

WORK-RELATED STRESS IN HER MAJESTY'S COASTGUARD (HMCG)

by

Susan E. Kingdom

A thesis submitted to Cardiff University in partial
fulfillment of the requirements for the degree of
Doctor of Philosophy (PhD)

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ABSTRACT

The aim of this research was to gain an understanding of work-related stress in a previously unstudied occupational group, Her Majesty's Coastguard (HMCG). The overall level of stress was established at 11%, contrary to expectations and lower than the 17% found in general population comparison samples. Despite this relatively lower level, measures reflecting the Effort-Reward-Imbalance (ERI), Job Demands-Control-Support (JDCS) and Negative Occupational Factors Models of stress were all associated with seven negative outcomes (stress, anxiety, depression, number of sick days, perception that illness was caused or made worse from work, inability to "relax or wind down" and impact on family life) and up to a further nine, dependent upon the model. Significant predictors of stress included ERI, organisation change and exposure to physical agents (noise), with anxiety predicted by ERI, noise and bullying, and depression by ERI, bullying, noise, training and role conflict/ambiguity. The level of depression found was significantly higher than a general population comparison group. ERI was a consistent theme throughout and the most efficient model in explaining variance in the data. Those who had high effort-reward imbalance were nine times more likely to experience stress, 13 times more likely to experience anxiety and six times more likely to suffer from depression. Using the JDCS Model, HMCG were found to have significantly lower job demands and decision latitude but significantly higher levels of moderating social support. A second, pilot study, which focused on job specific factors, indicated that critical incidents involving death of a child might be the most stressful to handle but that frequency of exposure, amongst a range of other influences, were having a moderating effect. Whilst demonstrating that lower levels of stress are still harmful, there were also aspects of this group which may help with stress reduction elsewhere. Implications for further research are discussed.

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Chapter 1

BACKGROUND TO HM COASTGUARD (HMCG)

1.1 INTRODUCTION

The overall aim of the research reported in this thesis was to gain an understanding of work-related stress in a previously unstudied occupational group. Chapter 2 presents a detailed rationale for conducting research on HMCG, one of the reasons being the nature of the role. HMCG is a uniformed, emergency service whose employees are exposed to the possibility of having to deal with life threatening situations 24-hours per day. The potential for stress, as a result of their work, is more likely given that previous research has found this to be the case in respect of other emergency services (i.e., police, fire and ambulance); although reasons for such stress vary between negative occupational factors (e.g. job demands) to those more directly related to emergency incidents themselves (e.g., post-traumatic stress disorder). This is discussed in more detail in Chapter 3. Amongst others, additional reasons for studying HMCG included a history of perceived stress within the organisation and a significant increase in the number of reported cases of occupational stress, generally within the UK population. Despite this, to date, there has been no research published on the prevalence of stress within the Coastguard.

The purpose of this chapter is purely a functional one to provide detailed, background information on HMCG as an organisation. The work of HMCG is often misunderstood, with the perception that it is they who go out in rescue boats to persons in distress. The primary role of watch keeping officers,

however, is to *co-ordinate* rescues from a Maritime Rescue Co-ordination Centre (MRCC), whilst others, often from volunteer organisations, such as the RNLI, carry out the actual rescue. This co-ordination function is supported from within HMCG by Sector Managers, whose duties include the training and management of Coastal Rescue Teams, and who are often called upon to effect rescues and act as liaison officers with the other emergency services. When conducting research in the workplace, it is important to understand the context. Knowledge of the working environment can be particularly relevant to the Researcher when it comes to research design, choice of methodology and later, in the interpretation of data. By understanding the role of HMCG and the demands placed upon those who work within the organisation, it becomes easier to identify any potential areas where stress may occur. This chapter is purely descriptive and a prelude to the formal introduction to the research, described in Chapter 2. It serves to provide in-depth contextual information, on which the two empirical studies reported later are based.

This chapter starts by outlining the history of HMCG and how it has evolved into the organisation it is today. This is then followed by a description of HMCG as a government department and its relationship to the Maritime and Coastguard Agency, an explanation of how HMCG's staff are located across the UK, an overview of their current duties, roles and reporting structure and the support they receive from the volunteer Coastal Rescue Service and other available resources. Finally, I provide a brief introduction to the next chapters.

Before moving on to HMCG's history, it should be noted that during the preparation of this thesis, the majority of information contained within this chapter has been obtained from the MCA HR Department or the MCA website (<http://www.mcga.gov.uk>) where further details are available, if required.

1.2 HISTORY OF THE COASTGUARD

The Coastguard was officially formed in 1822. A review of the main changes in the history of the Coastguard from this date until the present helps to understand the variety of tasks in which they have become involved, the different influences on their development as an organisation and the number of changes they have had in their reporting lines to various government departments. This subsequently leads to a greater appreciation of some of the points raised when talking to the Coastguard about workplace issues, for example, the effects of organisational change.

When originally formed in 1822, the "Coast Guard" (which became Coastguard during the twentieth century), was controlled by the Board of Customs. It was borne out of a need to tackle smuggling, which began when taxes were imposed upon imports and exports during mediaeval times. On land, staff from Customs would search cargoes and collect duties at each port, whilst at sea Customs Revenue Cruisers would patrol for illegal offloading of cargo. Prior to 1822, those involved in activities such as these were known as the Preventative Water Guard.

During the 1820s and 30s, the Coastguard were assigned the responsibility of shipwrecks (to safeguard cargoes) and those who went out in boats, were trained with life saving equipment, supplied by the Board of Ordnance. The Admiralty became involved by re-styling the Coastguard with a naval uniform, the introduction of drill and by providing training on large guns for coastal defence. The Merchant Shipping Act of 1854 resulted in the Board of Trade issuing life saving apparatus to Coastguard stations.

The Coast Guard Act of 1856 passed control of the Coastguard from the Board of Customs to the Admiralty. The Coastguard thus took on the role of naval reserve, in addition to being the coastal defence force. Although still available for customs work, Coastguards trained to supplement naval crews. By 1900, advancing technology in ships and arms meant that this style of naval reserve had become outdated and the Admiralty proposed a reduction in the Coastguard. This suggestion was opposed by the public, the Board of Customs and the Board of Trade, who championed the need for both life saving *and* revenue protection.

A government enquiry in 1921 found that the Coastguard had become the eyes and ears of many organisations with coastal interests. For example, they reported fleet movements, rendered mines safe and undertook recruitment for the Admiralty whilst changes in navigation were reported to the Hydrographer. For the Board of Customs and Excise, they searched vessels, collected duties from coastal vessels and kept statistics. For the Board of Trade, they acted as Receiver of Wreck and operated life saving equipment. They assisted the Post

Office and Lloyds with telegraphy and wireless, the Fishery Department with statistics, enforced quarantine regulations for Agricultural Departments, made meteorological reports to the Air Ministry, passed distress calls to the RNLI and reported faulty navigation aids to the Corporation of Trinity House.

In 1923, the Coastguard were moved from the Admiralty and placed under the Board of Trade. Their existence was dedicated to life saving, salvage from wreck and administration of the foreshore. During the 1920s, Coastguards kept visual watch from stations overlooking major shipping lanes, calling on support from Auxiliaries as required. A government enquiry during 1931, predicted that increased use of technology (i.e., radio), would eliminate the need for visual watches. However, it was from 1974, when the then Chief Coastguard, Commander John Douglas, recommended that HMCG take on the control of VHF Channel 16 and 70 (distress and safety calling) that a quicker reduction in Coastguard stations began to the 19 which exist around the UK coast today (although recent Government announcements suggest that there will be further reductions in the next year or so). HMCG then had the responsibility to monitor these channels 24/7 with additional Auxiliary Coastguards (now the Coastal Rescue Service) recruited at all Coastguard Rescue MRCCs.

From the 1930s onwards, effective watch and communication activities developed with the aim of reducing the number of shoreline casualties and this preventative role continues, as the government of today increases its demands on HMCG for a reduction in fatalities.

The Coastguard officially became an emergency service in the 1960s, contactable by the UK national 999 telephone number. During 1967, the Coastguard started using computer-enhanced radar to monitor traffic through the Dover Straits and since 1969 (due to the Torrey Canyon oil spill off the Scilly Isles in 1967), they have been tasked as being an early warning system for pollution control. In 1979, a Coastguard support vessel named Miranda began to accompany British fishing fleets into northern seas and after the Braer incident in 1994, when 85,000 tons of oil was spilt into the sea around Scotland, emergency towing vessels were added to Coastguard resources for assisting disabled vessels. Coastguards now provide liaison and training to enhance search and rescue awareness for the merchant marine and oil/gas industry.

The Coastguard currently handles approximately 12,000 incidents each year, most of which result from an ever growing list of leisure coastal pursuits, such as hang-gliding and wreck diving, which have significantly increased in popularity from the 1960s to this day. The scope of Coastguard co-ordination has extended as new facilities have been created to match modern rescue situations, for example, the introduction of inshore rescue boats by the RNLI and other independent groups. Coastguard rough terrain vehicles have increased their mobility and have provided mobile communication bases. In 1971, Coastguards improved their access to rivers and remote coastal areas with patrol boats. Military helicopters were first used for rapid rescue from the late 1940s and Coastguard helicopters supplemented military cover in the 1980s, when minimum response times were set. Fixed-wing, military aircraft

can also be tasked for long-range searches. This has given the Coastguard further resources to co-ordinate.

In 1998, the most recent change in reporting structure saw HMCG merge with the Maritime Safety Agency, to form the current Maritime and Coastguard Agency.

1.3 HMCG AND THE MARITIME AND COASTGUARD AGENCY

The current status of HMCG is still that of a public sector body but it is now an integral part of the Maritime and Coastguard Agency (MCA) and this, in turn, forms part of the Department for Transport (DfT). The MCA is responsible throughout the UK for implementing the UK Government's maritime safety policy. This includes developing, promoting and enforcing high standards of marine safety, minimising loss of life amongst seafarers and coastal users, responding to maritime emergencies 24-hours a day, minimising the risk of pollution of the marine environment from ships and where pollution does occur, minimising the impact on UK interests; the MCA's motto being: **Safer Lives, Safer Ships, Cleaner Seas**. HMCG provides the MCA's response to maritime emergencies and is also a Category 1 responder under the Civil Contingencies Act (i.e., they have a primary role in the response to incidents along with other emergency services, NHS bodies, government agencies and local authorities).

1.4 COASTGUARD REGIONS AND STATIONS

In order to effectively respond to these maritime emergencies, HMCG are currently based in 19 Coastguard stations located throughout the UK, in addition to Head Quarters in Southampton. Coastguard stations are officially referred to as Maritime Rescue Co-ordination Centres (MRCCs). The 19 MRCCs are divided into three geographical search and rescue regions as follows 1. *Eastern Region* comprises: Dover, Humber, London, Solent, Thames, Portland and Yarmouth stations, 2. *Western Region* comprises: Brixham, Falmouth, Holyhead, Liverpool, Milford Haven and Swansea and 3. *Scotland and Northern Ireland*: Aberdeen, Belfast, Clyde, Forth, Glasgow and Stornoway/Shetland Islands stations. Figure 1, is a map showing the location of stations currently located across the UK. In order to see whether there were any differences in stress levels, Regions and MRCCs were included as variables within both studies conducted for this research.

1.5 CURRENT DUTIES OF THE COASTGUARD

The official duties of HMCG are fully documented in the *Search and Rescue Framework for the United Kingdom of Great Britain and Northern Ireland* (Crown, 2002). These duties are many and varied. They include a substantial amount of liaison with other organisations who are also involved in emergency operations. An overview of these duties is as follows:

HMCG are primarily responsible for the *initiation and co-ordination* of civil maritime search and rescue (SAR) within the designated United Kingdom Search and Rescue Region (UKSARR); see Figure 2. SAR is the activity of

locating and recovering persons either in distress, potential distress or missing and delivering them to a place of safety. The organisation of SAR in the UK and Northern Ireland is via an amalgam of separate government departments, (such as the DfT and its Agencies, MoD, the Cabinet Office, Scottish Executive and the National Assembly for Wales), the emergency services (Police, Fire and Rescue, Ambulance) and other organisations. A number of charities and volunteer organisations dedicated to SAR also make a significant contribution, for example, the Royal National Lifeboat Institution (RNLI), Mountain Rescue Council of England and Wales (MRC), British Cave Rescue Council (BCRC) Search and Rescue Dog Association (SARDA) and Association of Lowland Search and Rescue (ALSAR).

HMCG's responsibility for the co-ordination of SAR within the UKSARR includes the mobilisation, organisation and tasking of the above listed resources to respond to persons either in distress at sea, or to persons at risk of injury or death on the cliffs and shoreline of the UK. HMCG is required to task its own assets, as well as those made available from other emergency services. The co-ordination of SAR incidents may also include close liaison with the Aeronautical Rescue Co-ordination Centre at RAF Kinloss and other emergency services, as well as rescue organisations in adjacent foreign SAR organisations.

As part of their duties, HMCG maintain a continuous communications watch on VHF, VHF/DSC, MF and MF/DSC radio at each of its 19 stations. VHF coverage extends to 30 nautical miles off UK coastal and offshore waters, MF to 150

nautical miles, whilst satellite communications extend that coverage worldwide. This communications watch includes a distress watch on the international VHF distress frequency. In addition to radio and satellite communication, HMCG keep a constant emergency telephone watch and have VHF Direction Finding capability (although the latter is due to cease at the end of 2010). Telex and fax are also maintained. SAR operations are all supported by a computerised information command and control system (ICCS), which provides incident management and recording, resource selecting and alerting, logging and databases. A computerised system provides the facility to predict the movement of drifting targets at sea, produce search areas and optimum search coverage plans for search units.

In addition to the co-ordination of SAR incidents, Coastguards broadcast maritime safety information such as: navigational working, shipping forecasts, local inshore forecasts, strong wind, gale and storm tide warnings.

HMCG also provides the UK Radio Medical Advice Service (MEDLINK). This service provides the ability to link a doctor from a nominated hospital, through the relevant HMCG station, to a vessel requiring medical assistance. This is done via an appropriate VHF channel or MF frequency. If necessary, HMCG will also arrange for the casualty to be transported from the vessel to hospital.

In addition to its normal search and rescue co-ordination role, MRCC Dover also operates the Channel Navigation Information Service (CNIS). This service is operated in conjunction with the French coast guard and provides continuous

radar surveillance of the Straits of Dover. This is to ensure that vessels that transit the Straits, do so in accordance with the 1972 International Regulations for Preventing Collisions at Sea. MRCC Dover also makes regular broadcasts, which include weather conditions and other occurrences to assist vessels through this busy waterway. As part of CNIS, vessels may voluntarily make known their position and intended movements to HMCG when transiting the Fair Isle Channel, the Pentland Firth, the Minches, Kyle of Lochalsh and traffic separation schemes around the Isles of Scilly.

In addition to its normal search and rescue co-ordination role, MRCC Falmouth acts as the UK's Global Maritime Distress and Safety System (GMDSS) Centre. MRCC Falmouth is linked directly to the Coast Earth Station at Goonhilly whereby distress, urgency or safety messages received via satellite systems are routed automatically to MRCC Falmouth for SAR action. If any distress calls are received outside the UKSRR, it is the responsibility of MRCC Falmouth to pass details to the appropriate foreign rescue co-ordination centre. Where this is not possible, MRCC Falmouth will co-ordinate the necessary SAR action regardless of location worldwide.

MRCC Falmouth also possesses an Operation Control Centre for the COSPAS/SARSAT satellite distress alerting system, which is linked direct to the MCA's satellite local users' terminals at its Combe Martin radio site. The Operation Control Centre operates in support of the COSPAS/SARSAT UK Mission Control Centre at the Air Rescue Co-ordination Centre at RAF Kinloss.

All NAVTEX (Navigational Safety Text) broadcasts originate from MRCC Falmouth. The National Maritime Emergency Position Indicating Radio Beacon Registry is also located at MRCC Falmouth and provides the necessary identification of vessels following distress alerts through the beacon.

1.6 COASTGUARD ROLES AND REPORTING STRUCTURE

Ultimately, all those employed by HMCG are involved to some degree in the resolution of maritime emergencies. However, there is a range of roles within HMCG, some of which may be more exposed to the potential for stress. From top down, all those working in HMCG report to the *Chief Coastguard*, who is also the Director of Operations and reports to the Chief Executive of the MCA.

Below the Chief Coastguard are *Regional Directors/Managers*. Their key purpose is to manage both corporate and Directorate business strategies, providing a contribution to decisions over the MCA's strategic direction. Regional Directors/Managers are particularly responsible for the management of business and operational effectiveness within the Region in order to meet key Business Plan targets.

Area Operations Managers (AOMs) are responsible to the Regional Operations Directors/Managers for the effective and efficient delivery of those aspects of the MCA's Business Plan that fall within the scope of the area covered. In addition, for ensuring that services are delivered in accordance with the terms of the MCA's Citizens' Charter Code of Practice (MCACS) and Quality Management Procedures (QMP).

District Operations Managers (DOMs) are responsible for managing the day-to-day SAR response and prevention and counter pollution and salvage support activities of the MRCC and District in conjunction with Watch Managers and, where necessary, Sector Managers and Coastal Rescue Teams.

Sector Managers manage the MCA's resources, for example, property estate and represent the MCA within the local community. Sector Managers are responsible for the day-to-day management of the Coastal Rescue Service team members (see sub-section 1.7.1), ensuring that they are proficient in all aspects of their duties and responsibilities.

Watch Managers (WM) are responsible for ensuring a prompt and appropriate response to all SAR incidents within the defined area of responsibility. This includes management of watch keeping staff, routine operations and the effective oversight of all marine activities.

Watch Officers (WO) respond to all calls and requests for information and assistance within the defined SAR region using relevant resources. They are also responsible for the supervision of Coastguard Watch Assistants under the direction of the Watch Manager.

Coastguard Watch Assistants (CWAs) work in rescue centre operations rooms under the supervision of Watch Officers (WOs) and Watch Leaders (WLs), working as part of a team to maintain an effective state of readiness at all times.

Finally, Coastguard Watch Assistants, Administration CWA(A) are accountable to the District Controller and assist with the general administration of the District Office and provide office support services under the direct supervision of District Management. As with Regions and MRCCs, job types were also included as a variable within the two studies conducted for this research to understand whether there were any differences in stress levels between roles.

More detailed job descriptions for each of these roles is provided as figures 3 – 10 at the end of this Chapter. Like other emergency services, between them, the roles cover a wide range of activities from associated administrative tasks through to more direct handling of emergency situations and the management of the service. As mentioned above, differences in the sources of stress in other emergency services, as currently reported within the literature, are described in Chapter 3.

1.7 SUPPORT SERVICES

1.7.1 Coastal Rescue Service (CRS)

In addition to the wide variety of other government departments that HMCG both interact with and rely upon, they receive support from a body known as the Coastal Rescue Service (CRS). The CRS is an organisation of Coastguard Rescue Teams (CRTs), situated at strategic locations around the coast. There are approximately 3,500 people within it and all are volunteers. The CRS plus various other volunteer organisations are crucial to HMCG's service as it is these people who actually conduct the lookout and rescue operations, whilst HMCG co-ordinate them. The CRS teams are equipped to deal with incidents

appropriate to the risks associated with local coastal terrain, local shoreline activities and conditions. Each CRT has an initial response capability for investigation, surveillance and reporting to their local MRCC. In some locations, where there are no CRTs but the operational requirement exists, small teams known as Initial Response Teams (IRTs) have been established to provide this initial response. All CRTs have a search capability and in addition, many have a cliff and/or mud rescue capability, whereas IRTs are usually equipped with portable radios for reporting purposes only.

Members of both CRTs and IRTs are volunteers. Reporting Coastal Rescue Officers (CROs) *ashore* are non-uniformed, unpaid volunteers who generally live in a prominent position overlooking the coast. Generally, it will be the local MRCC that contacts them to verify a report of an incident. Reporting CROs *afloat* are non-uniformed, unpaid volunteers who are experienced boat users and wish to be associated with the work of HMCG while at sea in their craft.

1.7.2 SAR Helicopters and Emergency Vessels

Finally, vehicular support comes in the form of helicopters and emergency vessels. HMCG operates helicopter units at Sumburgh Airport (Shetland), Stornoway (Isle of Lewis), Portland and Lee-on-Solent. The helicopters provided have a full night/all weather capability for civil maritime and civil aviation SAR and medical evacuation from ships and offshore installations (e.g., oil rigs). These aircraft can also be made available for military rescue if the need arises, with the Stornoway station providing a secondary role in support of land rescue. The MCA also charts four vessels to provide

emergency towing cover in high risk shipping areas. These are based in the Straits of Dover, the Minches, the Fair Isle Area and the South Western Approaches. Any use of these resources has to be requested and co-ordinated by HMCG from their base station as part of the day-to-day role.

1.8 CHAPTER SUMMARY

This chapter started by briefly stating my reasons for conducting research on HMCG and then subsequently fulfilled a functional purpose by describing the background to HMCG (history, description of structure, role and duties, etc.). This information provides a context for the results of the empirical studies presented later in Chapters 5 – 7. In the next chapter I provide a more formal introduction to the new research, followed by a relevant literature review in Chapter 3.

Figure 1. Location of HMCG MRCCs (stations) throughout the UK

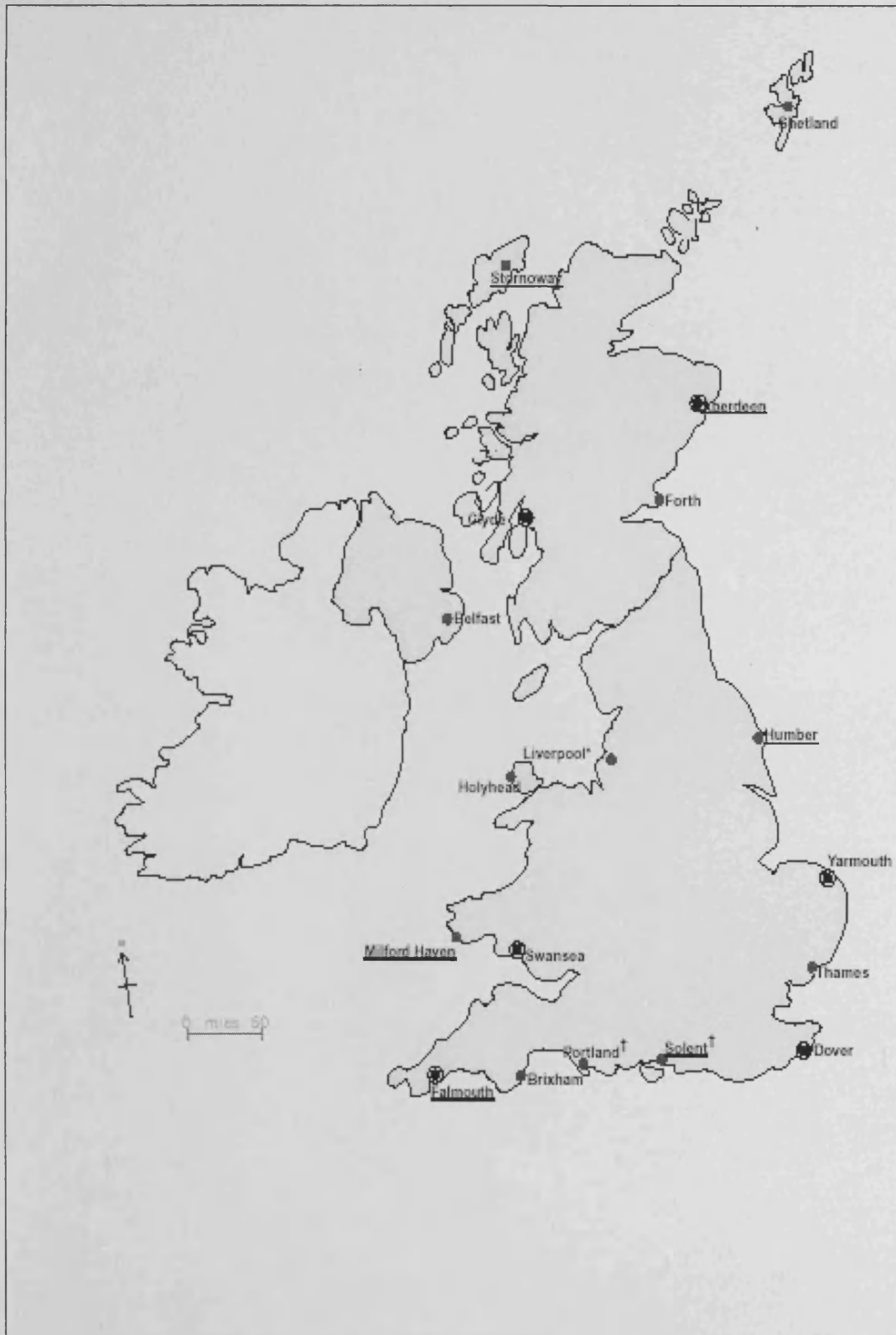


Figure 2. The UK Maritime Search and Rescue Region (UKSARR)

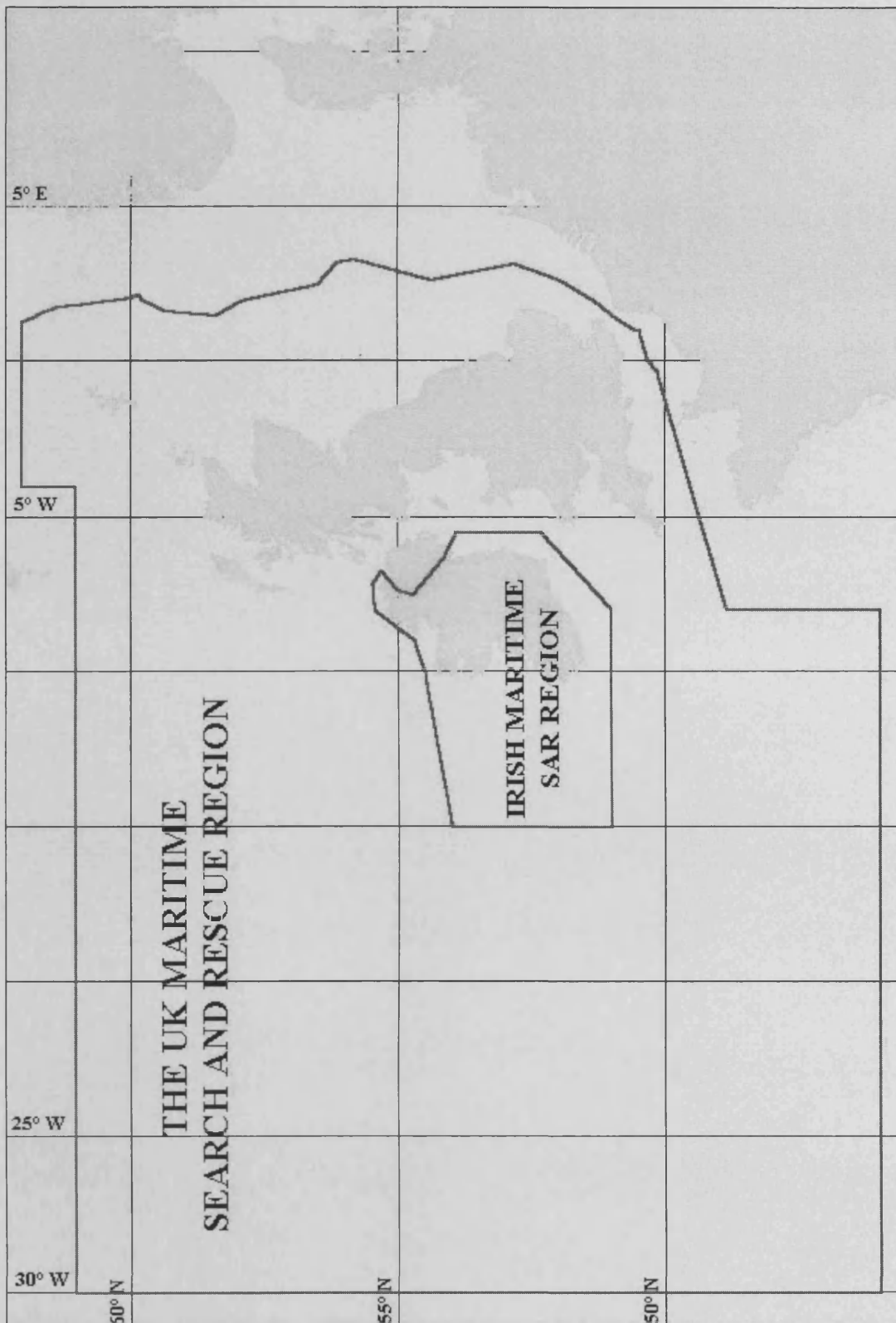


Figure 3: Job Description for Regional Director/Manager

Job Title	Regional Director
Reports to	Director of Operations
Location	Regional Office
Job Purpose	
Managing both Corporate and Directorate business strategies and contributing to decisions over the Agency's strategic direction. Particularly responsible for the management of business and operational effectiveness within the Region in order to meet key Business Plan targets.	
Key Responsibilities	
- Ensuring, in conjunction with Executive Board members, that the Agency achieves its business objectives and targets within its financial allocations. Assist in the setting of and achieving business plan targets. - To control and minimise corporate risk through ongoing strategic planning as required by the Director of Operations. - To plan and deliver positive organisational and cultural change for the Directorate. - To ensure efficient and effective deployment and use of all Agency staff and resources, including estate within the Region in line with the Director of Operations' requirements. - To develop and submit bids under a wide range of pay, non-pay and running cost budgets; full management of those budgets and signatory to Assurance to the Agency Accounting Officer for Region at year end. - To ensure the ongoing development of staff and to deliver HR management to meet corporate and legislative expectations. - Representing the Agency's interests on appropriate issues with Department for Transport (DfT), other DfT Agencies, Cabinet Office, Treasury and other public and private sector organisations and the media. - To manage and develop the Auxiliary Service within the Region in line with Director of Operations' requirements. - To develop the operational policies for paired and grouped Coastguard Co-ordination Centres using Integrated Coastguard Communication Systems. - To develop integrated MCA preventative initiatives and validate methodologies in concert with the Risk Analysis and Prevention Branch. - To develop and exploit opportunities for joined up working with other public sector organisations to maximise efficient and effective use of resources as required by the Director of Operations. - To identify and exploit as appropriate, opportunities for business growth, new opportunities and wider market initiatives. - To ensure that all Search and Rescue, Counter Pollution and Survey and Inspection operations are resourced to ensure operational readiness. - To deliver continuous improvement in operational efficiency.	

Figure 4: Job Description for Area Operations Manager

Job Title	Area Operations Manager (AOM)
Reports to	Regional Operations Manager
Location	Marine Office
Direct Reports	Surveyors
Job Purpose	
AOM responsible to the Regional Operations Manager for the effective and efficient delivery of those aspects of the MCA's Business Plan that fall within the scope of the area covered, and for ensuring that services are delivered in accordance with the terms of the MCA's Citizens' Charter Code of Practice (MCACS) and Quality Management Procedures (QMP).	
Key Responsibilities	
• Manager the statutory, inspectorate and audit work in the area to ensure allocated annual business plan targets are met. • Act as line manager for surveyors. • Improve relationships with and promote MCA Safety and Pollution Prevention messages through, local port authorities, marine industry groups, CG staff and Local Authorities. • Support MCA Enforcement unit and provide assistance to SOSREP and WR PCPO in order to progress the prosecution of pollution offences. • Support WR Principle Fishing Vessel Surveyor and provide surveyor assistance, as required. • Support NW area Marine Casualty Officer as required. • Support ROM (S&I) in management of survey and inspection related matters. • Maintain a high level of knowledge of current survey and inspection policy and carry out survey, inspection and audit work as necessary to maintain this knowledge.	
Other duties	
• Port State Control Inspections • General inspection of UK and Red Ensign Group ships • Audit of ships and shipping companies for issue for ISM Code and DSM Code certification. • Undertake statutory surveys and plan approvals. • Chair Marine Safety Committees. • Support Quality Branch in the Audit of organisations with delegated responsibility. • Audit (approval monitoring) of training providers, life-raft service stations and suppliers of approved marine equipment. • Assistance in implementation of International Ship and Port Facility Security (ISPS) Code and Port Marine Safety Code. • Assist with the investigation of accidents on behalf of the Marine Accident Investigation Branch. • Investigate complaints. • Developing cross-functional work. • Represent the MCA at specified internal and external meetings, working groups and other events. • Writing of QMS procedures and work instructions. • To propose and assist in the development of initiatives which help the MCA Western Region Management team be forward looking, informed, dynamic and adaptive.	

Figure 5: Job Description for District Operations Manager

Job Title	District Operations Manager (DOM)
Reports to	Area Operations Manager (AOM)
Location	MRCC or MRSC
Direct Reports	Watch Managers
Indirect Reports	Watch Officers and Coastguard Watch Assistants
Job Purpose	
To manage the day to day SAR response and prevention and counter pollution and salvage support activities of the MRCC/SC and District in conjunction with Watch Managers and, where necessary, Sector Managers and CRTs.	
Key Responsibilities	
• To ensure the operational readiness of the MRCC/SC and the operational partnership with its linked MRCC/SC. • To ensure an effective SAR response by the MRCC/SC to distress and other alerts received via radio, satellite or telephone and the co-ordination of SAR operations thereafter. • To ensure the effective management and conduct of SAR operations. • To ensure the MRCC/SC is proficient in joint operations with its partner MRCC/SC using the continuous ICCS and IMS links including the exchange of data and the handing over of operational control as and when necessary. • To represent the MCA at local and District SAR and emergency planning meetings, committees and groups etc. • To represent the MCA at County based SAR and emergency planning groups as requested by AOM. • To carry out District-wide duties as discussed and agreed with the AOM. • In conjunction with AOM and partner DOM, use the risk management techniques and ICCS/IMS flexibility to plan the effective use of resources to meet SAR response and prevention needs. • To work in conjunction with partner DOM and WMs to utilise ICCS/IMS flexibility to meet short notice operational and staff needs. • To maintain an on call roster with AOM and partner DOM for the provision of advice to junior and senior staff and to provide tactical and operational command during major incidents. • To attend Area Management Board meetings. • To assign specific tasks to WMs and their watches. • Through archival tape analysis, management information and incident debrief, identify best practice for promulgation. Similarly, identify shortfalls in operational capability, procedures and equipment and take remedial action where necessary or reporting the matter with recommendations to the AOM for further action at Regional or HQ level. • To promote MCA and high standards of sea and coastal safety by encouraging relevant groups to visit the MRCC/SC for presentations and briefings. • To establish training needs of MRCC/SC staff, monitor on watch training and provide local knowledge examinations in conjunction with WMs and SMs. • Oversee Health and Safety risk assessments pertaining to the MRCC/SC. • Ensure effective use of delegated budgets.	

Figure 6: Job Description for Sector Manager

Job Title	Sector Manager
Main Purpose of job	Manage resources and represent MCA within the local community.
Responsible to	District Controller/Deputy DC (until DMO Review implemented)
Staff Responsibilities	Auxiliary Coastguards
Key Responsibilities	
• Management of Auxiliary Coastguard response team members to ensure that they are fully proficient in all aspects of their duties and responsibilities. • Review and monitor the sector operational resources/equipment. • Liaison, PR events, education and accident prevention. • Promote Health and Safety awareness. • To be a member of the District Management Board. • Maintain effectiveness of the sector's SAR, accident prevention and sea and shoreline safety measures. • Chairing and participating as a member of relevant committees within the community. • Manage the sector's property estate. • Manage and control locally delegated budgets for the day-to-day running of the sector. • Submit sector returns, records and correspondence. • Ensure the completion of all directed sector related Agency miscellaneous tasks. • Carry out fishing vessel inspections and measurement.	
Sector Specific Duties	• It is the responsibility of the Line Manager to include specific duties and tasks to the sector.
Authority Limits	To be agreed.
Core Competencies	• As described in Annex B of the PPP Guidance Notes.
Job Specific Competencies	• As detailed in the HM Coastguard Job Specific Competency Framework.

Figure 7: Job Description for Watch Manager

Job Title	Watch Manager (WM)
Main Purpose of job	
The Watch Manager is responsible for ensuring a prompt and appropriate response to all SAR incidents within the defined area of responsibility. This includes management of watch keeping staff, routine operations and the effective oversight of all marine activities, in particular:	
Key Responsibilities	
• Initiating and effecting prompt, positive and appropriate action on all reported maritime SAR incidents within the area of responsibility including the subsequent co-ordination of units. • Tasking primary SAR resources and initiating requests for other resources as deemed necessary in accordance with the SAR plan implemented for all incidents, briefing District management as necessary. • Ensuring liaison with other emergency services and organisations involved, assuming the role of Search Mission Co-ordinator. • Appointing an On Scene Commander or Air Asset Co-ordinator where appropriate and advising the same on the conduct and responsibilities of the tasking. • Assisting other emergency services and appropriate authorities as necessary, particularly in relation to the tasking and control of Coastguard air, sea and land resources to non maritime incidents. • Obtaining a full briefing on all aspects of the status conditions and readiness of the district prior to commencement of duty, and maintaining a complete up to date "state of the district" at all times. • Maintaining accurate records, logs, catalogues databases and reports on all incidents, radio communication, messages, resources, and general information. • Advising appropriate persons of maritime incidents and actions taken in accordance with local orders. • Performing other duties as may be assigned by the District Controller or his delegate. • To be responsible for the training, development, welfare and discipline of CGO and CWA, including completion of PPPs. • Ensuring watch compliment levels are maintained taking into account staff absences. • Ensuring appropriate administrative functions as delegated are undertaken (returns etc.). • Ensure appropriate staff training and maintenance of full training records.	

Figure 8: Job Description for Watch Officer

Job Title	Watch Officer (WO)
Grade	Coastguard Officer
Responsible to	MRCC/MRSC
Main Purpose of job	
To respond to all calls and requests for information and assistance within the defined SAR region using relevant resources. The supervision of CWAs under the direction of the Watch Manager.	
Key Responsibilities	
- To understand thoroughly and operate Coastguard communications equipment including radio, satcoms, DSC, VHF/DF, telephone, telex, email, paging and facsimile and to supervise the on watch training of CWAs in this equipment. - To assist in maintaining the integrity of distress frequencies Channel 16. VHF and 2182 kHz MF. - To answer and respond positively to Distress, Urgency and Safety traffic on VHF, MF, DSC, SATCOMS and 999 calls and by any other means including EPIRB alerts. - Understand mobile telephone systems including the arrangements for receiving 999 information on such systems. - To fully understand and operate within the GMDSS. - To understand and operate within the SAR procedures and communication practices of neighbouring and other world-wide states. - To understand and operate within the communication procedures and contingency arrangements of other United Kingdom authorities who may be involved in SAR. - To contribute to the decision making process in all SAR incidents occurring within the MRCC/SC area of responsibility. This should include the selection, alerting and briefing of SAR units and search area determination, area coverage, survivor recovery, delivery and reception. - To sustain a high degree of local knowledge of the coast and sea area within the MRCC/SC area of responsibility including the availability and capability of all SAR declared and additional units. - To understand and operate within the responsibilities of the Marine Pollution Control Unit, providing advice and support to the same when required.	
Other Duties	
- The WO assists the SMC/WM. Some WOs will be called upon to accept operational SAR responsibility for the rescue centre during WM temporary absences such as meal breaks, or as delegated by them, and therefore may also be required to assume the duties of SMC. - To assist in or undertake the responsibilities for PR events, including accident prevention, and other duties as agreed with the District management. - To assist WM with the training, development, welfare and discipline of CWA.	
Authority Limits	N/A
Core Competencies	As described in Annex B of the PPP Guidance Notes.
Job Specific Competencies	As described in the Job Specific Competencies for HM Coastguard Competencies.

Figure 9: Job Description for Coastguard Watch Assistant

Job Title	Coastguard Watch Assistant (CWA)
Main Purpose of job	
Coastguard Watch Assistants (CWAs) work in rescue centre operations rooms under the supervision of Watch Officers (WOs) and Watch Leaders (WLs), working as part of a team to maintain an effective state of readiness at all times. The main duties are:	
Key Responsibilities	
• Operate and carry out user checks on all Coastguard communications equipment contained within the Combined Control and Distribution System (CCDS) consoles, and other stand-alone communications equipment within the rescue centre, including master radio-pagers, telephones, radio, telex, fax, NAVTEX and archive tape recorders, reporting any faults or problems immediately to the WO or WL as directed. • Under direct supervision, carry out <i>first-line</i> rectification on rescue centre communications equipment, such as changing spent fuses and indicator bulbs and formulating defect reports for other faults as appropriate. • Operate the Action DAta System (ADAS), recording incident and routine messages and routinely amending <i>front-end</i> database information as directed. • Monitor and respond to calls on the international VHF and MF Distress and Safety and Urgency (DSU) frequencies (including Digital Selective Calling (DSC) frequencies as appropriate, logging all necessary information and immediately reporting all DSU and other potential incident cases to the WO or WL and taking appropriate broadcast action as directed. • As directed, alert and monitor the progress of, search and rescue (SAR) and other facilities. • Perform basic chart work plotting functions in support of SAR and other operations, including, as directed, the operation of the search planning computer in the production of basic plans. • Answer routine and 999 telephone calls, logging all necessary information and immediately reporting all potential or actual incident cases to the WO or WL as directed. • Carry out routine administrative tasks as directed, such as dealing with visitors and amending rescue centre and other publications, including day-to-day filing. • Participate in SAR accident prevention projects and public relations events as required.	

Figure 10: Job Description for Coastguard Watch Assistant, Administration

Job Title	Coastguard Watch Assistant, Administration (CWA, A)
Main Purpose of job	
The CWA(A) will be accountable to the District Controller and will assist with the general administration of the District Office and provide office support services under the direct supervision of District Management	
Main Responsibilities	
• Use of the office switchboard, taking and distributing telephone messages, meeting/introducing visitors, arranging meetings, typing letters, minutes etc. by PC, WP, dealing with general enquiries. • To receive and correctly distribute the incoming post, recording as necessary. To collate and dispatch the outgoing post by the agreed format e.g. franking machine, postage stamps and ensure delivery to/collection by Royal Mail. To provide a messenger service within the District Office. To process the Citizen Charter return on replies to written enquiries. • To use the District telephone and fax system including National and GTN networks. To receive and distribute telephone and fax messages. Checking of telephone records e.g. itemised bills. • To use standard TCA IT equipment and administrative software e.g. Word Perfect, Lotus, Windows, PMD, District administrative databases etc. • To collate orders for stationery, receive deliveries and issue to staff as instructed. To advise stock levels at the appropriate level. Check deliveries against delivery notes/invoices. • To open and close files when directed in accordance with the District filing system. To place correspondence on the correct files, maintain files in good order and operate the Bring Forward system. • To ensure District manuals, instructions etc are correctly maintained and that amendments are effected immediately. Copying and distributing completed CGI5 records. • To ensure that associated vehicle and boat logs, records and returns are maintained. To ensure that fuel cards are correctly issued. • To log the invoices on the invoice register, check that the details are correct and that the invoices are correctly stamped and coded and are properly certified and authorised. To raise queries with suppliers. To process ACG payment forms and claims for telephone charge reimbursement. • To book spot hire vehicles, air, rail and ferry tickets, hotel reservations etc. To check and process T & S claims for approval and pass to Region for payment. • To order goods and services on the instructions of the District Controller, liaison with suppliers, receiving goods, escorting contractors etc. Administer ordering and distribution of HMCG uniform. • To ensure that all District records are maintained, processing of returns to Region and Headquarters, liaison with Sector and Auxiliary bases as necessary. Maintenance of ACG staff employment records. Photocopying and distribution of documents and correspondence. Maintenance of utility and service account records and miscellaneous foreshore and fisheries records. • During marine emergencies, assist the Operations Room staff handling telephone queries from the public and media and carry out other tasks as required.	

Chapter 2

INTRODUCTION TO THE RESEARCH

2.1 AIM

As indicated in Chapter 1, the overall aim of this research was to gain an understanding of work-related stress in a previously unstudied occupational group, Her Majesty's Coastguard (HMCG). The purpose of this chapter is to position and put into context the two empirical studies conducted to achieve this aim and reported on in this thesis. It also provides an introduction to the literature review in Chapter 3.

2.2 OVERVIEW OF HMCG

As the role of HMCG is often misunderstood, for information and clarity, a detailed description of the service and its history is provided in Chapter 1 and the reader is directed to read this carefully. However, as a brief summary, HMCG is an emergency service that forms part of the Maritime and Coastguard Agency (MCA), which in turn is part of the Department for Transport (DfT). Its primary function is to provide a civil maritime search and rescue service (SAR) and it is the responsibility of HMCG to **co-ordinate** activities, which include the mobilisation, organisation and tasking of resources to respond to persons either in distress at sea, or to persons at risk of injury or death on the cliffs and shoreline of the UK. The co-ordination of such activities is carried out from within 19 Maritime Rescue Co-ordination Centres (MRCCs) located around the UK. Here, calls are received, assessed and resources dispatched, as appropriate. HMCG are primarily supported in their work by the other UK

emergency services (Police, Fire and Rescue, Ambulance), volunteer rescue organisations, such as the Royal National Lifeboat Institution (RNLI), a volunteer Coastal Rescue Service (CRS) and a variety of other government organisations to carry out the *actual* rescue activity, (MCA, 2004).

