the themes which emerged from participants being asked to explain if defusing/debriefing should be mandatory. Fifty participants provided further explanation behind their beliefs whether which resulted in seven themes emerging.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Definition</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Experience</td>
<td>Individuality should be respected and supported with measures in place to help the person</td>
<td>13</td>
</tr>
<tr>
<td>Open Communication</td>
<td>Talking enables release of emotion which can positively impact the individual and their family</td>
<td>16</td>
</tr>
<tr>
<td>Social Support</td>
<td>Colleagues provide supportive environment to reflect and talk after incident</td>
<td>11</td>
</tr>
<tr>
<td>Awareness</td>
<td>Debriefing/ defusing brings awareness to feelings, experience and learning from events through others</td>
<td>13</td>
</tr>
<tr>
<td>Job</td>
<td>Part of role, and enables to move on to another call after incident</td>
<td>8</td>
</tr>
<tr>
<td>Lack of Interest</td>
<td>Not needed, and lack of trust in management</td>
<td>5</td>
</tr>
<tr>
<td>Negative Impact</td>
<td>Cause more distress to individual, not in favour of it or social support</td>
<td>5</td>
</tr>
</tbody>
</table>

The major themes to emerge relate to personal experience, open communication, social support and awareness. Some of the quotes resulting in these themes emerging are related to both positive and more critical aspects of the themes. The theme entitled personal experience, for example, focuses on individual needs being catered for participants. The following comments were provided by a participant;

“Yes but some people find different things stressful. But the option should be there”  
Participant 61.

“This is dependent on the incident and allowances should be facilitated to individuals who may require a different approach” Participant 30.

In terms of open communication, the following comments were made by participants:

“Can bring work stuff home, its not fair on family, so debrief is vital” Participant 38.
“After a particularly stressful firecall it’s important to talk with crew and make sure any issues are dealt with” Participant 20.

Debriefing/defusing brings awareness to an individual on how a particular event may have impacted and brings awareness of the potential symptoms which an individual may experience. The below quote emphasises that there can be implications if this is not in place, where a family member was significantly impacted by a critical incident.

“My father was at the Stardust and received no counselling and it caused him major problems later in life” Respondent 36.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talking</td>
<td>18</td>
</tr>
<tr>
<td>Social Support of Colleagues</td>
<td>9</td>
</tr>
<tr>
<td>Recreational Activity</td>
<td>7</td>
</tr>
<tr>
<td>Nothing/Don’t engage in any</td>
<td>7</td>
</tr>
<tr>
<td>Debrief/Defuse process</td>
<td>5</td>
</tr>
<tr>
<td>Experience Sharing</td>
<td>3</td>
</tr>
<tr>
<td>Drinking</td>
<td>3</td>
</tr>
<tr>
<td>Humour</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3 depicts aspects of stress management which individuals find effective after a critical incident. It is important to note that some participants did express aspects of stress management which would not be a part of CISM such as drinking. However, the author found this was a worthwhile inclusion as it was an aspect of managing stressful situations for that individual.

In addition, it must be noted that despite the fact that seven participants highlighted that they do not participate CISM techniques or find them effective, there was a high rate of participants who did not answer this question. The combination of these scenarios accounted for 27 out of 72 participants, which represented 38% of the respondents.
6.0 Discussion

This research focused on a number of objectives which consist of examining the current levels of stress, anxiety amongst firefighters and their coping mechanisms. CISM is used as an intervention for critical incidents. The current debriefing/defusing process provides a social support from colleagues and awareness of potential issues of stress. Collectively stress and anxiety levels appear to be within the normal range for firefighters as a group.

The thematic analysis highlighted an opinion of how age and/or experience are determining factors of managing stress and anxiety however, findings from the quantitative component of the study contradicted this perception. Importantly, this research indicates that individual’s coping mechanism may dictate their resilience towards anxiety and stress. Firefighters who have a problem focused coping mechanism showed less susceptibility towards stress and anxiety. Nevertheless, stress and anxiety did have a positive correlation between emotion focused coping and avoidance coping.