2.3 DEFINITION OF WORK STRESS

There are many different descriptions available within the literature (a problem pointed out by Smith, Johal, Wadsworth, Smith & Peters, 2000) but within the context of this research, work-related stress is defined as, “the adverse reaction people have to excessive pressure or other types of demand placed on them,” (Health and Safety Executive, 2001). This definition was selected, as the Health and Safety Executive (HSE) is the UK government body recognised as being responsible for policy and operational matters related to health and safety arising out of work activities. Their work is done through research, information, advice, promotion of training, new or revised regulations and codes of practice, inspection, investigation and enforcement (HSE, 2010). The remit of the HSE includes stress and since the late 1990s, has increasingly become active and a point of reference for researchers in this area, (e.g., the review of existing knowledge to underpin standards of good practice by Rick, Thomson, Briner, O'Reagan & Daniels, 2002; development of the HSE's Management Standards by Cousins et al., 2004 and examples of excellence in stress prevention by Jordan et al., 2003).

It has been noted by Leka, Griffiths and Cox (2003) that there is often confusion between an acceptable level of *pressure* or *challenge* in the workplace and

stress. Pressure perceived as being acceptable by an individual may help to keep workers motivated, alert and able to learn but this is dependent upon available resources and personal characteristics. If pressure becomes excessive or unmanageable, it can have a detrimental impact on workers' health and on organisational performance. This is because a mismatch arises between the demands and pressures on the person on the one hand and their knowledge, abilities, needs and resources on the other. This then affects their ability to cope. Stress can result both in situations where pressures *exceed* the worker's ability to cope (potentially impacting health and performance) and where skills and abilities are *under-utilised*, which can result in boredom.

2.4 SOURCES OF WORK STRESS

Work-related stress may result from a wide variety of one or more sources. Some examples that have been examined in this study include: the discrepancy between the amount of effort put into the job for the rewards received, as explained by the Effort-Reward Imbalance Model (Siegrist, 1996); the interaction between the demands of the job, the amount of control to do the job and the amount of support to perform the role, as explained by the Job Demands-Control-Support Model (Karasek, 1979; Johnson & Hall, 1988 and Johnson, Hall & Theorell, 1989); working patterns and exposure to physical hazards (Smith et al., 2000), the culture of the organisation (O'Reilly, Chatman & Caldwell, 1991); the quality of the manager-employee relationship (Scandura & Graen, 1984), the quality of the relationship between team members (Seers, 1989); the prevalence of bullying (Quine, 1999) and inconsistency in the behaviours expected for the role or lack of information pertaining to a role, i.e.,

role conflict and ambiguity, (Rizzo, House & Lirtzman, 1970). There may also be issues arising from the amount of organisational change taking place, as well as the interface between work and home (Smith et al., 2000).

2.5 WHY STUDY WORK-RELATED STRESS?

There are three key reasons for studying stress in the workplace: 1. the effects are many and are potentially harmful to workers in relation to mental health (e.g., anxiety and depression), physically (e.g., headaches, back pain, tiredness, digestive disorders, diabetes, musculoskeletal disorders, cardiovascular disease, some forms of cancer, accidents and injuries) and/or behaviourally (e.g., increased smoking, drugs and alcohol consumption). 2. The effects of stress can, in turn, impact the efficiency of organisations (e.g., impaired performance, decreased commitment, an increase in unsafe working practices, increased sickness absence and increased staff turnover). 3. The prevalence of work-related stress has been gradually increasing to the extent that it is now a major problem, not just in the UK but worldwide. Levi (2005), for example, quotes from a report by the World Health Organization (2001) that "mental health problems and stress-related disorders are the biggest overall cause of early death in Europe," (p.53) and the American Institute of Stress (2010) estimates that workplace stress costs the USA more than \$300 billion each year in health care, missed work and stress reduction efforts.

2.5.1 Current Status of Work-Related Stress in the UK

Recent statistics, as published on the 2009/10 HSE website (retrieved from <http://www.hse.gov.uk/statistics/causdis/stress/index.htm>), now available and

taken from recognised sources such as the Labour Force Survey (LFS), the Psychosocial Working Conditions Survey (PWC) and the Health and Occupation Reporting network (THOR), summarise the current state of the situation in the UK as follows:

- 415,000 individuals believed they were experiencing work-related stress at a level that was making them ill (2008/09).
- 16.7% of working individuals thought their job was very or extremely stressful (2009).
- The annual incidence of work-related mental health problems was estimated at 5,126 new cases per year (2008) but most likely underestimates the true incidence in the workforce.
- An estimated 230,000 people first became aware of work-related stress, depression or anxiety in 2008/09, giving an annual incidence rate of 760 cases per 100,000 workers.
- Self-reported work-related stress, depression or anxiety accounted for an estimated 11.4 million lost working days in 2008/09.
- The incidence rate of self-reported work-related stress, depression or anxiety has been broadly level over the years 2001/02 to 2008/09, with the exception of 2001/02 where the rate was higher than the current level.
- Psychiatrist reports of work-related mental health remained stable between 2000 and 2008 but occupational physician reports showed a clear upward trend over this time period.

- Data from General Practitioners indicates that 30.9% of all diagnoses of work-related ill-health are cases of mental ill-health, with an average length of sickness absence per certified case of 26.8 working days.
- Occupation groups containing teachers, nurses, and housing and welfare officers, customer service workers and certain professional and managerial groups, have high prevalence rates of self-reported work-related stress, as do people working within public administration and defence.
- High incidence rates of work-related mental illness have also been reported for these occupational groups, along with medical practitioners and those in public sector security based occupations, such as police officers, prison officers, and UK armed forces personnel.

As a result of the growing problem, the Health and Safety Commission (2000) set 10-year targets that included a reduction in days lost to work-related ill-health across the UK. The statistics above show that this has not yet been achieved and, therefore, remains a serious issue.

2.5.2 Reasons for the Rise in Reported Rates of Work Stress

Sparks, Faragher and Cooper (2001) provided an overview of likely reasons for the rise in reported rates of stress. These include: how radically the nature of work has changed in the last 40 years through substantial growth in the use of information technology at work, globalisation of many industries, changes in work contracts and work-time scheduling. In addition to these factors having majorly transformed the nature of work in many organisations, the workforce itself has also been diversifying, with an increase in female participation, a

growing number of dual-earner couples and older workers; as well as demands for equal opportunities. In trying to adapt to the pressures of change, companies are continually restructuring, sometimes decentralising and other times merging, sometimes decreasing and other times increasing management levels, sometimes downsizing and other times upsizing (Maddi, 2002, p.181). As a result of the rate and complexity of this change in workplace dynamics and demands, it is not surprising that there has been an impact on employee well-being and a subsequent increase in the number of reported cases of “stress.”

2.5.3 Legislation and Intervention

Other important reasons for studying stress include legislation and intervention. All employers are legally obliged to safeguard worker health (e.g., under the Health and Safety at Work Act 1974, Management of Health and Safety at Work Regulations 1999, the Protection from Harassment Act 1977 and Working Time Regulations 1988). This includes minimising the risk of stress-related illness or injury. As a result of the range of definitions that have existed for stress and the complexity of the issue, the work of Cox, Griffiths and Houdmont (2006) has helped to test consensus on a definition of “case” of stress and a caseness assessment schedule to help in this area (essential for the development of work-related stress specific legislation). There is also a need for more studies on stress in applied settings so that we may better understand causes, effects and any differences in levels of stress within occupational types, in order to facilitate methods of reduction and prevention.

2.6 WHY STUDY HMCG?

Given the major problem with work-related stress across the UK (and, as mentioned above, throughout Europe and elsewhere), it is not unreasonable to assume that HMCG would also be affected. Other key reasons are given in the following sections.

2.6.1 Need for Research in Occupational Settings

Following on from comments made above in 1.5.3., as recently as 2005, Johnson et al. were pointing out how little information there is available to show the relative stress values across different occupations. Chapter 2 describes a paucity of published research for the Coastguard, not just in the UK but across other countries. The studies reported in this thesis provided a unique opportunity to examine a previously unstudied occupational group in situ.

2.6.2 Nature of the Role

HMCG became an emergency service during the 1960s and, as such, the very nature and variation in the work carried out predisposes itself worthy of examination. It is reasonable to assume that dealing with lifesaving scenarios could be stressful. Current figures estimate that HMCG are involved in around 12,000 incidents, with 300 lives lost per annum (this includes maritime, shoreline and cliff incidents). In reality, therefore, those employed by HMCG face a wide range of activities during their working day. This can vary from routine duties, such as providing weather broadcasts and completing paperwork, to the co-ordination of life or death incidents such as: man overboard, suicides, ferry disasters, pollution/cliff or diving incidents, accidents

involving a range of marine craft – small boats, dinghies, surfboarders, kite/windsurfing, fishing vessels, tankers and yachts; to name but a few. Whilst there is an element of seasonality in the work, incidents are unpredictable, which means that HMCG work in a permanent state of readiness to deal with potentially life threatening situations. In their research with ambulance workers, Alexander and Klein (2001) have shown that even sitting and waiting in anticipation of potentially critical incidents can be stressful.

2.6.3 Work-Related Stress in Other Emergency Services

Evidence of serious levels of work-related stress has been found in other emergency services [e.g., Collins and Gibbs, 2003 (police); Young and Cooper, 1997 (ambulance, fire)], therefore, it is not unreasonable to assume that HMCG, also an emergency service, would be any different. What is not clear at this point, however, is whether any stress found is more related to organisational issues (such as with the police), or more directly related to incidents (as with the fire and ambulance services).

2.6.4 Opportunity to Study HMCG as a Group

According to Sparks et al. (2001), a further gap in workplace stress research, is the need for greater inclusion of employees at the lower end of the organisational hierarchy. This is because subordinate employees are often from lower social classes, which in turn are associated with poorer health. This poorer state of health may or may not be exacerbated by work stress and, as such, is an aspect that should be given greater consideration. Cooper, Dewe and O'Driscoll (2001) have also criticised the fact that stress has been

predominantly researched from the perspective of the individual to reduce its effects, instead of tackling actual stressors in the workplace. The study of HMCG as an entire group would afford all those employed the opportunity to participate, regardless of grade and the data used to identify risk factors across the workforce.

2.6.5 History of Work Stress within HMCG

The issue of “stress” and whether it exists within the workforce also has a history within HMCG. According to anecdotal evidence from some of their representatives, during the 1990s, the Public and Commercial Services Union (PCS) received an increased number of complaints from their Coastguard members concerning occupational stress. They claimed that this coincided with an increase in the reported number of strokes, cancer and alcohol and smoking-related diseases and were naturally interested to know if the two were related. In 1997, therefore, the PCS conducted their own study to ascertain the extent to which members believed that they were suffering from stress and stress-related illness. Unfortunately, there is no surviving paperwork from this study but the results of the exercise subsequently led to discussions with the MCA Personnel Department, which further led to a proposal for an organisation-wide study throughout the MCA (see Appendix 1). This was conducted by the Researcher using Cooper, Sloan and Williams’ (1988) Occupational Stress Indicator (OSI). Whilst this led to some positive outcomes (e.g., the introduction of a stress policy), the OSI produced a considerable amount of information which, due to commercial constraints restricted the use

of the measurement tools and the depth to which the data could be analysed. This thesis provided the opportunity to continue that work in greater detail.

2.6.6 Evidence of Work Stress in the Civil Service

The Whitehall Studies are two major, well documented pieces of research, which have examined links between stress and a wide range of negative effects such as: heart disease, some cancers, chronic lung disease, gastrointestinal disease, depression, suicide, sickness absence, back pain and smoking. Whitehall 1 (1967-1977) examined over 18,000 male civil servants and Whitehall II (1985 onwards) has examined the effects in a mixed sample of 10,308 male and female civil servants (see, for example, the work of Marmot, Rose, Shipley & Hamilton, 1978; Marmot et al., 1991; Stansfeld, Head & Marmot, 2000 and Kuper & Marmot, 2003). As HMCG are also civil servants, it is reasonable to assume that they would also be exposed (at least to some degree) and, therefore, another reason why they should be examined.

2.6.7 Risk Assessment

Prior to this study taking place, a risk assessment was carried out consisting of a series of 18 face-to-face semi-structured interviews, conducted with representatives from a random sample of 15 Coastguard staff from a cross-representative sample of MRCCs (Clyde, London, Thames, Solent and Swansea), the MCA Human Resources department (x2) and the PCS (x1). A full list of issues raised is provided as Appendix 2 but a few examples include: job demands (e.g., manning levels and use of resources), control over job (e.g., affecting on-call arrangements), support (e.g., lack of management training),

relationships (e.g., between MCA HO and MRCCs), role (e.g., change in focus for management), organisation change (e.g., lack of consultation and pace) and culture (e.g., different cultures across MRCCs). These have all been linked with stress and therefore, provided further support for conducting this research.

2.6.8 Accessibility

Finally, the Researcher was already working with HMCG in a commercial capacity and would not have been accessible under normal circumstances. Given current issues with work stress in the UK, the nature of the role of HMCG and its history regarding “stress,” the level of stress, types of exposure and subsequent effects within this group, were both interesting from an academic perspective and practically from an organisational perspective.

2.7 ISSUES IN THE STUDY OF WORK-RELATED STRESS

The very nature of stress makes it difficult to measure and, whilst there is a considerable body of literature available, there are a number of debates running through which makes it even more complex. The lack of information on comparable stress values across different occupations has already been mentioned above. Some other issues are discussed in the following sections.

2.7.1 Models and Approaches

Whilst a variety of different theoretical models exist, such as the Vitamin Model (Warr, 1987) and the Transactional Model (Lazarus, 1966), studies are often conducted without taking them into consideration (Smith et al., 2000). In addition, the effects of different stressors vary, dependent on whether they are

measured independently or combined with other factors. This is addressed here by the implementation of the two most influential models in the literature to date, these being Effort-Reward Imbalance (Siegrist, 1996) and Job Demands-Control-Support (Karasek, 1979; Johnson & Hall, 1988 and Johnson, Hall & Theorell, 1989). Both are described in detail in Chapter 2 but essentially, Effort–Reward Imbalance (ERI) maintains that if there is an imbalance between the degree of effort exerted in the workplace compared to the level of reward received, then stress is likely to occur, whilst Job Demands-Control-Support (JDCS) theorises that the prevalence of high job demands, combined with low levels of control and low levels of social support, will result in stress. One other theoretical framework was also taken into account, this being the combined effects of Negative Occupational Factors (NOF), developed by Smith, McNamera and Wellens (2004). The premise behind this approach is that individuals are much more likely to be exposed to multiple hazards in the workplace and that the relationship between combinations of stressors is likely to be additive. This will subsequently explain more variance in the outcome measures than any of the independent variables in isolation. Whilst this latter approach is relatively new, when this research began in 2002, it was the only theoretical framework that could accommodate the range of risk factors raised in the HMCG risk assessment (tables of these factors are provided in Chapters 4, 5 and 8). As ERI and JDCS, NOF is also discussed further in Chapter 2.

2.7.2 HSE Management Standards

A comprehensive review of the available literature by Rick et al. (2002), led to the development of another framework, currently advocated by the HSE as a

means to reduce levels of work-related stress. The Management Standards (<http://www.hse.gov.uk/stress/standards>), cover six key areas of work design that, if not properly managed, are associated with poor health and well-being, lower productivity and increased sickness absence. These are: 1. *Demands* – this includes issues such as workload, work patterns and the work environment, 2. *Control* - how much say the person has in the way they do their work, 3. *Support* – the encouragement, sponsorship and resources provided by the organisation, line management and colleagues, 4. *Relationships* – the promotion of positive working to avoid conflict and dealing with unacceptable behaviour, 5. *Role* – whether people understand their role within the organisation and whether the organisation ensures that they do not have conflicting roles and 6. *Change* – how organisational change (large or small) is managed and communicated. Collectively, the Management Standards define the characteristics, or culture, of an organisation so that where present, reflect a high level of health, well-being and organisational performance. The importance of culture to workplace health and well-being is well documented within the *Promoting a Positive Culture* report (IOSH, 2004).

The Management Standards approach to stress reduction has two major aspects: a risk management methodology (see Cox et al., 2000) and an Indicator Tool, which is a questionnaire designed for assessment against the Standards (Cousins et al., 2004; Mackay, Cousins, Kelly, Lee & McCaig, 2004). The approach is a key component of HSE's "stress toolbox" which is being expanded by adding secondary and tertiary interventions that can deal with common mental health problems at an individual level.

The Standards were launched in 2004, after the start of this research which began in 2002. As such, it was not possible to take them into account in the original design, or to make use of the Indicator Tool, as the main data had already been collected. Despite this, a risk assessment had been conducted in keeping with the approach (see 1.6.7 above) and, with the range of issues raised, the inclusion of the NOF theoretical framework and measures subsequently used, this research had inadvertently covered all of the Standards. This has, therefore, allowed further discussion and retrospective referencing, as appropriate, within the thesis.

2.7.3 Individual Differences

Another issue is the impact of personality traits or individual differences, now widely recognised as having an effect on the way in which people respond to sources of stress in the workplace (Rick et al., 2002). There is debate within the literature as to whether some of these should, or should not, be controlled for, when examining data on stress (e.g., negative affectivity). In the current study, this turned out not to be an issue but was taken into account in the initial design, including demographic variables, such as age and gender. The theoretical issues are discussed further in Chapter 2 and the ways in which these differences were treated, are discussed in more detail during the chapters which present the analyses.

2.7.4 Comparison Data

A further problem is the lack of available, consistent and reliable data from which to make relative comparisons; primarily due to the number of different

approaches. In the current research, this was remedied through use of data from the Bristol Stress and Health at Work Study (Smith et al., 2000), available through the Centre for Occupational and Health Psychology (COHP) and high level, published statistics from the government run Psychosocial Working Conditions Survey (PWC). As the Bristol Study (SHAW) was a community study and PWC an omnibus study carried out across the UK, comparison data was subsequently treated as “general population” data, from which to compare results from the two HMCG surveys. Both SHAW and PWC studies are discussed further in Chapters 2 and 4

2.7.5 Additional Definitions

Within the literature there are a number of different terms used to describe potential sources of stress, for example, stressors, hazards, physical hazards (such as exposure to harmful substances), psychosocial hazards (i.e., related to interactions within the work environment, such as bullying). In the current study, the all encompassing term “risk factors” is used, since a wide range and different types are examined. Two other key terms used throughout include “appraisals” and “outcomes”. Appraisals refer to perceptions resulting from exposure to risk factors, such as level of work stress and job satisfaction. A number of potential outcomes from stress were measured including: mental health (anxiety and depression being the most common stress-related complaints presented to general practitioners according to Quick, Nelson & Quick, 2001), physical health, accidents and injuries and behavioural outcomes such as smoking and alcohol consumption.

2.8 ISSUES IN STUDYING HMCG

In addition to the methodological issues, there were also a number of Coastguard specific effects to consider when studying this group, discussed further in the thesis, as appropriate. These included:

- a. *The nature of the role:* as described above, whilst HMCG is an emergency service, their focus is on *planning* and *co-ordinating* rescues from a distance within 19 MRCCs across the UK. Most of the *actual* rescues are conducted by voluntary organisations (e.g., Mountain Rescue, RNLI) and often involve other emergency services. HMCG do not go out to rescue distressed persons themselves, although they do conduct relevant training and some also belong to the volunteer Coastal Rescue Service, who do. Proximity to the incident may have a moderating effect on exposure to stress, although some might argue that the lack of control, because of the distance, generates more stress.
- b. *Seasonality of workload:* typically, HMCG are busiest during the months of April–September, due to an increase in leisure-related incidents. It is exceptionally difficult, therefore, to collect data during this time and, as a result, could mask potential effects of stress if collecting data in a less busy period. Stress could also be cumulative during busy times.
- c. *Unpredictable nature of workload:* although busier/less busy times of the year are generally predictable, the nature of incidents is unpredictable. As such, the timing of data collection may be critical.
- d. *Focus of role:* HMCG may attract a self-selecting group who will risk exposure to stress because they are dedicated to saving lives.

- e. *Lack of awareness*: the nature of the role may also lead to an ignorance of stressors, as they simply do not seem important in comparison to the potential for loss of life.
- f. *Level of exposure to life threatening situations*: exposure to life threatening scenarios on a day-to-day basis could also have a moderating effect, as it may be seen as the “norm.”
- g. *Previous experience and training*: many Coastguards were previously employed in seafaring roles. As such, stress outcomes may spill-over from earlier experiences. In addition to many within HMCG having come from a seafaring background, a considerable amount of training is provided. This may prove a buffer against stress.
- h. *Work in Watches*: those directly involved in the organisation and co-ordination of search and rescue, work in groups or Watches. The support from working in such a team environment may prove to be a great protector from stress, or could serve to aggravate it, if interpersonal relationships were poor.
- i. *Shift work*: most of HMCG work shifts, which have been shown in the literature to have negative effects on physiological and psychological health. Some of these effects may similarly result from stress (see, for example, the review by Smith et al., 2004). As such, any health effects found here could be more attributable to, or exacerbated by working hours.
- j. *Ageing work group*: a significant proportion of the workforce was aged over 50 years, therefore, any health outcomes may be simply age related.

These people also have a high level of experience, which could also provide a buffering effect on stress. This age category tends to have lower stress levels and a higher level of job satisfaction than younger workers (Oswald & Gardner, 2001). Smith et al., (2000) found that workers at either end of the age range (18-24) and (55-64), reported lower levels of stress than the 25-54 age group.

- k. *Personality*: results of the OSI (see 1.6.5. above) suggested that there was a prevalence of Type B personalities within HMCG; which could also have an impact on perceived stress levels.

2.9 STUDY OBJECTIVES AND HYPOTHESES

Having considered the above, in order to achieve the overall aim of understanding work-related stress in this occupational group, three objectives and 10 hypotheses were established. As the hypotheses are reported over three different chapters, they are presented, as appropriate, to each one. The overall objectives were as follows:

- O1. Establish the overall level of perceived work-stress in HMCG.
- O2. Ascertain whether the standard models of ERI, JDCA or NOF could be used to explain the level of stress found.
- O3. In addition to the standard models, establish whether there was anything inherent within HMCG as a group that could help to explain the level of stress found.

2.10 STRUCTURE OF THESIS

Following the detailed background on the history and the work of HMCG in Chapter 1 and this introduction to the new research, Chapter 3 provides an overview of the academic literature relevant to the first of the two studies carried out. Chapter 4 reports on the methodology for Study 1, Chapters 5 and 6 present and discuss the results. Chapter 7 reports on the background, methodology and results for Study 2. Finally, Chapter 8 provides an overall summary, evaluation and suggestions for further research.

2.11 CHAPTER SUMMARY

The purpose of this chapter was to position and put into context two studies conducted with the overall aim of gaining an understanding of work-related stress in HMCG. An overview of the duties of HMCG was provided, along with a definition of stress, an outline of the sources of stress within the work context and a number of reasons why stress should be studied. These included the negative effects on health and well-being, the detrimental effects on the efficiency of organisations and because there is an increasing number of reported cases; not just in the UK but world-wide. A summary of the latest available UK government statistics on stress was provided, along with an overview of likely reasons for the rise in the number of cases and the implications for legislation and intervention. Aside from the widespread problem of stress, a number of other reasons for studying HMCG were also given, including the nature of the role as an emergency service, the prevalence of stress in other emergency services and the history of stress within this group. Several issues in the study of work stress were described, such as the paucity

of reliable, comparison data and ways in which they would be addressed here. Whilst this research began prior to the launch of the HSE Management Standards on work stress, the ability to provide a retrospective reference periodically (due to the range of risk factors measured), was also discussed. Finally, the potential for a number of HMCG specific effects were also outlined, before describing the overall objectives for the two studies carried out. 10 hypotheses were also tested but as this was done through the course of three chapters, they are presented later within the relevant one.

Chapter 3

LITERATURE REVIEW

3.1 INTRODUCTION

The following expands on Chapter 2 to summarise the literature relevant to the main research carried out in Study 1. Study 2 (a pilot evaluation) is described and discussed in Chapter 7. After an account of the search for other studies on work-related stress and the Coastguard and an overview of the literature on stress and other emergency services (police, fire and ambulance), this chapter essentially comprises four main areas. The first provides a description and evaluation of the three models of stress underlying this study (i.e., ERI, JDCS and NOF), including their component risk factors and associated (negative) outcomes. The second discusses a range of additional, independent hazards considered and describes how all risk factors included map onto the current HSE Management Standards. The third main area comprises a discussion on individual differences, and the fourth describes two major studies used for comparison with the data collected from HMCG in this research.

3.2 LITERATURE SEARCH FOR STUDIES ON THE COASTGUARD

This search used a selection of relevant, licensed databases available through the Cardiff University academic libraries, widely used in research for the identification of studies on a particular topic. The following were identified as most relevant: PsycINFO, PubMed/Medline, ASSIA (Applied Social Sciences Index and Abstracts), EMBASE (Excerpta Medica Database Guide), Ingenta Journals and Web of Science. A general search via Google and Google

Scholar was also conducted. Between them, these databases allow access to millions of records.

To ensure this study on stress in HMCG was novel, a search on *published* literature was conducted using the following terms: *coastguard* (UK spelling), *coast guard* (US spelling), *coastguard in UK*, *coastguard and stress*, *coast guard and stress* and *maritime and stress*. Searches did not find any relevant papers relating to the coastguard in the UK or the coast guard in any other country. In respect of HMCG, the MCA was also able to confirm that there were no published papers on the subject. Given this, no further searches were carried out using other appropriate or relevant terms, such as, “well-being” or “psychosocial factors.”

A subsequent exercise was conducted to establish whether there was any *unpublished* research in this area. This involved contacting search and rescue organisations by email or letter (see master copy provided as Appendix 3), in the following countries: Australia, Canada, Denmark, Estonia, Faroe Islands, France, Germany, Greenland, Iceland, India, Japan, Latvia, Netherlands, New Zealand, Norway, Portugal, Singapore, South Africa, Spain and the USA. The outcome of this exercise also revealed that there were no records available to confirm that anyone had previously conducted such research.

A final exercise to understand the extent of the published literature available on the Coastguard (or Coast Guard) in general was carried out but again, there were few studies to be found. One key reason for this might be that in

countries such as the USA, the Coast Guard form part of the military and therefore, would be included in more general studies, or the data may be classed as sensitive. Another is that duties vary between countries, for example, in the USA, Coast Guards patrol waters on Coast Guard cutters (ships). In this instance, it was possible to find some evidence of research in the literature but this was more akin to seafarers and fatigue, (e.g., Comperatore, Rivera & Kingsley, 2005).

3.3 WORK-RELATED STRESS IN OTHER EMERGENCY SERVICES

The risk assessment carried out with representatives of HMCG (described in Chapter 1), highlighted a number and range of risk factors which were predominantly organisational in nature. A high level review of the literature was conducted to see how this compared with police, fire and ambulance services.

3.3.1 Police Service

According to Collins and Gibbs (2003), policing is generally perceived as highly stressful due to the increasing threat of violence on the streets, high public demand and a mounting focus on police efficiency and probity. They reported policing as ranking amongst the top three occupations most commonly reported by occupational physicians and psychiatrists in the Occupational Disease Intelligence Network system (ODIN) for Surveillance of Occupational Stress and Mental Illness (SOSMI); also that 26% of medical retirement in the police is due to psychological ill-health.

Much of the work on police and stress hails from the USA, however, building upon two notable British studies (Brown & Campbell, 1990; Alexander, Walker, Innes & Irving., 1993), Collins and Gibbs (2003) conducted a study with over 1,000 police officers to examine the sources of stress-related symptoms within their role and to measure the prevalence of significant, associated mental ill-health. In keeping with the earlier studies, they found that occupational stressors which ranked most highly, were not specific to policing but to organisational issues such as the demands of work impinging upon home life, lack of consultation and communication, lack of control over workload, inadequate support and excess workload in general. They found a significant association between gender and mental ill-health, with females likely to score more highly (i.e., badly), than males on Goldberg's (1972) General Health Questionnaire.

3.3.2 Fire and Ambulance Services

For fire and ambulance services, stress resulting in PTSD and burnout is a major concern because of exposure to critical incidents (e.g., Mitani, Fujita, Nakata & Shirakawa, 2006; Bennett et al., 2005; Bennett, Williams, Hood & Woollard, 2004; Haslam & Mallon, 2003; Alexander & Klein, 2001; Clohessy & Ehlers, 1999). However, as the findings from the risk assessment on HMCG were predominantly focused on organisational issues, this aspect of emergency service work in HMCG was not addressed in Study 1 but is discussed later in respect of Study 2. An example of a study which examined both fire and ambulance services in relation to organisational risk factors includes Young and Cooper (1997). For their sample of ambulance workers, they found that

relationships with other people was the main predictor of poor mental and physical health, whilst factors intrinsic to the job, career and achievement and the organisational structure and climate were sources of stress, which also affected job satisfaction. For the fire service sample, relationships with others was the main source of stress, which also influenced job satisfaction. Pressure from the organisational structure and climate was the most significant predictor of poor mental and physical health. Other negative factors found included education and role performed in the services. Another relevant example of a study on stress from organisational factors includes Johnson et al. (2005), who examined 26 different occupations, including ambulance workers and police. These were found to rank in the top six occupations who reported worse than average scores on physical health, psychological well-being and job satisfaction. James (1988) observed an apparent paradox, that ambulance work is stressful but rewarding.

3.4 MODELS UNDERLYING THE CURRENT STUDY

The Bristol Stress and Health at Work (SHAW) study by Smith et al. (2000) had criticised the lack of use of models in stress research. A combination of this criticism, the wide range of issues identified in the risk assessment plus evidence of stress from organisational factors in other emergency services, suitably enabled this study to take into account the two most influential models in stress research to date (ERI and JDCS), in addition to a relatively new approach to the way in which the combined effects of stress are examined (NOF). The NOF approach is unique in that it allows the researcher to study the effects of multiple risk factors at one time, sufficient to envelop the risk

factors associated with ERI, JDCS and the Management Standards; thus optimising the flexibility for examining the data within a theoretical framework. The three models, briefly outlined in Chapter 1, are described in detail below.

3.4.1 Effort Reward Imbalance (ERI)

3.4.1.1 ERI Model

This model was introduced by Siegrist, Siegrist and Weber (1986). It has been acknowledged as one becoming increasingly more important within occupational health research (e.g., van Vegchel, de Jonge, Bosma & Schaufelia, 2005) and described as the “current alternative model” to Karasek’s influential JDCS (Stansfeld, 2002, p.96). In essence, theory maintains that where there is a discrepancy between *efforts* spent (costs) and *rewards* received (gains) in the workplace, strain reactions occur, which could lead to an adverse affect on health. Efforts can be both extrinsic and intrinsic. *Extrinsic* effort represents job demands or obligations imposed upon the employee, whilst *intrinsic* effort comes from the personality characteristic known as overcommitment. This is based on Type A behaviour, i.e., reflecting very high levels of ambition in combination with the need to be approved and esteemed (van Vegchel et al., 2005 quoting Hanson, Schaufeli, Vrijkotte, Plomp & Godaert, 2000 and Siegrist, 1998). The theory assumes that the ERI process will be intensified by the personality characteristic of overcommitment, so that highly overcommitted employees will experience more strain from an ERI. The *reward* element consists of money, esteem and career opportunities, including job security. The model is fundamentally based upon the premise of a reciprocal relationship between efforts and rewards at work. Reasons given for

imbalance include: poorly defined work contracts, employees having little choice of alternative workplaces or accepting the imbalance for strategic reasons (e.g., promotion prospects), or because overcommitted people suffer from inappropriate perceptions of demands and their ability to cope.

Siegrist (2002) has formulated three predictions for the model, all of which increase the risk of poor health: 1. the *extrinsic ERI hypothesis* which results from an imbalance between high extrinsic effort and low reward (non-reciprocity) over and above the risk associated with each component, 2. the *intrinsic overcommitment (OVC) hypothesis* which results from a high level of overcommitment combined with low rewards and 3. the *interaction hypothesis* which results from high extrinsic effort, overcommitment and low reward. Figure 1 shows the model in diagrammatic format.



Figure 11. ERI Model, © 2008 Institute of Medical Sociology (Dusseldorf)

3.4.1.2 Outcomes

3.4.1.2.1 Physical health

The ERI Model was originally developed to study the relationship between work stress and cardiovascular disease (CVD). As such, most research conducted to date has been on this association. The Institute of Medical Sociology, which holds copyright for the ERI Model (refer to their website http://www.uni-duesseldorf.de/medicalsociology/effort-reward_imbalance_at_wor.112.0.html), quotes evidence from 11 prospective studies (e.g., Bosma, Peter, Siegrist & Marmot, 1998; Kiyimaki et al., 2002; Kuper, Singh-Manoux, Siegrist & Marmot, 2002 and Kumari, Head & Marmot, 2004). A review of empirical studies on the ERI Model by Tsutsumi and Kawakami (2004) found several further examples, such as Appels, Siegrist and Vos (1997) with their study on Dutch males and Lynch, Krause, Kaplan, Tuomilehto and Salonen (1997b) with their study on eastern Finnish men, where both samples had suffered from acute myocardial infarction. Van Vegchel et al. (2005) reviewed 25 studies on ERI and CVD, eight of which confirmed evidence of incidence of CVD whilst 17 verified symptoms or risk factors, such as hypertension and cholesterol. Odds ratios of a negative outcome quoted ranged from 1.22 – 8.98 between studies. They concluded that there was sufficient evidence to confirm a robust relationship between ERI and CVD. It should be noted, however, that most of the studies reviewed by van Vegchel et al. (2005) included a male population and that only three studies examined the interaction hypothesis, none of which found support in relation to CVD.

3.4.1.2.2 *Mental health*

To date, most studies on ERI and mental health have been conducted on depression. The Institute of Medical Sociology reference 15 different studies, for example, Stansfeld, Fuhrer, Head and Shipley (1999) who examined work characteristics that predict psychiatric disorder, Tsutsumi, Kayaba, Theorell and Siegrist (2001) who examined the association between depression and stress caused by the threat of job loss and Kikuchi et al. (2009) who examined ERI and depression in nurses.

3.4.1.2.3 *Psychological well-being*

In terms of self-rated well-being, van Vegchel et al. (2005) split their review of studies into psychosomatic health outcomes (i.e., physical symptoms of which the deeper cause is assumed to be psychological in nature) and job-related well-being. Of the 19 papers reviewed in this outcome category, 16 reported on ERI and psychosomatic outcomes, 14 of which found a positive association with impaired employee well-being. Those with a high effort, low reward situation had an increased risk of a negative outcome by 1.44 – 18.55 times in comparison to their counterparts. As a general principle, van Vegchel et al. concluded that studies to date found ERI to be more strongly related to general health issues rather than specific ones. An exception quoted was Dragano, Von dem Knesebeck, Rodel and Siegrist (2003), who found an association with ERI and specific musculoskeletal outcomes. In studies where the overcommitment hypothesis had been examined, both general and specific health outcomes had been found to indicate an elevated risk.

For job-related well-being, van Vegchel et al. found five studies with evidence of an association between ERI, emotional exhaustion and depersonalisation (e.g., Bakker, Killmer, Siegrist & Schaufeli, 2000) and less job satisfaction, especially in overcommitted employees (e.g., de Jonge, Bosma, Peter & Siegrist, 2000).

3.4.1.2.4 Behavioural outcomes

There is little evidence to date of ERI and behavioural outcomes, however, in their review, van Vegchel et al. (2005) quoted evidence from two studies which supported an association between high effort, low reward and increased smoking, with an elevated risk of 4.34 (Peter, Siegrist, Stork, Mann & Labrot, 1991) and alcohol consumption (Puls, Weinold & Blank, 1998). The Institute of Medical Sociology quotes six studies which have found a relationship between ERI and sickness absence, for example, a recent study by Head et al. (2007) who found that employees with one or more medically certified spells of sickness absence (>7 days) in a three year period had a mortality 1.7 (95% CI 1.3 to 2.1) times greater than those with no medically certified spells.

3.4.1.2.5 Other

The Institute of Medical Sociology also quote a number of individual studies which have found other associations with, for example, ERI and road rage (Hoggan & Dollard, 2007), ERI and slightly increased risk of migraine (Maki et al., 2007), chronic fatigue (Wada et al., 2008), low back and neck injuries (Rugulies & Krause, 2008), painful menstruation (László & Kopp, 2009), insomnia (Ota, et al., 2009), sleep disturbances, (Rugulies, Norborg,

Sorensen, Knudsen & Burr, 2009) and over-eating in men (Takaki, et al., 2010).

3.4.1.2.6 Limitations

From the above, obvious limitations of the ERI Model include the focus on CVD outcomes and the extent of testing for the three hypotheses postulated by Siegrist, particularly in relation to the interactive one. Despite this, most studies support the predictive validity of the model for various health problems and its applicability has been confirmed over a wide range of occupations and populations with diverse socio-demographic profiles (Tsutsumi & Kawakami, 2004).

3.4.2 Job Demands, Control and Support (JDCS)

3.4.2.1 JDC and JDCS Models

Karasek's Job Demands-Control (JDC) Model has been influential in stress research since it was first introduced by Karasek in 1979. The basic premise supports the notion that mental strain results not from a single aspect of the work environment but from the joint effects of 1. the demands of a work situation and 2. the level of control or discretion that is permitted to the worker in how to meet these demands. Thus, if a worker has high work demands and a low level of control or discretion on how to meet the demands, mental strain will occur. The term "control" or "decision latitude" encompasses two aspects: decision authority (the individual's ability to influence decisions) and skill level or discretion (the opportunity to develop skills and in turn control a situation). The role of control is important as the model proposes that it moderates the effects

of demand, so jobs that are high in both demand and control are not necessarily associated with poor psychological outcomes. Having decision latitude over the work process will reduce stress and increase learning. During the 1980s, a social support element was added to the model and this extension is known as the Job Demands-Control-Support (JDCS) Model (Johnson & Hall, 1988; Johnson, Hall & Theorell, 1989). Figure 2 shows the model in diagrammatic format.

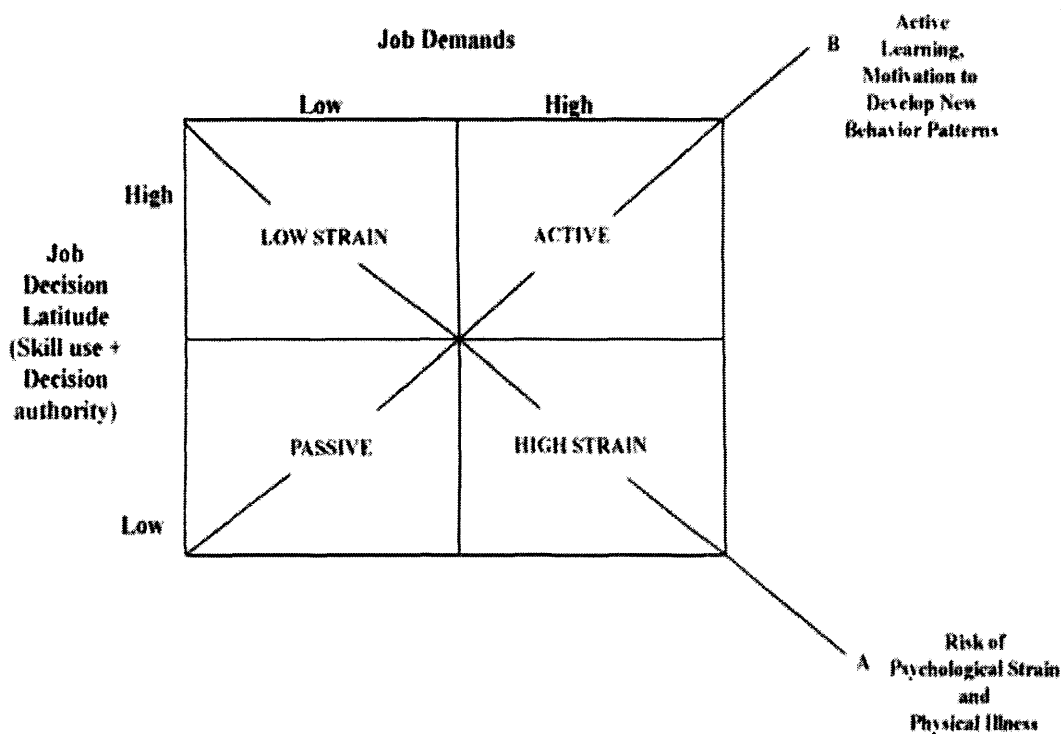


Figure 12. Job Strain Model (Westover, 2008; adapted from Karasek 1979)

In the model, “job strain” occurs when demands are high and control is low. When demands *and* control are high, the job is said to be “active,” as this leads to increased learning, motivation and development of skills, which have beneficial effects on well-being. When demands are low and control is high, the job is described as “passive,” as job activity and problem solving decreases.

The concept of “iso-strain” (isolated high strain work) was added in 1988 by Johnson and Hall, where demands are high but control and support is low.

In a review of empirical research on the JDC and JDCS Models, van der Doef and Maes (1999) distinguished between two different hypotheses which prevail the literature. The *(iso) strain hypothesis*, suggests that employees working in a high-strain job (i.e., high demands, low control, low support), experience the lowest well-being. The *buffer hypothesis* states that control and support can moderate the negative effects of high demands on well-being.

3.4.2.2 Outcomes

3.4.2.2.1 Physical health

As with ERI, the JDCS Model has also been extensively researched in association with cardiovascular health including: increased risk of myocardial infarction (e.g., Alfredsson, Spetz & Theorell, 1985; Karasek et al., 1988; Theorell, Perski, Orth-Gomer, Hamsten & deFair, 1991), ischaemic heart disease (e.g., Haan, 1988), increased blood pressure (e.g., Landbergis, Schnall, Warren, Pickering & Schwarz, 1994), cholesterol levels (e.g., Tsutsumi et al., 2003) and mortality risk (e.g., Johnson, Hall & Theorell, 1989; Astrand, Hanson & Isacsson, 1989; Kivimaki et al., 2002).

Whilst fewer in numbers, there are studies which have found an association between JDCS and musculoskeletal disorders (e.g., Slov, Borg & Orhede, 1996; Hagen, Magnus & Vetlesen, 1998; Nahit, Pritchard, Cherry, Silman & Macfarland, 2001 and Joksimovic, Starke, Knesebeck & Siegrist, 2002) and

poor general health (e.g., Houtman, Bongers, Smulders & Kompier, 1994; Schechter, Green, Olsen, Kruse & Cargo, 1997 and Cheng, Kawachi, Coakley, Schwartz & Colditz, 2000).

3.4.2.2.2 Mental health

According to a review of JDCS and mental health by Stansfeld (2002), there is sufficient and consistent evidence from a number of cross-sectional and longitudinal studies to link aspects of the JDCS Model with poor mental health, (e.g., Estryng-Behar et al., 1990; Bromet, Dew, Parkinson, Cohen & Schwartz, 1992; Kawakami, Haratani & Araki, 1992; Parkes, Mendham & Von Rabenau 1994; Stansfeld, Fuhrer & Head, 1997; Stansfeld et al., 1999; Niedhammer, Goldberg & Leclerc, 1998; Mino, Shigemi, Tsuda, Yasuda & Bebbington, 1999). The overview includes examples of associations with a higher prevalence of psychiatric morbidity in teachers (Cropley, Steptoe & Joeke, 1999), higher rates of major depressive episode, depressive syndrome and dysphoria (Mausner-Dorsch & Eaton, 2000) and higher rates of psychiatric sickness absence (Stansfeld et al., 1997). In general, job demands which contain the threat of overload have been related to anxiety, whereas low decision latitude has been more related to depressive symptoms (Broadbent, 1985; Warr, 1990). In contrast to the negative aspects of this model, high social support has been found to be protective of mental health (e.g., Stansfeld et al., 1999; Weinberg & Creed, 2000).

3.4.2.2.3 *Behavioural outcomes*

In their review, Smith et al. (2004) concluded that there is a substantial amount of literature on the associations between JDSC and behavioural outcomes but that they tend to focus on alcohol consumption and smoking. Some examples of studies where associations with alcohol have been found include: Bromet, Dew, Parkinson & Schulberg (1988), Crum, Muntaner, Eaton & Anthony (1995) and Stansfeld (1999). For smoking, examples include Hellerstedt and Jeffrey (1997) and Lindstrom (2004). In the former study, high job demands were also found to be associated with high fat intake in men. Studies have also shown associations with drug dependency (e.g. Reed, Storr & Anthony, 2006) and sickness absence (e.g., Vahtera, Penttinen & Uutela, 1996).

3.4.2.2.4 *Other*

Whilst most research has focused on CVD and mental health, other associations have been found, for example, in relation to job performance (e.g., Searle, Bright & Bochner, 1999, 2001) and accidents and injuries (e.g., Nolting, Berger, Schiffhorst, Genz & Kordt, 2002).

3.4.2.3 ***JDSC and HSE Management Standards***

Given that the JDSC Model has “dominated” the literature on stress (van der Doef & Maes, 1999, p.87), it is not surprising that in the comprehensive review of the literature on stress and associated outcomes by Rick et al. (2002), a number of studies were found relating to job *demands* (including workload, work scheduling, work organisation, the physical environment), *control* (skill discretion, decision authority), lack of proactive and reactive *support* (e.g., from

managers and colleagues, lack of recognition or feedback, bullying and harassment). As a consequence of the evidence available, these areas have been developed into three out of the six current HSE Management Standards (i.e. Demands, Control and Support).