6.1 Findings

Hypothesis 1

The results of this hypothesis show that there was no significant difference in stress between firefighter/paramedic group and firefighter group. Heavy workload and low levels of social support had been associated with an increase in stress levels (Healy and Tyrell, 2013; Meyer et al., 2012; Sudom et al., 2014), however this research suggests that individuals operating a dual role as firefighter/paramedic did not show any significant difference in stress when compared to the firefighter group.

A possible explanation for this lack of difference between groups could be explained through the thematic analysis of this research where it was found that important themes
regarding defusing/debriefing for participants were talking, high level of social support and awareness which does not appear to differ between groups. High levels of social support is considered to protect individuals towards high levels of stress (Sudom, Lee and Zamorski, 2014; Meyer, Zimering, Daly, Knight, Kamholz and Gulliver, 2012; Pack, 2014). These findings appear to be consistent with previous studies. The alternative hypothesis is rejected.

**Hypothesis 2**

High levels of anxiety can impair cognitive functioning as a result of hyper-arousal which is brought about by the HPA (Smith and Vale, 2006). Meyer et al., (2012) found that low levels of anxiety existed for firefighters. Another objective of this study was to assess if anxiety levels for firefighters who work in Irish settings operating the dual role of firefighter/paramedic and firefighters supported the research. The results of this hypothesis found that there was no significant difference in anxiety between the firefighter/paramedic group and firefighter group. Thus, this research supports the findings of previous research. The alternative hypothesis is rejected.

**Hypothesis 3**

There was previous conflicting research which suggested that there was a correlation between age and stress. Fullerton and Wang (2004) noted in their research that younger firefighters reported higher levels of stress however, Nydegger et al., (2011) reported that higher levels of stress were observed for older firefighters. The objective of this research was to determine if there was a relationship between stress and age. The results of this research show that there was no relationship between age and stress. The findings suggest no relationship and in the context of higher level of stress amongst older firefighters appear to contradict the research of Nydegger et al., (2011).

The researcher notes that there should be caution in applying these findings in relation to younger firefighters due to the small sample size obtained. Future research is
recommended in this area. However, based on the current research and hypothesis, the alternative hypothesis is rejected.

**Hypothesis 4**

In their research, Fullerton and Wang (2004) also suggested that rescue workers showed lower levels of stress due to longitude of service suggesting experience with stressful events over time allowed them to be able to manage stress. Biggs (2010) contradicts this by suggesting that other extraneous variables may impact an individual's ability or experience of events, and even suggests that early prior experience could potentially trigger a stress reaction. This research explored if longitude of service impacted either stress or anxiety levels. The results show that there was no significant difference between longitude of service and stress or anxiety. The alternative hypothesis is rejected.

**Hypothesis 5**

The results show that there was no relationship between the length of service and the coping mechanism used. Research shows that problem-focused was predominantly used amongst firefighters however, emotion focused coping (Minnie et al., 2015) can also be used. It is suggested that this change through experience (Leonard and Alison, 1999; Young, Partington, Wetherell, St Clair Gibson and Partington, 2014). Some researchers used COPE questionnaire to measure coping mechanisms amongst firefighters (Meyer et al., 2012), and an objective of this research was to explore if these findings are consistent for firefighters based in Ireland using a questionnaire which recognised avoidance as a distinct and separate coping mechanism.

The results show consistency with other research that problem focused is predominantly used by firefighters but other coping mechanisms can also be used. The results show that there was no significant difference between longitude of service and the coping mechanism used. This suggests that longitude of service does not impact coping
mechanisms, and these findings contradict previous research (Nydegger, Nydegger and Basile, 2011, del Ben, Scotti, Yi-Cheun and Fortson, 2006). The alternative hypothesis is rejected.

_Hypothesis 6_

An objective of this study was to determine if there was a difference between stress and coping mechanisms used. Previous research found that firefighters who had high levels of work related stress and those who had problem focused coping mechanism (Baker and Williams, 2001). Research also found cross cultural variations with the type of coping mechanism used with firefighters. This research supports previous research that Irish based firefighters engage in problem focused coping, however lower levels of stress were recorded in this group. These results contradict some of the previous research.

Participants who had higher levels of stress had emotion orientated coping or engaged in avoidance coping mechanisms. In terms of the sub division of avoidance coping, there was a weak positive correlation between stress and social diversion but there was a significant association with stress and participants who had avoidance distraction as a coping mechanism. The CISS questionnaire did support previous findings however, it does provide further information in relation to social diversion and avoidance distraction and the relationship with stress for the participants. This is significant as avoidance may not have negative implications for the individual in the short term but in the longer term this can have implications, and could suggest that these coping mechanisms may be predisposed to developing stress related disorders and as a result of their coping mechanism (Minnie et al., 2015).

Anxiety can impair an individual’s ability to function on a daily basis (Bryant, Sutherland and Guthrie, 2007). The objective of this research was to investigate if there was a relationship between anxiety and coping mechanisms amongst respondents. The findings
suggested a relationship between anxiety and avoidance coping, emotion orientated coping and avoidance distraction (within the avoidance sub scale). There was no relationship for anxiety and either task orientated and social diversion. The alternative hypothesis is partially accepted.

Open communication, personal experience and social support has been highlighted as the major themes relating to the debriefing process. Respondents had a mixture of positive and negative comments to make relating to some of these themes. Awareness emerged as being important to the debriefing/defusing process. It is important as it can provide awareness of certain aspects from the incident which the individual can learn from, gain experience but be able to become aware through the process of introspection.

Research conducted by Ross-Adhie, Leslie and Gillman (2007) suggested that debriefing/defusing should be mandatory after a critical incident. Whilst the majority of respondents were in favour of this, and had previous experience of a debriefing/defusing process further analysis provided clarification. The major themes which emerged were that participants were in favour of a supportive environment, bringing awareness of the critical incident and the impact this may have had on them and open communication, which facilitates the individual to express their thoughts and feelings. This was further supported by the aspects of CISM which participants engaged in on a personal basis or found effective. Debriefing/defusing provides an environment for a structured and formal approach after a serious incident, however for most incidents an informal talk amongst colleagues appears to be sufficient. Jeannette and Scorbia (2008) found how a variation to approaches depending on the severity was preferred amongst firefighters and the results from this thematic analysis support this research.
6.2 Strengths and limitations of Study

There are a number of strengths to this study. Firstly, the CISS questionnaire provided useful insight into coping mechanisms with the segregation of avoidance as a separate coping mechanism approach. Whilst, some of the tests support previous findings, it does indicate that firefighters can take an integrative approach in their coping style. In doing so, the use of the CISS questionnaire provides more depth to current research. This research supports existing findings that problem focused is predominantly used by firefighters and avoidance and emotion coping are used model by Irish firefighters.

Secondly, there is a quantitative aspect to this research which measures overall current stress and anxiety for firefighters as a group. The qualitative component of the research brings additional clarify to the findings of this study by revealing the aspects of CISM that firefighters engage in, and find beneficial to them on a personal level.

A limitation to this research was that the group sizes in relation to longitude of service there was unequal distribution amongst the groups. Future research could explore a larger sample size with more equal participants within each category. This was not possible for this research as recruitment had not occurred in the Fire Service for a number of years, therefore most of the participants were weighted as having at least ten years’ experience.

Another limitation to this research is that as the respondents were self- reported and self- awareness is a key aspect to reporting of reporting research in this regard. The challenge to self- reporting is the variances between optimistic and pessimistic individuals in how they report their symptoms. Optimists could be under-reporting their symptoms, whilst pessimistic individuals maybe over-reporting (Maltby et al 2013). A key component to self-reporting research is also self-awareness of the individual (Nes, Segerstrom and Sephton, 2005).

Finally, for the qualitative component of the study, a number of the questions were not answered by respondents. It was mentioned to the researcher by some of the respondents
that the questionnaire appeared to be quite long with the qualitative questions being asked at the end of the questionnaire. Other factors may have impacted the respondents not fully completing the questionnaire such as the time of day. Respondents from the retained stations were visited in the evening time, after training session so fatigue may have been a factor.

6.3 Implications

This research provides further information and education in relation to providing stress management programmes for firefighters, particularly after a critical incident. The thematic analysis shows that social support is an important factor but there is an individual component and awareness and interaction with stress management programmes. A high level of respondents did not provide information in relation to aspects of stress management which they may engage in. This could potentially suggest that a number of respondents may have problem focused coping mechanisms and did not feel that this would benefit them.