3.4.2.4 Limitations

Despite its dominance in the literature, the JDCS Model is not without its limitations. Sullivan and Bhagat (1992) summed up the situation when they stated that most research on Karasek's model has failed to find the expected moderating effect of control, suggesting that other possible moderators of the stress/satisfaction relationship should be examined (e.g., Payne & Fletcher, 1983; Pieper, La Croix & Karasek, 1989; Astrand et al., 1989; Newton & Keenan, 1990; Melamed, Kushnir & Meir, 1991). Van der Doef and Maes (1999) also found the same problem through their review. They concluded that only aspects of job control which correspond to the specific demands of a job moderate the impact of high demands on well-being and that certain sub-populations appear to be more vulnerable to high (iso) strain, whereas others benefit from high control. In addition to this argument, there are a number of inconsistencies in health related outcomes within the literature (e.g., Reed, LaCroix, Karasek, Miller & MacClean, 1989; Hall, Johnson, & Tsou, 1993). There has also been some criticism that the model's narrow focus is considered to limit its utility (Huang, Feuerstein & Sauter, 2002).

3.4.3 Combined Effects of ERI and JDCS

Whilst there is more research available on the individual ERI and JDCS Models, Smith et al. (2004) provided a review of available literature (approximately 100 studies) which looked at both within one study, including whether there were benefits to combining them into a single model. Evidence that this can be the case was found, for example, they quoted a study by Ostry, Kelly, Demers, Mustard and Hertzman (2003), which found that a combined model was a better predictor of self-reported health status and chronic disease in 3,000 sawmill workers in Canada, than either model alone. Another example quoted included a study by Calnan, Wainwright and Almond (2000), who found that in a combined model, key determinants of mental distress in a sample of 1,089 general practice staff were low intrinsic overcommitment, high extrinsic effort and low control. Smith et al. (2004) concluded that whilst the body of literature available was small, further research including both models, either comparatively or in combination would be worthwhile, especially for those wishing to investigate an increased range of outcomes. They also concluded that there was scope to increase aspects of the physical work environment to improve prediction of risk, as the JDCS Model is limited in that respect (p.37). This premise of combined effects was subsequently examined by Smith et al. (2004) through their own research, resulting in the Model of Negative Occupational Factors, described in the following section.

3.4.4 Combined Effects of Multiple Stressors

3.4.4.1 *Model of Negative Occupational Factors (NOF)*

The third model considered within this thesis was the combined effects approach to stress as prior to Smith et al. (2004), the nature and effects of risk factors had generally been considered in isolation and this represented a different approach. In their extensive review of the literature on workplace stress, Rick et al. (2002) reported that it is more likely that *stressors* will interact with each other, sometimes in complex ways. They gave the example that the impact of workload may depend on levels of other stressors such as control, lack of support, the physical environment and so on. They acknowledged that work environments do not contain single stressors in isolation and that the effects of any single one is likely to depend on the effects of others, also that the combination of stressors is likely to have stronger effects than each one alone. Studying risk factors in isolation can be misleading as the causal sequence through which a given stressor has its effects is not known.

Whilst both the JDCS and ERI models combine more than one risk factor, the approach developed by Smith et al. (2004) allows for the possibility to assess multiple stressors at one time; sufficient to actually subsume JDCS and ERI components and to cover each of the Management Standards. It is because of the flexibility that this method subsequently allows, plus the range of issues raised by HMCG, which mapped well onto the range of measures used within Smith et al.'s (2004) questionnaires, that led to the use of this approach as a framework in the current study.

In addition to the impact of multiple stressors on health, Smith et al. (2004) also sought to examine the lesser known effects on accident and injury outcomes. This was done through substantial questionnaires (measures outlined below) and data collected from several samples including: two large community samples (Bristol and South Wales), a sample of individuals who had attended Accident and Emergency departments throughout Wales and a sample of seafarers on board support vessels for the North Sea oilrigs; as part of a project on offshore fatigue. Data were examined in similar ways within the different data sets. Scores for the risk factors were summed to create a composite or “combined effects” measure called the Negative Occupational Factors (NOF) score, which was then split into quartiles for analysis purposes. The main premise behind the NOF is that the negative influence of job characteristics will be strongest when the greatest number of multiple stressors is present in combination (i.e., the top quartile).

3.4.4.2 Measures

Whilst there was some variation across the component studies, the NOF approach allowed Smith et al. (2004) to include an extensive assessment of risk factors such as: the workplace (e.g., exposure to physical agents, working hours, noise) and work characteristics (e.g., demand, control, support – including team and leader relationships, effort-reward imbalance, bullying, role clarity/ambiguity, organisational culture, job satisfaction, impact of job on family life and family life on job). Appraisals included a range of single items (e.g., perceived work and life stress, general health, whether illness was caused or made worse by work). As the NOF approach allowed for the measurement of a

wide range of risk factors, it also allowed for the measurement of a wide range of known outcomes, including: accidents and injuries, physical and mental health, prescribed medication, smoking, alcohol consumption, diet and exercise and fatigue. Standard demographics included: age, gender, marital status, education and income, with sample characteristics including, for example, employment status and length of service. Where applicable to the current study, these are described in more detail in Chapter 4.

3.4.4.3 Outcomes

Using this approach, Smith et al. (2004) were able to examine stress in a number of ways such as JDCS, ERI, exposure to physical hazards and working hours separately, combined or combined with other risk factors. Within their community survey samples, they found that stress could be predicted by each of the JDCS and ERI models but, it was most likely to be reported by workers who were exposed to a combination of the underlying factors, specifically where jobs were highly demanding, required high levels of effort and exposed them to high levels of physical hazards and/or deleterious working hours. They also found that overall, high effort jobs by themselves exerted the most negative influence on work stress. Through a number of different analyses, they reported on several combinations of risk factors having an impact on a wide range of outcomes, for example: anxiety, depression, the number of hospital outpatient visits, musculoskeletal problems, 6 or more sick days leave in the previous 12 months, gastrointestinal problems, respiratory tract infections and sleeping difficulties, to name but a few. Apart from the combined NOF, they also found that other potential risk factors included: age, gender, education

level, income and ethnicity. NOF showed the same effects when looking at specific occupations but there were differences when looking at employment status (i.e., self-employed, employee or manager). For example, back pain in the last 14 days was more likely to be reported amongst self-employed and managers than employees.

Whilst a number of associations were found within the community studies, there were few effects evident for work-related accidents, minor injuries and cognitive failures. It was hypothesised that this was due to the low incidence of outcomes in the samples, hence their follow-on Accident and Emergency study. From this research, Smith et al. (2004) were able to determine that stress from exposure to physical hazards (e.g., harmful substances, noise) and working hours, was significantly associated with various aspects of work-accidents.

Finally, from the work on their study with seafarers and further analyses on the Bristol and South Wales community samples, Smith et al. (2004) were also able to highlight the potential for applying the approach to objective measures of mood, performance (e.g., reaction time) and physical health (e.g., blood pressure, cortisol). For example, data from the Bristol study indicated a linear relationship between combinations of negative occupational factors and decreased mood.

3.4.4.4 Limitations

The main limitation is the obvious need for further subjective and objective studies, including a greater understanding of how stress factors interact to

result in specific outcomes. Other limitations are of a more practical nature. To be both flexible and comprehensive, this approach generally requires a wide range of data and can, therefore, result in lengthy questionnaires, which may impact response rates unless appropriately managed. In addition, methods to correct for missing data become important (especially in small samples). This is discussed in more detail within the chapters on methodology and analyses. A minor but nonetheless important issue here is the use of terminology. Some researchers refer to JDCS and ERI as combined effects (e.g., Rick et al., 2002) but Smith et al.'s approach is clearly different, as it is one of a combination of *multiple* effects. With a need for an increase in research in this area, as well as in JDCS and ERI, the current terminology could easily become confusing and less distinguishable as a specific approach in its own right.

3.5 OTHER RISK FACTORS MEASURED IN THE CURRENT STUDY

In addition to the risk factors discussed in the description of the ERI and JDCS Models above, use of the NOF approach as an overarching framework allowed for the inclusion of a number of others, highlighted in the initial risk assessment but described within the literature as having independent effects. This subsection briefly describes those factors and associated outcomes, along with an overview of how the risk factors measured in Study 1 map onto the HSE's Management Standards (Demand, Control, Support, Role, Relationships and Change). To supplement this description, a full summary of all measures used in Study 1 are summarised in a table provided in Chapter 5 and a summary of risk factors and how they relate to the Management Standards in Chapter 4.

3.5.1 Demand

Demands were examined using the job demands scale from the JDCA Model and extrinsic effort from ERI. Additional factors measured included: working hours, exposure to physical agents and noise.

3.5.1.1 Working Hours

In the current study, most of the respondents worked a 12-hour shift pattern that included night work. Harrington (1978) found that some individuals prefer shifts because of the potential for flexibility, as some Coastguards expressed during the risk assessment (e.g., in reference to child care and hobbies). However, this type of working is generally considered a risk factor, particularly if it involves night-work (e.g., Rutenfranz, Haider & Koller, 1985). This is mainly due to the disturbance in eating and sleeping patterns caused by disruption to biorhythms, which can lead to longer-term health problems. Disturbed sleep is the most common problem associated with shift work but some other negative effects from working hours found include: CHD, myocardial infarction, fatigue, increased risk of colorectal cancer, peptic ulcer, poor mental health and time of day effects (Smith et al., 2004 quoting Akerstedt, 2003; Schernhammer et al., 2003; Knutsson, 2003; Borg & Kristensen, 1999; Sparks, Cooper, Fried & Shirom, 1997; Craig & Cooper, 1992 and Smith, 1992).

3.5.1.2 Exposure to Noise

The health and well-being effects of noise are generally classified as auditory (i.e., caused by effects on the hearing organ or due to masking of auditory information resulting in communication problems) or non-auditory (i.e.,

performance effects, physiological responses and health outcomes). The auditory effects of noise are well documented (e.g., permanent or temporary deafness) and there are set guidelines to avoid acute and chronic effects (refer, for example, to the work of the HSE at <http://www.hse.gov.uk>). The non-auditory effects of noise have been shown to detrimentally affect sleep (e.g., Smith & Broadbent, 1992). There are other studies to suggest that exposure may influence cardiovascular functions, fatigue, that “annoyance” with noise may affect mental health and even result in the occurrence of accidents. However, as pointed out by Smith et al. (2004), more research is needed in this area, as there are many methodological problems in establishing clear relationships. For HMCG, sources of noise may come, for example, from monitoring radio either by wearing headsets or playing sounds through loudspeakers so that more than one person can hear (the latter can be both both positive and negative), or from operations rooms in which multi-agency incidents are being handled.

3.5.1.3 *Physical Agents*

As the majority of HMCG work in a control room environment, a small number of questions were taken from Smith et al. (2004) to assess exposure to physical hazards, such as breathing fumes or handling potentially harmful substances, amongst those who might be exposed due to personal attendance at the site of incidents. This is a very well documented area, too large to include here, with many papers and guidelines available within the literature and from the work of the HSE (accessible via <http://www.hse.gov.uk>).

3.5.2 Control

Control was examined by the decision latitude and skill discretion components of the JDCS Model and intrinsic overcommitment from ERI; described above.

3.5.3 Support

Support was examined by the support element from the JDCS Model and reward from ERI; described above. An additional factor, not included in Smith et al. (2000, 2004) but included here was training.

3.5.3.1 Training

Training issues (e.g., the amount of on-job training, computer literacy), were of particular concern in the current study group because of the nature of the work and potential impact on ability to save lives. As with physical agents, lack of training is a very well documented area, with many papers and guidelines accessible within the literature and from the work of the HSE, particularly in relation to accidents and injuries (accessible via <http://www.hse.gov.uk>). Further examples of negative outcomes associated with lack of training include: difficulties sleeping, depression, loss of libido and technostress, i.e., the inability to cope with new computer technologies in a healthy manner (Paton, 2004; Ennis, 2005).

3.5.4 Role

Role was examined using the established Role Conflict and Ambiguity scale from Rizzo, House and Lirtzman (1970). This was designed around two basic tenets of role theory: 1. Role *conflict* occurs when the behaviours expected of

an individual are inconsistent. When this happens, individuals experience stress, become dissatisfied and perform less effectively than if the expectations imposed did not conflict. 2. Role *ambiguity* occurs where there is a lack of information available to a given organisational position. When this happens, it may result in the individual making attempts to solve the problem to avoid any sources of stress, or to use defense mechanisms which distort the reality of the situation. Thus, there is an increased probability that the person will be dissatisfied with their role, will experience anxiety, distort reality and perform less effectively. Examples of other negative outcomes associated with role include: emotional exhaustion, work–family conflict and a propensity to leave the organisation (Boles, Johnston & Hair, 1997; Hamnera & Tosi, 1974; Rizzo et al., 1970).

3.5.5 Relationships

This includes the promotion of positive working to avoid conflict and ensure fairness. In the current study, leader-member relationships, team-member relationships and bullying were examined. These are described further below.

3.5.5.1 Leader-Member Exchange (LMX)

According to theory, successful leadership is characterised by high leader-member exchange (LMX) which emerges as the result of a series of exchanges or interactions between leaders and each member of the group that they lead. A high quality LMX relationship is characterised by a member feeling part of the group, (the “in group”). They will have more responsibility, decision influence, higher satisfaction and access to valuable resources. There is trust and

support, shared goals and initiative beyond the everyday job. A low quality LMX relationship occurs when a member feels that they are not part of the group, (the “out group”), with the leader offering low levels of support and the member has less responsibility ability to influence decisions. There will be a lack of trust, few shared goals and few rewards. Poor quality LMX has been found to negatively impact, for example, job performance, satisfaction with supervision, overall satisfaction, commitment, role conflict, role clarity, member competence and turnover intentions (Gernster & Day, 1997).

3.5.5.2 Team-Member Exchange (TMX)

This refers to an individual’s exchange relationship with their immediate colleagues (peers), or members of their work “team.” Reciprocity between a member and their team with respect to the member’s *contribution* of ideas, feedback and assistance to other members and, in turn, the member’s *receipt* of information, help gain recognition from other team members. Seers, Petty and Cashman (1995) maintained that higher levels of team-member exchange would result in higher levels of team cohesiveness, satisfaction with co-workers and general job satisfaction and that higher levels would be found in self-managing teams in comparison to those who function as traditional work groups. They also maintained that over time, an increased level of efficiency would be found in teams with high team-member exchange.

Team-Member Exchange was developed to be analogous to Leader-Member Exchange, described above. Both constructs are based on the idea that relationships, (rather than jobholder positions), are the building blocks of

organisational structure and both focus on the reciprocity between parties rather than the attributes or behavioural styles of a relationship. Whilst the leader-member exchange construct is designed to address employee role making and supervisory leadership, the team-member construct is designed to address employee role making and work team dynamics.

3.5.5.3 Bullying

Bullying was measured using a scale devised by Quine (1999), based on five categories of bullying behaviour as identified by Rayner and Hoel (1997). These include: 1. *threat to professional status* (for example, belittling opinion, public professional humiliation, accusation of lack of effort, 2. *threat to personal standing*, for example, name calling, insults and teasing, 3. *isolation*, for example, preventing access to opportunities such as training or withholding information, 4. *overwork*, for example, undue pressure to produce work, impossible deadlines or unnecessary disruptions and 5. *destabilisation*, for example, failure to give due credit, assigning meaningless tasks or removal of responsibility. Quine (1999) found that those who had reported being bullied were likely to have higher levels of job induced stress, lower levels of job satisfaction, were more likely to be clinically anxious and depressed and more likely to report wanting to leave. Aside from serious legal implications, recent surveys have shown that workplace bullying is an increasing problem, for example, Rayner, Hoel and Cooper (2002) found that one in 10 respondents in a sample of 5,000 had been a victim in the previous six months. There have been studies (e.g., Rayner, 1999), that have found the incidence of bullying to be higher in the public than the private sector, of which HMCG are a part. This

was attributed largely to the high rate of change and increased performance pressures that public sector employees have experienced in recent years.

3.5.6 Change

Whilst there is not so much in the literature as, for example, the effects of job demands and stress, organisational change is one of the Management Standards and a problem highlighted by HMCG during the initial risk assessment. Change is a problem because it generates uncertainty (e.g., potential job loss, role pressure, role ambiguity, transfer of authority) and from this, frustration, anxiety and stress can develop, as well as affecting job commitment and productivity. The effects of change are becoming more important in the face of globalisation and the greater need for efficiencies across all types of organisations. Indeed, Ming-Chu (2009) quoted Schweiger and DeNisi (1991) as having gone so far as to point out that organisational change can be viewed as the greatest source of stress on the job and, perhaps, in an employee's life.

Two example studies on the impact of change in government departments include Ferrie, Shipley, Marmot, Stansfeld and Smith (1988) and Ming-Chu (2009). The former examined the effects of major organisational change and consequent job insecurity on the health status of a cohort of 7419 white-collar civil servants in the UK. Negative effects found within different sample sub groups included: significant increases in self-rated health as "average" or "worse", longstanding illness, adverse sleep patterns, mean number of symptoms in the fortnight before questionnaire completion, minor psychiatric

morbidity, increases in body mass index and blood pressure. Ming-Chu (2009), in a study of four Taiwanese governmental departments undergoing change (including the Coast Guard Administration), found that change had a significant negative influence on employees' trust and job involvement. However, if stress management strategies (e.g., transparent, benevolent and uniform methods for implementing change, two-way communication, employee support groups and the establishment of change leadership teams) are implemented, the subsequent understanding of organisational change can positively influence employees' organisational identification and job involvement, as well as reducing risk of negative health related outcomes. It was also found that the formation of employee perceptions of organisational change is strongly related to the decisions and behaviours of superiors.

During the initial interviews for this study, the pace of change and lack of good consultation (as opposed to inundation with information) within the MCA were highlighted as particular issues; especially since they often led to anxiety over job security (including fear of station closures), as well as feelings of hopelessness and cynicism. As the approach to this study reflected the wide range of measures undertaken by Smith et al. (2000, 2004), a number of aspects affected by change (e.g., role conflict/ambiguity) were already accounted for. Change was not directly measured in these reference studies but given the number of related aspects already covered, a small number of new items were generated, which were both specifically relevant to HMCG and also reflected the HSE's recommended states to be achieved (i.e., explanations

of change, consultation and support through change). These are described further in Chapter 4.

3.5.7 Culture

When Rick et al. (2002) conducted their review of the literature which underpins the Management Standards, they suggested there would need to be elements that address issues about organisational culture running through them, for example, management style, management strategy for employee well-being, mechanisms for consultation and communication and a strategy for illness prevention. Culture is not an actual standard but the extent to which the Standards are implemented helps to define the culture or “how we do things around here,” HSE (2010). During the risk assessment for this study, representatives of HMCG complained of different cultures across MRCCs (stations) and between MCA Head Office (HO) and MRCCs. They perceived a “them and us” culture whereby HO often issued policy but were somewhat lacking in practical application or support for application across the Agency. This had resulted in difficulties engaging staff in new initiatives. Other examples of issues raised included an overly bureaucratic style of working and some difficulties arising from local management styles.

As with stress, culture is complex to measure because it also involves many factors. Whilst it could, in theory, be inferred from the wide range of measures used to reflect the Standards, a more direct approach in the current study was taken from Smith et al. (2004), who used O'Reilly, Chatman and Caldwell's Organisational Culture Profile (1991); described in Chapter 4. Taking an

overview of the literature on culture, that has been growing since the 1980s, O'Reilly et al. (1991) reported that empirical results had typically supported the hypothesis that congruence between individuals' personalities and demands of their occupations are associated with positive affect (Mount & Muchinsky, 1978; Spokane, 1985) and a high likelihood of them staying in their jobs (Meir & Hasson, 1982). It follows, therefore, that stressed individuals are more likely to experience incongruence. It was thus anticipated that including the OCP would provide a mechanism for establishing the level of person-organisation incongruence within stressed individuals, as well as provide a measure for examining the overall cultural perception of this occupational group.

3.6 INDIVIDUAL DIFFERENCES

For those conducting studies on stress, "it is widely recognised that there are strong, individual differences that determine responses to stressors," (Rick et al., 2002, p.150). Whilst these differences make us what we are, there are debates within the literature on the extent to which certain personality traits might act as confounding or "nuisance" variables, spuriously inflating correlations between measures of stressors and strains. This is an issue because much of the research on stress relies on self-report rather than objective measures. Two factors, commonly taken into account within the literature and consequently this thesis, include coping and negative affectivity. The concept of hardiness was also examined but this is described and discussed later in chapters relating specifically to Study 2.

3.6.1 Coping

3.6.1.1 *Coping in the Work Context*

This is important as the “level of stress a person experiences, and perhaps the extent to which deleterious effects occur, depends on how and how well the person copes in stressful situations,” Latack (1986), p.377. The concept of coping has been studied in the literature for well over 50 years, particularly in clinical settings (anxiety, depression, etc.) and its importance acknowledged in the theoretical (Lazarus & Folkman, 1984). However, a review by Newman and Beehr (1979) and then later by Latack and Havlovic (1992), due to lack of change in the literature, pointed out that there had been little rigorous evaluative research of strategies in the *work* context to this date. Latack and Havlovic’s (1992) review actually presented 33 different definitions of coping as well as describing studies where this was imprecise or had to be inferred, it also criticised the lack of evaluation of measures beyond the specific sample and setting in which they were developed. They subsequently went on to a comprehensive review of over 40 studies to help provide a relevant, conceptual framework for development, which underlies the approach to coping taken in the current thesis.

3.6.1.2 *Definition and Framework*

Latack and Havlovic (1992) argued that a definition of coping within a study is fundamental and should not be left to infer, so as to ensure consistency with the measure consequently used. They extended a preference for a broad, integrative description such as, “constantly changing cognitive and behavioural efforts to manage the internal and external demands of transactions that tax or

exceed a person's resources," (Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986, p.483). This was because the definition allows for both internal coping (e.g., emotional reactions) and/or external (e.g., focused on the situation); this was subsequently reflected in Latack's (1986) coping measure, also used within Study 1.

After assigning a definition, the framework is concerned with two broad aspects of coping; how *comprehensive* and how *specific* the measurement is. A "comprehensive" study is considered one that includes both the *focus* and *method* of coping. "Focus" is widely accepted as being one of two broad categories, either on the problem (situation at hand) or the emotional reactions (see work of Kahn et al., 1964 and Lazarus & Folkman, 1984); thus reflecting the definition above. Problem-focused coping (also known as positive coping types) are more likely to be associated with lower levels of negative health outcomes than emotional-focused (also known as negative types), which are more likely to be associated with increased negative health (Folkman et al., 1986). Whilst this might generally be the case, it should be noted that in the emergency work context, emotional-focused coping (involving avoidance), has been reported as a positive method. For example, Alexander and Klein's (2001) study of ambulance workers found that 69% (n = 61) of their sample frequently *avoided thinking about what they were doing* as a useful means to cope with handling critical incidents. A third category, appraisal-focused coping (modification of the meaning of the situation), has been proposed but has less support in the literature (Mitchell, Cronkite & Moos, 1983; Moos, Cronkite, Billings & Finney, 1983). In the current thesis, the focus is on the situation and

is examined both in terms of particular types of job stress common to HMCG (e.g., role conflict/ambiguity) in Study 1 and also specific encounters (incidents) in Study 2.

Within these broad problem/emotion-focused framework categories, there are numerous sub dimensions that comprise a variety of “methods” of coping which can be broadly classified as: 1. cognitive (mental strategies, self-talk) versus behavioural (taking action or doing something), 2. proactive/control (attempts to manage or alter this situation) versus escape/resignation (avoidance) and 3. social (involving others) versus solitary. In this study, the measure used in the main analysis was a modified version of Latack’s (1986) Control (problem-focused coping) and Escape (emotional-focused coping) scales, which not only reflect the definition of stress above but also encompass all of these methods (see Chapter 4 for description). They had emerged as two global dimensions for situation-specific coping, following extensive cluster analysis of items and correlations between stressors, situational, personality and stress symptom variables. Thus higher scores on Control (or positive attempts to manage the situation) would typically indicate lower stress, as shown, for example, by Leiter (1991) and Mark and Smith (2010, submitted).

Finally, the framework also considers the “specificity” of a measure by taking into consideration three issues: 1. the independent assessment of coping versus coping *effectiveness*, 2. the extent to which the focus is on behaviours (thoughts and actions) in specific stressful transactions rather than style (i.e. stable traits regularly used) and 3. the extent to which the dimensions suggest

stress management applications or interventions and training in how to deal with stress in the job. Given that Latack's (1986) own scales were utilised, points 2 and 3 above had already been taken into consideration. In relation to point 1, Chapters 4 and 7 describe a range of measures included to ensure such independence.

3.6.2 Negative Affectivity (NA)

3.6.2.1 Description

This is the second individual difference taken into consideration within the first study. The term was devised by Tellegen (1982) and defined by Watson and Clark (1984) as a "mood-dispositional dimension that reflects pervasive individual differences in *negative* emotionality and self-concept," (p.465). Those with high NA tend to be more distressed, upset and have a negative view of self than those with low NA (or *positive* affectivity), who are relatively content, secure and satisfied with themselves. The term is more recent than coping, appearing in the literature since the mid 1980s but a significant amount of work in this area had been done earlier by the Eysencks using the terminology "neuroticism" and more latterly "emotionality" (e.g., Eysenck 1952, 1958, 1959; Eysenck and Eysenck, 1964a, b, 1975, 1976, 1983; Eysenck, Eysenck & Barrett, 1985). "*Trait* anxiety" is another view of the construct (e.g., Spielberger, Gorsuch & Lushene, 1970), where an individual is characteristically anxious rather than temporarily so, as in "*state* anxiety". Whilst NA roughly corresponds to neuroticism/anxiety in the current Big Five personality traits, and is often measured using items from neuroticism and anxiety scales, in their review of the literature, Watson and Clark (1984)

distinguish NA from trait anxiety in that it represents a more general negative and pervasive condition that exists regardless of any overt stress, emphasises how people feel about themselves and the world rather than how they handle themselves and is unrelated to an individual's experience of positive emotions (i.e., does not imply a lack of joy, excitement or enthusiasm). They distinguish NA from neuroticism as being unitary rather than multifaceted (i.e., NA is not the only contributor to developing neurosis).

3.6.2.2 *Implications and Issues*

Watson and Clark's (1984) review concluded that those with high NA are more likely to report distress, discomfort and dissatisfaction over time, regardless of the situation, resulting in a consistently strong relation with state measures of anxiety and general negative affect. This includes reports that those with high NA also score highly (i.e., badly) on self-report health questionnaires typically used in stress research (e.g., Goldberg, 1972; Moyle, 1995), although there is debate about a direct link between NA and actual physical health (e.g., Eysenck, 1991; Costa & McCrae, 1987). In respect of mental health, affectivity has been found to correlate with the well documented concept of self-esteem, which has a close affinity with depression; a potential outcome of stress (Watson, Suls & Haig, 2002). Further debate includes the role of NA in stress research, i.e., whether it has a direct effect on strain measures, whether it should be considered as a confounding variable, as a moderator or whether it is mediated through perceptions of the work environment (refer to Moyle, 1995). There are also differing views about whether NA should be routinely controlled for (e.g., Brief, Burke, George, Robinson & Webster, 1988) or should not, as

this can lead to a removal of the effects being studied (e.g., Spector, Zapf, Chen & Frese, 2000). Ultimately, NA proved not to be an issue in the current study, however, given its current status in the literature, it was taken into account in the initial design and in some instances treated as a confounding variable (as most studies to date) and in others it was not, as appropriate to the analyses described in Chapters 5 and 6.

3.6.3 Individual Differences and Sampling

There is a substantial amount of statistical literature readily available on the potential effects of individual demographic differences on the validity of statistical tests (e.g., gender, age, social status). In more specific relation to stress, sub-section 2.4.4.3 above describes how Smith et al. (2004) found that age, gender, education, income and ethnicity were potential risk factors in their studies. Additional research in this area by Smith et al. (2005) found further evidence for ethnicity as a risk factor, especially if exposed to racial discrimination. With the majority of HMCG being white and male, this did not prove to be an issue here, however, a range of sample and demographic characteristics were measured, described in more detail, along with how they were treated in the HMCG studies, from Chapter 4 onwards.

3.7 COMPARISON STUDIES

Chapter 1 described one of the issues in the measurement of stress as the lack of available and reliable comparison data. In the current study, this was remedied through the use of a subsample of data from the Bristol Health at Work Study (SHAW) and the latest, overall results from the Psychosocial

Working Conditions Survey (PWC). Using these studies essentially allowed for a comparison of HMCG against the general population of the UK. The background to these studies is described below, with the methodology and samples described later in Chapter 4. Actual comparisons with data from the current study are reported on in Chapters 5 and 6. Other important issues which these comparison studies have tried to address include the attainment of a more accurate method of assessing the scale of stress in the UK, as well as tackling some of the difficult methodological problems.

3.7.1 The Bristol Stress and Health at Work Study (SHAW)

3.7.1.1 Background

The overall aim of this study by Smith et al. (2000) was to determine the prevalence and severity of occupational stress in a random community sample. This study was particularly important, as prior to its undertaking, it had been concluded that there were “no reliable estimates of the incidence of occupational stress and related disorders in the British working population;” Smith et al. (2000) quoting Hodgson et al. (1993). Before SHAW, studies such as the 1990 trailer to the Labour Force Survey and the 1995 Survey of Self-reported Work-related Ill Health had varied considerably in their estimates (e.g., 182,700 in the former and 500,000 in the latter). Smith et al. (2000) summarised the situation at the time by stating, “while different studies all suggest that stress is a major problem, there is considerable disagreement about the extent of it ... it is clearly important ... to provide more definitive figures on the prevalence of occupational stress and the effects of stress on health,” (p.4).

In addition to the prevalence of stress issue, Smith et al. (2000) also pointed out a number of methodological problems that had pervaded research to that time. These included: the lack of a clear definition of occupational stress, the inadequacy of non-validated single one-off measures of stress, the failure to distinguish between stress at work and stress elsewhere (i.e., where stress was clearly work-related, where stress was clearly non-work related, where stress was work-related but had an impact on home life, or where stress at home had an impact on work), that previous research had focused on the individual without considering either the effects on the organisation or on the person's family or community and that previous research had not been driven by any clear model and there had been little attempt at validation. This was a problem because it had important implications for the type of measurement necessary and for the techniques needed to validate these assessments of stress. Whilst it was generally acknowledged at the time, that stress may influence health and job effectiveness, there was little information on precisely how frequently such effects occur. Estimates of the scale of stress showed great variation depending on the indicators used. They were usually measured by self-report, which also meant that associations could reflect the influence of such biases.

As a consequence of these issues, the SHAW study set out three specific aims. These included: 1. to determine the prevalence and severity of occupational stress in a random population sample, 2. to distinguish stress caused by work from that caused by other factors and 3. to assess the further health impact of stress using a cohort design.

3.7.1.2 Measures Used in SHAW

The measures used in SHAW are important for two main reasons: 1. they were selected against the wide range of methodological issues described above and 2. this study was described by Rick et al. (2002) as “one of only a few random sample surveys containing questions relevant to the stressors identified in the HSE framework,” (p.26). A further study by Smith et al. (2004), described above, also used a range of validated measures relevant to the HSE framework, as well as extending the use of stress models to include ERI, JDCS and NOF. Given this situation, the lack of reference studies for the coastguard as an occupational group, plus the fact that the issues raised within the risk assessment for the current study also mapped onto each of the Management Standards, it seemed prudent to replicate use of the measures in these reference studies, as applicable.

In summary, the extensive set of measures used in SHAW (see 2.4.4.2 for Smith et al., 2004) included: demographics (e.g., age, gender, marital status, education), job description (e.g., employment status, length of service), the workplace (physical environment, working hours), work characteristics (e.g., demand, discretion, involvement, support, satisfaction), family and work (life outside work and performance of job, job responsibilities and interference with family life), health related behaviours (e.g., smoking, alcohol consumption), fatigue, physical health (recent symptoms, chronic illness), mental health (e.g., anxiety and depression), prescribed medication, single-item ratings of health (e.g., whether illness was caused or made worse by work, general perception of health) and single-item ratings of perceived stress, both in relation to work

and to life in general. Where applicable to the current study, these are described in more detail in Chapter 4.

3.7.1.3 Summary of Findings

One of the most important outcomes of SHAW was the validation of the way in which perceived stress was measured. Data for the whole study was collected from two surveys (about 12 months apart) and a cohort study. The second survey showed that the original, first survey estimate of perceived occupational stress was reliable. Further validation was obtained through the additional cohort study, which included a sample of people who had reported stress in the previous two surveys. High stress was defined as those who had self-reported that they were *very* or *extremely* stressed on a single measure (in general, how do you find your job? not at all stressful, mildly stressful, moderately stressful, very stressful, extremely stressful). Smith et al. (2000) justified their method of measuring stress through the following reasons: no organisation would want their employees to be *very* stressed, it is common practice to define a “high” group as the upper quartile and the prevalence of stress estimated through SHAW was close to this, the size of effects on health measures found in the results between the high and low stress groups and that they found stronger associations with mental health¹, to the extent that the levels would, on average, classify the person as a psychiatric case, as per DSM criteria. Further evidence of the validity and reliability of this measure is reported by Smith, Wadsworth, Chaplin, Allen and Mark (2011) and is also described below

¹ Mental health measures used here included Zigmond and Snaith's (1983) Hospital and Anxiety Scale and Goldberg's (1978) General Health Questionnaire.

(Psychosocial Working Conditions Survey). The valid use of single measures in the study of psychosocial stress is also discussed generally, for example, by Littman, White, Satia, Bowen and Kristal (2006).

In addition to Smith et al.'s (2000) validation of the measurement of stress levels, this was also the first major study to distinguish work stress from life stress. Results found that reported levels of stress *outside* the work place were lower than the levels of work stress, to the extent that excluding those with life stress made little difference to the associations found between work-related stress and health; i.e., the effects of work stress were independent from those of general life.

The underlying model for SHAW was the JDCS Model (described above). Results found that high stress was associated with high job demand, low skill discretion and lack of social support but not with decision authority. Other associations found between high stress and work characteristics included: hours of work (shift work, working long hours), exposure to physical agents (noise), demanding work (having to work fast), bullying, less job satisfaction and more problems with the home/work interface. Full-time employment was associated with greater stress than part-time, and workers at either end of the age range (18-24), (55-64) reported lower levels of stress than the 25-54 age groups.

In terms of chronic health problems, not all those measured were found to be associated with stress at work however, high blood pressure, nervous trouble/depression, bronchitis and breast cancer were. Acute illness over the last two weeks was more frequent in the high stress group, as was use of medication, visits to the GP and sick leave. There was clear evidence that more of the high stress group believed that their condition was caused or made worse by work and they were more likely to state that their health had deteriorated over the last 12 months. In terms of other health-related behaviours, high levels of perceived work stress were associated with sleep problems, less exercise, increased frequency of alcohol consumption, a greater likelihood of being a smoker and poorer diet.

In relation to accidents and human error, the high stress group reported more accidents at work (but not *outside* work) in the previous 12 months and they were more likely to report problems of memory, attention and action.

Results from the final data collection phase, the cohort study, found that subjective reports of stress were associated with differences in physiological functioning and mental performance, as well as subjective reports on mood. Results also found that the effects of stress could not be solely attributed to negative affectivity.

3.7.2 Psychosocial Working Conditions in Britain (PWC)

3.7.2.1 Background

The Psychosocial Working Conditions Survey (PWC) is the second comparison study for the current thesis. It was first conducted in 2004 and is repeated on an annual basis (N.B. Chapter 4 provides an overview of the sample and methodology). The survey is conducted by the Office for National Statistics (ONS) on behalf of the HSE and was designed to track exposure to psychosocial hazards by the working population in the UK. At the time of its launch, work-related stress and associated conditions were the second most commonly reported work-related ill health problem. As described above, estimates on the number of people actually suffering from stress about this time varied but it was recognised as a significant problem and it was also estimated that it was resulting in around 12.8 million days off work (HSE, 2004).

A few years prior, the Health and Safety Commission (2000) had set out a 10-year strategy to improve health and safety at work that included three national targets: 1. to reduce the number of working days lost per 100,000 workers from work-related injury and ill health by 30%; 2. to reduce the incidence rate of cases of work-related ill health by 20% and 3. to reduce the incidence rate of fatalities and major injuries by 10%; (HSE, 2001). If these targets were to be met, it was evident that significant reductions in work-related stress would be required.

To address the situation, the HSE embarked on a programme of work on stress that included the development of the Management Standards (outlined in

Chapter 1). These were subsequently launched in 2004 and form the basis of the HSE Indicator Tool, a 35-item questionnaire to help gain an indication of the state of psychosocial working conditions for each Standard, (see Cousins et al., 2004 and Clarke, 2004, for an account of its development). This questionnaire is now used in the PWC to monitor change in such conditions in the general UK population, as is Smith et al.'s (2000) single item of perceived work stress (described above), used repeatedly on an annual basis since 2004. Results of the PWC survey conducted in 2004 indicated an association between higher stress levels and more negative psychosocial conditions derived from the Role, Relationships, Change, Demand, Control and Support (both management and peer support) Management Standard scores, HSE (2004b). For comparison, a similar analysis was performed on the data from the 2005 survey for the Role, Relationships and Change Management Standards, with similar conclusions including that this was an acceptable measure to use, HSE (2005, p.16).

The Indicator Tool is also available for use by individual organisations. The first PWC (2004) was used to obtain a baseline of the situation prior to the launch of the Standards. Since then, it has been used directly as a benchmark to assess change in exposure to negative working conditions and indirectly, the success of the Standards.

3.7.2.2 Overview of PWC Results 2004 - 2009

In their analysis of the latest available PWC results, Packham and Webster (2009) reported that there has been no significant change in the levels of perceived work stress since 2004; during which time the incidence of high stress had ranged from 12% in 2006 to 17% in 2008. They also found no significant difference in the number of respondents indicating that their employers had been taking visible measures to reduce stress in the workplace (range 33% in 2007 to 36.5% in 2009), or that they had discussed work-related stress with their line manager in the previous 12 months (range 35% in 2007 to 36% in 2005 and 2009). They did, however, find that trends in scores on the Change and Managerial Support scales had showed a significant improvement over time, with some improvement in Peer Support during the period 2008 – 2009.

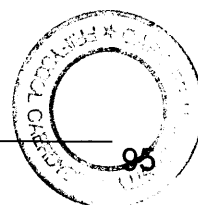
Packham and Webster (2009) concluded that Psychosocial Working Conditions for British employees had not changed between 2004 and 2009 and that the predicted improvement in working conditions, as a result of HSE's Management Standards, had not yet materialised. They suggested that the lack of impact might be due to the latency between organisations first implementing the process and benefits being realised, and that the number of other economic and social factors affecting perceptions of working conditions may be masking effects. Thus, they also concluded that the effects of the Management Standards would be better understood in combination with other such evidence.

3.7.2.3 Further Issues in the Management Standards Approach

A number of additional issues with the Standards have been more recently identified by Cox, Karanika-Murray, Griffiths, Wong and Hardy (2009), in a Delphi Study conducted on behalf of the HSE. This research examined the development of the Management Standards approach within the context of common health problems in the workplace. It was established that the approach “works well in principle but less so in practice,” (p.3). For full details refer to their report but page 5 of the document summarises what needs to be done to overcome current weaknesses, to broaden the approach and also what challenges need to be met. These were stated to be as follows:

Overcoming current weaknesses

1. Incorporate higher level organisational factors in the assessment model and Indicator Tool.
2. Modify the risk model to allow for the “balancing out” of positive and negative drivers of employee health.
3. Provide further evidence of the validity and reliability of the Indicator Tool and risk management process. *(N.B. some work has been done using organisational-level data, e.g., Edwards, Webster, Van Laar & Easton, 2008).*
4. Develop a more flexible approach to allow tailoring to specific contexts.
5. Address the issue of equivalence in relation to assessment tools and processes.



6. Provide a more comprehensive “toolbox” to support all aspects of the Management Standards approach (particularly the translation of the risk assessment information into interventions and the implementation of those interventions).
7. Clarify the use of the approach in terms of organisational populations versus targeted at-risk groups.
8. Develop the business case providing economic arguments for managing stress and other common health problems through the Management Standards approach.
9. Educate and provide more support for both users and experts

Broadening out the approach

10. Develop a more modular approach to the Management Standards to allow it to address both those work and organisational factors common to different health conditions and those specific to particular conditions.

Challenges

11. Develop a set of competencies for those using the Management Standards approach and some mechanism for “approving” those competencies.
12. Develop more supportive compliance and enforcement regimes for users.
13. Develop the approach for use in small and micro organisations.
14. Examine the validity of using the Management Standards on an individual basis as in rehabilitation and return to work (including the legal position).
15. Examine the usefulness of the approach for public health issues through workplace action.

In terms of policy, it has been argued that prevention strategies must be placed within the overarching “Health, Work and Well-being” message (Crown, 2008, retrieved from www.workingforhealth.gov.uk). This requires a wider development of the health management agenda to develop strategies that go beyond current methods of primary prevention.

Further, a recent study by Nielsen, Randall, Holten and González (2010) concluded that the Management Standards approach has not been thoroughly validated “when reviewed in the light of current research to support their appropriateness in conducting organisational level occupational health interventions,” (p.234). However, the same conclusion was drawn in respect of the four other approaches examined, i.e., the Risk Management approach (UK), Health Circles (Germany), Work Positive (Ireland) and Prevenlab (Spain). Seven criteria to identify methods that describe organisational-level primary occupational health interventions were developed and used for this review, such as, the approach should “focus on organisational-level solutions (primary interventions) aimed at changing the way work is designed, organised and managed” and the approach should include “communication/education in and the raising awareness of the risks posed by features of work design, organisation and management should constitute part of the methods,” (p.235). Whilst each of the approaches examined met most of the criteria (including the Management Standards), the authors also commented that to their knowledge, “there have been no published evaluations of Work Positive and the Management Standards,” (p.237).

As previously discussed in general terms, and more specifically in relation to the other theoretical models considered within this study, each one has its limitations and this further illustrates the complexity of the study of stress and the need for more research.

3.8 CHAPTER SUMMARY

The purpose of this chapter was to provide an overview of the literature relevant to Study 1 of this thesis. It was essentially divided into the following:

3.8.1 Stress in the Emergency Services

A search for *published* and *unpublished* studies on stress and the Coastguard (UK spelling) or Coast Guard (US spelling), using standard databases through Cardiff University Libraries, email or letter, found no relevant records in the literature or through contact with international search and rescue agencies. For UK studies, this was also confirmed by the MCA. A key reason suggested for this included a difference in duties across countries, for example, in the USA the Coast Guard is part of the military and might be considered in more general studies or data may be considered sensitive. Irrespective of subject matter, this meant that little was found on the Coastguard (or Coast Guard) in general.

For other emergency services (police, fire and ambulance), a number of studies were found confirming stress from organisational risk factors (e.g., workload and lack of support), which was a theme that predominated through the initial risk assessment conducted with representatives of HMCG. This was particularly so for the police. For fire and ambulance services, PTSD and

burnout were also areas of concern but these are discussed later in relation to Study 2.

3.8.2 Models of Stress

The wide range of issues initially raised by HMCG meant that two influential and well documented models of stress could be considered (ERI and JDCS) along with one relatively new approach, which allows for a flexible way to measure multiple stressors within a theoretical framework (NOF). Each of the models was described and evaluated, with associated outcomes and limitations. Between them, the models allowed for the measurement of a wide range of risk factors that have been found to predict a wide range of outcomes, for example, mental and physical health, accidents and injuries, smoking, alcohol consumption and sleeping difficulties, to name but a few.

3.8.3 Risk Factors

In addition to the risk factors inherent within the ERI and JDCS Models, a number of others used in the NOF methodology have independent effects, such as, bullying, role and management of change. These were described and all risk factors measured were summarised within the Management Standards, to demonstrate how they also map onto the current HSE framework.

3.8.4 Individual Differences

It is well known within the literature that individual differences or certain personality traits might act as confounding or “nuisance” variables, spuriously inflating correlations between measures of stressors and strains. This is an

issue because much of the research on stress relies on self-report rather than objective measures. Two facets of individual differences, commonly taken into account within the literature and subsequently this thesis (i.e., coping and negative affectivity) are described, along with some of the debates within the literature on the extent of their influence.

3.8.5 Comparison Studies

Finally, this chapter addressed the lack of reliable comparison data available for studies on stress. This was remedied through the use of a subsample of data from Smith et al.'s (2002) Bristol Health at Work Study (SHAW) and the latest (2009), overall results from the Psychosocial Working Conditions Survey (PWC). Using these studies essentially allowed for a comparison of HMCG against the general population of the UK. Their background is described here with sample and methodologies described in Chapter 4. As part of the discussion on PWC, this section also covered some of the current issues with the Management Standards approach.

Having now provided descriptive, background information on HMCG as an organisation, an introduction to the new research and a relevant literature review, I will now move on to describe the methodology for Study 1 in the subsequent Chapter 4.

Chapter 4

METHODOLOGY FOR STUDY 1

4.1 INTRODUCTION

The first aim of this chapter is to describe the methodology used in Study 1. In Chapter 3, stress was described as a process whereby exposure to negative job characteristics may lead to perceived stress and may consequently result in negative outcomes. A description of the measures used are presented to reflect this order, i.e.; potential risk factors (job characteristics), followed by appraisal or perception measures, then outcomes. Since individual differences may affect response to stressors, a description of the variables taken into consideration is also provided. As discussed in Chapter 3, the Bristol Stress and Health at Work Study (Smith et al., 2002) and the Combined Effects of Occupational Health Hazards Study (Smith et al., 2004) were significant references in the current research due to their comprehensive nature. As such, almost all of the items in the Study 1 questionnaire were replicated from this earlier work. Measures were only selected, however, following a detailed analysis and cross-referencing exercise with the feedback gained from the pre-survey risk assessment to ensure suitability. Therefore, unless otherwise stated, full or modified measures, were taken from these two studies.