Providing mindfulness classes may provide beneficial intervention if a high level of stress or anxiety is being experience on an individual basis or even in the maintenance of positive mental health and cognitive functioning. This could be considered by the Fire Service as an intervention or in the maintenance of positive mental health.

6.4 Future Research

In order to provide more comprehensive results for stress and anxiety on coping mechanisms and longitude of service, further research could focus on trainee firefighters or individuals who have just joined the service to determine if these findings are consistent.

An urban station which used EMS differs in its operational approach and handles more volume calls than the retained stations. A cross sectional study would perhaps be beneficial where an EMS based system was used in another urban centre. A larger sample to include random sampling from retained stations could also provide more insight to determine if the findings are and consistent.
A number of themes emerged in relation to defusing/ debriefing which corroborate existing research. Whilst, majority of respondents participated in a debriefing/ defusing and were in favour of this being mandatory, the thematic analysis highlighted the role of social support, personal open communication and awareness as being crucial to be able to manage critical incidents. There is no difference in anxiety or stress between firefighter/paramedic and firefighter group or between age and stress. The results show that there was no significant difference between longitude of service and stress, anxiety or coping mechanism. High levels of social support are considered to protect individuals towards high levels of stress, and this was an evident in the findings. The research proved to be more supportive of a contextual framework for debriefing/ defusing.

In conclusion, this research reinforced the findings in previous literature, that problem-focused coping is the predominant coping mechanism used for Irish based firefighters. The levels of stress and anxiety were within a normal range. The research also found no difference in age and longitude of service and with the type of coping mechanism employed by the individual.

Participants who had higher levels of stress had emotion orientated coping or engaged in avoidance coping mechanisms. There was a weak positive correlation between stress and social diversion but there was a significant association with stress and participants who had avoidance distraction as a coping mechanism. There is a partial relationship in stress, anxiety and coping mechanisms.
References


Appendices

My name is Niamh O Rourke and I am a final year student of psychology at Dublin Business School. I am conducting research into the current stress levels of Firefighters/ Paramedics and how individuals may manage stressful experiences.

This research has been granted ethical approval from Dublin Business School and is being conducted as part of my studies within the Psychology Higher Diploma and will be submitted for examination.

You are invited to take part in this study and participation involves completing and returning the attached anonymous survey. The survey asks some questions in relation to stress and how you may cope in general, in stressful situations.

Some of the questions may cause some minor negative feelings. If this is the case, contact information for support services is included on the final page.

Participation is voluntary and the questionnaires are anonymous and confidential. Answers cannot be attributed to an individual participant therefore, it will not be possible to withdraw from the study once the questionnaire has been collected.

Answers which are provided may be used in future presentations or maybe published as part of findings. The questionnaires will be securely stored and data from the questionnaires will be transferred from the paper record to electronic format and stored on a password protected computer.

It is important to note that by completing and submitting the questionnaire that you are consenting to participate in the study.

Should you require any further information about the research, please contact myself, Niamh O Rourke, at 1603113@mydbs.ie or my thesis supervisor Dr. John Hyland john.hyland@dbs.ie.

Thank you for taking the time to complete this survey.
Please **CIRCLE** your response to each of the following questions.