The second aim of this chapter is to expand the information provided in Chapter 3 on the comparison group data, used to benchmark the level of stress in HMCG. Here, I continue to describe the SHAW and PWC studies by

elaborating on the composition of the samples and methods used to obtain data from them.

4.2 RISK FACTORS

4.2.1 Effort-Reward Imbalance (ERI)

Developed by Siegrist (1996), this measure was used to examine discrepancy between efforts spent (costs) and rewards received (gains). It comprises three subscales: extrinsic effort, intrinsic overcommitment and reward. Extrinsic effort was measured by four items which concern demanding aspects of the work environment (e.g., *I have a constant time pressure due to a heavy workload*). The intrinsic element of the model was measured by eight items describing overcommitment or excessive job involvement (e.g., *as soon as I get up in the morning I start thinking about work problems*). Items were rated on a 4-point scale of agreement, ranging from *agree* to *disagree*. Reward included eight items about status-related aspects, esteem and job security (e.g., *I receive the respect I deserve from my superiors and colleagues*). In both instances, participants were first asked to agree or disagree with the statement (respond as *yes* or *no*). Dependent upon the response, they were subsequently required to rate the extent to which they were distressed on a 4-point scale, ranging from *not at all* to *very distressed*.

Subscale scores were calculated by totaling the items in each one, reversing items as appropriate. The effort-reward ratio was then derived by adding extrinsic effort to intrinsic overcommitment and dividing by reward. As Siegrist advocates adjusting for the differing number of items in the scales, the scale

score was subsequently converted to a percentage score. In the current study, the Cronbach alpha coefficient for extrinsic effort was 0.66, intrinsic overcommitment was 0.59 and reward 0.83.

4.2.2 Job Demands-Control-Support (JDCS)

Developed by Karasek (1979, 1985), Johnson and Hall (1988) and Johnson, Hall and Theorell (1989), this measure contains four subscales: job demands (e.g., *do you have enough time to do everything?*), decision authority (e.g., *I have a great deal of say in decisions about work*), skill level or discretion (e.g., *do you have the possibility of learning new things through work?*) and social support (e.g., *how often do you get help and support from your colleagues?*). All items were measured on a 5-point scale to indicate the frequency of occurrence experienced, ranging from *often* to *never/ almost never* or *not applicable*. Subscale scores were calculated by totaling the items in each one, reversing items as appropriate. To calculate the “control” element of this model, the decision authority and skill level or discretion scores were added together, thus reducing the number of subscales from four to three – demands, control and support. In the current study, the Cronbach alpha coefficient for job demand was 0.56, decision authority 0.77, skill level/discretion 0.61 and social support 0.84.

4.2.3 Work Patterns

This measure was used to assess the extent to which participants were exposed to undesirable work patterns. The scale included five items (e.g., *do you have to work long or unsociable hours?*) and was rated on a 4-point scale

to indicate the frequency of occurrence, ranging from *often* to *never/almost never*. In the current study, the Cronbach alpha coefficient for the full scale was 0.09. However, this improved to 0.86 for items q5.1a, b and c as one component and 0.68 for items q5.1d and e as another. These new components simply reflected the differences between those who worked shifts (*do you work at night?, do you work shifts?, do you work long or unsociable hours?*) and those who worked fixed hours but also had “on-call” responsibilities (*do you have to be “on-call” for work?, do you have unpredictable working hours?*). As the majority of HMCG work shifts, this risk factor was not used in any analysis as it simply reflected normal working hours for this occupational group.

4.2.4 Exposure to Physical Agents

This measure was used to assess the extent to which participants were exposed to hazardous substances and/or noise. The scale included five items (e.g., *does your job ever expose you to breathing fumes, dusts or other potentially harmful substances?*) and was rated on the same 4-point frequency of occurrence scale (*often* to *never/almost*), as work patterns above. Items were summed to provide an overall score. In the current study, the Cronbach alpha coefficient was 0.47.

4.2.5 Noise

As an extension to exposure to physical agents, this scale included three items: exposure to noise at work, outside of work and whether the respondent was easily annoyed by noise. Two 5-point scales were used, measuring frequency of exposure (range *not at all* to *very frequently*) and level of annoyance (range

not at all annoyed to *extremely annoyed*). Items were summed to provide an overall score. In the current study, the Cronbach alpha coefficient was 0.47.

4.2.6 The Organisational Culture Profile (OCP)

Person-organisation fit (i.e., the congruence between the extent to which certain values characterise a target organisation and an individual's preference for that particular configuration of values) was measured using the Organisational Culture Profile (OCP), developed by O'Reilly, Chatman and Caldwell (1991).

The OCP consists of 54 value statements for which respondents are required to indicate the extent to which they are characteristic of the organisation in which they work. Examples include: *flexibility*, *demanding*, *offers praise for good performance* and *having a good reputation*. Two additional items were added, based on information gathered through the pre-survey interviews: *consultative* and *bureaucratic*. All items were rated on a 5-point scale (range *extremely characteristic* to *not at all characteristic*). O'Reilly et al. used a template matching approach to assessing person-situation interactions. In this study, the OCP was used to measure individuals' perceptions of characteristics of the organisation. Only scores from characteristics which were positively associated within the HMCG sample were summed to provide an overall score. This reduced the number of items from 56 to 43. In the current study, the Cronbach alpha coefficient was 0.95.

4.2.7 Management of Change

This measure consisted of four new items based on feedback from the pre-survey interviews (e.g., *the reasons and benefits of change are explained to you*). Respondents rated their level of satisfaction on a 4-point scale ranging from *very satisfied* to *very dissatisfied*. Items were summed to provide an overall total. In the current study, the Cronbach alpha coefficient was 0.87.

4.2.8 Leader-Member Exchange (LMX)

The quality of leader-member relationships (LMX) was measured using the seven-item version of the Leader-Member Exchange scale developed by Scandura and Graen (1984), as according to Gernster and Day (1997), it provides the soundest psychometric properties of the available LMX measures. All items were rated on a 5-point scale, which varied to reflect the question, for example, *how well do you feel that your manager understands your problems and needs? not a bit/ a little/ a fair amount/ quite a bit/ a great deal*. A total score was calculated by summing the items. In the current study, the Cronbach alpha coefficient was 0.93.

4.2.9 Team-Member Exchange (TMX)

This 10-item scale was developed by Seers (1989) and designed to measure an individual's relationship with their immediate colleagues, peers, or members of their work "team." Five items reflect what a member *receives* in exchange with other group members and five items reflect what the member *contributes* towards other group members. Example questions include: *in busy situations, how often do other team members ask you to help out?* and *in busy situations,*

how often do you volunteer your efforts to help others on your team? All items were rated on the same 5-point scale (*not a bit/ a little/ a fair amount/ quite a bit/ a great deal*). A total score was derived by summing the total of all items. In the current study, the Cronbach alpha coefficient was 0.84.

4.2.10 Bullying

The prevalence of workplace bullying was measured using a scale developed by Quine (1999). This measure contains 20 items, based on five categories of bullying behaviour, as identified by Rayner and Hoel (1997). These include:

1. *threat to professional status* (e.g., belittling opinion, public professional humiliation),
2. *threat to personal standing* (e.g., name calling, insults and teasing),
3. *isolation* (e.g., preventing access to opportunities such as training or withholding information),
4. *overwork* (e.g., undue pressure to produce work, impossible deadlines or unnecessary disruptions) and
5. *destabilisation* (e.g., failure to give due credit, assigning meaningless tasks or removal of responsibility).

Respondents were required to answer *yes* or *no* to indicate whether or not they had been exposed to the items within the previous six months. Example items include: *undue pressure to produce work*, *constant under valuation of your efforts* and *undermining your personal integrity*. Scores were summed to provide an overall total. In the current study, the Cronbach alpha coefficient was 0.91.

4.2.11 Role Conflict and Ambiguity

Role conflict (i.e., when the behaviours expected of an individual are inconsistent) and role ambiguity (i.e., where there is a lack of information available to a given organisational position), were examined using a 29-item measure developed by Rizzo, House and Lirtzman (1970). The *role conflict* subscale contains 15 items (e.g., *I have to do things that that should be done differently*) and the *role ambiguity* subscale contains 14 items, (e.g., *I feel certain how I will be evaluated for a raise or a promotion*). All 29 items were rated on the same 5-point scale to indicate frequency of occurrence (*never/ very rarely/ sometimes/ often/ always*). Items were reversed, as appropriate and summed to produce an overall score. In the current study, the Cronbach alpha coefficient was 0.89.

4.2.12 Training

This measure consisted of seven new items based on feedback from the pre-survey interviews (e.g., *the amount of training conducted "on the job"*). Respondents rated their level of satisfaction on a 4-point scale ranging from *very satisfied* to *very dissatisfied*. Items were summed to provide an overall total. In the current study, the Cronbach alpha coefficient was 0.88.

4.2.13 Summary of Risk Factors in Relation to Management Standards

The HSE Management Standards cover six key areas of work that, where improperly managed, are associated with poor health and well-being, lower productivity and increased sickness absence. Whilst the Standards were in

development at the time of Study 1, measures included fully reflected the six areas and for reference, are summarised in Table 1.

Table 1

Risk Factors Measured in Relation to HSE Management Standards

Management Standard	Question Reference
1. Demands	
Job demands (JDCS)	q5.5 a-c, q5.7a
Work patterns	q5.1 a-e
Exposure to physical agents	q5.1 f-i
Noise	q5.2, q5.3 a-b
Extrinsic effort (ERI)	q5.11 a-d
2. Control	
Decision authority (JDCS)	q5.5 i-j, q5.6 a-e, g, h
Skill discretion (JDCS)	q5.5 e-h, q5.8 a-b
Intrinsic overcommitment (ERI)	q5.10 a-e, g-i
3. Support	
Social support (JDCS)	q5.7 b-c, q5.9 a-d
Training	q5.21 a-g
Reward (ERI)	q5.11 e-h, q5.12 a-d
4. Relationships	
Leader-member exchange (LMX)	q5.15 a-g
Team-member exchange (TMX)	q5.16 a-j
Bullying	q5.17 a-t
5. Role	
Role conflict and ambiguity	q5.20.(1-29)
6. Change	
Management of change	q5.14 a-d
7. Culture	
Organisational Culture Profile (OCP)	q5.13 (1-56)

4.3 APPRAISALS (PERCEPTIONS)

Three key items used in the analysis included single items on self perception of work stress (*in general how do you find your job? not at all/ mildly/ moderately/ very/ extremely stressful*), life stress (*how do you find life in general? not at all/ mildly/ moderately/ very/ extremely stressful*) and general perception of health (*over the last 12 months how would you say your health in general has been? very good/ good/ fair/ bad/ very bad*), as Rick et al. (2002) stated that the distinction between work and life stress had been a unique feature of SHAW. Several other single item questions were included from Smith et al. (2000, 2004) to measure perception of the work-life balance, job satisfaction and satisfaction with pay, along with some new HMCG specific items on satisfaction with the way important information is communicated and support from MCA HR and HO. These items are summarised in Table 2. For a discussion on the reliability and validity of the single stress measures, refer to Chapter 3.

Table 2

Summary of Study 1 Appraisal Variables

Appraisals (Perceptions)	Question Reference
In general how do you find your job? (not at all/mildly/moderately/very/extremely stressful)	q2.6
How do you find life in general? (not at all/mildly/moderately/very/extremely stressful)	q2.7
Over the past 12 months how would you say your health has been? (very good/good/fair/bad/very bad)	q2.5
Are you satisfied with your job?	q1.12a
Is the MCA an attractive place to work?	q6.1

Appraisals (Perceptions)	Question Reference
Do you feel that you have a balanced home and work life?	q6.2
How satisfied are you with your usual take home pay?	q5.22a
How satisfied are you with the support available from HR if you need it?	q5.22h
How satisfied are you with the support from HO if you need it?	q5.22i
How satisfied are you with the way in which important information is communicated?	q5.22k

4.4 OUTCOMES

A range of mental health, physical health and behavioural outcomes were measured and are described below. A comprehensive set of questions on accidents and injuries, in addition to single items on the prevalence of risk taking and memory problems were also included (see Section 3 of the questionnaire provided as Appendix 5). However, analysis of data obtained (reported in Chapter 5) was unable to establish a significant association with these particular outcomes and work stress. As such, the data on accidents, injuries, risk taking and memory problems were not used in the current analysis.

4.4.1 Mental Health

4.4.1.1 *The Hospital Anxiety and Depression Scale (HADS)*

Mental health was measured using the Hospital Anxiety and Depression Scale (HADS), developed by Zigmond and Snaith (1983). This includes 14 items with two subscales. Seven of the items relate to the measurement of depression, (e.g., *I feel as if I am slowed down*) and seven to anxiety (e.g., *I feel tense or*

wound up). Participants were asked to rate, on 4-point scales, the extent to which each of the 14 statements applied. When scoring, items for each of the two subscales are reversed as appropriate and summed to obtain a total anxiety and a total depression score. Scores of 0 – 7 in respective subscales are considered normal, with 8 – 10 borderline and 11 or over indicating clinical depression or anxiety. In addition to the total anxiety and total depression scores, two further variables were derived, these being clinical anxiety and depression, representing scores of 11 or more. In the current study, the Cronbach alpha coefficient for each scale was 0.88.

4.4.2 Physical Health

4.4.2.1 Symptoms and Medication Questionnaire

This descriptive questionnaire was used to measure the prevalence of *minor* health symptoms (e.g., headache, cold or flu in the previous 14 days), *acute* health symptoms (e.g., bronchitis, hay fever, recurring stomach trouble in the last 12 months) and *chronic* illness (e.g. stroke, high blood pressure and cancer at any time). It was also used to measure the level of medication prescribed by a doctor within the previous 14 days, the previous month and in the previous year. Respondents simply answered *yes* or *no* to indicate the presence or absence of the symptom or medication. Scores for each of the six subscales were derived by totaling the number of *yes* responses.

4.4.2.2 Epworth Sleepiness Scale

The propensity for excessive daytime sleepiness (EDS) was measured by the Epworth Sleepiness Scale, developed by Murray Johns (1991). Respondents

were asked to rate, on a scale of 0 – 3, the chance of dozing in eight different situations, such as *watching TV* and *as a passenger in a car for an hour without a break*. A rating of zero indicates *never* dozing, a rating of 1, a *slight chance* of dozing, a rating of 2, a *moderate chance* and 3, a *high chance* of dozing. Scores are summed for the eight items. A score of less than eight indicates low EDS, between eight and 12 indicates moderate sleepiness and a score of 12 or more indicates pathologic sleepiness, in need of immediate testing and treatment. Two variables were derived from this measure; a total sleepiness score and a score indicating the presence or absence of pathological sleepiness. In the current study, the Cronbach alpha coefficient was 0.80.

4.4.3 General Health Questions

Two single item general health questions were also included to indicate the number of sick days taken in the last 12 months and, to provide a balance with Epworth, a question on frequency of insomnia.

4.4.4 Behavioural Outcomes

Twelve single item questions were asked about the balance between home and work life and general lifestyle (i.e., smoking, drinking, bodyweight, exercise, ability to relax and number of hours spent on interests outside of work). These were taken from Smith et al. (2000, 2004) and the Biographical Questionnaire that supplements the Occupational Stress Indicator, published by ASE (Cooper, Sloan & Williams, 1988). Examples include: *how many cigarettes do you smoke per day?*, *how many units do you drink on an average weekend?* and *do you take any planned exercise?*

4.4.4.1 Home-Work Interface

The home-work interface was examined using two four-item scales. The first concerns the extent to which family life and responsibilities interfere with the job, for example, *family worries or problems distract you from your work* (family life impact on job). The second scale is the reverse, looking at the way in which job responsibilities interfere with family life, for example, *problems at work make you irritable at home* (job impact on family life). Both were rated on a 3-point scale (*not at all/ to some extent/ a great deal*). In the current study, the Cronbach alpha coefficient for family impact on job was 0.82 and job impact on family life 0.76.

4.5 INDIVIDUAL CHARACTERISTICS

Individual characteristics measured in the current study, widely recognised as having potentially confounding effects, included coping and negative affectivity.

4.5.1 Work Related Coping

The work related coping measure, developed by Latack (1986), has two subscales, control and escape. *Control* examines problem-focused coping, which is defined as attempts to alter or manage the situation (e.g., *try to work faster and more efficiently*). The *escape* subscale examines emotion-focused coping, which is defined as attempts to reduce or manage emotional distress (e.g., *tell myself that I can probably work things out to my advantage*). The original measure contained 28 items but only the 12 most predictive of coping behaviour were included in the questionnaire for this study; as used by Smith et al. (2004). Each of the items was rated on a 5-point scale, indicating frequency

of occurrence, ranging from *never* to *always*. Scores were calculated by summing the responses to each item. In the current study, the Cronbach alpha coefficient was 0.82.

4.5.2 Negative Affectivity

Three items from Eysenck's neuroticism scales, chosen for their ability to discriminate, were included to measure negative affectivity. As discussed in Chapter 2, this is often measured using items from neuroticism and anxiety scales because of its relationship with neuroticism/anxiety in the Big Five personality traits. Items included: *are your feelings rather easily hurt?*, *would you call yourself "tense" or "highly strung"?* and *do you worry about awful things that might happen?* Participants were required to provide a *yes* or *no* rating. The total number of *yes* and *no* responses were calculated, with three negative responses indicating negative affectivity. In the current study, the Cronbach alpha coefficient was 0.56.

4.6 SAMPLE AND DEMOGRAPHIC CHARACTERISTICS

A further range of potentially confounding variables was taken into account through the sample and demographic classifications, described below.

4.6.1 Sample Characteristics

Sample characteristics collected included a number of standard and HMCG specific occupational variables, such as: region of the organisation worked in, district/station/office worked in, whether the job was full-time or part-time, whether the job was permanent, temporary or a fixed contract, current position

at work (e.g. manager, supervisor or employee), number of volunteer Coastal Rescue Service Officers responsible for, date started with MCA, average hours worked per week (including overtime), work pattern, whether currently undergoing training, whether previously employed in a maritime related job or whether currently have any other paid jobs, information on working shifts and on-call rotas.

4.6.2 Demographics

Demographic information included: age, sex, marital status, education level, ethnicity and income.

4.7 SUMMARY AND HMCG SPECIFIC ITEMS

Section 1 of the Study 1 questionnaire (Appendix 5) contained several summary items reflecting stress and negative aspects of the work environment (e.g., *do you find your job demands stressful?*) and a small number of general questions which MCA management were specifically interested in but were not part of the main analysis of this study (e.g., *under what circumstances would you consider changing your work pattern to reduce the number of night shifts that you work?*). The latter were mainly contained within Section 6 (The Future of Work in Relation to the Home-Work Balance). Due to the number of responses and information available from the detailed job characteristics scales, the summary questions were not actually required for any analysis. The general questions for MCA management were reported separately, however, some of the responses generated useful information for this thesis and, where applicable, the implications form part of the discussion in Chapter 8.

4.8 SCALE RELIABILITY

Due to the nature of the analyses, in most cases, the total scale scores were used. This had the advantage of increasing the reliability over some of the shorter subscales. Also, because of the length of the questionnaire, in some cases a reduced number of scale items had been used. Whilst these modified versions had been used effectively elsewhere, they consequently had a slightly reduced level of reliability.

4.9 ETHICAL CONSIDERATIONS AND TREATMENT OF DATA

Data were collected in line with Cardiff University and the British Psychological Society ethical guidelines and analysed using the statistical software packages SPSS version 16 and PASW version 18.

4.10 COMPARISON GROUPS

As discussed in Chapters 1 and 2, one of the problems in measuring stress is the availability and compatibility (and therefore reliability), of comparison data. Within this research, HMCG was compared with data from the Bristol Stress and Health at Work Study (SHAW) and the Psychosocial Working Conditions (PWC) Survey 2009, as these provided the best chance of comparing HMCG with the general working population within the UK.

4.10.1 SHAW

Another key reason for selecting SHAW as a comparison group was because it was described by Rick et al. (2002), in their review of the existing literature on stress, as “the most valuable source of information” when examining the

evidence of exposure or incidence rates to stress (p.26). At the time of Rick et al.'s research, SHAW was also one of a very small number of studies containing questions relevant to the stressors identified in the framework under which they were reviewing the literature (since developed into the current Management Standards). It was also unique as it sought to distinguish work from life stress. A further reason for selecting this group was accessibility of the data, which was available within the COHP where the current study was also being conducted. Data collection, sample and response rates for SHAW are described below.

4.10.1.1 Method and Procedure for SHAW

Data were collected via two extensive paper questionnaires: Part 1 (33 pages) was sent out in 1998 and Part 2 (38 pages) in 1999. Questionnaire packs for Part 1 were distributed to 17,000 randomly selected people from the Bristol electoral register using regular mail. Packs consisted of a covering letter, the questionnaire and a freepost return envelope. Reminder letters were sent out by regular mail four weeks later. This was followed by telephone reminders after a further month and finally, a further questionnaire by recorded delivery after another four weeks. For Part 2, distribution took place 12 months later. Questionnaires were sent out by regular mail to 4,673 individuals who had indicated via the Part 1 survey that they would be prepared to complete another questionnaire. The follow-up mailing strategy was as described for Part 1.

4.10.1.2 Sample and Response Rates

The response rate for Part 1 was 41% based on the 17,000 sent out, or 49% when taking into consideration questionnaires returned, for example, due to the person being deceased, incomplete address, address inaccessible, etc. For Part 2, the response rate was 66.5% when based on the 4,673 sent out or 69% when adjusted for those returned unopened, not completed due to person being deceased, etc.

As SHAW was a community study and contained both working and non working individuals, a subsample of working individuals who had completed Parts 1 and 2 was extracted from data available to use as a comparison group. This is described in further detail in Chapter 5, where a breakdown of the sample and demographic characteristics is also provided.

4.10.1.3 CASOC

The SHAW data provided an additional opportunity to conduct comparisons of stress levels by job category, as one of the variables was a CASOC classification. CASOC, now known as CASCOT (Computer Assisted CODing Tool), is a computer program which converts relevant text information to standard occupational and industrial classifications, as developed by the UK Office for National Statistics (ONS). In the case of the Standard Occupation Classification (SOC), text is typically a job title. For the Standard Industrial Classification (SIC), the text is a description of the main product or services provided by an employing establishment. In this instance, the classification was of the SOC type, based on the two volumes of information published in 1990 by

the ONS. Whilst the SOC 1990 has since been updated (2000), it nevertheless contained a substantial amount of information, including 23,000 job titles (now 26,000), subclassified into nine major groups, 22 submajor groups, 77 minor groups and 371 unit groups. An example of how this system would work is shown in Figure 5, as obtained from at <http://www.ons.gov.uk/about-statistics/classifications/archived/SOC2000/about-soc2000/index.html>.

Figure 13. Example of CASOC (1990) Numbering System

Group		Classification
Major group	2	Professional occupations
Submajor group	2a	Science and engineering professionals
Minor group	20	Natural scientists
Unit group	200	Chemists

In the current study, Coastguards formed part of major group 6 (personal and protective services). Use of the CASOC system for comparative analysis is discussed further in Chapter 5.

4.10.2 Psychosocial Working Conditions in Britain Survey (PWC) 2009

The PWC (2009) survey was used as a comparison group in the current study as it is reflective of the general population, is up-to-date and is conducted by the ONS on behalf of the HSE. The PWC surveys are conducted annually to monitor changes in psychosocial working conditions across the UK, as reflected in the HSE Management Standards [i.e., Demand, Control, Support (management and peer), Role, Relationships and Change]. Both were

launched in 2004. At the time of writing, the most up-to-date results were those published for 2009. The full account is provided by Packham and Webster (2009) but a description of the Management Standards and an overview of the PWC survey are provided in Chapters 1 and 2. A summary of the methodology used and sample obtained in the PWC 2009 survey is described below.

4.10.2.1 Method for PWC (2009)

Data was collected via an ONS run omnibus survey from households across the UK during March and April 2009. Omnibus surveys are multi-purpose instruments for questions on topics too brief to warrant a survey of their own and also for topics of immediate interest. Data collected is typically weighted to reflect the views of the general population.

4.10.2.2 Procedure for PWC (2009)

Data was collected via face-to-face interviews using the ONS' own trained field force. Letters were sent out in advance to 2,010 UK households. Interviewers called at the selected addresses, unless a refusal had been made beforehand in response to the advanced letter. Interviewers make at least three calls at an address at different times of the day and week, before coding the household as a non-contact. After the field period (duration one month), a proportion of the non-contacts and refusals were sent to the ONS Telephone Unit who attempted to obtain an interview over a four-day period.

4.10.2.3 Sample for PWC

The survey sample was randomly selected but stratified by region, the proportion of households where the household reference person is in the National Statistics Socio-economic Classification (NS-SEC) categories 1-3 (i.e., employers in large organisations, higher managerial occupations and higher professional employees/ self-employed), and the proportion of people who are aged over 65 years. The Royal Mail's Postcode Address File (PAF) of "small users" provided the sampling frame used. The PAF contains the addresses of approximately 27 million private households in the UK, which receive fewer than 50 items of mail per day, and is the most complete and up-to-date address database in the UK. The survey spanned 67 postal sectors, with 30 addresses selected at random from each of these sectors. The postal sectors were selected with probability proportionate to size (number of addresses within the postal sector). Weighting factors are applied to omnibus data to correct for unequal probability of selection caused by interviewing only one adult per household, or restricting the eligibility of the module to certain types of respondent. The weighting system also adjusts for some non-response bias by calibrating the sample to ONS population totals.

4.10.2.4 Eligibility for PWC

HSE's psychosocial working conditions modules were administered to a sample from the population of currently employed and those currently self-employed who worked like employees. This was because the questions were based on work-relationships and structures that would be of little relevance to self-employed people, who worked largely on their own and with control over their

work. The total number of relevant individuals in the 2009 sample was 891. Table 3 provides a summary of the omnibus samples and those eligible for the PWC questions since its inception.

Table 3

Response Rates for ONS Omnibus Modules and Numbers Eligible to Answer Psychosocial Working Conditions Questions (March 2004 – April 2009)

Module	Selected addresses	Eligible addresses	Eligible for PWC	Interviews achieved	Response rate
April 2009	2010	1830	891	974	54%
March 2009	2010	1779	836	1092	61%
April 2008	2010	1830	845	1156	63%
March 2008	2010	1818	631	1087	60%
April 2007	2010	1664	606	1083	62%
March 2007	2010	1667	639	1088	65%
April 2006	2010	1825	562	1295	71%
March 2006	2010	1815	507	1220	66%
April 2005	2010	1819	503	1251	69%
March 2005	3000	2762	566	1703	62%
April 2004	3000	2778	527	1686	61%
March 2004	3000	2775	452	1751	63%

4.11 CHAPTER SUMMARY

This chapter contains a description of the measures and comparison groups used in Study 1. In keeping with the stress process, risk factors were described first (i.e., ERI, JDCS, work patterns, exposure to physical agents, noise, OCP, management of change, LMX, TMX, bullying, role conflict and training). This was followed by a number of single items used as appraisals, such as perceived work and life stress. A number of potential outcomes were then described including mental and physical health and a range of behavioural related measures, such as smoking and drinking. In respect of individual differences, variables measured included coping and negative affectivity, along with a range of sample and demographic characteristics. The method and samples for the SHAW (2000) and PWC (2009) studies were described, along with CASOC (a means to classify occupational information), as these were all used for comparisons with HMCG data during the analysis phase. The results for Study 1 are now presented in the following Chapters 5 and 6.

Chapter 5

METHOD AND RESULTS FOR STUDY 1 (PART 1)

5.1 INTRODUCTION

In Chapter 1, it was stated that the overall aim of this research was to gain an understanding of work stress in HMCG as a previously unstudied occupational group. Three objectives were set out. The method and results for Study 1 (the first of two studies eventually carried out) are reported in two parts (Chapters 5 and 6). Objectives examined in this chapter include: *objective 1*. establish the overall level of perceived work stress in HMCG and *objective 2*. ascertain whether standard models (i.e., ERI, JDCS and NOF), could then be used to explain the level of stress found. Hypotheses examined here include: *hypothesis 1*: the level of stress found within HMCG would be at least the same when compared to a community study or “general population” sample and *hypothesis 2*: the level of stress found within HMCG would result in a number of negative outcomes related to mental and physical health, accidents and injuries, behaviour, the home-work balance and/or job satisfaction (refer to Chapters 2 and 3 for the rationale and literature relevant to these predictions.) Whilst evidence of high stress relating to negative occupational factors has been found in the police (also evidenced as sources of stress in HMCG from the pre-survey interviews reported on in Chapter 2), as well as more directly related to emergency incidents themselves (e.g., PTSD), in the fire and ambulance services, as no literature on the Coastguard could be found at the time of this research, a cautious approach was taken for hypothesis 1.

The remaining objective (*objective 3*. in addition to standard models, establish whether there was anything about HMCG as a group in itself, that can help explain the level of stress found), is reported on from Study 1 in Chapter 6 and Study 2 in Chapter 7.

5.2 METHOD

5.2.1 Questionnaire

Data were collected via a 24-page paper questionnaire, entitled *Health and Safety at Work Survey 2003*. A copy is provided as Appendix 5.

5.2.2 Full Summary of Measures

The rationale and detailed description of measures used in Study 1 are provided in Chapters 2 and 4. In essence, all reflect the three models included in this study (ERI, JDCS and NOF), the measures used in the reference studies (Smith et al., 2000, 2004) and the current HSE Management Standards. A summary table in relation to the risk factors included and how they mapped onto the Standards was provided in Chapter 4. Table 4 provides a full summary of measures in three main sections: risk factors, appraisals (perceptions) and outcomes. Question numbers are also included for ease of reference to the survey questionnaire.

Table 4

Full Summary of Study 1 Measures (Risk Factors, Appraisals and Outcomes)

Survey Measures	Question Reference
Risk Factors	
Exposure to physical agents	q5.1f-i
Noise	q5.2-q5.3b
Job Demands-Control-Support (JDCS)*	q5.5a-c, e-j, q6a-e, g-h, q5.7a-5.9d
Effort-Reward Imbalance (ERI)*	q5.10 a-e, g-i, q5.11a-12d
Organisational Culture Profile (OCP)	q5.13 (1-56)
Management of change	q5.14a-d
Leader-member exchange (LMX)	q5.15a-g
Team-member exchange (TMX)	q5.16a-j
Bullying	q5.17a-t
Role conflict and ambiguity	q5.20 (1-29)
Training	q5.21a-g
Appraisals (Perceptions)	
Work stress (<i>In general how do you find your job? not at all/ mildly/ moderately/ very extremely stressful</i>)*	q2.6
Life stress (<i>How do you find life in general? not at all/ mildly/ moderately/ very extremely stressful</i>)	q2.7
General health (<i>Over the past 12 months how would you say your health has been? very good/ good/ fair/ bad/ very bad</i>)	q2.5
Job satisfaction (<i>Are you satisfied with your job/ take home pay/ support from HR, HO, etc.</i>)	q1.12a, q5.22a-k
Is the MCA an attractive place to work?	q6.1

Survey Measures	Question Reference
<i>Outcomes</i>	
<i>Health</i>	
Number of sick days in last 12 months*	q2.1
Have you suffered from any illness that you think was caused or made worse by work?	q2.2
HADS (anxiety and depression)*	q2.3a-n
Symptoms and Medication*	q2.8-q2.12
Epworth (sleepiness)	q2.13a-h
How frequently do you suffer from insomnia?	q5.4
<i>Accidents and Injuries</i>	
Accidents	q3.1-q3.4b
Memory problems	q3.5a-b
Risk taking	q3.6a-b
<i>Behavioural</i>	
Smoking	q4.1-q4.2
Drinking	q4.3-q4.7
Do you maintain a desired bodyweight?	q4.8
Do you take any planned exercise?	q4.9
Do you find time to “relax and wind down”?	q4.10
Number of hours per week spent on hobbies/interests	q4.11
<i>Home-Work Balance</i>	
Impact of family life on job	q5.23a-d
Impact of job on family life	q5.24a-d

Survey Measures	Question Reference
Individual Characteristics	
Negative Affectivity	q2.4a-c
Coping	q5.18a-l

Note. * = variables also available in BSW dataset for comparison with HMCG.

5.2.3 Participants

Except for very senior managers based at MCA Head Quarters in Southampton, (associated with the sponsorship of this study), all others working within HMCG were invited to participate in the survey. At this time, the Operations Division (of which HMCG comprised the majority), contained approximately 600 employees, with about 400 directly involved with SAR related activities.

5.2.4 Procedure

Data was collected during February and March 2003. This is generally a quieter time of year in regard to the number of incidents that have to be dealt with. It should be noted, therefore, that this may have had some impact on perception of stress. However, for practical reasons, MCA management were keen that Study 1 went ahead at a time that would not necessarily overly burden staff, with the addition of their day-to-day workload, as well as having to participate in other organisational initiatives that were already underway, or scheduled for later in the year (such as an MCA-wide staff satisfaction survey). Questionnaires were distributed internally by the MCA to relevant staff working within the 19 MRCCs located across the UK.

Prior to questionnaire distribution, a joint internal communication was sent out from the Chief Coastguard (also the Director of Operations) and the HR Director who were in post at the time, (see Appendix 4). The communication was designed to encourage a good response by explaining why the survey was being conducted and to provide assurance of confidentiality. Pre-survey consultation also took place with the PCS to enlist trade union support.

Instructions for completion, a contact email and a telephone number for queries were included within the questionnaire itself. Pre-addressed envelopes were provided so that completed questionnaires could be sent directly to Cardiff University for processing, and in turn, provide additional assurance of confidentiality.

5.3 RESPONSE RATE, SAMPLE AND DEMOGRAPHICS

5.3.1 Response Rate

Due to financial constraints, the questionnaire was distributed internally by MCA employees and mainly by hand. As such, the *actual* number of individuals who received one was unknown. The total number of completed questionnaires returned was 282, representing a conservatively estimated response rate of 47% (based on the 600 employees of the Operations Division).

5.3.2 Sample: HMCG

Table 5 shows that all HMCG job types listed within the questionnaire were represented within the sample, responses were distributed relatively equally across each of the three Agency regions and more than half of respondents (63%, $n = 177$), had previously worked in a maritime environment.

Table 5

HMCG Specific Sample Characteristics

Sample Characteristics	HMCG <i>n</i> %
Job Title	
Area/District Operations Manager	20 (7%)
Sector Manager	32 (11%)
Watch Manager	51 (18%)
Watch Officer	72 (26%)
CWA	90 (32%)
District/Deputy District Controller	11 (4%)
Other/not specified	6 (2%)
Area/Region of Agency Worked In	
Scotland and NI	101 (36%)
Western	84 (30%)
Eastern	95 (34%)
Not specified	2 (1%)
Previously Worked in Maritime Environment	
No	105 (37%)
Yes	177 (63%)

At MRCC level, completed questionnaires were received from all 19, with responses ranging from 7 at London (2% of total) to 30 at Clyde (11% of total). A large proportion of the sample worked a 12-hour shift pattern (77%, n

= 216), which meant a 48-hours rota of two days, two nights and four days off. Length of service ranged from 0 – 34 years, with a mean of 10 years (SD = 8.28). Most of the sample had no responsibility for the management of the 3,500 volunteer Coastal Rescue Service (79%, $n = 222$) and 28% ($n = 78$) were undergoing training.

At the time of the survey, figures available from MCA HR suggested that these characteristics were representative of HMCG as a population. For job types, the lowest rate of return was approximately 39% for any one category (CWA). Job types that may have received a questionnaire during the internal distribution but did not subsequently return a completed form, were only likely to have included administrative personnel and at most, three Inspectors. As with the sample, the full compliment of employees within the Agency was almost equally distributed across the three Regions of the UK (32%, 34% and 34% in the population, compared with 36%, 30% and 34% in the sample). At MRCC level, the response varied between 33% (Belfast) and 100% (London) and with length of service, 50% of the full workforce had been employed between five and 20 years (sample mean 10 years).

5.3.3 Comparison Sample: Bristol Study Workers (BSW)

The Bristol Study sample is described in detail in Chapter 4. Having been a community study, the full data set available (around 7,000 cases in time 1 data collection, 3,000 in time 2 data collection), contained non-working respondents, for example, retired individuals, students and people at home with children. To increase the reliability of any analyses carried out here, a

subsample of those who had completed both time 1 and 2 data collection phases and had indicated that they were currently working, was extracted and are referred to hereafter as Bristol Study Workers (BSW). Extracted data was subsequently taken from the time 2 data set only, as this included accident and incident information (which might have been useful for comparisons). The total number finally extracted for this BSW sample was 1,892.

Table 6 provides a comparison of the HMCG and BSW samples in respect of key working arrangements. As can be seen, a larger proportion of HMCG employees were full-time (95% compared to BSW 73%) and were permanently employed (99% compared to BSW 88%). This was in keeping with MCA HR figures which confirmed that 91% of those in the HMCG Operations Division were full-time. There were larger proportions of shift workers within HMCG (77% compared to BSW 14%) and managers with less than 25 employees (20% compared to BSW 6%). The latter reflected the number of Operations Rooms and Watches that have to be managed. As shift work has been associated with negative health outcomes and the SHAW study had found that full-time employment was associated with greater stress than part-time, based on the figures above, it seemed more likely that a higher level of perceived work stress would be reported by HMCG.

Table 6

Comparison of HMCG and BSW Working Arrangements

Working Arrangements	HMCG	BSW
	<i>n</i> %	<i>n</i> %
Full-time/Part-time		
Full-time	267 (95%)	1378 (73%)
Part-time	15 (5%)	503 (27%)
Not specified	0 (0%)	11 (1%)
Permanent/Temporary/Fixed Contract		
Permanent	278 (99%)	1662 (88%)
Temporary/casual/fixed contract	4 (2%)	212 (12%)
Not specified	0 (0%)	18 (1%)
Shift Worker		
Yes	216 (77%)	272 (14%)
No/not specified	66 (23%)	1620 (86%)
Current Position at Work		
Manager >25 employees	24 (9%)	221 (12%)
Manager <25 employees	57 (20%)	104 (6%)
Supervisor	29 (10%)	196 (10%)
Employee	164 (58%)	1130 (60%)
Self employed/not specified	8 (3%)	241 (12%)
Any Other Paid Jobs		
No	257 (91%)	1720 (91%)
Yes	23 (8%)	159 (8%)
Not specified	2 (1%)	13 (1%)

5.3.4 Demographics

Table 7 provides a summary of the demographics for both groups. Noteworthy characteristics of the HMCG sample included their age profile in so much that a larger proportion were between the ages of 41 and 60 years (64% compared to BSW 47%), were male (76% compared to 43% in BSW) and had an annual income range between £10,000 – £29,999 (94%

compared to 62% in BSW). Within the HMCG group, 17% (n = 49) were in receipt of a supplementary income such as a Navy pension and 84% (n = 237) were paid overtime if asked to work additional hours.

Again, figures available from MCA HR on age, gender and salary indicated that the sample was comparable with the HMCG population. For age, 64% of the full workforce was aged between 41 and 60 years; exactly as the sample. 71% of the full workforce were male compared to 76% in the sample, and 98% of the full workforce earned £10,000 – £29,999 compared to 94% in the sample.

Given the actual numbers involved (total sample 282, population 600), figures available on both sample and demographic characteristics suggested that the data collected was sufficiently representative of HMCG to have confidence in the results and reflect the occupational group as a whole.

Table 7

Comparison of HMCG and BSW Demographics

Demographic	HMCG <i>n</i> %	BSW <i>n</i> %
Age		
Less than 41 years	86 (30%)	905 (48%)
41-50 years	97 (34%)	547 (29%)
51-60 years	84 (30%)	345 (18%)
More than 60 years/not specified	15 (6%)	95 (5%)
Gender		
Male	213 (76%)	816 (43%)
Female	62 (22%)	1075 (57%)
Not specified	7 (2%)	1 (0%)
Marital Status		
Single	37 (13%)	337 (18%)
Living with partner/married	218 (78%)	1355 (72%)
Separated/divorced/widowed	22 (7%)	183 (9%)
Not specified	5 (2%)	17 (1%)
Education Level		
GCSE/ "O" Level	97 (34%)	467 (25%)
AS Level or equivalent	27 (10%)	139 (7%)
City and Guilds or equivalent	79 (28%)	355 (19%)
BA/BSc	16 (6%)	162 (9%)
Higher degree/professional qual'n	40 (14%)	460 (24%)
None/not specified	23 (8%)	309 (16%)
Ethnicity		
White	263 (93%)	1845 (98%)
Other/not specified	19 (7%)	47 (2%)
Annual Income Before Tax		
Less than £9,999	10 (4%)	439 (23%)
£10,000 – £19,999	159 (57%)	800 (42%)
£20,000 – £29,999	104 (37%)	384 (20%)
More than £30k	3 (1%)	213 (12%)
Not specified	6 (2%)	56 (3%)

5.4 CONTROL VARIABLES

5.4.1 HMCG Data

5.4.1.1 *Coping and Negative Affectivity*

As discussed in Chapter 2, coping and negative affectivity (NA) can have confounding effects on self report perceptions. Before conducting any statistical analyses, the HMCG data were tested to assess for potential effects. A significant association was found with NA and perceived work stress but not coping, when examined together using the univariate ANOVA technique in SPSS. A significant association was also found between coping and depression but not anxiety. The issue of coping is further analysed and discussed in Chapters 6 and 7.

Again, using univariate ANOVA, other potential outcomes of stress and the risk factors measured were also tested for an association with coping but none other than the one with depression was found. Therefore, throughout the analysis for Study 1, treatment of data involving perceived stress has been controlled for NA and coping if the analysis involved depression.

5.4.1.2 *Sample Characteristics*

A series of Chi-squared tests found that there were no significant differences between the sample characteristics variables and those with high (*extremely, very*) and low (*not at all/ mildly/ moderately*) perceived work stress. A significant association was found for work pattern (shift worker/ non shift worker), average number of hours worked per week (up to 48/ 49 or more) and the number of volunteers responsible for (none/ 1 or more). However,

these simply reflected the same underlying theme of those who worked shifts (which were also the majority of the sample, 77% $n = 216$) and those who worked fixed hours but were also required to be on-call (17%, $n = 47$). The implication of this being that it was not necessary to control for any of these variables in the analyses using HMCG data only.

5.4.1.2 Demographics

Results of a series of Chi-squared tests found that there were no significant differences between any of the demographic variables and those with perceived high (*extremely/ very*) and low (*not at all/ mildly/ moderately*) work stress. The implication of this being that it was not necessary to control for any of these variables in the analyses using HMCG data only.

5.4.2 Comparison of HMCG with BSW

To reduce the amount of potential error in comparisons between the HMCG and BSW samples, analyses were controlled for age, gender and income to reflect main differences (see 5.3.4 above), available data and common practice. Age was significantly associated with perceived stress in the SHAW study, whilst all were found to be potential risk factors in the study of stress by Smith et al. (2004). Shift work was considered as an additional variable, however, there was a lack of detailed information on the type of shift systems worked in the BSW sample and thus it was uncertain as to how comparable the work pattern implemented by HMCG was to varied patterns likely to have been worked amongst the Bristol Study workers. In addition to this, and in keeping with the debate in the literature on the extent to which individual

characteristics should be controlled for (see Chapter 2), there was also the issue of not wanting to control for too many variables which actually define HMCG as an occupational group (as opposed to considerations which might be undertaken when examining general themes across a population). Mindful of this, several analyses were carried out to check for significant differences in levels of work stress between shift workers (all shift workers and male shift workers only) in the two samples and these are described in the next section and presented in Table 8.

5.5 STRESS LEVEL AND OVERVIEW OF ASSOCIATED OUTCOMES

To gain an understanding of stress in the work of HMCG (level and source) and the subsequent potential for negative outcomes, such as health issues, was the primary reason for conducting this study. As such, the analysis in the first half of this chapter began with an examination of overall perceived work and life stress levels (objective 1, hypothesis 1) and the general relationship with associated outcomes.

5.5.1 Overall Level of Stress

5.5.1.1 Perceived Work Stress

Perceived **work** stress was measured by question 2.6 *in general, how do you find your job? (not at all/ mildly/ moderately/ very/ extremely stressful)*. As this was a key variable in the analyses contained within this thesis, a histogram of the distribution of scores for this question was plotted for both HMCG and the comparison BSW group. Figures 14 and 15 show these distributions to be similar and positively skewed. Similar shaped distributions were also reported in each of the annual, government-run PWC surveys conducted between 2004 and 2009, which also use this measure. The distribution of scores for HMCG could, therefore, be considered “normal” in this respect. As a further comment on the shape of the distribution, many scales and measures used in the social sciences have scores that are skewed. This does not necessarily indicate a problem with the scale or measure but can reflect the underlying nature of the construct being measured, (Pallant, 2007). Given this, the similarity of the HMCG data to the BSW and PWC groups, and the discussion on the reliability and validity of this item presented in Chapter 3, the distribution of this measure was found to be in keeping with previous research.

Figure 14: Distribution of Perceived Work Stress Scores in HMCG Rated 0 - 4

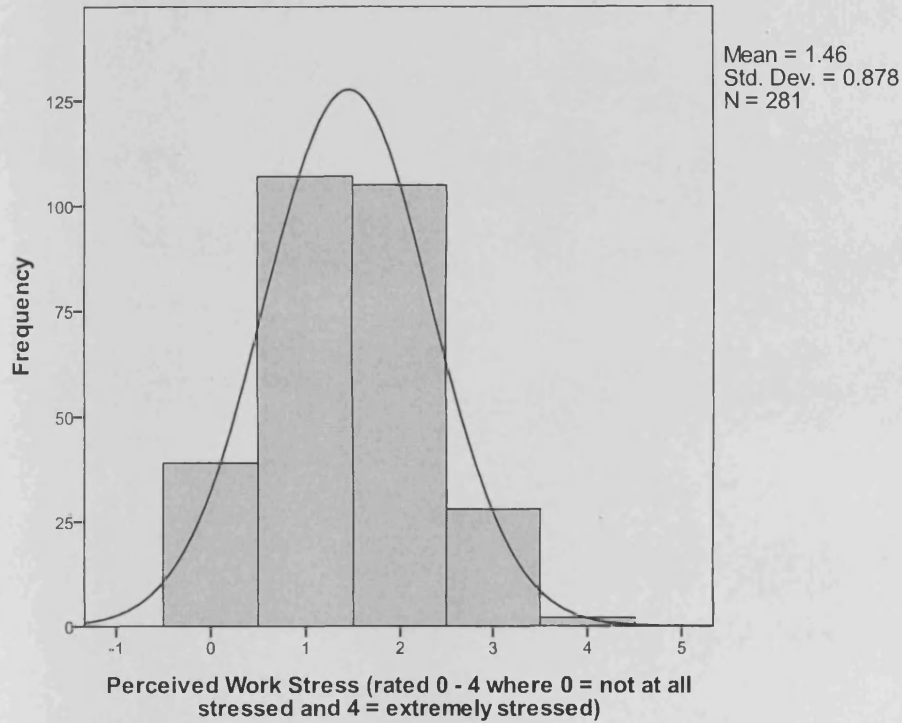
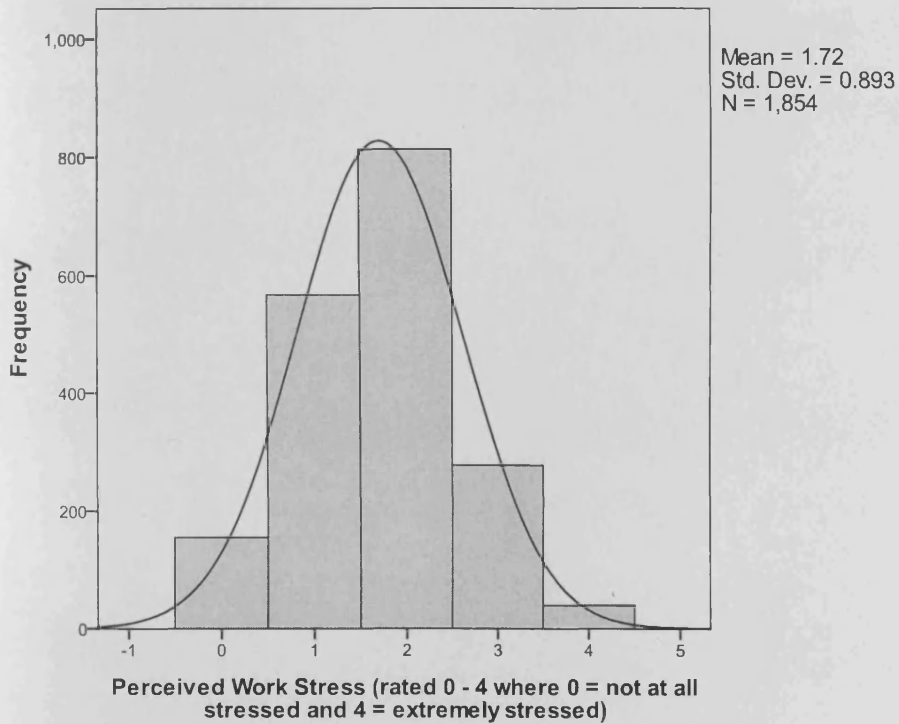


Figure 15: Distribution of Perceived Work Stress Scores in BSW Rated 0 - 4



The actual number of respondents from HMCG who rated *very* or *extremely* stressful was 11% (n = 30). This compared to 17% (n = 317) in the BSW group; therefore, HMCG were found to be 1.5 times *less* stressed.

Results of a univariate ANOVA confirmed that this difference was statistically significant: $F(1, 2045) = 13.41, p = <0.001$. The mean score for HMCG ($M = 1.46, SD = 0.88$) was *lower* than BSW ($M = 1.73, SD = 0.89$), however, the effect size was small (partial eta squared = 0.01). Whilst ANOVA is a powerful, parametric technique and assumes populations from which the samples are taken are normally distributed, as already discussed above, a lot of research (particularly in the social sciences), does not meet this criteria. However, Pallant (2007) referring to the work of Tabachnick and Fidell (2007), states that most parametric techniques are reasonably “robust” or tolerant of such a violation and “should not cause any major problems” (i.e. risking type 1 or 2 errors), with sample sizes above 30 (p.204). To check whether this was, indeed the case, the data was retested using a non parametric alternative of chi-square, which returned the same highly significant results: $X^2(4, n = 2135) = 21.70, p < 0.001$. To further minimise error, additional univariate ANOVAs reported in this chapter were conducted using quartile splits to keep the size of groups reasonably similar and by reporting alpha levels of .05 or above, (Pallant 2007).

Given the profile of the HMCG sample (predominantly male, shift workers, aged between 41 – 60 years, with an income of £10 – £29,999k per annum), further analyses were conducted to establish whether the difference in perceived work stress was still significant when comparing with data from BSW on these sample and demographic subclassifications. Whilst effect sizes were again small (partial eta squared range = 0.00 – 0.02), levels of stress were also still significantly lower in all instances [i.e. male, shift workers (all), shift workers (male), age 41 – 60 years and income £10,000 - £29.999]; see Table 8 for a summary of the results.

Table 8

Comparison of HMCG and BSW on Perceived Work Stress within Key Sample and Demographic Subclassifications Using Univariate ANOVA

Subclassification	Study Group	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
Male	HMCG	1.52	0.90	204	1, 980	3.89	0.05
	BSW	1.73	0.88	780			
Shift workers (all)	HMCG	1.32	0.85	200	1, 457	24.10	<0.001
	BSW	1.74	0.86	262			
Shift workers (male)	HMCG	1.33	0.86	150	1, 273	10.74	≤0.001
	BSW	1.65	0.86	127			
Age 41 – 60 years	HMCG	1.58	0.90	177	1, 1028	4.80	0.03
	BSW	1.77	0.88	855			
Income £10 – 29,999k	HMCG	1.47	0.87	250	1, 1400	23.71	<0.001
	BSW	1.84	0.88	1154			

In the event that level of current experience and previous maritime experience had an impact on stress levels, Chi-squared tests were applied but no significant difference was found between those within the HMCG sample who were currently undergoing training and those who were not, and those who had previously worked in a maritime environment and those who had not.

A further subanalysis was considered using the CASOC (now CASCOT) occupational group classification that was available with the BSW data to ascertain whether there were any differences in this respect (refer to Chapter 4). Coastguards formed part of CASOC major group 6 (personal and protective services), however, this group included occupations such as chefs, travel and flight attendants, nursery nurses and hairdressers, which were not particularly relevant. Within the subclassifications of the CASOC system there was a category of police, fire and ambulance workers, however, there were only 19 cases and so it was not possible to conduct a reliable comparison. The lowest level CASOC category to which coastguards were classified was group 619 (other security and protective service occupations) but there were no 619s available in the database. As a result of the above, no analyses were conducted using the occupational group information.

Finally, the HSE recently made available further evidence on the level of stress within the UK by publishing results of the 2009 Psychosocial Working Conditions (PWC) survey (retrieved from [http://www.hse.gov.uk/statistics/causdis/stress/ 1](http://www.hse.gov.uk/statistics/causdis/stress/1)); refer also to Chapters 2 and 4. As found with BSW, the PWC survey also indicated that around 17% of UK employees thought that

their job was *very* or *extremely* stressful. Given the scale and results of these two reference studies, in addition to the sample and demographic analyses reported in Table 8, it seemed reasonable to conclude that contrary to expectations, HMCG were less stressed than the average working individual in the UK.

5.5.1.2 Characteristics of the High Stress HMCG Group

Descriptive statistics (count, percentages, etc.) were calculated on the sample and demographic variables of those who reported high stress; to examine the profile of this subgroup. All job types had at least one stressed individual. The split between management grades was 57% (n = 17) to 43% (n = 13) non management. Eastern Region had a larger proportion of high stress cases (47%, n = 14) compared to 27% (n = 8) in each of the Western and Scotland and NI Regions. Dover MRCC had a slightly higher proportion of high stress cases (13%, n = 4), followed by Solent (10%, n = 3) and Aberdeen (10%, n = 3). There were no high stress cases in the sample from Belfast or Swansea MRCCs, or relevant individuals based at the Southampton Head Office. This may be for various reasons, for example, sample size reflecting apathy or concern over confidentiality, or the fact that Southampton is HO and Swansea has special status for central information, which may subsequently affect outlook. Other potentially negative characteristics of the sample included: 33% (n = 10) were on-call out of normal working hours, 30% (n = 9) were undergoing training and 23% (n = 7) said that they worked on average 50 – 60 hours per week.

In keeping with the total HMCG sample, all but one of the high stress group ($n = 30$) were full-time and all were permanent employees. 93% ($n = 28$) were male, 57% ($n = 17$) worked shifts, 43% ($n = 13$) had previously worked shifts, 73% ($n = 22$) were previously employed in a maritime related job and all were within the age range of 33 – 62 years.

5.5.1.3 Perceived Life Stress

Following the lower level of perceived work stress found in HMCG, the general question on perceived **life** stress (*q2.7 how do you find life in general? not at all/ mildly/ moderately/ very/ extremely stressful*) was examined to ascertain whether the same trend existed. The number of respondents from the HMCG sample who rated *very* or *extremely* stressful was 5% ($n = 15$). This compared to 8% ($n = 143$) in the BSW sample; therefore, HMCG were found to be 1.6 times *less* stressed. Results of a univariate AVOVA confirmed that this difference was statistically significant: $F(1, 2053) = 6.58, p = 0.01$. The mean score for HMCG ($M = 1.10, SD = 0.83$) was lower than BSW ($M = 1.33, SD = 0.82$), however, as with perceived work stress, the effect size was small (partial eta squared = 0.00).

Although, the two types of stress are not always found together (Smith et al., 2000), descriptive statistics were obtained to establish whether those who reported higher levels of *work* stress also reported higher levels of *life* stress. In the HMCG sample, 6 of the 30 (20%) and in the BSW sample, 52 of the 317 (16%) reported both. In this case, a larger proportion of HMCG than BSW reported a higher incidence of both work and life stress. At this point it

is not clear as to whether work impacted home life or visa versa; this will be examined in more detail later.

5.5.2 Work Stress and General Health

The link between work stress and negative health outcomes was discussed in Chapter 2. Given the relatively lower levels of work and life stress reported by HMCG, the general question on health (*q2.5 over the past 12 months, how would you say your health in general has been? very good/ good/ fair/ bad/ very bad*) was then examined to ascertain whether this lead to a more positive perception of health.

The number of respondents from the HMCG sample who perceived their general health to be *bad* or *very bad* was 1% ($n = 3$). This compared to 3% ($n = 59$) in the BSW sample; therefore, HMCG were found to be three times more positive in their perception of health. Results of a univariate ANOVA confirmed that this difference was statistically significant: $F(1, 2060) = 20.33$, $p < 0.001$. The mean score for HMCG ($M = 0.79$, $SD = 0.58$) was lower than BSW ($M = 1.02$, $SD = 0.79$), however, as before, the effect size was small (partial eta squared = 0.01). Descriptive statistics showed that none of the HMCG sample who reported high work stress also reported poor health and only 18 of the 317 (6%) who reported high work stress in BSW also reported a poor perception of general health. Despite this finding, analyses reported later in 5.5.5, shows that within the HMCG sample there was actually a significant correlation between perceived stress and health, (see also 6.5.5.3 which describes health symptoms in the high stress group).

5.5.3 Work Stress and Accidents and Injuries

In addition to health, accidents and injuries may also be a potentially negative outcome of stress. However, due to the number of occurrences in the 12 months prior to the survey (see Table 9), it was not possible to find a significant association between perceived work stress, the number of accidents and injuries, problems of memory (*q3.5 how frequently do you find that you have problems of memory, attention or action at work/outside work?*) or risk taking (*q3.6 how frequently do you take risks at work/outside of work?*). Data were tested using both Chi-squared and univariate ANOVA statistics. As a consequence, this data has been excluded from any further analyses.

Table 9

Number of Accidents and Frequency of Problems of Memory and Risk Taking within those Reporting High Work Stress (i.e. Very and Extremely Stressed)

Prevalence of Accidents, Memory Problems and Risk Taking Over Previous 12 Months	<i>n</i>	% of Total Sample
Accidents		
Number of accidents at work = 1	5	1.77%
Number of accidents at work = 2	1	0.35%
Memory Problems		
Memory problems <i>at work</i> = quite/very frequently	10	3.55%
Memory problems <i>outside work</i> = quite/very frequently	8	2.84%
Risk Taking		
Take risks <i>at work</i> = quite/very frequently	4	1.42%
Take risks <i>outside work</i> = quite/very frequently	2	0.71%

Note. Number of high stress cases = 30.

5.5.4 Work Stress and Overall Job Satisfaction

As discussed in Chapters 1 and 2, stress has also been found to have an impact upon job satisfaction. Given the relatively lower levels identified, it was now anticipated that higher levels of job satisfaction might be found amongst HMCG as a group. Item q1.12a was a general job satisfaction question (*are you satisfied with your job?*) rated on a 5-point scale 0 (never) to 4 (very often). The mean score was 2.75 (SD = 0.85) indicating that on average, HMCG were *often* satisfied with their job; only 6% (n = 16) stated that they were either *never* or *rarely* satisfied and only 6% (n = 16) said that the MCA was *not* an attractive place to work (q6.1). Whilst the majority of HMCG were found to be satisfied with their job, it should be borne in mind that satisfaction has been found to be U-shaped with age and that it is highest in not-for-profit organisations (Oswald & Gardner, 2001). As such, the general age profile and the nature and work of the organisation, may be part of the reason as to why they were relatively less stressed, in addition to the potential effects of conducting the survey at a relatively quieter time of year.

5.5.5 General Relationships between Perceived Stress, Health, Job Satisfaction and the Work-Life Balance

As a precursor to more detailed analyses, the general relationships between stress and negative outcomes were examined. A significant, negative correlation between perceived work stress, life stress and general health was found, so that higher levels of either stress type resulted in a poor perception of health (see Table 10). There was also a significant, negative correlation between perceived work stress and job satisfaction so that as work stress increased, job satisfaction decreased ($r = -0.30$, $n = 281$, $p = <0.001$).

Table 10

Correlations between Perceived General Health, Work and Life Stress

Variable	<i>r</i>	<i>n</i>	<i>p</i>
Work stress	-0.30	280	$p = <0.001$
Life stress	-0.31	282	$p = <0.001$

Further analyses were conducted to examine the relationship between perceptions of the work-life balance (*q6.2 do you feel that you have a balanced home and work life?*), work and life stress, perception of health and job satisfaction. Significant negative correlations were found so that as perception of the work-life balance increased, perception of work and life stress decreased. Significant positive correlations were found so that as perception of the work-life balance increased so did perception of health and job satisfaction (see Table 11).

Despite this, 17% ($n = 47$) of the HMCG sample stated that they did not have a balanced work and home life. This is more than the 11% work and 5% life stress combined. Although perceived stress clearly had a relationship with perceptions of the work-life balance, it appeared other factors might be influencing these ratings, for example, the implications of shift working and being on-call. Of the 17% who said that they did not have a balanced work and home life, 64% ($n = 30$) worked shifts, with 11% ($n = 5$) on-call. Within this subgroup, 32% ($n = 15$) also reported high work stress and 17% ($n = 8$) also reported high life stress. As this work pattern is characteristic of HMCG

as an occupational group, further, separate follow-up would have to be conducted to determine the actual reasons behind these ratings.

Table 11

Correlations between Perception of Work-Life Balance, Work and Life Stress, General Health and Job Satisfaction

Variable	<i>r</i>	<i>n</i>	<i>p</i>
Work stress	-0.39	277	$p = <0.001$
Life stress	-0.27	279	$p = <0.001$
General health	0.35	279	$p = <0.001$
Job satisfaction	0.29	278	$p = <0.001$

5.5.6 Conclusions

5.5.6.1 Objective 1: Establish Level of Perceived Work Stress in HMCG

The first objective in gaining an understanding of stress in HMCG was to establish the overall level of perceived work stress and this was found to be 11%.

5.5.6.2 Hypothesis 1: Comparison of Perceived Work Stress

Hypothesis 1 stated that the level of stress found within HMCG would be at least the same when compared to a community study or “general population” sample. Results of the study did not support this and found that HMCG had significantly lower levels of work stress, life stress and a better general perception of health. Therefore, this hypothesis was rejected.

5.5.7 Discussion

Contrary to expectations, HMCG as an emergency service had lower levels of perceived work stress than BSW and as reported through the PWC 2009 survey. Based on analysis so far, this may be explained through the level of professionalism, the age profile and nature of work. The majority of the HMCG sample had a considerable amount of training and experience (both in current and previous maritime related roles), and job satisfaction has been found to be U shaped with age and higher in not-for-profit organisations. Whilst high levels of stress have been found in police, fire and ambulance worker groups, who are also not-for-profit organisations, the age profile of HMCG may be particularly significant in this instance, as well as the work focus to prevent the loss of and to save lives. Other influencing factors may have come from the timing of the survey and the possibility that HMCG were less likely to admit to suffering from stress, as a “macho” culture was described during the pre-survey interviews.

Despite the relatively lower level of stress, no stress is good. Characteristics of the high stress HMCG group indicated that larger proportions were based in the Eastern region and were of management grade. This is likely to be due to the fact that the Eastern region contains MRCCs such as Dover, which has the busiest shipping lane in the world to monitor. The use of radar at Dover is potentially an additional stressor to those who work there. For management grades, higher stress levels have been found elsewhere (e.g., Smith et al., 2004). Except for this, there were no other obviously distinguishing

characteristics of the high stress group, indicating the need for organisational interventions rather than individual ones.

When analysing data associated with outcomes from work-related stress at a general level, except for accidents and injuries, HMCG were “normal” in the sense that perceived work and life stress had significant relationships with negative outcomes including: general health, job satisfaction and the work-life balance. Even though there was a significant correlation between perceived work stress and general health, it did not follow that those who reported high work stress also reported perceived poor health. However, it must be borne in mind that there may have been a reluctance (or denial) to report poor health, perception of health may be relative to the condition experienced, perception may be different to *actual* health status and that health issues may appear in the longer term and, as such, would not necessarily be reported here. Further analysis will take place in Chapter 6.

Finally, 17% of HMCG reported negative perceptions of the work-life balance which was higher than the 11% work stress and 5% life stress combined.

It was suggested that other factors may be influencing these ratings, such as the implications of shift working and being on-call. As this is characteristic of the way in which HMCG work as an occupational group, it was concluded that in order to determine reasons for these ratings, further, separate investigation (outside the remit of this thesis) would have to be conducted should the MCA wish to follow this up.

5.6 HMCG AND MODELS OF STRESS

Having established the overall level of stress and compared it to the general population (objective 1, hypothesis 1), objective 2 was to determine whether standard models could then be used to explain the process of work stress in this sample. Hypothesis 2 was to examine whether work stress would result in a number of negative outcomes related to mental and physical health, accidents and injuries, behaviour, the home-work balance and/or job satisfaction. The following analyses involve the three models discussed in detail in Chapter 3: Effort-Reward Imbalance (ERI), Job-Demands-Control-Support (JDCS) and Combined Effects (NOF).

5.6.1 Effort-Reward-Imbalance (ERI)

ERI (Siegrist, 1996) is a well documented theory which basically maintains that if there is an imbalance between the degree of effort exerted in the workplace compared to the level of reward received, then stress is likely to occur. The measure is made up of three subscales: *extrinsic effort* (EE) or demanding aspects of the work environment (e.g., time pressure due to a heavy workload), *intrinsic overcommitment* (IO) or excessive job involvement (e.g., constantly thinking of work problems) and *reward* (status-related aspects of the job, esteem and job security, e.g., respect from superiors); refer to Chapter 4 for more detail.

The effort-reward ratio was computed by totalling the items for each subscale (recoding items as appropriate) and then dividing the total effort (EE + IO) by reward scores. As Siegrist recommends adjusting for the varying number of

items in the subscales, scale scores were subsequently converted to percentage scores.

5.6.2 Differences in Levels of ERI, Work Stress and Mental Health

So that a dose response could be examined, the ERI percentage scores were converted into quartile splits and a univariate ANOVA conducted to determine whether there were any significant differences between levels of ERI, perceived work stress, anxiety and depression (anxiety and depression being the most common stress-related complaints presented to general practitioners, Quick et al., 2001). Results of the tests found that there was a significant difference between ERI, levels of stress, anxiety and depression, so that those with a higher effort-reward imbalance also reported higher stress, anxiety and depression. Results are presented in Figure 16.

Figure 16. Significant Differences between Levels of ERI, Work Stress, Anxiety and Depression Using Univariate ANOVA

Outcome	Quartile	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
Work stress	Q1	0.84	0.82	57	3, 231	21.00	<0.001
	Q2	1.27	0.71	60			
	Q3	1.54	0.70	59			
	Q4	2.17	0.74	60			
Anxiety	Q1	3.21	3.21	57	3, 233	65.09	<0.001
	Q2	3.81	2.93	59			
	Q3	6.85	3.32	61			
	Q4	10.72	3.60	60			
Depression	Q1	1.98	2.69	56	3, 227	36.77	<0.001
	Q2	2.86	3.20	59			
	Q3	4.22	3.04	59			
	Q4	8.02	3.96	58			

5.6.3 Impact of ERI on Work Stress and Mental Health

As described in Chapter 3, there is a considerable body of evidence linking each of the three models to stress, anxiety and depression. To assess whether the same outcome existed in the HMCG sample, a series of logistic regression analyses were carried out with each of the models in turn. Logistic regression allows one to assess how well a set of independent variables predicts or explains a categorical (dichotomous) dependent variable. Independent variables can be categorical or continuous, or a mix of both in one model and there are no assumptions regarding their distribution. For these calculations, variables were recoded into dichotomous variables using median splits for ERI, anxiety and depression scores, where the splits represented the presence or absence of the relevant outcome being examined. Work stress was recoded as high stress (*very* and *extremely stressed* combined) and low stress (*not at all*, *mildly* and *moderately stressed* combined). As the effects of each of the independent variables was examined separately, the default procedure in SPSS is to use the enter method. Analyses found that those with a high effort-reward imbalance were:

- Nine times more likely to report higher levels of work stress.
- 13 times more likely to have higher levels of anxiety.
- Six times more likely to suffer from higher levels of depression.

Results are presented in Table 12.

Table 12

Impact of ERI on Perceived Work Stress, Anxiety and Depression

Outcome	OR	95% CI	<i>p</i>
Work stress	8.92	[2.56, 30.61]	<0.01
Anxiety	12.65	[6.84, 23.40]	<0.001
Depression	6.30	[3.58, 11.07]	<0.001

Note. OR = odds ratio; CI = confidence interval.

In the Study 1 survey, the issue of salary as a component of “reward” was examined within a set of items designed to measure job satisfaction. Whilst satisfaction with pay (q5.22a) was not in itself found to be significantly associated with stress using a Chi-squared test, 83% (n = 230) stated that they were *dissatisfied* or *very dissatisfied* with their usual take home pay. This level of dissatisfaction has been found elsewhere in non-published surveys carried out within the MCA and is the subject of a “work-to-rule” situation in practice at the time of writing.

5.6.4 Impact of ERI on Other Negative Outcomes

To ascertain what impact ERI had on any other outcomes measured, a further series of univariate ANOVAs was conducted using quartile splits of the ERI percentage scores. A number of statistically significant differences were found in other health outcomes so that a high ERI equated to a higher prevalence of: sick days in the last 12 months, illness thought or caused by work, number of chronic symptoms, number of symptoms in the last year, number of symptoms in the last 14 days, sleepiness and insomnia.

For behavioural, home-work balance and job satisfaction outcomes, a high ERI had a significantly detrimental impact on: the ability to maintain a desired body weight, the ability to find time to “relax and wind down”, time spent on hobbies or interests, the impact of the job on family life and job satisfaction.

Results for the impact of ERI on other negative outcomes are presented in Table 13.

Table 13

Significant Differences between Levels of ERI and Other Outcomes Using Univariate ANOVA

Outcome	Quartile	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
Number of sick days in last 12 months	Q1	0.64	0.83	59	3, 233	2.74	0.04
	Q2	0.93	0.85	61			
	Q3	1.00	1.11	59			
	Q4	1.25	1.12	59			
Illness caused/made worse by work	Q1	0.05	0.23	57	3, 227	7.98	<0.001
	Q2	0.12	0.32	60			
	Q3	0.19	0.40	57			
	Q4	0.48	0.50	58			
Chronic symptoms	Q1	0.58	0.72	59	3, 226	2.99	0.03
	Q2	0.63	0.93	59			
	Q3	0.58	0.68	57			
	Q4	1.18	1.10	56			
Symptoms in last 12 months	Q1	1.04	1.25	57	3, 221	4.66	<0.01
	Q2	1.05	1.32	58			
	Q3	1.75	1.39	55			
	Q4	2.23	1.74	56			
Symptoms in last 14 days	Q1	2.63	2.62	54	3, 215	11.30	<0.001
	Q2	3.68	2.68	57			
	Q3	4.26	3.04	54			
	Q4	6.89	3.48	55			
Sleepiness	Q1	4.75	3.08	57	3, 226	3.24	0.02
	Q2	5.69	3.85	61			
	Q3	6.75	4.35	57			
	Q4	7.39	4.66	56			

Outcome	Quartile	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
Insomnia	Q1	1.14	0.99	59	3, 234	7.06	<0.001
	Q2	1.46	1.01	61			
	Q3	1.66	0.96	59			
	Q4	2.33	1.07	60			
Ability to maintain desired body weight	Q1	0.85	0.85	59	3, 234	3.41	0.02
	Q2	0.80	0.83	61			
	Q3	1.00	0.83	59			
	Q4	1.37	0.76	60			
Ability to find time to “relax and wind down”	Q1	0.86	0.84	59	3, 234	11.38	<0.001
	Q2	1.16	0.82	61			
	Q3	1.51	0.70	59			
	Q4	1.93	0.80	60			
Time spent on hobbies/interests	Q1	2.15	0.85	59	3, 234	5.55	<0.01
	Q2	2.05	0.94	61			
	Q3	1.73	0.78	59			
	Q4	1.40	0.76	60			
Impact of job on family life	Q1	1.53	1.38	51	3, 216	37.39	<0.001
	Q2	2.29	1.72	56			
	Q3	3.25	1.89	57			
	Q4	5.21	1.58	57			
Job satisfaction	Q1	2.25	0.77	60	3, 233	12.57	<0.001
	Q2	2.54	0.84	59			
	Q3	2.98	0.77	60			
	Q4	3.15	0.66	59			

No significant differences were found in relation to ERI and the number of medicines taken in the previous year, month or 14 days, or in pathological sleepiness (i.e., scores above 12 on the Epworth scale). For *behavioural* measures, there were no significant differences found in the number of cigarettes smoked, the number of units of alcohol ingested (males or females), or the ability to take planned exercise. Finally, in regards to the home-work balance, no significant difference was found in the impact of family life on work.

5.6.5 Job Demands-Control-Support (JDCS)

As described in Chapter 2, this is another well documented model which theorises that the prevalence of high job demands, combined with low levels of control and low levels of social support, will result in stress. Developed by Karasek (1979), Johnson and Hall (1988) and Johnson, Hall and Theorell, (1989), it contains four subscales: *job demand*, *decision authority*, *skill level or discretion*, and *social support*. Scores were computed by totalling the items for each one (recoding items as appropriate). Decision authority and skill discretion were then added together to derive the decision latitude or “control” score, thus reducing the number of subscales from four to three (job demands, control and social support); refer to Chapter 4 for detail.

5.6.6 Differences in Levels of JDCS, Work Stress and Mental Health

The same statistical treatment of ERI was applied to JDCS. Each of the three subscale scores were converted into quartile splits and a univariate ANOVA conducted to determine whether there were any significant differences between levels of job demands, decision latitude (control) and support and perceived work stress, anxiety and depression. Results of the tests found that there was a significant difference between those with high stress and low levels of social support but not with high job demands or low decision latitude.

In the case of anxiety and depression, the same result was found as perceived work stress. A significant difference was found between those with high levels of anxiety and depression and low levels of support but not with high job demands or low decision latitude. Results are displayed in Figure 17.

Figure 17. Significant Differences between Levels of Social Support, Work Stress, Anxiety and Depression Using Univariate ANOVA

Outcome	Quartile	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
Work stress	Q1	1.14	0.83	69	3, 268	6.15	<0.001
	Q2	1.38	0.84	78			
	Q3	1.64	0.84	64			
	Q4	1.74	0.92	62			
Anxiety	Q1	4.44	3.87	71	3, 271	12.43	<0.001
	Q2	5.43	3.78	80			
	Q3	6.92	4.58	61			
	Q4	8.54	4.49	63			
Depression	Q1	2.74	2.84	66	3, 259	13.11	<0.001
	Q2	3.35	3.27	79			
	Q3	4.67	4.09	61			
	Q4	6.79	4.56	58			

5.6.7 Impact of Low Support on Work Stress and Mental Health

To assess the impact of low support on perceived work stress, anxiety and depression, as with ERI, a series of logistic regression analyses, using the enter method, were carried out with median splits for support, anxiety and depression scores and with the work stress question recoded as *high* and *low stress*. Analyses found that those with low social support were:

- Three times more likely to report high work stress.
- Three times more likely to report high anxiety.
- Three times more likely to suffer from high levels of depression.

Results are presented in Table 14.

Table 14

Impact of Low Support on Perceived Work stress, Anxiety and Depression

Outcome	OR	95% CI	<i>p</i>
Work stress	2.61	[1.18, 5.82]	0.02
Anxiety	2.68	[1.64, 4.38]	<0.001
Depression	2.56	[1.56, 4.22]	<0.001

Note. OR = odds ratio; CI = confidence interval.

In this survey, two general questions about support from MCA Head Office (HO) and MCA Human Resources (HR) were added as a result of the pre-survey interviews. Analysis found that 38% (n = 108) said that they were *dissatisfied* or *very dissatisfied* with the support from HO and 39% (n = 112)

were *dissatisfied* or *very dissatisfied* with the level of support from HR if they needed it.

5.6.8 Impact of Low Support on other Negative Outcomes

To ascertain what impact low social support had on any other outcomes measured, a further series of univariate ANOVAs were conducted using quartile splits of the support scale. A number of statistically significant differences in other health outcomes were found so that low support equated to a higher prevalence of: the number of sick days in the last 12 months, illness thought or caused by work, number of symptoms in the last 14 days and the number of medicines taken in the last year. For behavioural, home-work balance and job satisfaction outcomes, low support had a significantly detrimental impact on: the ability to find time to “relax and wind down”, the impact of the job on family life and job satisfaction. Results are presented in Table 15.

No significant differences were found in relation to the following health outcomes: the number of chronic symptoms, the number of symptoms in last year, the number of medicines taken in the last month, the number of medicines taken in the last 14 days, sleepiness, pathological sleepiness or insomnia. For *behavioural* measures, there were no significant differences found in the number of cigarettes smoked, the number of units of alcohol ingested (males or females), the ability to maintain a desired body weight, the ability to take planned exercise or the amount of time spent on hobbies and interests.

Table 15

Significant Differences between Levels of Support and Other Outcomes Using Univariate ANOVA

Outcome	Quartile	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
Number of sick days in last 12 months	Q1	0.61	0.71	71	3, 270	6.15	<0.001
	Q2	0.85	0.94	79			
	Q3	1.27	1.21	63			
	Q4	1.11	0.98	62			
Illness caused/made worse by work	Q1	0.13	0.34	69	3, 263	7.72	<0.001
	Q2	0.08	0.27	75			
	Q3	0.35	0.48	63			
	Q4	0.33	0.47	61			
Symptoms in last 14 days	Q1	3.24	2.86	66	3, 250	4.80	<0.01
	Q2	3.93	3.26	72			
	Q3	4.83	3.40	60			
	Q4	5.39	3.49	57			
Medicines taken in last year	Q1	1.00	1.03	67	3, 256	3.30	0.02
	Q2	0.93	0.93	76			
	Q3	1.38	1.32	58			
	Q4	1.55	1.55	60			
Ability to find time to “relax and wind down”	Q1	1.17	0.88	71	3, 271	6.91	<0.001
	Q2	1.13	0.85	79			
	Q3	1.55	0.82	64			
	Q4	1.76	0.97	62			

Variable	Quartile	<i>M</i>	<i>SD</i>	<i>N</i>	<i>df</i>	<i>F</i>	<i>p</i>
Impact of job on family life	Q1	2.27	2.06	63	3, 250	8.75	<0.001
	Q2	2.75	1.87	69			
	Q3	3.52	2.02	64			
	Q4	4.08	2.21	59			
Job satisfaction	Q1	2.32	0.85	62	3, 270	20.77	<0.001
	Q2	2.38	0.75	64			
	Q3	2.95	0.72	78			
	Q4	3.20	0.77	71			

5.6.9 Combined Negative Occupational Factors (NOF)

The third model examined was the combined effects approach (Smith et al., 2004). This theorises that unlike previous research, which has tended to focus on hazards in isolation, individuals are much more likely to be exposed to multiple hazards in the workplace and that the relationship between combinations of stressors is likely to be additive and will explain more variance in the outcome measures than any of the independent variables in isolation. Scores for the risk factors are summed to create a composite or “combined effects” measure called the Negative Occupational Factors (NOF) score, which are then split into quartiles for analysis purposes. The main premise behind the NOF is that the negative influence of job characteristics will be strongest when the greatest number of multiple stressors is present in combination (i.e., the top quartile).

To calculate a combined negative effects or Negative Occupational Factor score (NOF), each of the risk factor measures were totalled and converted to median splits. These measures included: exposure to physical agents, noise, ERI, JDCS, positive culture, management of change, LMX, TMX, bullying, role conflict/ambiguity and training. As not all respondents had answered all questions, to minimise the potential for sample size reduction when combining them together, a percentage NOF score was generated based on the number of negative components of the median splits and the number of measures completed. Eight extreme outliers were removed so that no more than three measures were missing from a possible total of 11 for any one individual.

5.6.10 Differences in Levels of NOF, Work Stress and Mental Health

The same method of analysis used above with the ERI and JDCS models was applied here. NOF scores were converted into quartile splits and a series of univariate ANOVAs carried out. Results of the tests found that there were significant differences, so that those with a higher NOF also reported higher levels of stress, anxiety and depression. Results are presented in Figure 18.

5.6.11 Impact of NOF on Work Stress and Mental Health

Again, as above with ERI and JDCS, a series of logistic regression analyses, using the enter method, were carried out with median splits of the NOF, anxiety and depression scores and the work stress question recoded to high and low stress. Analyses found that those with a high NOF were:

- Four times more likely to report high work stress.
- Four times more likely to report high anxiety.
- Four times more likely to suffer from higher levels of depression.

Results are presented in Table 16.

Table 16

Impact of NOF on Perceived Work Stress, Anxiety and Depression

Outcome	OR	95% CI	<i>p</i>
Work stress	4.42	[1.74, 11.19]	0.002
Anxiety	3.66	[2.22, 6.05]	<0.001
Depression	4.22	[2.53, 7.02]	<0.001

Note. OR = odds ratio; CI = confidence interval.

Figure 18. Significant Differences between Levels of NOF, Anxiety and Depression Using Univariate ANOVA

Outcome	Quartile	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
Work stress	Q1	0.95	0.74	57	3, 263	12.02	<0.001
	Q2	1.38	0.82	74			
	Q3	1.59	0.84	70			
	Q4	1.93	0.86	67			
Anxiety	Q1	3.70	3.33	57	3, 267	22.62	<0.001
	Q2	5.17	3.81	76			
	Q3	6.71	4.07	70			
	Q4	9.19	4.44	68			
Depression	Q1	1.93	2.56	57	3, 258	25.72	<0.001
	Q2	2.99	2.79	73			
	Q3	4.65	4.08	69			
	Q4	7.42	3.96	64			

5.6.12 Impact of NOF on Other Negative Outcomes

The standard univariate ANOVA technique was repeated using quartile splits of the NOF scores and the full range of other measured outcomes. A number of statistically significant differences were found in the health measures so that a high NOF equated to a higher prevalence of: the number of sick days in the last 12 months, illness thought or caused by work, the number of symptoms in the last year, the number of symptoms in the last 14 days, the number of medicines taken in the last year and insomnia.

For behavioural, home-work balance and job satisfaction outcomes, a high NOF had a significantly detrimental impact on: the ability to maintain a desired body weight, the ability to take planned exercise, the ability to find time to “relax and wind down”, time spent on hobbies and interests, the impact of family life on the job, the impact of the job on family life and job satisfaction. Results are presented in Table 17.

No significant differences were found in relation to: the number of chronic symptoms, the number of medicines taken in the last month, the number of medicines taken in the last 14 days, sleepiness and pathological sleepiness. For *behavioural* measures, there were no significant differences found in the number of cigarettes smoked or the number of units of alcohol ingested (males or females).

Table 17

Significant Differences between Levels of NOF and Other Outcomes Using Univariate ANOVA

Outcome	Quartile	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
Number of sick days in last 12 months	Q1	0.72	0.83	58	3, 265	6.49	<0.001
	Q2	0.70	0.69	76			
	Q3	1.03	0.99	70			
	Q4	1.39	1.24	66			
Illness caused/made worse by work	Q1	0.09	0.29	56	3, 258	7.60	<0.001
	Q2	0.09	0.29	75			
	Q3	0.27	0.45	67			
	Q4	0.42	0.50	65			
Symptoms in last year	Q1	0.95	1.21	58	3, 252	7.02	<0.001
	Q2	1.17	1.24	71			
	Q3	1.75	1.66	67			
	Q4	2.25	1.61	61			
Symptoms in last 14 days	Q1	2.38	2.23	53	3, 246	9.84	<0.001
	Q2	3.96	3.16	71			
	Q3	4.86	3.53	66			
	Q4	5.87	3.30	61			
Medicines in year	Q1	0.79	0.89	58	3, 252	3.04	0.03
	Q2	1.23	1.26	74			
	Q3	1.18	1.20	62			
	Q4	1.54	1.42	63			
Insomnia	Q1	1.10	0.95	58	3, 266	8.52	<0.001
	Q2	1.54	0.97	76			
	Q3	1.70	1.08	70			
	Q4	2.18	1.06	67			

Outcome	Quartile	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
Ability to maintain desired body weight	Q1	0.72	0.77	58	3, 265	4.77	0.003
	Q2	1.00	0.88	76			
	Q3	0.86	0.79	70			
	Q4	1.30	0.82	66			
Ability to take planned exercise	Q1	1.66	1.43	58	3, 266	2.84	0.38
	Q2	2.21	1.54	76			
	Q3	2.19	1.43	70			
	Q4	2.54	1.41	67			
Ability to find time to "relax and wind down"	Q1	0.91	0.88	58	3, 266	9.23	<0.001
	Q2	1.25	0.82	76			
	Q3	1.60	0.86	70			
	Q4	1.76	0.90	67			
Time spent on hobbies and interests	Q1	2.12	0.88	58	3, 266	3.16	0.03
	Q2	1.89	0.90	76			
	Q3	1.67	0.86	70			
	Q4	1.58	0.89	67			
Impact of job on family life	Q1	1.86	1.47	51	3, 248	12.46	<0.001
	Q2	2.64	2.02	69			
	Q3	3.54	2.25	68			
	Q4	4.18	1.97	65			
Impact of family life on job	Q1	1.00	1.60	51	3, 248	3.90	0.01
	Q2	1.21	1.43	72			
	Q3	1.76	2.00	66			
	Q4	2.20	2.06	64			
Job satisfaction	Q1	2.13	0.76	67	3, 265	23.13	<0.001
	Q2	2.65	0.80	69			
	Q3	2.91	0.72	76			
	Q4	3.28	0.67	58			

5.6.13 Summary of Outcomes by Stress Model

For ease of reference, Table 18 summarises the significant associations found in relation to each model examined above. For JDCS, this refers to the social support (SS) subscale only. There were no significant associations found with any model for the following outcomes: medicines taken in the last month or 14 days, pathological sleepiness, smoking or drinking.

Table 18

Summary of Significant Outcome Associations by Stress Model

Outcome	ERI	JDCS(SS)	NOF
Stress and mental health			
Work stress	■	■	■
Anxiety	■	■	■
Depression	■	■	■
Physical health			
Number of sick days in last 12 months	■	■	■
Illness caused or made worse by work	■	■	■
Chronic symptoms	■		
Symptoms in last 12 months	■		■
Symptoms in last 14 days	■	■	■
Medicines in last year		■	■
Medicines in last month			
Medicines in last 14 days			
Sleepiness (Epworth)	■		
Pathological sleepiness			

Outcome	ERI	JDCS(SS)	NOF
Insomnia	■		■
Accidents and Injuries			
Accidents and injuries	n/a	n/a	n/a
Problems of memory	n/a	n/a	n/a
Risk taking	n/a	n/a	n/a
Behavioural			
Smoking			
Drinking			
Inability to maintain desired body weight	■		■
Planned exercise			■
Inability to “relax and wind down”	■	■	■
Number of hours spent on hobbies/ interests	■		■
Home-work balance			
Impact of family life on job			■
Impact of job on family life	■	■	■
Job satisfaction			
Job satisfaction	■	■	■
Total associated outcomes	15	10	16

Note. ERI = Effort-Reward Imbalance; JDCS (SS) = Job-Demands-Control-Support (Social Support); NOF = Negative Occupational Factors; ■ = significant association.

5.6.14 Conclusions

5.6.14.1 Objective 2: HMCG and Standard Models of Stress

The second objective of this study was to establish whether standard models of stress could be used to explain the process of stress in this occupational group. The ERI, JDCS and NOF models were examined and all three significantly predicted differences in high and low levels of stress.

5.6.14.2 Hypothesis 2: Stress Would Result in a Range of Negative Outcomes

Hypothesis 2 stated that the level of stress found in HMCG would result in a number of negative outcomes related to health, accidents and injuries, behaviour, the home-work balance and/or job satisfaction. Although there was no statistically significant evidence that stress resulted in an increase in accidents and injuries, medicines taken in the last month or 14 days, pathological sleepiness, smoking or drinking, there was for up to 16 other outcomes and they are summarised in Table 18. Therefore, this hypothesis was upheld.

5.6.15 Discussion

5.6.15.1 HMCG and Models of Stress

Table 18 summarises the outcomes significantly associated with each of the models. Results reflect the literature (see Chapter 3) in that there is a considerable body of evidence linking them all to stress, anxiety and depression, with a more varied association with other outcomes. Whilst it could be argued that a lack of differentiation in these main outcomes is due to a floor effect from the relatively lower level of stress, it is more likely because

of the conceptual overlap which exists in these models. For a floor effect, a mean closer to zero would have been expected (mean 1.46, rating 0 – 4).

In regards to ERI, overall, this model was the most efficient in terms of ease of use, explanation of the main risk factor and at predicting negative outcomes. As mentioned above, at the time of writing, further evidence comes from the work-to-rule situation in place through dissatisfaction with pay. This may also help to explain the level of depression, which will be examined further in Chapter 6. However, ERI is limited in what it measures and there are clearly other risk factors which need to be addressed and would have been missed if measuring for ERI alone.

From the JDCS Model, the only difference that low support was able to add to predicting outcomes, was the number of medicines taken in the last year. As with ERI, using JDCS alone would have been limiting in this study (both for identifying risk factors and outcomes).

NOF proved a more useful model of stress for HMCG than JDCS, identified more risk factors than ERI or JDCS Models alone and was sensitive enough to predict the most negative outcomes (16 compared to 15 from ERI and 10 from JDCS). However, from a practical standpoint it was more difficult to use in this research than the ERI Model, given the size of the HMCG sample. NOF would be easier to use with either a smaller number of highly reliable items or large sample sizes. This is predominantly due to the issue of missing data when using long questionnaires (as in this study). Without implementing

a method for adjustment (which can be complex for those not skilled in the use of statistics and time consuming, regardless of skill level), analysis can suffer from a reduced sample size. In this study, the HMCG sample size would have reduced to 161 compared to 278 in ERI and JDCS related analyses. The reduction would also have meant that just over half of the high stress cases would have been excluded from the analysis. Despite this, with increased responses to measures, or the inclusion of a reduced number of reliable and highly predictive items within surveys, more filters or other practical ways of capping the number of items, the NOF method shows signs of being a much stronger model, including the ability to adapt more easily to new stress research. Finally, since the components of the NOF here reflect the Management Standards, it can be concluded that they are applicable to this group. However, given the results described above, the emphasis on items from the JDCS Model within the Standards, would suggest that assessment of this group using the Indicator Tool would not have been as helpful.