**Sex**
- Male
- Female

**Age**
________ years

**Longitude of service**
- a. 0-4 Years
- b. 5-9 Years
- c. 10-14 years
- d. 15 years plus

**Current Role**
- a. Fire-fighter / Paramedic
- b. Fire Fighter

**Do you work**
- a. Full-Time
- b. Volunteer

**Do you work at an**
- a. Urban based station
- b. Small Urban or rural based station

**Instructions**: The following are ways people react to various difficult, stressful, or upsetting situations. Please **circle a number from 1 to 5 for each item**. Indicate how much you engage in these types of activities when you encounter a difficult, stressful, or upsetting situation.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>Very much</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Schedule my time better</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>2. Focus on the problem and see how I can solve it</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>3. Think about the good times I've had</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>4. Try to be with other people</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td>5. Blame myself for procrastinating</td>
<td>1 2 3 4 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description</td>
<td>1</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>6</td>
<td>Do what I think best</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Preoccupied with aches and pains</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Blame myself for having gotten into this situation</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Window shop</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Outline my priorities</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Try to go to sleep</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Treat myself to a favourite food or snack</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Feel anxious about not being able to cope</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Become very tense</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Think about how I have solved similar problems</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Tell myself that it is really not happening to me</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Blame myself for being too emotional about the situation</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Go out for a snack or meal</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Become very upset</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Buy myself something</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Determine a course of action and follow it</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Blame myself for not knowing what to do</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Go to a party</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Work to understand the situation</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>&quot;Freeze&quot; and don’t know what to do</td>
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<tr>
<td></td>
<td>Stress, Anxiety and Coping Mechanisms</td>
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</tr>
<tr>
<td>26.</td>
<td>Take corrective action immediately</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>27.</td>
<td>Think about the event and learn from my mistakes</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>28.</td>
<td>Wish that I could change what had happened or how I felt</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>29.</td>
<td>Visit a friend</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>30.</td>
<td>Worry about what I am going to do</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>31.</td>
<td>Spend time with a special person</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>32.</td>
<td>Go for a walk</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>33.</td>
<td>Tell myself that it will never happen again</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>34.</td>
<td>Focus on my general inadequacies</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>35.</td>
<td>Talk to someone whose advice I value</td>
<td>1 2 3 4 5</td>
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<tr>
<td>36.</td>
<td>Analyze the problem before reacting</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>37.</td>
<td>Phone a friend</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>38.</td>
<td>Get angry</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>39.</td>
<td>Adjust my priorities</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>40.</td>
<td>See a movie</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>41</td>
<td>Get control of the situation</td>
<td>1 2 3 4 5</td>
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<tr>
<td>42.</td>
<td>Make an extra effort to get things done</td>
<td>1 2 3 4 5</td>
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<tr>
<td>43.</td>
<td>Come up with several different solutions to the problem</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>44.</td>
<td>Take time off and get away from the situation</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>45.</td>
<td>Take it out on other people</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>46</td>
<td>Use the situation to prove that I can do it</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0  Did not apply to me at all
1  Applied to me to some degree, or some of the time
2  Applied to me to a considerable degree, or a good part of time
3  Applied to me very much, or most of the time

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</thead>
<tbody>
<tr>
<td>1</td>
<td>I found it hard to wind down</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>I was aware of dryness of my mouth</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>3</td>
<td>I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion).</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<tr>
<td>4</td>
<td>I tended to over-react to situations</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
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<td></td>
<td>Description</td>
<td>Score</td>
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<tr>
<td>5</td>
<td>I experienced trembling (e.g., in the hands)</td>
<td>0 1 2 3</td>
<td></td>
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<tr>
<td>6</td>
<td>I felt that I was using a lot of nervous energy</td>
<td>0 1 2 3</td>
<td></td>
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<tr>
<td>7</td>
<td>I was worried about situations in which I might panic and make a fool of myself</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>8</td>
<td>I found myself getting agitated</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>I found it difficult to relax</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>10</td>
<td>I was intolerant of anything that kept me from getting on with what I was doing</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>I felt I was close to panic</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>I felt that I was rather touchy</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
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<tr>
<td>13</td>
<td>I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)</td>
<td>0 1 2 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I felt scared without any good reason</td>
<td>0 1 2 3</td>
<td></td>
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</tbody>
</table>
Critical Incident Debriefing and Defusing, (shortened version of CID) are both techniques used in the aftermath after a particularly stressful situation. Have you ever participated in a Critical Incident Debriefing or Defusing? (Please circle your response)

Yes          No

Do you believe that Critical Incident Debriefing OR Defusing should be mandatory after a particularly stressful situation? (Please circle your response). Can you please briefly explain

Yes          No

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

On a personal level, can you briefly describe what aspects of Critical Incident Stress Management techniques you engage in and/or find effective?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Thank you for participating in this study.
Helpful contacts names and numbers

Samaritans

Phone 116123 (ROI)

Website http://www.samaritans.org/how-we-can-help-you/contact-us/calling-samaritans-roi

Aware

The Aware Support Line 1890 303 302

Available Monday – Sunday, 10am to 10pm.

For Support groups - http://www.aware.ie/help/support/support-groups/

Psychologist

PSI has a list of useful accredited and qualified psychologists. Please see http://www.psychologicalsociety.ie/find-a-psychologist/ for a psychologist in your preferred location.