5.6.15.2 Outcomes of Work Stress

The range of outcomes found to be associated with work stress was not surprising given research available to date. Fewer outcomes may have been expected as a consequence of the level of stress found but results show that even lower levels of stress can be harmful. In HMCG, this confirms that stress can have a detrimental effect across both the work and home environments, that they are “normal” in the sense that standard models can be used to explain the process and that they are exposed to the same risk

factors and outcomes as many other working individuals in the UK. It was surprising that none of the models predicted an increase in smoking or drinking. This may be due to a number of reasons, for example, the level of professionalism and dedication associated with the role, greater care taken over health due to the age range or the level of job demand, but it should also be borne in mind that the survey was based on self report.

5.7 CHAPTER SUMMARY

5.7.1 Perceived Work Stress

In relation to perceived work stress, the purpose of this chapter was to establish the overall level in HMCG and then to compare it with general population groups. A subsample from SHAW and results from the national PWC (2009) survey were selected to do this. The level of stress found in HMCG was 11% and, contrary to expectations, this was significantly lower than average working individuals in the UK. HMCG were also found to have a significantly lower level of perceived life stress and a more positive perception of health. Some of the reasons for this discussed above included: the level of experience, professionalism, the nature of the work and/or the age profile and its relation to higher job satisfaction.

5.7.2 Models of Stress

Another objective for this chapter was to ascertain whether standard models could be used to explain the stress process in HMCG. ERI, JCDS and NOF were examined and analysis found that any one of them could be used to do so. ERI was the most efficient in this instance but NOF the most effective. The range of measures included within the NOF confirmed that the Management Standards also applied. Therefore, it was concluded that this group were “normal” in this respect.

5.7.3 Outcomes of Work Stress

This chapter also sought to understand the extent to which exposure to a range of known risk factors subsequently resulted in negative outcomes. Dependent upon the model, the number of negative outcomes predicted varied between 10 (JCDS), 15 (ERI) and 16 (NOF), whilst the range extended across mental and physical health, behavioural related outcomes, the home-work balance and job satisfaction. No relation was found in respect of accidents and injuries, smoking, drinking, medicines taken in the last month or 14 days or pathological sleepiness.

The following Chapter 6 was originally intended to examine objective 3 (establish whether there was anything about HMCG as a group that could help explain the level of stress found). However, given some of the unexpected results above, the comparative analysis with the SHAW sample was expanded to test three further hypotheses on the levels of exposure to negative job factors and whether HMCG had fewer mental and physical health

problems. To fulfil objective 3, the data from HMCG was then examined by itself to determine whether an NOF or Management Standards type of approach could establish whether there were any risk factors that could be specifically identified as predictors of work stress and poor mental health in this occupational group.

Chapter 6

RESULTS FOR STUDY 1 (PART 2)

6.1 INTRODUCTION

In Chapter 5 it was stated that the three objectives and two hypotheses set out in Chapter 1 would be analysed in two parts. Part 1 (Chapter 5) reported that contrary to expectations, lower levels of perceived work stress were found within HMCG but it was clearly established that the *process* by which stress occurred was not unique and could be described using recognised models such as ERI. It was also established that HMCG were exposed to a range of known risk factors (e.g., noise, bullying and management of change) and that where stress occurred, a number of known outcomes were also experienced (e.g., physical and mental health issues, negative effects on the home-work balance and low job satisfaction).

Following on, the original purpose of this chapter was to examine *objective 3* (in addition to the standard models, establish whether there was anything inherent within HMCG as a group that could help to explain the level of stress found). However, given the results of the study so far, the findings now posed questions about the relatively lower level of perceived work stress and whether it could simply be accounted for in terms of the amount of exposure to negative job factors, and whether the lower level of stress and more positive general perception of health subsequently resulted in lower levels of health outcomes. As a consequence and in addition to the original two hypotheses, three new ones were generated for testing, these being: *hypothesis 3*: the level of stress within HMCG is attributable to the level of

exposure to negative job characteristics, *hypothesis 4*: in comparison to a community study (“general population”) sample, HMCG would have fewer mental health issues and *hypothesis 5*: in comparison to a community study (“general population”) sample, HMCG would have fewer physical health issues (number of symptoms).

The purpose of the analysis in this chapter now, therefore, was to compare HMCG with the Bristol Study Workers (BSW) in relation to the ERI and JDCS models of stress to examine the level of exposure (N.B. due to data compatibility issues, it was not possible to include direct comparisons on the NOF model here), and to compare the samples on health related outcomes. Finally, to fulfill objective 3, the data from HMCG was examined by itself to determine whether an NOF or Management Standards type of approach could identify whether there were any specific risk factors that could be identified as predictors of work stress and poor mental health.

6.2 METHODOLOGY

A full description of the methodology for Study 1 is provided in Chapters 4 and 5. For comparisons between HMCG and BSW on stress models described in this chapter, measures comprised the ERI and JDCS subscales and for comparisons on health outcomes, measures included: HADS (anxiety and depression), number of symptoms and medication and number of sick days in the previous 12 months. For the analyses carried out with HMCG data only, additional measures selected included all other risk factors for which data

were available. For reference, Chapter 5 contains a summary table of all Study 1 measures (Table 4, page 116); comparable items between the two samples are indicated with an asterisk.

6.3 RESPONSE RATE, SAMPLE AND DEMOGRAPHICS

There were no changes to the data sets used previously, therefore, the response rate, description of HMCG and BSW samples and demographics for any analysis here, are as described in Chapter 5. The total number of respondents in the HMCG sample was 282 and in BSW, 1,892.

6.4. CONTROL VARIABLES

Use of control variables for any analysis in this chapter was exactly as described in Chapter 5. Any comparisons between the HMCG and BSW samples were controlled for age, gender and income. When HMCG data was examined by itself, treatment of data involving perceived stress was controlled for negative affectivity and coping if the analysis involved depression.

6.5 COMPARISON OF HMCG WITH BSW

6.5.1 ERI Model

The level of exposure to negative job characteristics was tested through a series of univariate ANOVAs. In respect of the ERI, no significant difference was found between HMCG and BSW.

6.5.2 JDCS Model

With JDCS, significant differences were found in all three components of the model, although the effects were small (partial eta squared = 0.01 or lower in each case). HMCG scored significantly *lower* on job demands and decision latitude in comparison to BSW but significantly *higher* on social support. Results are presented in Figure 9.

Further analysis through descriptive statistics (count, percentages, etc.) found that HMCG had lower demands than BSW on all items in the job demands scale (i.e., work fast, intensively, enough time to do everything, demands from different groups where things are hard to combine). In respect of decision latitude, they also scored lower on all except two items, these being: *do you have the possibility of learning new things through your work?* (46%, n = 130 rated *often* in the HMCG group compared with 39%, n = 723 in BSW) and *does your work demand a high level of skill or expertise?* (HMCG 64%, n = 181 *often* compared with BSW 51%, n = 951). In respect of social support, HMCG received more help from colleagues and their immediate superior than BSW but fewer thought that they received sufficient or consistent information from superiors.

Figure 19. Comparison of HMCG and BSW on JDCS using univariate ANOVA

Subscale	Study Group	<i>M</i>	<i>SD</i>	<i>n</i>	<i>df</i>	<i>F</i>	<i>p</i>
Job demand	HMCG	4.30	1.49	259	1, 2043	32.13	<0.001
	BSW	4.95	2.18	1789			
Decision latitude (control)	HMCG	25.11	6.96	255	1, 2022	17.29	<0.001
	BSW	27.26	8.72	1772			
Social support	HMCG	12.51	4.67	261	1, 2062	19.35	<0.001
	BSW	11.65	3.90	1806			

6.5.3 Health Outcomes

A further series of univariate ANOVAs were conducted to examine differences in mental and physical health outcomes between the two groups where comparable data was available. Significant differences were found in the level of depression, $F(1, 2063) = 3.86, p = 0.05$. The mean score for HMCG ($M = 4.31, SD = 3.96$) was higher than BSW ($M = 3.86, SD = 3.15$); although the effect size was small (partial eta squared = 0.00). This difference extended to the level of clinical depression, where 7% ($n = 19$) of HMCG were found to be clinically depressed compared to 4% ($n = 67$) in BSW. This difference in clinical depression was also significant, $F(1, 2063) = 6.48, p = 0.01$, although once again, the effect size was small (partial eta squared = 0.00).

There was also a significant difference found in the amount of medication taken in the last 14 days, $F(1, 1785) = 39.51, p = <0.001$. The mean score for HMCG ($M = 0.85, SD = 1$) was higher than BSW ($M = 0.50, SD = 0.78$) but as before, the effect size was small (partial eta squared = 0.02).

There were no significant differences found between: anxiety, the number of chronic symptoms, the number of symptoms in the last year, the number of symptoms in the last 14 days and the number of sick days in the last 12 months.

6.5.4 Conclusions

6.5.4.1 Hypothesis 3: Exposure to Negative Job Characteristics

Hypothesis 3 stated that the level of stress within HMCG is attributable to the level of exposure to negative job characteristics. When examining the data using the ERI model, no significant difference was found between HMCG and BSW. However, when examining the data using JDCS, there were significant differences in the level of exposure in that HMCG had lower job demands and decision latitude but higher levels of social support. Therefore, in relation to the ERI model, this hypothesis was rejected but with JDCS, it was upheld.

6.5.4.2 Hypothesis 4: HMCG and Mental Health

As a result of the relatively lower levels of stress, hypothesis 4 stated that in comparison to a community study or “general population” sample, HMCG would have lower levels of mental health issues. No significant differences were found in relation to anxiety but with depression, HMCG had significantly higher levels in comparison to BSW. Therefore, in both instances, this hypothesis was rejected.

6.5.4.3 Hypothesis 5: HMCG and Physical Health

Hypothesis 5 stated that in comparison to a community study or “general population” sample, HMCG would have lower levels of physical health issues. As no significant differences were found in the number of symptoms (chronic, over the last year, or in the last 14 days), or the number of sick days taken in the previous 12 months, this hypothesis was rejected.

6.5.5 Discussion

6.5.5.1 ERI Model

In the previous analysis, it was established that in terms of the level of exposure to ERI, HMCG were no different to BSW. This subsequently gives additional weight to the finding that HMCG were less stressed, if using ERI as a model to describe the stress process in this group.

6.5.5.2 JDCS Model

Using the JDCS model, HMCG scored significantly lower on job demand. Whilst this apparent lower level of exposure might appear to help explain lower stress, it should be remembered that the nature of the role means that HMCG have to work in *bursts of intensity*, as incidents arise. It would seem insulting to suggest that the demands of co-ordinating an incident involving multiple fatalities, with multiple agencies, would be less demanding than, for example, general management or office duties. Working in “bursts” of activity can be very stressful at the time but given that HMCG deal with approximately 300 fatalities per annum between 19 MRCCS, the low frequency of dealing with more difficult (and hence more stressful) incidents, plus the time to recover between them, may have a significant moderation effect. Of course, the shared responsibility of handling incidents within a Watch, the level of training and previous experience that over 50% of Coastguards in the sample had (i.e., the level of professionalism), may also have contributed to perceptions of job demands.

The lower score on decision latitude may also initially appear negative. However, this could be attributable to the nature of the work and the requirement for strict protocol and procedures to reduce the chance of loss of life, in addition to the consequences of working a 48-hour shift rota (e.g., *I have a say in my work speed and my working time can be flexible*). Anecdotal evidence suggests that it is possible that following protocol may reduce stress and increase confidence to handle difficult events, particularly for less experienced individuals.

Social support was significantly higher in the HMCG group amongst colleagues and immediate superiors, probably due to the highly cohesive team culture both within Operations Rooms and in working with other emergency and rescue related organisations, to successfully execute positive outcomes to incidents.

6.5.5.3 Health Outcomes

Finally, apart from depression, which will be examined in more detail in the next analysis, there was no real difference in health outcomes between HMCG and BSW. HMCG were found to have ingested more medication in the previous 14 days than BSW. However, given that this study was conducted in winter (February – March 2003), it is possible that increased medication was due to a prevalence of cold-related symptoms, as the most frequently taken at the time of the study were *painkillers* (n = 85) and *other medicine* (n = 66). Interestingly, although there were no significant differences between physical health measures in comparison to BSW, within

the HMCG high stress group, 60% (n = 18) had at least one chronic symptom and 77% (n = 23) had a least one symptom in the previous year. None of the high stress group had rated their health as *bad* or *very bad* on q2.5 which measured general health. There is a possibility that their self perception of health may have been age related.

6.6 RISK FACTORS ASSOCIATED WITH HMCG ONLY

In the Study 1, Part 1 analysis (refer to Chapter 5), the NOF score calculated from a number of job characteristic measures, when examining the Combined Effects approach to stress, was found to have a significant association with perceived work stress and mental health. Having now examined ERI and JDCS in some detail, a further question arose as to whether any of the individual risk factors making up the NOF, and thus reflecting a Management Standards type of approach, could add any further understanding to the findings from the HMCG group.

6.6.1 Predictors of Work Stress, Anxiety and Depression

Examined individually, using the standard univariate ANOVA technique, the remaining job characteristics (i.e., exposure to physical agents, noise, positive organisational culture, management of change, LMX, bullying and training), were found to have a significant association with stress, anxiety and depression, except for TMX and role conflict/ambiguity (for depression this was borderline). As discussed above, this may be due to the team culture within Operations Rooms in addition to the fact that the role of HMCG is clear cut (i.e., they exist to save lives at sea). However, to examine whether any of

these other risk factors *uniquely* contributed to the variance for perceived stress, anxiety and depression, a series of multiple regression analyses were conducted. Multiple regression is a series of techniques which can be used to explore the relationship between the dependent variable and a number of independent variables or predictors. It is based on correlation and can be used to examine how well a set of variables is able to predict a particular outcome. In this set of analyses, total scale scores and an unmodified version of the stress question (q2.6) were used as continuous variables. Pallant (2007) quotes Stevens (1996) as recommending 15 subjects per indicator for social science research, however, in this instance, the ratio was closer to the more stringent recommendation quoted by Pallant from Tabachnick and Fidell (2007) of 40 cases per independent variable for a skewed distribution. PASW's stepwise method was used, as this allows the program to select which variables it will enter and in which order they will go into the equation. The output from the analysis is a number of models from which the user can examine how the program looked at the data and then select which one best predicts a particular outcome of interest.

Results of the first regression carried out found that 28% of the variance in *perceived work stress* could be explained by ERI, management of change and exposure to physical agents; results are presented in Table 19.

Table 19

Summary Statistics for the Final Model in a Stepwise Multiple Regression Predicting Perceived Work Stress in HMCG

Risk Factor	<i>B</i>	<i>SE B</i>	Beta	<i>t</i>	<i>p</i>
Change	0.07	0.22	0.21	3.20	<0.01
Physical agents	0.07	0.26	0.16	2.66	<0.01
ERI	0.32	0.14	0.15	2.22	0.03
Step, R^2 , ΔR^2	4, 0.28, 0.27				

ERI has already been examined in Chapter 5. With respect to organisational change, four aspects were rated in the questionnaire (i.e., reasons and benefits of change are explained, amount of consultation about change, amount of support during change and pace of change) and, in each case, the level of dissatisfaction was 50% or higher. HMCG were most dissatisfied with the amount of consultation received about change (66%, $n = 186$). Two thirds of the high stress respondents found in this group also rated *dissatisfied* or *very dissatisfied* in response to the management of change questions. For physical agents, the most frequently rated item in the scale was *q5.1i do you work in an environment where the level of background noise disturbs your concentration?* (10%, $n = 28$); although only five of the 30 high stress respondents rated *often* to this question. Stress from noise has anecdotally been associated, for example, with having to handle multi agency incidents in one workspace, listening for distress calls via the radio through use of headsets or transmitted through loudspeaker. Descriptive statistics confirmed

that there was no consistency in job type or area of the Agency worked in, for the five high stress respondents in respect to noise.

For *anxiety*, 42% of the variance could be explained by ERI, noise and bullying; results are presented in Table 20. Further analysis of the anxiety scores by median split found that 90% ($n = 27$) of the high stress HMCG group had relatively higher anxiety. Further, whilst there were no significant differences between HMCG and BSW, analysis also found that 19% ($n = 53$) of HMCG were suffering from clinical anxiety and that this applied to 18 of the 30 high stress respondents (60%). In terms of predictors of anxiety, ERI and noise have been discussed above. In relation to bullying, the most frequently rated items included: *shifting of goal posts without telling you* (33%, $n = 94$), *withholding of necessary information* (25%, $n = 70$) and *freezing out, ignoring or exclusion* (22%, $n = 61$).

Table 20

Summary Statistics for the Final Model in a Stepwise Multiple Regression Predicting Anxiety in HMCG

Risk Factor	<i>B</i>	<i>SE B</i>	Beta	<i>t</i>	<i>p</i>
ERI	4.48	0.67	0.43	6.68	<0.001
Noise	0.54	0.13	0.22	4.09	<0.001
Bullying	0.22	0.70	0.20	3.22	<0.01
Step, R^2 , ΔR^2	3, 0.42, 0.41				

For *depression*, 46% of the variance could be explained by ERI, bullying, noise, training and role conflict/ambiguity; results are presented in Table 21. Further analysis of the depression scores by median split found that 90% (n = 27) of the high stress HMCG group had relatively higher depression. Whilst only five were found to have clinical depression, a further seven scored close to the cut-off point of 11, by scoring 10 on the depression scale. In terms of predictors of depression, ERI, noise and bullying have been discussed above. In respect to training, anecdotal evidence has suggested that a lack of it can lead to a feeling of incompetence, particularly in urgent situations, which sometimes damages confidence to learn. It should be noted that since this survey, the Training Centre for HMCG has undergone a significant review.

For role conflict and ambiguity, the remaining predictor of depression, analysis using descriptive statistics on some of the items that make up the measure may help to explain some of the earlier results with ERI and job demands. For example, 40% (n = 115), rated *never* or *very rarely* on, *I am told how well I am doing in my job* and 36% (n = 102) rated in the same way on the statement, *I feel certain how I will be evaluated for a raise or promotion*; thus affecting the effort-reward imbalance. Further, 30% (n = 85) rated *often* or *always* on, *I perform tasks that are too easy or too boring*. Since only 8% (n = 21) rated that their job was *boring* on the decision latitude scale, it would seem reasonable to assume that most, or all of the 30%, performed tasks that were “too easy”, relative to their training and previous experience. This would help to explain the lower job demand scores in HMCG. Of the 30 high stress respondents, one third said that they *often* performed tasks that were too easy

or too boring, 13 said they were *never* or *rarely* certain how they would be evaluated for a raise or a promotion and 15 said that they were *never* or *very rarely* told how well they were doing in their job.

Table 21

Summary Statistics for the Final Model in a Stepwise Multiple Regression Predicting Depression in HMCG

Risk Factor	<i>B</i>	<i>SE B</i>	Beta	<i>t</i>	<i>p</i>
ERI	3.83	0.60	0.40	6.41	<0.001
Training	0.18	0.06	0.19	3.28	<0.01
Bullying	0.20	0.06	0.20	3.24	<0.01
Noise	0.37	0.12	0.17	3.08	<0.01
Role conflict/ ambiguity	0.07	0.03	0.11	2.04	0.04
Step, R^2 , ΔR^2	5, 0.46, 0.44				

6.6.2 Stress and Coping

Whilst there was no significant difference found between the HMCG high and low stress groups in respect of coping, descriptive statistics were calculated to examine whether coping *style* may have affected the overall level of stress.

Latack's (1986) coping measure (q5.18) contained 12 items rated on a scale of 0 – 4, where 0 = *never* used and 4 = *always* used. Except for the item *get together with my supervisor to discuss things*, all others achieved a mean rating of the mid-point (2) or above. This indicated that as a group, HMCG used a wide range of methods to cope, the most frequently used being, *talk with people (other than my supervisor) who are involved* ($M = 2.67$, $SD =$

0.79) and *try to see the situation as an opportunity to learn and develop new skills* ($M = 2.56$, $SD = 0.84$). This reflects the team culture already discussed and also provides additional confirmation for some of the scores on the decision latitude scale regarding opportunities to learn. It is possible that the term “supervisor” was misleading here as within a Watch, the “supervisor,” or Watch Manager would be part of the group of individuals involved in handling an incident.

Latack’s (1986) coping measure also includes two subscales: *control*, which measures problem-focused coping and *escape* which examines emotion-focused coping, or attempts to reduce or manage emotional distress. Descriptive statistics found that both high and low stress groups used the full range of methods, however, the high stress group used some of them less frequently (4 methods scored below the mid-point compared to only 1 with the low stress group). As discussed in Chapter 2, emotion-focused coping has been found to be useful in the context of critical incidents. In the HMCG sample, the low stress group used methods such as *try to see the situation as an opportunity to develop new skills* and *try to think of myself as a winner, someone who always comes through*, more frequently, suggesting that greater use of emotion-focused coping is, indeed useful in such a context.

6.6.3 Stress and Incidents

Although the subject matter was not raised during the initial pre-survey interviews, Section 5 (q5.19) of the questionnaire included exploratory items about stress from incidents as some general comments had been made about

management training to better identify PTSD amongst staff. Descriptive statistics showed that:

- Less than half of HMCG (39%, n = 111), said that they found the way in which incidents were debriefed at stations *often* or *always* useful.
- Only 4% (n = 12), said that they found the support from outside of the Station in coping with stress from incidents (e.g., counselling), *always* or *often* useful.
- The majority of respondents had not made use of external support available (74%, n = 208).
- Only 12% (n = 35) clearly stated that they believed the Agency provided *sufficient* support for stress from incidents [34% (n = 95) rated that the support was *insufficient* with a further 40% (n = 112) that it was only *adequate*].

Incidents quoted as being more stressful to deal with than others primarily included those resulting in fatalities, particularly if children were involved.

6.6.4 Other Risk Factors to HMCG

At the end of the questionnaire, a general, free text format question was included to capture any other aspect of stress that had not already been covered (*q.6.10 is there any aspect of your job which is not covered in this questionnaire but which you find to be a source of pressure in your job?*).

Except for a very small number, involving very specific matters for a small

number of individuals, any comments made only provided additional evidence for the risk factors analysed above.

6.6.5 Conclusions

The purpose of the analysis in the second half of this chapter was to fulfil the third objective of the study and that was to establish whether there was anything about HMCG that could help explain the level of work stress within this group in their own right. In a series of comparison analyses with BSW, HMCG were found to have lower job demands (30% had described their jobs as being “easy”) and decision latitude but significantly higher social support. Additional job characteristics that resulted in stress included management of change and exposure to physical agents (noise). Within the high stress group, there were more cases of clinical anxiety than clinical depression. Job characteristics that helped to moderate stress included TMX, role clarity and high social support. Use of a wide range of both problem and emotional-focused coping strategies may also have had a positive effect. Whilst ERI was the most efficient model for predicting stress within HMCG in this instance, each of the other models examined and the Management Standards approach have all contributed in some way to providing a better understanding of this group; further highlighting the complexity of measuring stress.

6.7 FUTURE CONSIDERATIONS FOR RESEARCH

Whilst HMCG were found to be significantly less stressed than the general population, no stress is good. A wide range of variables were measured in Study 1 but the analysis in section 6.6.1 could only clearly account for 28% of the variance in work stress. This may be due to a variety of reasons such as, the amount of noise in the questionnaire, or as the combined effects model theorises, stress is due to an accumulation of factors but the effects in this sample may be too small to register, or may affect *individuals* rather than the group.

The subject of incidents was not raised in pre-survey interviews and Study 1 contained a wide range of known measures, however, responses to general questions in section 6.6.3 above suggested that potential stress from incidents might be worth examining. In addition to this, with the relatively lower level of stress, there was also the possibility that there was something else about this group which may be insulating them from the effects of stress. It was, therefore, decided to conduct a small second study to look at these areas to see if any further explanation could be achieved.

6.8 CHAPTER SUMMARY

6.8.1 Perceived Work Stress

The purpose of this Chapter was three fold. Firstly, to compare HMCG with BSW in respect of ERI and JDCA models to ascertain whether the level of exposure to negative job characteristics could explain the lower level of stress in the HMCG sample. Secondly to examine whether the lower level of stress

and more positive perception of health also led to fewer health outcomes and thirdly, to ascertain whether there was anything else about HMCG, as an occupational group in itself, that could help explain the results. Analysis found that there was no significant difference between the two groups in relation to effort-reward imbalance, therefore, when using the ERI Model, low stress could not be explained by level of exposure. Comparisons on the subscales of the JDCS model, however, did find significant differences in the level of exposure, more specifically that HMCG had lower job demands (including 30% who rated their job as being easy) and decision latitude, with significantly higher levels of social support. However, care needs to be taken in the interpretation if using this model, as the demands for handling difficult incidents involving multiple fatalities should not be underestimated, and the low score on decision latitude is likely to be due, in part, to protocol associated with the nature of the role and working shifts. After examining other risk factors available for the HMCG group only, it was found that 28% of the variance in perceived stress could be accounted for by ERI, management of change and exposure to physical agents (noise). It would appear, therefore, that ERI was a better predictor of stress in HMCG but JDCS (with care) was better able to explain stress through levels of exposure, whilst the NOF and Management Standards type of approach highlighted the effects of other risk factors.

6.8.2 Health Outcomes

In relation to mental health, over 50% of the high stress group also suffered from clinical anxiety but in comparison to BSW the difference in anxiety scores

was not significant. However, HMCG as a group were found to have significantly higher levels of depression, with 46% of the variance accounted for by: ERI, bullying, noise, training and role conflict/ambiguity. In relation to physical health, where comparisons were possible, there were no noteworthy differences found between the two groups. However, 60% of the HMCG high stress group had one or more chronic symptoms and 77% reported at least one symptom in the previous year. Interestingly, none of the high stress group rated that their health was *bad* or *very bad* on the general health question (q2.5).

6.8.3 Incidents and Study 2

Despite the inclusion of a significant number of measures with well documented associations with stress, results of Study 1 suggested that they were better able to explain the variance in the levels of anxiety and depression. This may be that given the low numbers of stressed individuals, after ERI, management of change and exposure to physical agents, stress may be more readily accounted for by localised issues, which cause effects at an individual level rather than global issues across the group. However, the inclusion of a small number of exploratory questions on the effects and management of incidents suggested that this might be an area for further investigation, along with the possibility that there could be something else about this group which may help insulate them from stress. Therefore, it was concluded that a small, second study should be carried out.

In the following Chapter 7, I describe the hypotheses to be tested, the methodology and results for Study 2. Unfortunately, due to “work-to-rule” industrial action on the part of HMCG, data collection was exceptionally difficult and resulted in only a small number of cases for analysis. Study 2 therefore, had to be treated as a pilot evaluation. Chapter 7 describes and discusses this in more detail. As the work-to-rule continues at the time of writing, the thesis is concluded in Chapter 8, where the two studies are evaluated and suggestions for further research discussed.

Chapter 7

PILOT INVESTIGATION ON STRESS IN RELATION TO INCIDENTS (STUDY 2)

7.1 INTRODUCTION

Chapters 5 and 6, which describe analyses from Study 1, reported lower than expected levels of stress amongst HMCG using standard measures, such as ERI and JDCS. Respondents were actually found to have less stress at work and with life in general over the previous 12 months than comparative general population samples. Results were in contrast to the literature, which tends to focus on the presence rather than the absence of stress, and surprising given the emergency service context. Whilst there was evidence that respondents were dissatisfied with various aspects of their work, there was little to indicate *inherent* stress within the role, except for responses to a section on the way in which formal support for incidents by the MCA was made available (e.g., occupational health services), where 78% said that they did not use it and 39% said it was insufficient. Insufficient support from the organisation over exposure to critical incidents has been found elsewhere, for example, Alexander and Klein (2001) in their study on ambulance workers. Qualitative data indicated that fatalities, especially those involving children, could be stress inducing. This has also been found elsewhere, for example, by Clohessy and Ehlers (1999), in a further study with ambulance workers. Additional evidence for stress from incidents came from anecdotal information gathered during the initial risk assessment, where it was suggested that skills within the organisation to successfully identify posttraumatic stress disorder (PTSD) could be improved. Although the subject of incidents in themselves had not been raised at that time

(hence the limited number of questions in the first study), responses to Study 1, in addition to evidence in the literature relating to ambulance and fire service workers (see Chapter 2), suggested that it would be appropriate to carry out some further research which focused on the impact of incidents.

Study 2 was, therefore, designed around two main themes. The first was to ascertain whether stress may be inherently caused from dealing with certain types of incidents. The second was to examine whether characteristics of the group, such as previous experience, prevalence of “hardiness” (or resilience), and/or other methods of coping (not yet measured but found to work in the emergency work context), had a moderating effect on perceived stress levels. This was because these have been found to have an effect elsewhere (e.g., Alexander & Klein, 2001 and their work with ambulance workers; Maddi, 2002, reflecting on 20 years of research on hardiness).

Unfortunately, during the period between the two studies for this thesis, HMCG’s dissatisfaction with pay in relation to other emergency services turned into a “work-to-rule” situation, which continued for more than 12 months and still continues at the time of writing. Whilst this action provided further evidence for the ERI findings in Study 1, additional access to this group became exceptionally difficult. During 2009, support for this research from one senior manager and the PCS allowed for a very small survey to take place. The level of access and response ultimately meant that Study 2 could only be treated as a pilot. The first half of this chapter is, therefore, dedicated to describing the method and measures for the intended study, followed by a description of the

limited findings in the second half. Whilst results are discussed as much as is reasonably possible, they raised more questions and were best used as indicators for potential further work, which is a subject for the final Chapter 8.

7.2 HYPOTHESES

Following on from the five hypotheses examined in Study 1, the results (combined with evidence from the literature), generated a further five to test for potential stressors and moderators inherent within the role:

- *Hypothesis 6:* critical incidents, particularly those involving children, generate high levels of stress.
- *Hypotheses 7 – 10:* (7) exposure to incidents, (8) hardiness, (9) previous experience and (10) the desire to save lives (job commitment), has a moderating effect on perceived stress.

7.3 METHOD

7.3.1 Participants

Under the work-to-rule situation, only staff located within the South Eastern Region, comprising the London, Thames and Dover MRCCs, were authorised and subsequently invited to participate in Study 2 (n = 71).

7.3.2 Questionnaire

Data were collected using an electronic questionnaire entitled “Health and Safety at Work 2009.” The questionnaire was located on a secure website and contained a number of features, such as a unique self generating password for confidentiality and to allow for partial completion at any time during the data

collection period. For additional assurance, the questionnaire also contained links to general information about the Researcher and COHP, which were located on the Cardiff University website. A copy is provided as Appendix 7.

7.3.3 Procedure

The survey took place during July to September 2009. This is the busiest time of the year for HMCG (due to an increase in summer holiday leisure related incidents) and in contrast to Study 1, which took place during February and March 2003. Study 2 aimed to control for potential differences in response to levels of stress between studies, due to the seasonal differences in workload.

As with Study 1, the questionnaire was distributed internally, this time via an email from a Coastguard senior manager, which contained a link to the questionnaire embedded within the text, (a copy is provided as Appendix 6). The covering email and the questionnaire included instructions for completion and contact email and telephone numbers for both the Researcher and Cardiff University in the event of queries.

7.4 MEASURES

7.4.1 Risk Factors

Given the lack of published research on the work of the Coastguard to draw upon, and as the focus of Study 2 was incidents in an emergency context, exposure was measured using the Ambulance Workers' Stressors Questionnaire (AWSQ), as used by Bennet et al. (2005), which had been adapted from Clohessy and Ehlers (1999). This measure contained a

combination of items that were both relevant to the current situation and, where appropriate, easily modified to suit HMCG.

Questions were presented in two parts. Part 1 contained 10 critical incidents that HMCG have to deal with, such as: *fatality involving child, suicide and having to call off a search*. Part 2 contained 12 general work conditions that may potentially lead to stress, such as: *tension with colleagues, dealing with “false alarms” and unpredictable nature of the work*. In both instances, respondents were asked to rate each item in two ways: the frequency of exposure on a 5-point scale ranging from *very frequently (once a week or more)* to *not at all (never)*, and the degree of associated stress on a 5-point scale ranging from *not at all* to *extremely stressful*. Adaptations included replacing ambulance worker specific items (e.g., *dealing with burns and dealing with mental patients*) with maritime related incidents (e.g., *man overboard*) and the addition of four new items to the list of general working conditions: *management of change, on-the-job training, bullying and lack of support from manager*, as these had previously been raised as relevant issues.

Finally, two new summary items were included (q2.1k, q2.2m), which allowed respondents to comment on any incident or aspect of an incident, and any general aspect of the working conditions not included in the pre-populated lists but which they had previously found stressful.

7.4.2 Appraisals

7.4.2.1 Perceived Stress

Perceived stress was measured in three ways: by repeating the work and life stress questions from Study 1 (to allow for direct comparison), by repeating the work and life stress questions but within a more specific timeframe (in the LAST MONTH), to allow for corroboration with the posttraumatic stress disorder measure described later. Thirdly, in the event that single items were too simplistic, perceived stress was also measured in more detail using the widely used Perceived Stress Scale (described below).

7.4.2.2 Perceived Stress Scale (PSS)

The PSS, developed by Cohen, Kamarack and Mermelstein (1983), is a 14-item, one-dimensional instrument. Items were designed to determine how unpredictable, uncontrollable and overloaded respondents find their lives, for example, *in the last month, how often have you felt that you were unable to control the important things in your life?* The scale also includes a number of direct queries about current levels of experienced stress, such as, *in the last month how often have you felt nervous and stressed?* Respondents report the prevalence of an item within the last month on a 5-point scale, ranging from *never* to *very often*. Coefficient alpha reliabilities have been shown to range from 0.67 to 0.86 (Cohen et al., 1983; Cohen & Williamson, 1988). In the current pilot sample it was 0.82. Scores are summed to obtain a total, reversing items as appropriate.

7.4.2.3 Job Commitment

To help understand the extent to which job commitment might be a moderator of stress, three single ratable items were included: job satisfaction (repeated from Study 1), the extent to which respondents enjoyed their job and were motivated to do their job. A further, general, open-response item asking the main reason for joining HMCG was also added.

7.4.3 Outcomes

In the event that exposure to critical incidents was found to be stressful, the potential for PTSD was measured by an adapted version of the Posttraumatic Diagnostic Scale (PDS) developed by Foa, Cashman, Jaycox and Perry (1997) and the Sheehan Disability Scale (Sheehan, 1993). Health and accidents are well documented outcomes of stress and had been examined in detail during Study 1. However, to measure whether levels of stress had any impact on health or accidents in the current sample, or whether the situation had changed between 2003 and 2009, a small selection of questions were repeated from the initial study (see Chapter 4). These outcome measures are described in more detail below.

7.4.3.1 Posttraumatic Diagnostic Scale (PDS)

The PDS was selected because it assesses all 17 symptoms of the DSM-IV criteria for PTSD. The measure comprises four parts. For this study, the inclusion of Part 1 (trauma checklist, e.g., sexual assault) was unsuitable and was, therefore, replaced with a filter question, *have you been involved in an incident which you found particularly stressful or disturbing in the previous six*

months? Part 2 (questions about the incident) was replaced with *what was the incident? (list more than one if applicable)*. Parts 3 and 4 of the PDS were included in their original format. Part 3 was used to assess the 17 symptoms of PTSD grouped into three clusters: *re-experience* of the incident (e.g., *having bad dreams or nightmares about the event*), *avoidance* of the incident (e.g., *trying not to think about, talk about or have feelings about the event*) and *hyperarousal* over the event (e.g., *feeling irritable or having fits of anger*). Respondents were asked to rate the severity of the symptom, or how much it had bothered them in the past month, from *not at all* to *5 or more times a week*. Part 4 measured interference of the symptoms on eight aspects of life (e.g., *household chores and duties, fun and leisure activities and general satisfaction with life*). These items were rated either *yes* or *no*. Scoring includes a count of the number of symptoms endorsed and of the level of impairment of functioning. The instrument has strong validity due to its items directly reflecting DSM-IV criteria; alpha rating 0.92 (McCarthy, 2008). In the current pilot, the coefficient was 0.90.

7.4.3.2 Sheehan Disability Scale

The Sheehan Disability Scale was used to assess the extent to which any problems identified via the PDS interfered with work, social or family life. Respondents rated three items on a 5-point scale ranging from *not at all* to *very severely*. The original format included a 10-point scale but a 5-point was used here for greater consistency with other scales in the questionnaire. Ratings of *markedly* and *very severely* were likely to indicate functional impairment and could highlight the need for further assessment. Rush et al.

(2000) published an alpha coefficient of 0.89 for this scale but explained that this is partially due to high inter-item correlations of the three items. However, in the current pilot, the reliability coefficient indicated that this measure might not be as reliable if further work is carried out in this area, since social or family life negatively correlated with work. Study 1 found that there were likely to be other factors affecting perception of the home-work balance (such as shift work), which might be related and may need to be taken into consideration. However, it should also be noted that in this pilot, there were only seven responses to these items.

At the end of these measures, a question from the study by Alexander and Klein (2001) on ambulance workers was also included about the duration of distress, *q3.6 approximately how long was the duration of your distress following the incident(s) stated?* This was then rated on a scale from *a few hours to a few months or longer*.

7.4.3.3 Health

Health measures included three single items from Study 1 to indicate the number of sick days taken in the last 12 months, general perception of health and whether respondents felt they had suffered any illness caused or made worse by work. A section from the previously used Symptoms and Medication Questionnaire was also repeated to determine whether respondents had taken a range of medicines, such as, blood pressure tablets and anti-depressants, either in the last 14 days, in the last month, the last year or not at all.

7.4.3.4 Accidents

As accidents and injuries had not proved an issue within the Study 1 sample, only four single item summary questions from Study 1 were repeated to ascertain any change between surveys. These included *the number of accidents whilst working/ outside of work in the past 12 months that also required medical attention* and *the number of minor injuries whilst working/ outside of work that did not require medical attention*.

7.4.4 Individual Differences

Data from Study 1 found that the majority of the HMCG sample used a wide range of general methods for coping. Study 2 sought to further investigate the impact of individual differences as a moderator of stress by examining hardiness, coping methods more specific to the emergency work context and general outlook.

7.4.4.1 Hardiness

Over 20 years of research has found that the 3Cs of hardiness (i.e., commitment, control and challenge) have emerged as a combination of attitudes that enhances performance, health and mood, despite stressful circumstances (e.g., Maddi, 1990, 1994, 1998, 1999, 2002; Maddi & Kobasa, 1984; Maddi, Khoshaba, Harvey, Lu & Persico, 2001). In the event that hardiness was a moderator of stress within HMCG, this was measured using the Personal Views Survey, third edition revised (Maddi & Khoshaba, 2001a). This contains three subscales to reflect the 3Cs: *commitment* (i.e., the predisposition to be involved with people, things and contexts), *control* (i.e., the

struggle to have an influence on outcomes going on around you) and *challenge* (i.e., the desire to continually learn from experience). The survey includes 18 items rated on a 4-point scale ranging from *not at all true* to *very true*. Examples include: *trying your best at what you do usually pays off in the end* (commitment), *my mistakes are usually very difficult to correct* (control), and *I like a lot of variety in my work* (challenge). Maddi et al. (2006) quote reliability coefficients of 0.57 – 0.69 for individual subscales, with a total hardiness coefficient of 0.80. In the current pilot, reliability ranged through 0.43 (control) to 0.57 (commitment) and 0.65 (challenge), with total hardiness 0.72.

7.4.4.2 Coping Methods Checklist (CMC)

Although general coping had been measured in Study 1, it was measured again in Study 2 but this time using the CMC (Alexander & Wells, 1991 and Alexander & Klein, 2001), as these studies examined coping within emergency work specific contexts and the checklist reflected this. The measure included eight methods of coping, such as, *use of black humour* and *talking with colleagues*. Items were rated on a 5-point scale of frequency of use over the previous six months (range *very frequently* to *not at all*) and then on a 5-point scale of how helpful this method of coping had been (range *very helpful* to *very unhelpful*). Four new items were added including: *try to be very organised so that you can keep on top of things* (found to be a well used method of coping in Study 1 and repeated here for comparison), *try to see the situation as an opportunity to learn and develop new skills* (also used in Study 1, found to reflect some of the high decision latitude scores and complimented hardiness) and *on station incident de-briefing sessions* (as debriefings should be standard

practice on station). The fourth summary item was added in case any other method used was missed, *q4.3 are there any other methods of coping with the impact of incidents which you use but are not mentioned here?* As this was a descriptive scale, scoring involved a simple total of items endorsed.

7.4.4.3 General Outlook

An additional, 10 single items on general outlook and coping were included, repeated from Study 1, or from the work of Alexander and Klein (2001) in an emergency work specific situation. These are listed in Table 22.

Table 22

General Outlook and Coping Items for Study 2

Item	Question Reference
Do you feel that you are given sufficient time to recover emotionally between incidents?	q4.4
Do you find that regular exposure to incidents makes you better/ less able to cope?	q4.5
To what extent are your peers supportive after critical incidents?	q4.6
To what extent do any concerns that you may have about confidentiality and risk to career prospects deter seeking personal help after critical incidents?	q4.7
To what extent would better training and pre/post incident briefing have helped you to cope more successfully with previous critical incidents?	q4.8
To what extent would better equipment have helped to cope more successfully with previous critical incidents?	q4.9
To what extent has previous maritime experience helped you to cope more successfully with critical incidents?	q4.10

Item	Question Reference
Have you ever made use of a formal counselling service via the Agency to help you deal with the impact of a critical incident?	q4.11
In your opinion, does the Agency provide sufficient support for stress/ potential stress from incidents	q4.12
What could be done to improve support in dealing with the impact of incidents?	q4.13

7.4.5 Sample and Demographics

Variables taken into account through the sample and demographic characteristics included: job title, area worked in, work pattern, length of service, whether previously employed in a maritime related job, age and gender. Alexander and Klein's (2001) study with ambulance workers found that years in post, age and gender were the most useful sample data to collect in relation to the ability to deal with incidents.

7.4.6. General Questions

Given the difficulties gaining access, three all encompassing questions were included in the event that potential stressors had been missed, these being: *q6.4a if there was one thing that you could change about your job itself (excluding salary and benefits) what would it be?*, *q6.4b how stressful do you find this aspect of your job?* and *q6.6 do you have any general comments or suggestions for improvement on health and well-being at work?*

7.5 ETHICAL CONSIDERATIONS AND TREATMENT OF DATA

As with Study 1, data were collected in line with Cardiff University and the British Psychological Society ethical guidelines and analysed using the statistical software packages SPSS version 16 and PASW version 18. However, due to the low numbers in the current pilot, it was only feasible to make use of descriptive statistics (counts, means, percentages, etc.). Where possible, comparisons have been made with the literature, in particular, the studies with ambulance workers by Clohessy and Ehlers (1999) and Alexander and Klein (2001), from which several of the measures used had been taken.

7.6 RESULTS

7.6.1 Sample and Response Rates

Of the 71 Coastguards in the South East Region who were invited to participate, 21 completed the questionnaire, representing a 30% response rate. A breakdown of the profile is provided in Table 23. Differences between the characteristics of this sample and those from Study 1 included the absence of senior managers (although, here, this then best reflected those more likely to be exposed to incidents), the proportion of respondents over the age of 50 years (Study 2 = 62%, Study 1 = 36%) and the largest proportion of the sample had worked for the MCA between 2 and 5 years (43%), whereas the mean length of service in Study 1 had been 10 years.

Table 23

Summary of Study 2 Sample and Demographic Characteristics

Sample and Demographic Characteristics	HMCG
	<i>n</i> %
Job Title	
Sector Manager	3 (14%)
Watch Manager	7 (33%)
Watch Officer	7 (33%)
CWA	3 (14%)
Other	1 (5%)
Full-time/Part-time	
Full-time	20 (95%)
Part-time	1 (5%)
Length of Service	
Less than 2 years	2 (10%)
Between 2 and 5 years	9 (43%)
Between 6 and 10 years	3 (14%)
Between 11 and 20 years	3 (14%)
21 or more years	4 (19%)
Previously Worked in a Maritime Environment	
No	7 (33%)
Yes	14 (67%)
Age	
20 – 30 years	1 (5%)
31 – 40 years	3 (14%)
41 – 50 years	4 (19%)
More than 50 years	13 (62%)
Gender	
Male	20 (95%)
Female	1 (5%)

7.6.2 Appraisals

7.6.2.1 Perceived Work Stress

Perceived work stress was measured in three ways; firstly by *q5.7 in general, how do you find your job? not at all/ mildly/ moderately/ very/ extremely stressful*, repeated from Study 1. In the current sample, none of the respondents indicated that it was *very* or *extremely stressful*; this was lower than the level found in Study 1 (11%). There was no change in response when asked the same question but constrained within the LAST MONTH (*q5.10*). The third way of measuring stress through the more detailed PSS, found that 38% ($n = 8$) *sometimes* felt *nervous and stressed* in the LAST MONTH but no one rated *fairly* or *very often*. Total scores on the PSS ranged between 14 and 30 (maximum 56), with all but one respondent scoring below the mid-point of 28; once again indicating low stress.

7.6.2.2 Perceived Life Stress

The general question on perceived **life** stress (*q5.8 how do you find life in general? not at all/ mildly/ moderately/ very/ extremely stressful*) was subsequently examined to ascertain whether the same trend existed. Analysis found that the same *proportion* of respondents who rated *very* or *extremely* stressful in the first study, did so in the current study (5%, $n = 1$). When asked again but constrained to within the LAST MONTH, no respondents indicated that they were *very* or *extremely stressed*.

7.6.2.3 Work Stress and General Health

General health was measured by *q5.4 over the last 12 months how would you say your health has been? very bad/ bad/ fair/ good/ very good*. The number of respondents who rated that it was *bad* or *very bad* was 10% ($n = 2$). This was a much higher proportion than HMCG in Study 1 (1%) and the BSW group (3%). Whilst it is possible that respondents may not have made any links between stress and health outcomes, it is also possible that these figures simply reflected greater variation in a small sample, or that illness was more age related as both cases were over 50 years old. There are a number of other possibilities, such as the impact of working shifts. Regardless, the majority of the sample (71%, $n = 15$) clearly stated that they had a positive perception of health, which confirmed the trend in data from Study 1. Health is examined in more detail later.

7.6.2.4 Stress and Job Commitment

Given the results above and from Study 1, it was anticipated that with low perceived work stress, job satisfaction and motivation would be high. This was confirmed through three questions which found that in each case, 71% ($n = 15$) were *very often* or *often* satisfied with their job, enjoyed their job and were motivated to do their job. Although the sample was predominantly above the age of 50, where satisfaction is likely to be higher (discussed in Chapter 5), and numbers in other age groups were small, the same high level of satisfaction and commitment was shown across each age category measured (*q1.f*).

7.6.2.5 Conclusion and Discussion on Appraisals

Results from this pilot continued to indicate that overall, HMCG are a low stress occupational group, with a positive perception of health and high job satisfaction. One of the reasons for conducting this study during July to September was to control for the potential change in stress levels due to a seasonal increase in maritime related activity. However, due to the low response rate (30%), it was still not clear whether this was the case. Given that HMCG work in teams through Watches, it is possible that responses could be generalised across the three participating stations but it would be unreliable to do so for the remainder of the MCA, as different areas can be subject to different types of incident and hence have potentially different outcomes.

The question now arises as to whether (and how) HMCG could be used as a reference group for the *reduction* of stress within other organisations; particularly in relation to other emergency contexts, where literature tends to report high stress. There are clearly times when the work does become stressful but based on evidence so far, this does not appear to be sustained over long periods of time (as per the HSE definition of stress, refer to Chapter 1). Further analyses, therefore, hoped to find evidence of moderating factors to aid stress reduction. The first to be examined was level of exposure to incidents.

7.6.3 Incidents and General Work Conditions

7.6.3.1 Exposure to Incidents

Table 24 summarises the level of exposure to 10 critical incidents that HMCG might find themselves having to deal with and the associated stress. Highest levels of exposure were to *missing person searches* (90%, $n = 19$), *suicide* (76%, $n = 16$) and *having to finish a shift with an incident still in progress* (76%, $n = 16$). As anticipated through hypothesis 7 (*exposure to incidents has a moderating effect on perceived stress*), these three incidents had relatively lower levels of associated stress in comparison with the others listed, they also had scores below the mid-point ($M = 1.71, 2.10, 1.85$ respectively, where 5 = high stress). Stronger evidence to confirm this hypothesis came from *q4.5 do you find that regular exposure to incidents makes you better/ less able to cope?* where 81% ($n = 17$) clearly indicated that it did, or that their ability was not affected. These findings were in keeping with research from Alexander and Klein (2001) who found that 87% ($n = 78$) of their ambulance worker subjects also reported that more frequent exposure led to better coping, or that their ability to cope was not affected.

Table 24

Number Frequently or Very Frequently Exposed to Incidents and Degree of Associated Stress, Rank Ordered by Degree of Stress (Highest to Lowest Scores)

Number Frequently Exposed to Incident		Degree of Stress		
Incident	<i>n</i> %	<i>M</i> (1 – 5)	<i>SD</i>	<i>n</i> %
Fatality involving child	0 (0%)	2.85	1.09	20 (95%)
Dealing with relatives of persons in distress	6 (29%)	2.63	0.90	19 (90%)
Fatality involving multiple bodies	1 (5%)	2.50	0.92	18 (86%)
Fatality involving adult	12 (57%)	2.24	0.77	21 (100%)
Suicide	16 (76%)	2.10	0.89	21 (100%)
Man overboard	1 (5%)	2.05	0.94	20 (95%)
Having to call off a search	6 (29%)	2.00	0.92	20 (95%)
Finish a shift with an incident still in progress	16 (76%)	1.85	0.87	20 (95%)
Missing person searches	19 (90%)	1.71	0.64	21 (100%)
Vessel sinking/ run aground	12 (57%)	1.50	0.69	20 (95%)

Note: Mean score, 1 = low stress, 5 = high stress.

7.6.3.2 Stress Levels Associated with Incidents

Hypothesis 6 aimed to test whether critical incidents, particularly those involving children, would generate high stress. In the current sample, incidents which generated highest levels of stress were indeed: *fatality involving child* ($M = 2.85$, $SD = 1.09$), *dealing with relatives of persons in distress* ($M = 2.63$, $SD = .90$) and *fatality involving multiple bodies* ($M = 2.50$, $SD = 0.92$); refer to Table 24. However, whilst *fatality involving child* did generate the highest stress score, no single incident measured attained a mean of 4 or above (to indicate high stress). In the current sample, it is possible that response was moderated both by exposure and by *low* frequency, as no one in the sample had actually experienced an incident involving the death of a child more than once per year and only one had regular exposure to fatality involving multiple bodies. Further, when asked *do you feel that you are given sufficient time to recover emotionally between incidents?*, 52% ($n = 11$) clearly stated yes or that it was *adequate*. The latter was in contrast with Alexander and Klein's (2001) study with ambulance workers where 69% ($n = 62$) of subjects reported that they never had time to recover emotionally between critical incidents, even though 87% ($n = 78$) had also said that frequent exposure led to better coping. If stress can be moderated in this way, what is not clear is the relationship between frequency of exposure, time required to recover emotionally for certain incident types and individual differences.

Whilst stress was found to be relatively low at group level, at individual level, most incidents listed were rated *very* or *extremely stressful* by one or more respondents, ranging from *fatality involving child* 20% ($n = 5$), to *having to call*

off a search 5% (n = 1). (N.B. the lower frequency of the latter may be a reflection on the chain of command, whereby it would be the responsibility of one senior individual). Feedback on “other” types of incidents, or aspects of dealing with an incident, which had not been included in the measure but had been reported as having induced stress in the current sample, included: vessel collisions, multiple incident handling, the initial 30 minutes of getting an incident under control (particularly if information was vague or ambiguous), lack of staff and equipment not working when needed. Some examples of comments provided to illustrate the stress which can be experienced are as follows:

- *“Father murdered his female family, wife and daughter, then took his small son and threw him off a bridge and then jumped himself; extremely stressful for all involved.”*
- *“A number of incidents will have stress attached to them, particularly in the early stages when you may not be clear about what you are dealing with.”*
- *“When information is vague or ambiguous ... incidents can be stressful as it is difficult to be sure you have interpreted the information correctly.”*
- *“I have also been involved in dealing with several ship fires, one of which was in a cruise liner; these incidents can prove extremely stressful, particularly in the early stages.”*

One other comment received, which provides an alternative insight into stress and the work of the Coastguard was as follows:

“Most incidents we come across are mundane, often due to incompetence; I cannot get stressed about these. If it is a major incident, in which I have done all I can to help, I have found myself anything but stressed.”

7.6.3.3 Exposure to General Work Conditions

Table 25 summarises the frequency of exposure to general work conditions in an emergency work context, along with associated stress. In this sample, HMCG were most exposed to *dealing with false alarms* (81%, $n = 17$) and *tiredness at work* (76%, $n = 16$). Relative to other conditions listed, *tiredness at work* was also the most stressful ($M = 2.30$, $SD = 0.80$) but no single condition measured attained a mean of 4 or above (indicating high stress). Whilst scores for the whole sample showed that none of the work conditions generated high mean stress scores (as with exposure to incidents), at the individual level there were instances of *very* or *extremely stressful* ratings but in each case here, the n was no higher than 1.

Table 25

Exposure to General Work Conditions and Degree of Associated Stress, Rank Ordered by Degree of Stress (Highest to Lowest Scores)

Number Frequently Exposed to Condition		Degree of Stress		
Work Condition	<i>n</i> %	<i>M</i> (1 – 5)	<i>SD</i>	<i>n</i> %
Tiredness at work	16 (76%)	2.30	0.80	20 (95%)
Tension with colleagues	3 (14%)	2.05	0.83	20 (95%)
Unpredictable nature of work	14 (67%)	2.00	0.80	20 (95%)
Home-work demands	7 (33%)	1.95	1.05	20 (95%)
Organisational change	9 (43%)	1.95	0.83	20 (95%)
Dealing with “false alarms”	17 (81%)	1.84	1.02	19 (90%)
Lack of support from manager	2 (10%)	1.84	0.83	19 (90%)
On-the-job training	13 (62%)	1.75	0.85	20 (95%)
Doing overtime	12 (57%)	1.68	0.95	19 (90%)
Shift work	14 (67%)	1.55	0.69	20 (95%)
Bullying	0 (0%)	1.39	0.79	18 (86%)
Waiting for the next call	12 (57%)	1.30	0.66	20 (95%)

Note: Mean score, 1 = low stress, 5 = high stress

7.6.3.4 Comparison of Stress and General Working Conditions

Table 26 shows a comparison of mean stress scores from HMCG with those from the Clohessy and Ehlers' (1999) ambulance workers sample, where *tiredness at work* was also found to be the most stressful. In comparison, all associated mean scores for exposure to general work conditions were lower in HMCG except for *doing overtime*, where they scored marginally higher with a mean of 1.68 (ambulance workers $M = 1.6$); yet still well below the mid-point of 3. When HMCG were asked *is there any other aspect of your general work conditions (excluding salary and benefits) which you have or are finding stressful?*, comments reflected *organisational* dissatisfaction rather than *job* dissatisfaction. Examples included: shortage of staff (incorporating situations where manning levels are correct but some staff are under training), paperwork, and response time to fixing IT issues. In their study of ambulance workers, Alexander and Klein (2001) also found high satisfaction but this was with internal features of the job (job satisfaction) and not so with the way the system operated (organisational satisfaction). Data gathered here, from Study 1, the initial risk assessment and annual staff surveys (reported elsewhere) suggested that this was the same for HMCG.

Table 26

Comparison of Mean Stress Levels Associated With General Work Conditions

General Work Condition	<i>M (1 – 5)</i>	
	HMCG	Ambulance Workers
Tiredness at work	2.30	3.2
Tension with colleagues	2.05	2.5
Unpredictable nature of the work	2.00	2.1
Home-work demands	1.95	2.8
Dealing with “false alarms”	1.84	1.9
Doing overtime	1.68	1.6
Shift work	1.55	2.4
Waiting for the next call	1.30	1.7
Total n	21	56

Note. Data on ambulance workers taken from Clohessy and Ehlers (1999). Mean score, 1 = low stress, 5 = high stress.

7.6.3.5 Conclusions on Exposure to Incidents and Work Conditions

7.6.3.5.1 Incidents

Hypothesis 6 stated that critical incidents, particularly those involving children, would generate high levels of stress. Results from the pilot found that fatality involving child, dealing with relatives of persons in distress and fatality involving multiple bodies did generate *higher* levels of stress, in relation to other incidents measured but not *high* (i.e., above the mean score). However, given the frequency of exposure found (e.g., no one had experienced death of a child within the previous 12 months and only one person had experienced incidents with multiple bodies on a regular basis), this aspect needs further research

before any firm conclusions can be drawn, as it cannot be assumed that the types of incident dealt with at London, Dover and Solent were representative of the remaining 16 MRCCs across the UK. Dover and Solent, for example, are responsible for monitoring a significant amount of commercial traffic.

Hypothesis 7 stated that exposure to incidents has a moderating effect on stress. Since data from this pilot found that the incidents most exposed to also had relatively lower levels of stress (i.e., missing person searches, suicide and having to finish a shift with an incident still in progress), and that when asked directly about regular exposure to incidents and ability to cope, the majority of the sample indicated that it did, or that their ability was not affected, results suggested that this hypothesis could be upheld subject to testing with a more representative sample.

7.6.3.5.2 General work conditions

There was nothing in the pilot data which suggested that exposure to general work conditions in the emergency context (e.g., dealing with false alarms) generated high levels of stress.

7.6.3.6 Discussion: Exposure to Incidents and General Work Conditions

7.6.3.6.1 Incidents

As discussed above, the low response and nature of the sample clearly indicates the need for wider research, particularly in relation to regional differences in types of incidents which may be handled by different stations (e.g., commercial versus more leisure related).

Whilst limited, data reported here raises a number of questions, for example, in relation to thresholds of exposure. HMCG deal with approximately 12,000 incidents per annum, 300 of which result in fatality. The Office for National Statistics (2010) quotes the number of deaths in road accidents and pedestrians as approximately 3,500 per annum (retrieved from <http://www.statistics.gov.uk/cci/nugget.asp?id=1208>). This may help to explain higher levels of stress in the ambulance worker samples and why they have less time to recover emotionally between incidents than HMCG. Further, given the findings above, data suggested that there may be a complex relationship between exposure to critical incidents, time to recover emotionally and individual differences that needs to be explored. Given that no one in the pilot study had experienced death of a child more than once per year but it had generated the highest level of stress, it is also possible that there is a question about *anticipated* stress versus *actual* stress. The differences in levels of exposure to critical incidents between HMCG and ambulance workers might also help to explain the lower job demands score found in Study 1.

Another aspect to consider is the issue of proximity as a moderator of stress. HMCG deal with incidents mainly in a removed capacity by co-ordination from an MRCC, whereas ambulance workers experience the event first hand, which may be another reason for high stress in other emergency work. There is also the issue of general outlook (discussed in more detail later). One comment from the pilot sample was as follows, "*suicides are not stressful as my input has no influence on events.*"

7.6.3.6.2 General work conditions

In the event that general work conditions more specific to the emergency services had an impact on stress, items such as *dealing with false alarms* and *unpredictable nature of the work* were included in this pilot study. Analysis found that none of these generated a mean score to indicate high stress.

Tiredness at work and *tension with colleagues* generated the highest levels of stress in HMCG but not high. These were also the highest in Clohessy and Ehlers' (1999) study on ambulance workers. What is not clear is whether the tiredness is due to the nature of the work, working shifts or some other reason (e.g., low job demands). Given the importance of teamwork within Watches, it is not surprising that *tension with colleagues* would generate high stress. One person quoted: "... *working in the same room with a small number of people for a 12-hour shift if one or more members of the team do not fit or contribute as much as others*" [can be stressful]. However, there was little in the data to suggest that there was actually an issue, more that it is an important aspect of stress reduction to working in this environment.

Unlike Study 1, there was little evidence of stress from the additional items included on organisational change or bullying. Here, it is not clear whether the situation between studies had changed, or whether this was simply a reflection of the sample.

7.6.4 Outcomes

7.6.4.1 PTSD

The first two parts of the PDS ask whether the respondent had been involved in a stressful or disturbing incident in the previous six months; seven out of 21 respondents (33%) in the current sample said that they had. Incidents quoted as being stressful included: fishing vessel sinking with loss of one person, body recovery and searches for vulnerable, missing people, family suicide, female suicide which reminded respondent of a family member, missing person where search was hampered due to poor communications from a peer organisation and potential suicide that resulted in death, which may have been avoided (again, due to poor communication from a peer organisation).

Of the 17 items which respondents provide ratings for in part 3 of the measure, the prevalence of PTSD is likely if at least one re-experiencing symptom is experienced, three avoidance symptoms, and two arousal symptoms with a duration of at least one month and impairment in at least one area of functioning. In the HMCG sample, six of the seven who had been involved in a disturbing incident met the re-experiencing, one met the avoidance and three met the hyperarousal criteria. One person met all criteria with interference in 6 out of 8 areas of life measured (indicating PTSD), but when examining the *extent* of interference with work, social life or family life through the Sheehan Disability Scale, only indicated a moderate impact. The duration of distress following the disturbing incidents reported ranged from a few hours ($n = 2$) to a few days ($n = 3$) and a few weeks ($n = 2$).

Further analysis of the mean scores for the 17 items found that one *hyperarousal* problem scored above the mid-point of 2 (indicating experience more than two times per week), this being *having trouble falling or staying asleep* ($M = 2.43$, $SD = 0.79$). This is in keeping with the tiredness at work issue found in general working conditions above, and again raises the question to what extent does tiredness at work reflect the impact or strain of dealing with incidents.

7.6.4.2 Health

14% ($n = 3$) had more than 10 days sick leave in the previous 12 months and also stated that they believed they had suffered from illness that was caused or made worse by work. Whilst only 7% ($n = 21$) had more than 10 days sick in Study 1, the potential for greater variation in small samples must be considered. Further analysis of medicines taken over the previous 14 days, month or year, found that no one had taken medicine directly for stress or anxiety but within the previous 14 days, a variety had been taken including: painkillers, medicine for indigestion, blood pressure, sleeping pills, anti-depressants and "other". Only painkillers had been taken in the previous month by 14% ($n = 3$) with painkillers, sleeping pills, laxatives and "other" medicine in the last year. Ultimately, given the very low reported stress levels in this pilot and the small sample, it was not possible to find a significant association with health outcomes, as had been found in Study 1.

7.6.4.3 Accidents

As with Study 1, it was not possible to find a significant association between stress and incidents in Study 2. Of the 17 who had responded to this set of questions, 15 clearly indicated that they had not had an accident which needed medical attention either in, or out of work. There were one or two individual cases for concern, for example, one person stated they had six accidents that required medical attention whilst working and one had three outside of work. Between the two studies, data suggested that any issues with accidents were more likely to be related to the individual rather than HMCG as a group.

7.6.4.4 Conclusion and Discussion on Outcomes

As a result of low reported stress and low exposure to critical incidents, it was not surprising to find a very low prevalence of PTSD and association with health or accident related issues in this pilot group. Whilst these findings support those of Study 1 in terms of accidents, there was insufficient data to be able to draw firm conclusions about PTSD across HMCG as a whole, especially as there is potential for variation in types of incident handled across MRCCs. The results from the PDS on *having trouble falling or staying asleep* suggested that this may be an area for follow up, given that it had shown up in the general work conditions, had been predicted by the ERI and NOF models in Study 1, and had been found to be an issue with ambulance workers; if not in relation to stress, potentially in relation to working shifts. Finally, results from the PDS and the Sheehan Disability Scale regarding extent of distress, seemed contradictory to one another. If used together in a future study on HMCG, this should be taken into account.

7.6.5 General Outlook and Coping

7.6.5.1 Hardiness

Total scores for the PVS III-R range from 0 – 54, with a maximum score on each of the three subscales (commitment, control and challenge) being 18. The percentile score of 50% (based on the normative data base of approximately 20,000 cases of working adults and students held by the Hardiness Institute), is reached when the total PVS score is 32; scores above this, therefore, indicating “hardiness.” In the current pilot, 15 of 17 fully completed sets of questions scored above 32, indicating the prevalence of hardiness in 88% of the available sample. Each of the subscales achieved an average score of 12. Hypothesis 9 stated that hardiness has a moderating effect on perceived stress. Given the scores here (and research elsewhere), it is possible that hardiness was having an influence on perceived stress, particularly in relation to the *challenge* subscale (i.e., the desire to continually learn from experience); which seems to be reflected in other areas of the data and, incidentally, was the most reliable scale within the current sample. However, although hardiness and perceived stress were negatively correlated ($r = -0.24$, $n = 17$), the relationship was small, not significant and needs more data to explore this hypothesis. Scoring for the PVS III-R has to be conducted by the Hardiness Institute as the algorithm is not available for others to do so therefore, it is difficult to comment further on individual items of the scale.

7.6.5.2 Coping Methods (CMC)

Use of coping methods as measured by the CMC, along with ratings on their helpfulness, are summarised in Table 27. In the current sample, the most frequently used and most helpful method of dealing with incidents was *talking with colleagues*; (used by 86%, n = 18). Alexander and Klein (2001) also found that *talking with colleagues* was the most frequently used method of coping with ambulance workers. These results were also in keeping with those from Study 1, which indicated a highly cohesive team culture. Additional evidence was provided by q4.6 where 38% (n = 8) stated that peers were *frequently* or *very frequently* supportive after critical incidents. The Alexander and Klein (2001) study found a higher rate of support in their sample (44%, n = 40), however, on reflection, it may be that this question would have been better phrased *to what extent are your immediate colleagues supportive after critical incidents* as “peers” could mean others throughout the Agency, who may not be aware of particular incidents taking place.

Least helpful coping method was *avoid thinking about what you're doing*, used *frequently* by only 10% (n = 2). Conversely, Alexander and Klein (2001) found this to be more useful to their ambulance workers (used by 69%, n = 61). This may be due to the element of control over incidents. As discussed above, HMCG are responsible for *directing* the co-ordination of an incident to its conclusion (i.e., they have to think about what they are doing to ensure success), whereas ambulance workers *respond* and will spend a proportion of their time dealing with incidents for which there is no control and therefore, cope better by not thinking about it too much. The response from the pilot

sample is in keeping with some of the high decision latitude scores found in Study 1 in that *thinking about what you are doing* allows for the chance to learn and develop skills to increase the likelihood of a successful outcome. This could also be potentially corroborated by data on hardiness, particularly the control and commitment subscales. As found with hardiness above, coping and perceived stress were negatively correlated ($r = -0.37$, $n = 16$), indicating that there was a relationship between coping (more frequently used and more helpfully perceived) and low work stress. However, the correlation was not statistically significant and needs more data to examine this potential finding.

When asked *are there any other methods of coping with the impact of incidents, which you use but are not mentioned above?* the only others described involved a variation on talking with colleagues, such as: *"sometimes it's nice to go home to a glass of wine and a chat," "social gathering with friends who are not in my business" or "when in the lifeboat crew, on return from an incident, we frequently re-visited the incident over a few beers ... a couple of beers in the pub and re-arrange my thoughts before I return home."*

Table 27

Coping Methods Rank Ordered by Degree of Helpfulness (Most to Least Helpful)

Frequent Use of Method		Degree of Helpfulness		
Coping Method	<i>n</i> %	<i>M</i> (1 – 5)	<i>SD</i>	<i>n</i> %
Talking with colleagues	18 (86%)	1.56	0.51	18 (86%)
Try to be organised so that you can keep on top of things	16 (76%)	1.69	0.70	16 (76%)
Try to see the situation as an opportunity to learn/develop	14 (67%)	1.75	0.86	16 (76%)
Thinking about positive benefits of work	14 (67%)	1.81	0.54	16 (76%)
On station incident de-briefing sessions	7 (33%)	1.87	0.81	16 (76%)
Black humour	9 (43%)	2.17	1.04	18 (86%)
Thinking about outside interests	10 (48%)	2.29	0.77	17 (81%)
Thinking about own family	10 (48%)	2.35	0.93	17 (81%)
Looking forward to going off duty	6 (29%)	2.50	0.86	18 (86%)
Keeping thoughts/feelings to self	6 (29%)	2.81	1.22	16 (76%)
Avoid thinking about what you're doing	2 (10%)	3.25	1.13	16 (76%)

Note: Mean score, 1 = very helpful, 5 = very unhelpful.

7.6.5.3 General Outlook

7.6.5.3.1 Previous experience and critical incidents

Hypothesis 9 (*previous experience has a moderating effect on stress*) was tested through q4.10, *to what extent has previous maritime experience helped you to cope more successfully with critical incidents?* In response, 43% (n = 9) stated that it *always* did, with a further 24% (n = 5) *sometimes*; indicating that this hypothesis could be upheld subject to testing with a more representative sample.

7.6.5.3.2 Improved training and equipment and critical incidents

Since no predictive association had been found with stress and training in Study 1, answers given to other general outlook questions most likely reflected the willingness and opportunity to learn new skills (also found in Study 1 and potentially through the challenge aspect of hardiness), for example, 57% (n = 12) thought that better training and pre/ post incident briefing would help them cope more successfully with critical incidents and 52% (n = 11) thought that better equipment would help. Whilst over a third of Alexander and Klein's (2001) ambulance workers claimed that better training (38%) and better pre-incident briefing (36%) would have helped them to cope better, the level of agreement was not as high as with HMCG. Only 9% (n = 88) of the ambulance workers held this view in relation to equipment.

7.6.5.3.3 Formal support and critical incidents

As in Study 1, responses from the pilot group indicated that few sought formal help from the MCA to deal with the impact of incidents (5%, $n = 1$). This person also indicated that it had not been useful. 11 of the 14 who said that they had not used counselling gave the reason that they did not feel that they needed it. One stated *"I have always found that talking to my colleagues has been sufficient, however, I would use counselling if I felt I needed it,"* and one other, *"... 20+ years in the army and 10+ years in the Coastguard rescue, I am from a culture of 'get on with it'."*

Whilst few sought formal support, 24% ($n = 5$) clearly stated that what support was available from the Agency was inadequate; 43% ($n = 9$) did not know whether it was sufficient. Only 10% ($n = 2$) actually rated that it was adequate. Similarly, Alexander and Klein (2001) also found dissatisfaction with organisational support; 73% ($n = 66$) judged the ambulance service in general to be *never* concerned about staff welfare after disturbing incidents.

7.6.5.3.4 Support from critical incidents and career prospects

Only 5% ($n = 1$) in the HMCG sample clearly stated that they were *always* concerned about confidentiality and risk to career prospects to seek personal help after critical incidents. Conversely, Alexander and Klein (2001) found concerns about confidentiality and risk to career prospects were identified as being either *always* (64%, $n = 58$) or *frequently* (46%, $n = 41$) deterrents to seeking personal help after such incidents.

7.6.5.4 Conclusions and Discussion on General Outlook and Coping

7.6.5.4.1 Hardiness

Data from the pilot found a high prevalence of hardiness within the sample. Questions now arise as to what extent this might be the case across HMCG, as well as the extent to which this moderates the perception of stress within this occupational group. The challenge subscale is particularly interesting given the theme of wanting to learn or improve found within the data from HMCG so far. This clearly needs further investigation and would be particularly relevant in further research with others working in the emergency service context.

7.6.5.4.2 Coping methods (CMC)

Data from Study 1 and the current pilot found that in general, HMCG made use of a wide range of coping methods that were both practically and psychologically positive (e.g., *try to be organised so that you can keep on top of things* and *think about positive benefits of work*). However, clearly, support from colleagues was consistently found to be the most useful. Study 1 suggested that those with high stress did not make use of such a wide repertoire of methods, however, given the absence of high stress cases in the current study, this was not possible to corroborate here. The teamwork theme within the findings does indicate that the ability to work well in this way is a very important factor in moderating stress, as had been found in the ambulance work context.

7.6.5.4.3 Previous experience and critical incidents

Hypothesis 9 stated that previous experience has a moderating effect on stress. The response of 67% (n = 14) *always/ sometimes* suggested that this could be upheld subject to testing in a more representative sample. However, what isn't clear from the data is the type and amount of experience that might be most useful to do this.

7.6.5.4.4 Improved training and equipment and critical incidents

Given the low number of maritime related fatalities per annum (approximately 300), the level of experience which exists within HMCG, some of the high decision latitude scores and indications from the hardiness measure, responses to questions on better training and equipment seemed to reflect the opportunity and desire that HMCG have to learn new skills as a positive coping method. As mentioned earlier, this may also reflect the fact that they are responsible for coordinating maritime related incidents. The more exposure they have, the more they learn and the better they become at getting an incident under control within the first 30 minutes, which ultimately means a greater likelihood of a successful outcome. Anecdotal evidence on the benefits of improved equipment may also reflect the use of IT, upon which HMCG rely heavily (and the differences in views of equipment with ambulance workers). When asked for any general suggestions for improving health and well-being at the end of the questionnaire, responses primarily focused on training and equipment. These included: on-the-job training for dealing with friends and relatives of those involved in incidents, recruitment and training of staff in advance of others retiring, better training and equipment in general and provision of administrative assistants for

Sector Managers to handle day-to-day activities and paperwork thus allowing the Sector Manager to concentrate on the main role of looking after volunteer Coastal Rescue Teams and rescue equipment.

7.6.5.4.5 Formal support and critical incidents

Results for both this pilot and Alexander and Klein's (2001) study found dissatisfaction with support after critical incidents from their respective organisations. This seems to be an area which could be further investigated from both the organisation and the potential recipients' perspectives. It is possible that the high dependency on colleagues means that there is low demand for a formal service and consequently less attention paid to it. Only one person had used the external counselling available in the current sample and had not found it useful. Anecdotal evidence has suggested that counselling is not necessarily followed through sufficiently and has, therefore, sometimes left individuals in more distress. Further research is needed. Given the high dependency on colleagues, it is possible, for example, that training local staff in counselling skills might be a more useful approach.

7.6.5.4.6 Support from critical incidents and career prospects

Finally, within the HMCG sample, few seemed to be concerned about confidentiality and risk to career prospects to seek personal help after incidents. On reflection, this is most likely due to the fact that incidents are dealt with on station and in Watches (i.e., in public), not forgetting that the most frequently used coping method was talking with colleagues. Therefore, confidentiality would be difficult. In addition, the initial risk assessment interviews and data

from Study 1 found that promotion was an issue, as with small groups working within stations, there are few opportunities to advance careers.

7.6.6 Other Moderators or Risk Factors

The final hypothesis for testing stated that the desire to save lives has a moderating effect on perceived stress (hypothesis 10). High levels of job satisfaction, enjoyment of job and motivation to carry out the job were described above in 7.6.2.4. When also asked reasons for joining HMCG, 81% (n = 17) of the sample said that they had wanted to help others and/ or to remain in a maritime related role. Example comments to illustrate this included:

- *[I wanted] ... "to put something back into society."*
- *"I have always been in the services and to be able to continue helping others is a great feeling."*
- *"... continuing in the maritime environment in which I have served and found fulfilling for many years."*
- *"I personally find this job a vocation and a calling ..."*

Asked, *if there was one thing that you could change about your job itself, what would it be?*, only two from the sample provided a response which they said resulted in stress. In both cases, the issue concerned insufficient manpower (again *organisational* dissatisfaction rather than *job* dissatisfaction).

Whilst the pilot sample were not fully representative, given the high job satisfaction found in Study 1, repeated here along with high levels of job

commitment and the reasons provided for joining HMCG, subject to testing within a more representative sample, it is likely that this hypothesis would be upheld.

7.7 CHAPTER SUMMARY

The purpose of Study 2 was to examine the impact of incidents and to examine whether there were characteristics of the group which had a moderating effect on stress. Unfortunately, difficulties in conducting the fieldwork due to a work-to-rule situation meant that the questionnaire could only be accessed by Coastguards working within three stations. This, plus a low response, meant that data could only be used as a pilot. Despite this, evidence suggested that subject to testing with a more representative sample, the five hypotheses from Study 2 would be upheld. Data also raised a number of additional, interesting issues for further research. Several general questions were repeated from Study 1 in order to check whether there had been any change between studies. These included perceived work and life stress and items on health and accident outcomes.

7.7.1 Stress, General Health and Job Commitment

Findings were consistent with those from Study 1, i.e., low levels of perceived work and life stress, a positive perception of health and high levels of job commitment. However, given the small sample, it was not possible to determine whether conducting this study during the busiest time of year made a difference to the recording of stress levels (Study 1 had been conducted at a quieter time of year). Results subsequently raised questions as to whether and

how HMCG could be used as a reference group for the *reduction* of stress within other organisations.

7.7.2 Exposure to and Stress from Incidents

Data from exposure to and stress from incidents raised more questions than provided answers. Whilst stress from critical incidents such as *fatality involving child* and *fatality involving multiple bodies* generated the *highest* levels of stress, they were not *high* (as anticipated with hypothesis 6, *critical incidents, particularly those involving children would generate high levels of stress*). Notwithstanding issues with the sample on differences in types of incidents dealt with across the UK, questions arose on a potentially complex relationship between levels of exposure to incidents, time to recover emotionally between incidents and individual differences. There were also questions about *anticipated* stress versus actual stress, and the impact of proximity to an incident as a moderator of stress. It was concluded that if tested with a more representative sample, hypothesis 7 (*exposure to incidents has a moderating effect on stress*) would be upheld given that when asked directly, most of the sample agreed that it did, but that hypothesis 6 clearly needed much further research.

7.7.3 Exposure to and Stress from General Working Conditions

Tiredness at work and *tension with colleagues* generated the *highest* levels of stress but not *high*. Whilst tiredness at work had been found to be an issue in Study 1 and elsewhere with ambulance workers (Clohessy & Ehlers, 1999), what wasn't clear from the pilot data was the reason for it. Data did, however, continue to highlight the importance of being able to work successfully as a team. There was little evidence of stress from organisational change or bullying, as had been found in Study 1 but again, it was not clear whether this was simply due to the sample or whether the situation had changed.

7.7.4 Outcomes

There was insufficient data to draw any conclusions about the impact of incidents on PTSD and health. In relation to accidents, except for one case, the general trend was that there was little impact; as had been found in Study 1.

7.7.5 General Outlook, Coping and Incidents

7.7.5.1 Hardiness

Whilst the small sample placed limitations on analyses which could be conducted with this information, data suggested that hardiness might have a role to play in perceived stress as 88% ($n = 15$) of those who fully completed this measure attained high scores (indicating hardiness). The *challenge* subscale (desire to continually learn from experience) was particularly interesting as it reflected some of the high decision latitude scores found in Study 1. Based on the literature and subject to testing with a more representative sample, it is likely that hypothesis 8 (*hardiness has a moderating*

impact on stress), would be upheld in keeping with the work published by Maddi et al. discussed above.

7.7.5.2 Coping

As with Study 1, data indicated use of a wide range of coping methods; *talking with colleagues* being the most useful. This provided further evidence for the importance of teamwork and raises questions on *exactly* how valuable it is as a moderator of stress including the impact it has, or should have, on recruitment and development activities. This is particularly so of work in the emergency context.

7.7.5.3 General Outlook

Subject to testing with a more representative sample, data suggested that hypothesis 9 (*previous experience has a moderating effect on stress*) could be upheld given that over 50% of the sample said that it did, or that their ability was not affected. Additional evidence came from the general view that better training, pre and post incident briefing and equipment would help HMCG to cope more successfully with incidents. Given the high level of experience which exists in this group and the low number of fatalities handled in comparison to other emergency services, it was concluded that this most likely reflected some of the high decision latitude scores from Study 1, as well as the high job commitment scores. As a co-ordinator of maritime incidents, a high sense of responsibility, as well as a mindset of continuous improvement, seems important to the role.

Use of formal support for the impact of incidents was low, as was the opinion of the support provided from the Agency. This appears to be an area for further research both from the individuals' and the organisation's perspective. Given data on the importance of being able to talk with colleagues, it was suggested that it might be more beneficial to train local individuals in counselling skills, with the possibility that this could be applied within other emergency contexts, as similar results were found elsewhere with ambulance workers.

The pilot sample was not deterred from seeking support from critical incidents through concerns about it affecting promotion. It was anticipated that this was probably due to the lack of confidentiality about incidents (handled through Watches) and the fact that talking with colleagues was the most useful coping method. Promotion opportunities have also been described as limited due to the way in which stations are manned and operated.

Finally, given the high levels of job satisfaction and commitment found in Studies 1 and 2, scores on subscales of hardiness and the reasons provided for joining HMCG, it was concluded that subject to further testing with a more representative sample, hypothesis 10 (*the desire to save lives has a moderating effect on perceived stress*), would be upheld.

7.7.6 Future Directions on Research

Given the difficulties in obtaining data for the pilot study, it was not possible to follow up any of the issues that it raised through to conclusion but it did have the added benefit of being able to generate a range of issues not previously considered which, if followed up robustly, could provide useful research on stress *reduction*. The final chapter of this thesis is, therefore, dedicated to summarising the findings of the research so far and discussing implications and possibilities for further work.

Chapter 8

OVERALL SUMMARY, EVALUATION AND SUGGESTIONS FOR FURTHER RESEARCH

8.1 INTRODUCTION

Having presented and discussed the rationale, methodology and results of the two surveys carried out for this study in Chapters 1 – 7, the purpose of this final chapter is to conclude by providing an overall summary, evaluation and suggestions for further research.

8.2 OVERALL SUMMARY OF FINDINGS

Figure 10 provides an overall summary of the measures used in both surveys and Figure 11 an overall summary of the aim, objectives, hypotheses and key findings; all discussed in detail in previous chapters.

Figure 20. Overview of Measures Used Across the Two Studies

Individual Differences		
General outlook and coping	Negative affectivity	Hardiness
Sample and demographics (e.g., age, gender)		
Risk Factors	Appraisals	Outcomes
Demands (demands, extrinsic effort, work patterns, exposure to noise and physical agents) Control (decision latitude, skill discretion) Support (inc. training) Role (conflict and ambiguity) Relationships (LMX, TMX, bullying) Change Culture Exposure to critical incidents	Perceived work stress Perceived life stress General perception of health Illness caused or made worse by work Home/work balance Job satisfaction, motivation and commitment Satisfaction with support from HO and HR, pay and communication of important information MCA is an attractive place to work	Number of sick days Mental health (anxiety, depression, PTSD) Physical health (minor, acute and chronic illness, medication) Sleepiness/ insomnia Behavioural (smoking, drinking, bodyweight, ability to exercise/ relax) Accidents and injuries Problems of memory Risk taking

Figure 21. Summary of Study Aim, Objectives, Hypotheses and Key Findings

OVERALL AIM: to gain an understanding of work-related stress in HMCG as a previously unstudied occupational group			
Objective (O)/ Hypothesis (H)		Achieved or Upheld	Key Findings
O1	Establish the overall level of perceived work-stress in HMCG.	Yes	Established at 11% <i>very</i> or <i>extremely</i> stressed.
H01	The level of stress found within HMCG would be at least the same when compared to a community study or "general population" sample	No	Level of stress found in HMCG was established at 11% in comparison to 17% in the general population samples. HMCG were also found to have significantly lower levels of perceived life stress and a better general perception of health.
O2	Ascertain whether the standard models of ERI, JDCS or NOF could be used to explain the level of stress found.	Yes	ERI – those with ERI were 9 times more likely to report higher levels of work stress, 13 times more likely to have higher levels of anxiety and 6 times more likely to suffer from higher levels of depression. JDCS – those with low social support were 3 times more likely to report stress, anxiety or depression. NOF – those with a high NOF score were 4 times more likely to report stress, anxiety or depression.

OVERALL AIM: to gain an understanding of work-related stress in HMCG as a previously unstudied occupational group

Objective (O)/ Hypothesis (H)		Achieved or Upheld	Key Findings
H02	The level of stress found within HMCG would result in a number of negative outcomes related to mental and physical health, accidents and injuries, behavioural outcomes, the home-work balance and/or job satisfaction.	Yes	ERI was associated with 15 negative outcomes. JDCS (low social support) was associated with 10 negative outcomes. NOF was associated with 16 negative outcomes.
O3	In addition to the standard models, establish whether there was anything inherent within HMCG as a group that could help to explain the level of stress found.	Yes	Significant differences were found between levels of stress, anxiety and depression and exposure to physical agents, noise, positive organisational culture, management of change, LMX, bullying and training. 28% of the variance in <i>perceived work stress</i> could be explained by ERI, management of change and exposure to physical agents (mainly noise). 42% of the variance in <i>anxiety</i> could be explained by ERI, noise and bullying. 46% of the variance in <i>depression</i> could be explained by ERI, bullying, noise, training and role conflict/ambiguity.

OVERALL AIM: to gain an understanding of work-related stress in HMCG as a previously unstudied occupational group

Objective (O)/ Hypothesis (H)		Achieved or Upheld	Key Findings
H03	The level of stress within HMCG is attributable to the level of exposure to negative job characteristics.	JDCS - yes	HMCG had significantly lower job demands and decision latitude than general population samples but significantly higher levels of social support with the JDCS Model.
		ERI - no	No significant differences in levels of exposure when compared to general population samples with the ERI Model.
H04	Following the lower level of stress found, in comparison to a community study or "general population" sample, HMCG would also have lower levels of mental health issues.	No	<i>Anxiety</i> : no significant differences found between HMCG and the general population sample. <i>Depression</i> : significantly higher levels in HMCG when compared to the general population, including the number of clinical cases.
H05	Following the lower level of stress found, in comparison to a community study or "general population" sample, HMCG would also have lower levels of physical health issues (number of symptoms).	No	No significant differences were found.
H06	Critical incidents, particularly those involving children, generate high levels of stress.	Insufficient evidence to conclude	Needs further research. Pilot study evidence suggests that such incidents do generate the highest levels of stress but the current frequency of exposure is potentially moderating the impact.

OVERALL AIM: to gain an understanding of work-related stress in HMCG as a previously unstudied occupational group

Objective (O)/ Hypothesis (H)		Achieved or Upheld	Key Findings
H07	Exposure to incidents has a moderating effect on perceived stress.	Insufficient evidence to conclude	Needs further research. Pilot study suggests that exposure does have a moderating effect but the extent or type of exposure is not clear.
H08	Hardiness has a moderating effect on perceived stress.	Insufficient evidence to conclude	Needs further research but the prevalence of hardiness in the pilot study sample, plus evidence from the literature, suggests that this would have a positive effect.
H09	Previous experience has a moderating effect on perceived stress.	Insufficient evidence to conclude	Needs further research on the breadth and depth of experience to have a positive impact but data from the pilot suggest that this does have a positive effect.
H10	Desire to save lives (job commitment), has a moderating effect on perceived stress.	Insufficient evidence to conclude	Needs further research on the impact of organisation versus job satisfaction but data from the pilot suggest that this has a positive effect.

8.3 METHODOLOGICAL ISSUES IN THE CURRENT RESEARCH

8.3.1 Current Validity of Data

There were several methodological issues affecting the current research. Firstly, the main data collection took place in 2003 and it could, therefore, be argued, out-of-date. However, a consistent theme, regardless of model used to examine sources of stress, was ERI. It was pointed out earlier that at the time of writing, there is still a work-to-rule situation in place within HMCG, primarily due to dissatisfaction with pay, which has been ongoing for several years. Whilst ERI is not solely about pay, it is a component part and, therefore, a reasonable indication that the ERI findings are still valid, although what is not clear is whether the levels have changed. Another issue in relation to validity is the fact that all data collected was self-report and has not been corroborated with any objective measures.

8.3.2 Data Collection

There were data collection issues for both studies conducted. In the first, financial constraints meant that the questionnaires were distributed in paper format and by hand via representatives of the MCA, with no quality checks on the actual number distributed. This created difficulties in calculating accurate response rates, however, there was enough information available to ascertain that the number of questionnaires completed were sufficiently viable for analysis. In the second study, the work-to-rule not only created a delay in data collection but restricted it such that the response could only be treated as a pilot evaluation. Again, distribution was carried out by the MCA through email and there were some issues in effectively providing a link to the electronic

questionnaire through copying errors, which may have impacted the response. This illustrates some of the difficulties of conducting studies in applied settings.

8.3.3 Questionnaire

Due to the number of issues raised in the initial risk assessment and the complexity of measuring stress, the first questionnaire was of substantial length and may have impacted response. It also had implications for having to make adjustments for missing data when using the NOF approach. The second survey was reduced from the original format due to concerns from the MCA in the current working situation. Given the potential number of sources of stress within organisations, this illustrates the need for support and encouragement from senior management, as demonstrated by Jordan et al. (2003) in describing examples of good practice in stress management, as well as the benefits of potentially using filtering techniques in electronic media to effectively constrain questionnaire length. This is discussed further below.

8.3.4 Timing

Another methodological issue for this research was timing of data collection. Study 1 was conducted at a relatively quiet time in respect of volume of incidents (February/March), due to MCA management request. Study 2 attempted to collect data during the busy summer period but was unable to attain a representative sample to better understand potential implications. Given fluctuations in workload and the requirement to work in “bursts” of intensity, it is not clear from this study what impact this factor has on stress levels.

8.3.5 Level of Detail

Finally, the number of completed questionnaires made it difficult to analyse data to MRCC (station) or job type levels, in a meaningful capacity. It is likely, therefore, that there may be local issues, which have not been identified in the current study (e.g., difficulties in the Sector Manager's role, which have been examined elsewhere). However, there is greater value to studying HMCG as an organisation and this is discussed in more detail below.

8.4 CURRENT FINDINGS AND IMPLICATIONS FOR FURTHER RESEARCH

A number of issues were raised as a result of this research and are discussed below both in terms of a HMCG specific and a wider context below.

8.4.1 HMCG Specific

Within HMCG as a group, the most obvious area for further research is how to reduce or moderate the impact of ERI, organisational change and exposure to physical agents (noise), as these were found to uniquely contribute to the prediction of stress (refer to Chapters 5 and 6). On the assumption that there has been no significant change in the workplace, successful management of these risk factors has the potential to reduce perceived stress levels across the group to well below 10%. This would involve, for example, interventions for improved consultation, clarification of routes to promotion and positive feedback for jobs well done.

Following on from 8.3.4 above, it would be beneficial to conduct a small study with a subsample of Coastguards to examine the impact of fluctuations in

workload on perceived stress levels. This would be particularly useful in the Eastern Region, which was found to have relatively higher levels of stress; most likely due to the number of vessels in that area, additional use of radar, etc. At the time of the first study, 39% ($n = 98$) of the HMCG sample were not aware that the MCA had a stress policy in place. Whilst it is hoped this has changed, it would be beneficial to check that is the case; if this has not already been done. Further, 60% ($n = 160$) stated that their employer did not encourage them to balance their work and home life (17% $n = 47$ rated that they did not have a home-work balance). This may be partially due to the nature of shift work and/or the male dominated environment, however, the importance of demonstrating commitment from senior management should be revisited in the light of Jordan et al.'s (2003) work on "Beacons of Excellence" in stress prevention.

An important area to examine further would be the level of depression. This was found to be higher than the BSW group (including the prevalence of clinical depression). Some of the risk factors found to predict depression included: ERI, bullying, noise, training and role conflict/ambiguity.

Whilst the negative effects of shift work are well known, at the start of the research, the MCA management team in post at the time, was interested to examine changes in work patterns to improve the home-work balance (refer to general questions in Section 6 of questionnaire provided as Appendix 5). Such changes were considered possible due to the IT systems that were being installed within MRCCs and allowed for the possibility of transferring incident

handling between them. The impact of shift work was not the subject of this study (and to make changes would require another), but results indicated that it was affecting the home-work balance and the prevalence of insomnia. Further, 30% (n = 67) of respondents who worked shifts indicated that they were not aware of the health implications of doing so. Whilst there was interest in considering change to work patterns to reduce the number of night shifts (39%, n = 35), some of the concerns expressed by others included the reliability of the IT systems, the level of IT competence and that such change would lead to station closures, rather than the desired redeployment of resources to an increased level of incident prevention activities. Reliability of the IT systems will have vastly improved since the first study in 2003 but the dissatisfaction with organisational change, particularly in respect of consultation, would need to be addressed if improvements to health and well-being were to be made here.

Whilst the number of cases was relatively small, noise was found to be a significant predictor of stress, anxiety and depression. It would be worth examining what improvements could be made on the impact of the noise, for example, resulting from the use of headsets and loudspeakers in Operations Rooms and from multi agency incident handling. There were also some issues at a more local level to be investigated, such as the case of PTSD found in Study 2, stress from boredom and difficulties with on-call arrangements for a small number of individuals in Study 1.

Finally, it should be borne in mind that the profile of HMCG was of a mature workforce, with a considerable amount of experience, handling approximately

300 fatalities per annum from across 19 MRCCs. Should the profile change (e.g., recent announcements to reduce the number of stations), this may also impact stress levels and/or change any source of stress.

8.4.2 Wider Context

8.4.2.1 HMCG as an Occupational Group

Several interesting issues arose as a result of studying HMCG as a group. Contrary to expectations, results indicated that HMCG are not only interesting in relation to the study of negative stress effects but they also confirm that good teamwork, support, training, etc. can contribute to stress reduction. Few studies report good practice (Jordan et al., 2003), therefore, this is useful and different in that respect. In the advent that the negative effects from ERI and organisational change were moderated, a revised survey of perceived work stress might result in an unusually low level, worthy of study as a “Beacon of Excellence” in job design (Jordan et al., 2003).

Further value from this study comes from the focus on risk factors in the workplace. As discussed in Chapter 1, Cooper et al. (2001) pointed out that stress at work has predominantly been researched from the perspective of the individual, the purpose being to reduce its effects instead of tackling stressors in the wider context. They also argued that whilst organisations are investing substantially in relevant programmes, such as stress management training, they lack understanding of the sources of strain and of effective strategies to deal with particular stressors. As this study was conducted at the organisational level, the results can be used to provide MCA management with

the information required to tackle risk factors in the workplace. The methodology used also provides a comprehensive but flexible means to do this elsewhere and is discussed in more detail later.

Chapter 1 also discussed the lack of information on relative stress levels across occupations, (Johnson et al., 2005). Whilst they examined 26 different types, composite physical health, psychological well-being and job satisfaction mean scores from copyrighted material were published. This is not so easily replicated, especially in academic scenarios where there may be little or no budget to use such material. In the current study, perceived work stress was established through use of Smith et al.'s (2000) validated single item stress measure (discussed in detail in Chapter 2), which is also utilised in the PWC general population surveys. By using this question, it was not only possible to determine a perceived level of work stress but to also compare it against the latest PWC data and the community data from SHAW. This provided the closest possible UK "norm" based comparison, which could more reliably be used to compare against other occupations. There is still a lack of reliable, comparable information about occupations and it would be useful to conduct further research using a more standardised and readily available method, such as this one.

Because of this lack of reliable information, it was subsequently difficult to find a study within the literature that reported a similar stress level to HMCG. However, unpublished data from COHP has found perceived work stress levels in a sample of 1000+ seafarers at 13%, using Smith et al.'s (2000) validated

single stress measure. Like HMCG, this occupational group also has to work in bursts of intensity, such as when entering port. It is possible that there are similar effects going on worthy of further research (although many of HMCG are also ex-seafarers). Methodologically, this might be difficult and may require the use of observational techniques and retrospective analysis of the incident within a short time-frame of it taking place, to avoid memory issues. There may also be interesting individual characteristics of people attracted to working in the maritime environment (e.g., hardiness), that may also warrant further investigation.

8.4.2.2 *HMCG and Other Emergency Services*

In relation to the other emergency services, as the findings stand, HMCG are more similar to the police in that workplace stress emanates from organisational risk factors, rather than those inherent within the job, resulting in PTSD and burnout (more common with the fire and ambulance services). However, more research is required. Results from the pilot suggest that critical incidents, particularly those involving children, generate high levels of stress but the frequency of exposure was most likely moderating the impact. Further research on this area could help in the wider context with the other emergency services, as the extent or type of exposure to be beneficial is unclear. Other factors to be considered would be the breadth and depth of experience, the impact of proximity to incidents (attendance versus co-ordination of) and the desire to save lives. A key difference in the Coastguard service is that they take calls and co-ordinate incidents through to conclusion, whereas these tasks

can be handled separately in other emergency services. There may be some interesting differences here worthy of further research.

A clear, positive result from the studies on HMCG was the value of teamwork and the support from within Watches. Further research may be useful to the other emergency services, where the impact of relationships has been found to be difficult (refer to Chapter 2). It is possible that as a general principle, the high level of support found in HMCG could build on findings from studies such as Mitani et al. (2006), who found that social support was essential to reduce PTSD, stress and burnout in fire service workers.

In an earlier discussion, it was suggested that another area for research would be to examine the value of training local staff in a certain level of counselling techniques. It was clear that HMCG did not perceive MCA management to be providing sufficient support from stress but they valued the support from their colleagues. Further research on how this support could be extended could be beneficial to HMCG as well as the wider context of the emergency services.

In terms of individual differences, the pilot study indicated a high level of hardiness as a moderator of stress. It would be useful to extend this research both within HMCG as an organisation and to other organisations within the UK in general. A study with the police by Collins and Gibbs (2003) found that their high stress group differed significantly from those with low scores in perception of all stressors measured and from the personality constraints, appeared significantly more "stress-prone". It is possible that the stressed

group here would have also scored lower on hardiness. Since hardiness can be trained, further research on the impact of training as an intervention, would be useful (although not an excuse for poor management practices). In respect of the emergency services, this could be especially so, in relation to the number of police who retire early due to mental health issues.

Finally, there is the role of age. The age profile of HMCG was of a more experienced workforce aged 40+. Further research with this group could prove useful, as several studies have found that age can be beneficial, for example, in relation to job satisfaction. A study by Marchant et al. (2008) found that “mental toughness” generally increases with age. Mental toughness is an extension of the 3C’s of hardiness, with the addition of a confidence dimension (control, commitment, challenge and confidence). They also concluded that it can be developed through training. Further research on the benefits of age in the emergency context may help with decisions on appointments to senior positions, as well as team composition and development activities to reduce stress. This may be further beneficial in a society where individuals are now required to work longer.

8.4.2.3 Models of Stress

The SHAW study by Smith et al. (2000), discussed in detail in Chapter 2, had raised issues about the lack of use of models within the literature when studying stress. Since then, there has been a rise in such studies, most notably in relation to ERI. ERI was also found to be the most efficient model with the current group. This has implications for the current Management Standards,

which has a bias towards JDCS; understandably due to its dominance in the literature at the time of development. Had the Indicator Tool been used here, interpretation of data would have been quite different.

Given the complexity of studying stress, this raises a question on how to decide which model to use in any one study. One way to do this would be to devise a method of selection during the initial risk assessment. Another method would be to conduct further research using the NOF Model. Although relatively new, the NOF has considerable flexibility to incorporate known combinations of risk factors (such as ERI and JDCS), as well as individual ones (e.g., bullying). It also has the capacity of including new factors without having to substantially revise the model, as well as the ability to examine new combinations of factors. Although currently untried, it may also have the potential to examine the combined *positive* rather than negative effects of risk factors on stress levels (such as support and teamwork in the current sample). The main issue with the NOF is that of practical application. To measure a wide range of risk factors generally results in long questionnaires (although the methodology does allow for the use of single items instead of full scales). This could be overcome in several ways, for example, further research on the use of single items, commitment from senior management within any organisation conducting an audit to allow staff time to complete surveys or by developing a method for screening content either through an initial risk assessment or measure. Alternatively, with the advent of IT technology, it would be possible to develop an instrument with filter questions. Depending on the response to these questions, the respondent could either move on to the next section or be invited

to complete a fuller set of items to more fully examine the relevant risk factor. Such an instrument would allow for both individual assessment or to aggregate data to a team, division or organisational level. Further research would be needed on reliable filter items in relation to full measures. In order to develop a general purpose instrument, there would undoubtedly be copyright issues if wanting to include established measures.

8.4.2.4 Outcomes

Whilst the level of stress within HMCG (11%) was found to be lower than the latest PWC data (17%), an association with up to 16 different negative outcomes was still found. This demonstrates that even at this level, stress may be harmful. Results were also consistent with findings that anxiety and depression are common consequences of stress (Quick et al., 2001). In Chapter 2, limitations in the range of outcomes found to be associated with the models used in the current study was discussed. The methodology used in this study included both an examination of and found associations with, a wide range of outcomes, from mental and physical health to behavioural factors.

8.4.2.5 Comparison Groups

The issue of availability of reliable data for comparison purposes was discussed in Chapters 1 and 2. Data from the SHAW and PWC studies proved a useful method here and allowed the closest comparison to a UK “norm” possible. Further studies which take into account the annual “norm” published from the PWC would be advantageous.

8.4.2.6 Additional Relevant Issues

Additional, relevant issues included the absence of incident handling as a risk factor from the initial risk assessment. Whilst it appears that there are moderators lessening the impact in this group, it is nonetheless a risk factor. This raises a concern that in some occupations, the reason for joining the occupation may also be a primary risk factor and, therefore, not perceived as such. In the case of HMCG, this is the desire to save lives. This raises issues about initial risk assessments and the potential to exclude important risk factors if they are not brought to attention. It also raises issues about the importance of awareness (such as the impact of shifts on health in the current sample), so that individuals can better monitor their own situation, or that of their immediate colleagues.

Although more data is required, another interesting issue arose with some of the measures, such as Quine's (1999) bullying scale. Depending on the occupation being examined, some items can have both positive and negative meaning. For example, "inappropriate jokes," was initially considered negative and an indication of bullying. However, in the second study, it was found that inappropriate jokes and black humour can also be useful methods of coping. This illustrates the importance of having a good understanding of the context in which one is working when doing so in applied settings.

Finally, following on the debate in the literature described in Chapter 2, further research would be useful on the issue of control variables. In particular, to examine the appropriateness of controlling when examining general population

data versus a contained occupational group, where variables reflect distinct characteristics of the sample and might affect decisions on follow-up interventions.

8.5 CONTRIBUTION

The originality of this study has been to advance understanding of work-related stress in a previously unstudied occupational group. In reference to issues discussed throughout this thesis, further value was added as follows:

1. By examining work stress in HMCG as an organisation, rather than focus on the individual.
2. By establishing the level of perceived work stress in this occupation as 11%, using a validated single stress item, which can be used to compare against the current UK norm and other occupations, if using the same methodology. This is even more useful given the lack of information on relative stress levels across occupations within the literature.
3. By identifying an occupation of relatively lower stress in comparison with the current UK PWC norm, from which there is potential to learn how to reduce stress, not just in relation to risk factors but also the benefits of age and other individual characteristics. In the advent that ERI could be modified, this study has potentially identified a "Beacon of Excellence."
4. Unlike many other studies, this one has examined a wide range of outcomes rather than focusing on one or two, such as CVD.

5. Despite the relatively lower level of stress, this study has found associations with up to 16 negative outcomes, thereby helping to demonstrate that no stress is good.
6. This research examined three models in one study, where previous criticisms have pointed out the lack of using one.
7. The importance of the ERI Model here (and in other published studies), indicates a potential shortcoming of the current HSE Indicator Tool.
8. This study has used and demonstrated the flexibility of the NOF Model, of which there are currently few studies.
9. This study has demonstrated the importance of understanding the context in which one is researching. For example, the desire to save lives meant that potential stress from incidents was not raised as an issue during the risk assessment and some coping methods, which may be seen as negative in most contexts (e.g., use of black humour), may be useful in others (such as handling critical incidents).
10. This study further highlights the benefits of support, good teamwork and training in stress reduction.

8.6 CHAPTER SUMMARY

8.6.1 Summary of Findings and Methodological Issues

A summary of all measures used across this research and the key findings in relation to each objective and hypothesis was provided. Methodological issues discussed included the current validity of the data (given that the first survey was conducted in 2003), data collection issues, length of questionnaires, level of detail in the analysis and timing; the latter being important due to the seasonal differences in workload.

8.6.2 Implications for Further Research: HMCG Specific

The results of the study raised a number of areas for further research specifically related to HMCG. Some examples included: ways in which to moderate the impact of ERI and organisational change, seasonal effects on workload, the levels of depression, effects of shift work and noise.

8.6.3 Implications for Further Research: Wider Context

In the wider context, the value of studying HMCG as a group (rather than at the individual level) was discussed. This included further understanding of negative aspects of stress, as well as the potential to be studied as a “Beacon of Excellence.” This research established a level of stress within HMCG which can be reliably used to compare across occupations in relation to the latest UK (PWC) norm. The level of stress in HMCG was similar to that found in unpublished data on a sample of seafarers. Possibilities for further research on those working in the maritime environment were proposed.

In relation to other emergency services, a number of areas for further research were discussed such as a range of factors for moderating the effects from critical incidents, the value of teamwork and support (including suggestions for training local resources in counselling techniques), as well as the benefits from certain aspects of individual differences (hardiness and age).

Issues in relation to models of stress were also discussed, including the rise in studies on ERI but mostly in relation to the flexibility of the NOF Model, which has the capability to incorporate known combinations of stress in addition to individual ones. For outcomes, despite the relatively lower level of stress, up to 16 different negative effects were found to be associated with the models, demonstrating that no stress is good. This study was unusual in the range of potential outcomes measured.

Additional issues discussed included: the value of the SHAW and PWC data used as comparison groups, the potential for missing risk factors during risk assessments due to the nature of the occupation being studied and potential issues in relation to measuring instruments; again due to the occupation being studied. The chapter ended with a summary of the unique contribution and additional value that this study has brought to the literature.

GLOSSARY

ALSAR	Association of Lowland Search and Rescue
AOM	Area Operations Manager
ASSIA	Applied Social Sciences Index and Abstracts
AWSQ	Ambulance Workers Stressors' Questionnaire
BCRC	British Cave Rescue Council
BSW	Bristol Study Workers
CASOC	Computer Assisted Standard Occupational Coding
CASCOT	Computer Assisted Structured COding Tool
CMC	Coping Methods Checklist
CNIS	Channel Navigation Information Service
COHP	Centre for Occupational and Health Psychology
COSPAS/SARSAT	Satellite Distress Alerting System
CRO	Coastal Rescue Officer
CRS	Coastal Rescue Service
CRTs	Coastguard Rescue Teams
CVD	Cardiovascular disease
CWA	Coastguard Watch Assistant
CWA(A)	Coastguard Watch Assistant, Administration
DfT	Department for Transport
DSM	Diagnostic and Statistical Manual of Mental Disorders
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, 4 th Edition
DOM	District Operations Manager

EDS	Excessive daytime sleepiness
EE	Extrinsic effort
EMBASE	Excerpta Medica Database Guide
ERI	Effort-Reward Imbalance (Model)
GMDSS	Global Maritime Distress and Safety System
HADS	Hospital and Anxiety Scale
HR	Human Resources
HO	Head Office (MCA)
HMCG	Her Majesty's Coastguard
HSE	Health and Safety Executive
ICCS	Information Command and Control System
IO	Intrinsic overcommitment
IOSH	The Institution of Occupational Safety and Health
IRT	Initial Response Team
JDC	Job Demand-Control (Model)
JDCS	Job Demand-Control-Support (Model)
LFS	Labour Force Survey
LMX	Leader-Member Exchange
MoD	Ministry of Defence
MCA	Maritime and Coastguard Agency
MCACS	MCA's Citizens' Charter Code of Practice
MF	Medium Frequency
MFDSC	Medium Frequency Digital Selective Calling
MRC	Mountain Rescue Council of England and Wales

MRCC	Maritime Rescue Co-ordination Centre
NA	Negative affectivity
NAVTEX	Navigational Safety Text
NHS	National Health Service
NI	Northern Ireland
NOF	Negative Occupational Factors (Score)
NS-SEC	National Statistics Socio-economic Classification
OCP	Occupational Culture Profile
ODIN	Occupational Disease Intelligence Network
ONS	Office for National Statistics
OSI	Occupational Stress Indicator
PAF	Postcode Address File (Royal Mail)
PASW	Predictive Analytics SoftWare
PCS	Public and Commercial Services Union
PDS	Post-traumatic Diagnostic Scale
PSS	Perceived Stress Scale
PTSD	Post-traumatic stress disorder
PWC	Psychosocial Working Conditions (Survey)
QMP	Quality Management Procedures
RAF	Royal Air Force
RNLI	Royal National Lifeboat Institution
SAR	Search and Rescue
SARDA	Search and Rescue Dog Association
SHAW	The Bristol Stress and Health at Work Study

SIC	Standard Industrial Classification
SOC	Standard Occupational Classification
SOSMI	Surveillance of Occupational Stress and Mental Illness
SPSS	Statistical Package for the Social Sciences
SRR	Search and Rescue Regions
SS	Social support (from JDCS)
THOR	The Health and Occupation Reporting network
TMX	Team-Member Exchange
UKSARR	UK Search and Rescue Region
VHF	Very High Frequency
VHFDSC	Very High Frequency Digital Selective Calling
WL	Watch Leaders
WM	Watch Manager
WO	Watch Officer

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APPENDICES

Appendix 1

Paper presented to the Maritime and Coastguard Agency Board by the Personnel Department to conduct survey on stress (September 2000)

Survey to Establish Stress Levels Within the MCA

Introduction

A Treasury review of ill health retirement in the public sector has identified mental illness, of which chronic depression and anxiety are the main components, as the commonest cause for retirement. The review recommends that 'Employers should take steps to promote positive health by identifying and reducing sources of stress through stress management programmes.' This review and its recommendations link in with public sector absence management policies.

A recent Health and Safety Executive study confirms that stress is the second largest occupational health problem in Britain. In 1999 the Health and Safety Commission issued a discussion document to encourage debate about to what extent stress at work should be regulated. Although they have decided not to introduce an Approved Code of Practice at the moment they are determined that action should be taken to reduce the amount of occupational ill health caused by work-related stress.

Although we have distributed leaflets to all staff about Stress at Work this should only be seen as an interim measure. As with other workplace hazards, stress should be the subject of a risk assessment and be dealt with by eliminating it where reasonably practicable. All potential causes of stress need to be considered and these can be identified by using a questionnaire to determine staff attitudes to job content and work organisation.

The number of MCA staff who have cited stress as a reason for sickness during 1999 are 17 and of these 8 have since left the Agency. However this figure does not include the reporting of physical signs such as fatigue, headaches or stomach upsets which may be attributed to stress. This means we are unaware of the true figures and do not understand the effect of stress related absences on our business performance.

The T.U.s have been pressing for over a year for a dedicated stress survey to be conducted as they believe a significant number of their members are affected. The staff attitude survey (1999) did not address the issue in a way in which any conclusions could be drawn. An assessment of the true figures would therefore give all sides an accurate picture from which to work.

Process

To assess the extent of the problem amongst staff we need to conduct a survey. This could be done by way of a simple sample survey, by choosing particular locations or a random selection of staff, however this approach may easily be misconstrued. If we wish to show our commitment to health and safety risk assessment and the stress issue we should adopt an Agency wide policy. We also need to consider whether we would include auxiliaries within the scope of the survey. This would increase the cost and complexity of the survey and would need to be weighed against the benefits.

Secretariat and Planning is in the process of setting up a call-off contract for staff and customer surveys and the successful company could be asked to undertake the survey on our behalf. To allow time for the contracts to be set up the earliest this could take place would be the autumn. We would expect a relatively simple survey to be completed to provide a benchmark of current stress levels within the MCA.

We would then need to act upon the recommendations made by the contractor following analysis of the results; this is likely to commit us to regular follow up surveys.

Benefits

Studies have shown that reduced workplace stress leads to improved health, reduced sickness absence, lower staff turnover, increased productivity and better relationships within the organisation. This may help the Agency meet its absence reduction targets of 30% by 2003.

Recommendations

The Board is asked to agree that a stress survey covering all staff is carried out.

Personnel
September 2000

Appendix 2

Issues Identified During Pre-Surveys Risk Assessment

DEMANDS		
Topic Area	Issues	Consequences
Work pattern: Part-time working	Managers reluctant to recruit on this basis	- Perceived as difficult to manage due to demands of job, shifts, etc. - Reduces the pool of potential recruits - Can provide additional pressure to those working part-time
Work pattern: Shift work	Shift allowance equivalent to 25% of pay	- Many staff do not want to give up working shifts as they don't want to lose the allowance - Little incentive to get promotion for some as shift allowance and overtime payments mean that Ops Room staff can earn more than their managers
Work pattern: Shift work	Amount of time off	- Many staff don't want to give up working shifts as they don't want to lose the time off (366 hours plus public holidays and privilege days) - Seen by some as an attraction to the job <i>(Time off appears to serve as a psychological compromise for low salary)</i>
Work pattern: Shift work	Shift pattern itself – 2 x 12 hr days, 2 x 12hr nights, 4 days off Some Stations work 7-7, others 8-8 At London CG, shift pattern is 4 x 12 hr days, 4 days off, 4 x 12 hr nights 4 days off	- Affects home/life balance - Some staff not resting before start/after finishing shifts - Some staff go home after night shift and look after children/start doing housework/shopping, etc. - Difficult to rest after night shift for those with young families - Disruptive to social life as unable to maintain outside activities - Generally difficult to plan or commit outside of work - Easy to become over tired - Supported by some as they do not want a Monday to Friday work pattern - Encourages second jobs due to time off - Can be problematic for those whose partners do not work shifts - Can be difficult to book time off for special events, specific dates for leave - Difficult to juggle watch keeping with school holidays – some single mothers in CG struggle to juggle childcare - Easier for those who have experienced working shifts before (e.g., working for Navy) - Family support crucial for those with young children

DEMANDS		
		▪ Reliance on adrenalin to keep going through an incident at night ▪ MCA provide kitchen and rest room facilities at Stations ▪ Some find the nights difficult to work ▪ 12 – 3 am reported as most difficult hours to work
Work pattern: Shift work	History of shift patterns – 6, 8 and 12 hour shift patterns have been worked	▪ Maybe more difficult to persuade staff to change to a new system ▪ Those who have experience of 6 and 8 hour shifts maintain that 12 hour shifts are better ▪ Job redesign maybe the way forward rather than change in shift pattern
Work pattern: Shift work	Many have previous experience of working shifts(e.g., Navy, merchant navy backgrounds)	▪ Therefore seen as the 'norm' ▪ Less incentive to change ▪ Some of those who have not had previous experience are teased about the lack of "sea-time" that they have
Work pattern: Shift work	Overtime pay	▪ Seen as a bonus, particularly overtime pay for bank holidays ▪ Less incentive to change ▪ Used to supplement income by some/some rely on it to make up pay
Workload: Staffing Levels	Pre-specified minimum manning levels	▪ Perceived as "written in stone" from Southampton ▪ Fear of losing staff if any suggestion from Station that this could change ▪ Feeling that there is a lack of flexibility to introduce new initiatives due to the minimum manning levels ▪ Some staff are working overtime to make up minimum manning levels where there are staff vacancies, when they should be resting ▪ Some staff are acting up for positions that they are not qualified for in order to provide minimum manning level cover ▪ Managers feel under pressure to make sure that the Ops Room is manned to minimum manning levels – encourages overtime working for some ▪ Perception by some that there are too many people working nights, particularly in winter but fear of losing staff if this issue is raised ▪ Some managers unaware that they can do risk assessments on the situation if they feel it should change ▪ Conducting a risk assessment to change manning levels requires a form to be filled in – "CGs do not like filling in forms"
Workload: Staffing Levels	Staff vacancies at Stations	▪ Some staff working overtime when they should be resting leading to a reliance on "the team" and adrenalin to keep them going through incidents (amount of overtime worked varies between Stations)

DEMANDS		
		- Some staff acting up for positions that they are not qualified for - Some staff sent to other Stations to provide cover - Poor perception of HR as not providing adequate support at some Stations with longer term vacancies - Insufficient "slack" at some Stations - Some staff reluctant to work overtime - In some instances, some Watches see themselves as "taking risks" or "having to manage" as unable to always provide cover - Difficult for some staff to get leave due to shortages
Workload: Staffing Levels	Recruitment pool – historically from maritime background, getting smaller	- More difficult to attract new staff from maritime background - Affects training requirements - Potentially affects quality of staff on entry - Potential for skills gap to emerge
Workload: Staffing Levels	Promotion system – staff are promoted before passing relevant exams	- Demotion/loss of job for those who fail exams - Reduction in salary for those who fail exams - De-motivation for those who fail exams - Embarrassment in front of colleagues (has led to sick leave due to stress) - Affects confidence and morale of those who have failed exams - Additional pressure on management support
Workload: Staffing Levels	Promotion system – usually involves moving	- No incentive to advance unless prepared to move - Reluctance for some who may be suitable to apply for promotion - CG have to move family/away from family - Disruptive to home/social life - Shortage of staff at certain levels, e.g., Watch Officers (WO is a mobile grade so go where there is a vacancy) - Some posts with no applicants - Movement between jobs could mean losing out on allowances
Workload: Staffing Levels	Becoming more senior can mean less pay due to shift allowance	- Less incentive to apply for promotion - Dissatisfaction as some managers not working 9-5 as they should, coupled with loss of shift allowance leads to job dissatisfaction and frustrations
Workload: Staffing Levels	Sick cover/meal breaks/annual leave	- Some Stations run with what staff they have when someone is sick, as try not to ask those who have just worked a shift - Some Stations have long term sick – can take up large percentage of overtime budget

DEMANDS		
		- Increased overtime worked by some to cover sickness - Some sickness absence due to stress (examples found of domestic and work related reasons) - Some staff working considerable amounts of overtime to cover staff shortages
Workload: Staffing Levels	Differing numbers of District Managers	- Affects workload - Affects job satisfaction - Affects stress levels
Workload: Staffing Levels	Lack of experienced staff	- Unqualified staff act up for jobs - Extra pressure during incidents - Increased potential for error
Workload: The job itself	Increase in management workload due to restructure	- Managers working whatever hours are required - No lunch breaks - Inability to sleep - Feeling of hopelessness - Can end up not having weekends off if need to attend meetings - Sector Managers working 60 hours a week regularly - no-one to deputise, lots of admin., visits to other rescue parties, lots of paperwork, reactive instead of proactive
Workload: The job itself	Increase in paperwork/admin.	- A major source of pressure for many - CG feel that they only produce statistics to justify their existence - Less time for potentially more useful CG work - Qualified staff doing work which could be done by less experienced, lower paid staff - Poor utilisation of staff - Could affect ability to introduce incident prevention work - CG find paperwork (e.g., end of month returns) boring and therefore stressful - Feeling that statistics have to be generated to justify existence - An area to be looked at if further change such as incident prevention is to be introduced - Lots of duplication/inefficiency - Seen as preventing ability to get involved in incident prevention as too time consuming
Workload: The job itself	Amount of time spent on routine work	- An area to be looked at if further change such as incident prevention is to be introduced - Large amount of time spent on routine work - An opportunity for job redesign
Workload: The job itself	Workload increase for some jobs due to staff vacancies	- No applicants for some posts - Conflicting tasks and demands for Ops Rooms staff

DEMANDS		
		▪ Affects morale and motivation ▪ Increased stress
Workload: The job itself	Low number of incidents at smaller Stations	▪ Stress due to boredom ▪ Increase in activities to relieve boredom which may or may not be acceptable to management, e.g., OU degrees, building models
Workload: The job itself	Operations room – volume and type of incidents	▪ Varies between Stations – some Stations, Officers required to manage several incidents at one time, others have fewer incidents but maybe more complex or will take longer to complete ▪ Feelings of inadequacy when waiting for boats to get to scene etc., can be stressful awaiting outcome – feeling of uselessness ▪ Unspoken hierarchy and status of incidents between Stations
Workload: The job itself	One-stop-shop service at Swansea	▪ Many calls referred to Southampton ▪ Additional staff achieved by taking this on ▪ Reluctance to give up due to additional staff acquired ▪ Handling routine calls boring for some ▪ Many who call in do not recognise the name MCA
Workload: The job itself	Seasonal variations in number of incidents to deal with	▪ Some will be working to capacity during April – September ▪ Less busy October - March
Workload: The job itself	Lack of predictability of incidents	▪ Affects the ability to plan incident prevention activities (PRs) ▪ Affects need for minimum manning levels
Workload: The job itself	Lack of resources/poor management of resources	▪ Greater difficulty in managing some areas, e.g., Scotland, as geography of area can lead to difficulties in getting around ▪ Can result in delays ▪ Mobile phones don't work in some areas ▪ Can take 10 days to cover some incidents in the Atlantic ▪ Get involved in other things – hospital transfers, court cases, media involvement ▪ Reliance on volunteers ▪ Logistical variations between Stations ▪ Some concerns about ability to respond in some areas if more than one major incident ▪ Some concern over expensive resources not being properly utilised, e.g., patrol boats in Scotland
Workload: The job itself	Geography/logistics	▪ Geography of area can mean difficulties getting around leading to greater pressure on resources in some areas due to logistics (e.g., Scotland) ▪ Mobile phones don't work in some areas

DEMANDS		
		- Can take 10 days to cover some incidents in the Atlantic - Affects skills required to deal with the type of incidents at different Stations
Workload: The job itself	Lack of admin. support for Sector Managers	60 hour weeks - Feelings of hopelessness - Low morale - Inefficiency - Affects relationships with auxiliaries and peer groups (i.e. not enough time to devote to)
Workload: The job itself	Local knowledge	- Seen by some as crucial to the job and therefore difficult with regards to introduction of change with regards to pairing of Stations – a major issue for some - Seen by others as not as crucial - At London, attempts being made to programme local knowledge into computer - First 10 mins. in taking a call seen as being critical - A potentially major issue to address for introducing change - Some areas maintain that there are all sorts of anomalies which require local knowledge when dealing with SAR - A major concern regarding the pairing of Stations
Workload: The job itself	Variation in tasks between Stations	- Such as the number of aerals to listen out to, skills required (e.g., radar) - A major concern regarding pairing. - Different skills required (e.g., radar at Dover) - Different incidents
Workload: The job itself	Maritime background – reliance on recruitment of those with experience	- Reliance on other organisations to have completed training - Both good and bad – lots of good experience but a perpetuation of behaviours by some not appropriate to MCA
Workload: Incident Prevention	Desire for CG to be involved in more incident prevention work without additional resources	- Difficult to release staff whilst working to minimum manning levels - May require job redesign - Problems with staff working shifts, limits amount of time available - Lack of flexibility under existing work pattern - Not all staff suitable - Not all staff want to be involved in actual visits - Sector Manager concerns that without them co-ordinating effort, Ops Room staff may undo some of the good work that they have done, simply because Ops Room staff not up to speed with the various “politics” and understanding of situations

DEMANDS		
Workload: Incident Prevention	Lack of co-ordinated effort/no national strategy	- Stations conduct their own programme of incident prevention - Current activities not co-ordinated or logged into central database for analysis - No records to establish exactly the amount and type of activity currently undertaken
Workload: Incident Prevention	Under-utilised effort	- Examples found of staff who have researched and made provision for incident prevention activities but not able to carry out due to minimum manning or lack of opportunity for travel and subsistence to be paid - Inefficiency - Staff who wish to be involved see incident prevention as part of the job as standard and feel that this has been taken away from them and substituted by increased paperwork
Workload: Time Recording System	Inefficient time recording system – not suitable for CG	- Lieu time not recorded - Inability to conduct analyses to appropriately assess hours worked - Long hours worked go unnoticed - People “hate” filling them in - Some people filling in forms as they think they should be filling them in - Incorrect assumptions made on the basis of the information provided - Seen as a chore - Provides additional pressure
Work Environment: Call Centre	Concept of CG working in Call Centre environment	- Seen by some as the way forward and possible if planned correctly – suggestions on compartmentalising staff to work on certain areas of country therefore allowing them to build up relevant knowledge - Some see working in Call Centre environment shared with other emergency services as possible future scenario - Seen by others as not possible – major reason given being issue of local knowledge - Opportunity for job redesign - Concern over possibility of job losses - Increased union interest

CONTROL		
Topic Area	Issues	Consequences
Job Security	Job insecurity	- Mainly due to Station closures, introduction of ICCS and lack of consultation from HO - Affects morale
On-call rota	On call arrangements for managers (£2.5k fixed allowance)	- For some this is now 1 in 2 - Can be difficult to arrange holidays - Affects home/life balance - Some can find themselves on call for a month or more if covering for holidays or sickness - Some end up doing risk assessments on social activities - Resentment for affect on home and social life and lack of financial compensation - Increased stress for the more conscientious
Shift work	Ability to sleep on the job – allowance of 1.5 hrs break	For some, ability to sleep for 1.5 hrs is crucial to getting them through the night shift
Shift work	Regularity – staff know what their working hours will be in advance	Some staff enjoy the regularity of knowing their work hours in advance (particularly regarding bank holidays) and is therefore seen as an incentive
Staffing	Sick cover/meal breaks/annual leave	- Reports that at some Stations, can be difficult to get meal breaks - Reports that at some Stations, can be difficult to get annual leave when wanted

SUPPORT		
Topic Area	Issues	Consequences
Incidents	Incident debriefing	▪ Not considered good enough by some – lack of follow up ▪ Poor take up of counselling available
Management Training	Lack of management training	▪ Varying management styles across the CG ▪ Number of different cultures across the CG ▪ Affects staff performance and morale ▪ Additional pressure for managers trying to cope with demands
Management Style	Variety of management styles across the CG	▪ Prevalence of different cultures ▪ In some instances, management style described as 'bullying' ▪ Affects morale ▪ Increased union interest ▪ Staff feel undervalued ▪ Unforgiving at some Stations ▪ Problems with some staff getting meal breaks/booking leave ▪ Problems when staff have family problems ▪ Lack of praise and reward ▪ Lack of willingness to get involved "just doing my job" ▪ Increased sick leave ▪ Low morale
Shift work	Lack of advice on the effects of working shifts/lack of encouragement to undertake health checks/lack of health monitoring	▪ Staff indulge in behaviours potentially detrimental to health ▪ Increased potential for health issues ▪ Ignorance of the potential for health issues – some staff believe that working shifts will not affect them

SUPPORT		
Topic Area	Issues	Consequences
Training	The training system itself	▪ Perceived as not fitting with Station needs/the way in which Stations run ▪ Perceived as needing to be updated – creates inefficiency in the Ops Rooms ▪ Substantial part of training conducted on the job with little or no formal support from training school ▪ On-job trainers do not always have sufficient time to spend with those being trained ▪ Some on job trainers feel that they have not had sufficient training to train ▪ For some Stations, too many staff undergoing training ▪ Little quality control ▪ No visits from Training School out to Station ▪ Training School perceived as not providing enough support out to Stations ▪ Wide variety of subjects to learn, e.g., SAR, media skills, surveying, vessel regulations, satellite, computer skills, first aid, incident management ▪ No training on how to deal with fatalities ▪ Some dissatisfaction with Exam Board (e.g., poor feedback, support and understanding with those who have failed exams) ▪ Some books can't take home – have to study at Station ▪ Quality of some trainers perceived as poor ▪ Some elements of training perceived as irrelevant/not tailored to needs of Stations ▪ Some trainers perceived as having a tendency to teach people how to push buttons rather than develop full, integrated knowledge ▪ Previously basic training covered in 2 weeks – not any longer – seen as a backward step ▪ Older staff need more training on computers ▪ Reliance on those training on the job to use experience learned elsewhere ▪ Too much for people to take in one go – would prefer a modular approach ▪ Loss of job associated with not passing exams ▪ Lack of understanding from Training School for those who have too much to do when out at Stations/understaffed ▪ CWA training not to a high level – person doing training ends up living life of the person they are training ▪ Reassess knowledge needed – CWA exams – more knowledge than needed

SUPPORT

Topic Area	Issues	Consequences
Training	Substantial amount of training completed on the job	▪ Many staff have to carry out their job and train at the same time ▪ Staff try to study in early hours of the morning/late at night ▪ Some staff have to carry out their job, train and try to cover where short of staff ▪ Pressure on home life ▪ Pressure on those trying to provide on the job training as well as trying to do their job – often the trainer has an important decision making role ▪ Some staff try to conduct training whilst listening out on Channel 16 ▪ Difficult to concentrate ▪ Difficult to maintain consistency ▪ Contributes to failure rates ▪ Extra pressure on those working on shifts where staff vacancies as end up trying to cover as well as do their job and train ▪ Affects teamwork and efficiency in Ops Room ▪ Those completing the training can end up “living someone's life for them”
Training	Number of staff undergoing training	▪ Extra pressure on existing staff ▪ Difficult to devote enough qualified staff to help train ▪ Stress associated with incidents greater
Training	Range of knowledge required	▪ Difficult to learn under existing system ▪ Contributes to failure rates ▪ Less attractive for staff to apply for ▪ Stressful
Training	Completion of Task Book/supervised by local management	▪ Completed on the job ▪ Wide variation in help/supervision provided between Stations ▪ Difficult to maintain consistent standard ▪ Inconsistency of standards ▪ Lack of adequate guidance at Stations ▪ Lack of support from Training School ▪ Seen by some to contain lots of irrelevant information ▪ Person doing the training ends up living someone else's life

SUPPORT		
Topic Area	Issues	Consequences
Training	Rigidity of exam system (pass/fail, intense for fortnight)	▪ Stressful ▪ Demand for a more modular based approach ▪ Staff failing ▪ Potential for skills gap ▪ Some staff put off by failing and do not try again ▪ Demotivating for those who subsequently lose promotion ▪ Has led to sick leave due to stress in some cases ▪ Lack of faith in Training School
Training	Lack of training for those providing on job training	▪ Quality of training variable ▪ Affects staff morale, especially for those who fail exams ▪ Inconsistent standards
Training	Poor at PDP	▪ Poor at identifying training needs ▪ Poor at managing expectations ▪ Too many staff undergoing training whilst trying to do the job
Training	Many staff have come from maritime background	▪ Reliance on knowledge learned before ▪ Resource pool for new recruits getting smaller ▪ Leading to skills gap ▪ Training has gap due to this – basic training provided and paid for by previous employer for some
Training	Location of Training School - south	▪ Lots of travel for those from north of country ▪ Preference for more centralised facility or one in south, one in north

SUPPORT		
Topic Area	Issues	Consequences
Salary and Benefits	Perceived low pay, particularly with lower grades	▪ For some areas of the country, difficulty in matching salary to ability to obtain mortgage ▪ Some staff struggle to meet mortgage payments ▪ Some staff take second jobs out of necessity; some in preparation for earning extra money during retirement ▪ Those who take second jobs may not be resting as they should be when off shifts ▪ Prevents some people from going for promotion (i.e., responsibility not seen as equating to pay, moving to management grades could mean loss of allowances) ▪ Difficult to attract new recruits ▪ Frustration with promotion system as the only method to obtain a higher salary ▪ Staff have to be prepared to move to get promotion, potentially leading to stress where families do not want to be uprooted ▪ High turnover rate, e.g., for CWA grades ▪ Some staff have to be put up in hotels and drive in from their homes due to house prices not equating to salary
Salary and Benefits	Tied to Civil Service regulations	▪ Difficult to make change quickly ▪ Complex bureaucracy to negotiate
Salary and Benefits	Perceived disparity in pay	▪ This is seen in particular, with regard to other emergency services, i.e., that the CG are paid less ▪ Also some disparity perceived between grades within the CG ▪ Unions conduct studies comparing MCA salaries across government departments
Salary and Benefits	Navy pension	▪ Some experienced staff state that they would not be able to remain in the job unless they had their Navy pension to supplement their CG salary ▪ Recruitment pool from Navy getting smaller therefore cannot be relied upon for future
Salary and Benefits	Overtime pay	▪ No overtime pay for Sector Managers who work long hours per week ▪ Leads to frustration and low morale
Salary and Benefits	Benefits	▪ Benefits received overshadowed by low basic salary, therefore, less appreciated
Salary and Benefits	General note	▪ As the CG are asked to do more/take on more responsibility, etc., the salary issue becomes increasingly more important and increasingly affects job satisfaction

RELATIONSHIPS		
Topic Area	Issues	Consequences
Head Quarters, Southampton	Seen as policy making without <i>providing practical backup for</i> implementation	- Stations sceptical of new initiatives - Stations left wondering how to tackle issues - Stations feel unsupported - Stations feel that Southampton do not understand the reality of the day job - Creates a "Southampton and us" situation
HR	Poor perception of HR – seen as not providing necessary support with regards to training and recruitment	Resentment due to knock-on effects of staff shortages, training issues
	Shift work	Working shifts makes it difficult for CG to speak to HR should they need to do so (HR 9-5, Mon-Fri)
Teamwork	Teamwork in Operations Room	- Seen by some as crucial - Allows those who are fatigued through working overtime or not resting properly to be supported by colleagues - Important when lots of incidents – number of incidents at one time varies between Stations - Puts those undergoing training under pressure (i.e., training vs. helping out colleagues) - Used for consultation on whether incidents should be called off

ROLE		
Topic Area	Issues	Consequences
Management	Focus of job has changed	▪ Perception that this was previously SAR, with focus changed now to all man-management, budgets and admin. ▪ Affects staff performance and morale ▪ Increased hours worked to meet demands of managing Ops Room, reporting, meetings with various committees, etc. – job does not fit 9-5, Mon-Fri framework
Sector Manager Role	Doesn't fit 9-5, Mon-Fri and lack of support to conduct role	▪ Causes stress and distress ▪ Leads to long hours ▪ Pressure on home and work-life
Incident Prevention	Requirements for increased incident prevention activities without additional resources	▪ Puts additional strain on existing resources ▪ Lack of co-ordinated approach

CHANGE		
Topic Area	Issues	Consequences
Benefits of change	Better explanation of benefits of change - not explained fully - CG need to be assured of benefits of change and that no loss to financial income	- Resistance to change - CG feel that they always lose out when change is implemented
Consultation	Lack of consultation	- Fear that jobs will be lost - Increased union involvement - Concern over potential poor management decisions - Staff feel that things are kept hidden by management - Uncertainty is a major source of pressure for CG - Inundating people with information is used as a substitute for good consultation
Organisation structure	Many changes in organisation structure. New organisation structure – for some they get a bit more money but double the responsibility	- Increased workload - For some, a feeling of hopelessness - Concern about quality of work output - Lower job satisfaction - Increase in stress levels
Pace	Too much change – pace of change	- CG feel need for period of stability - Staff “tired” of initiatives - CG cynical about change as they feel they have always lost out - CG more resistant to more change
Technology	Introduction of ICCS technology	- Perception that posts are disappearing as a result of introduction - Change and relearning for some is stressful - Older staff resentful at the lack of basic Windows/computer skills and typing training provided - Provides opportunity for job redesign - Provides opportunity for the CG to become more flexible in working with other Stations

CHANGE		
Topic Area	Issues	Consequences
Stations	Pairing of Stations	▪ Fear that jobs will be lost – seen as “thin end of the wedge” by some ▪ Change and relearning for some is stressful ▪ For some, a fear of greater workload ▪ For some, concern about local knowledge issues ▪ Concerns that Southampton will make the wrong decisions on which Stations should be paired – that busy Stations will be paired with busy Stations, that Stations requiring additional specialist skills will be paired with Stations whose staff do not possess the experience or skills, e.g., use of radar at Dover
Stations	Handling of Station closures	▪ History of Station closures mean that there is a constant, underlying fear that jobs will be lost ▪ Scepticism over new initiatives ▪ Increased union interest

CULTURE		
Topic Area	Issues	Consequences
Lack of consistency	Number of varying cultures across the Stations	▪ More difficult to engage staff in new initiatives ▪ Different management styles
Head Quarters, Southampton	Seen as policy making without providing practical backup for implementation	▪ Stations feel unsupported ▪ Stations feel that Southampton do not understand the reality of the day job ▪ Creates a "Southampton and us" situation

Appendix 3

Master Copy of Letter Sent to Coast Guard Organisations

Postal Address

Telephone Number

Fax Number

Email Address

January 2002

Chief of MRCC Riga
MRCC Riga
Meldru 5a
Riga
LV-1015
LATVIA

Dear Sirs

Re Research Enquiry – Coast Guard / Off-Shore Rescue

My name is Sue Kingdom and I am a business consultant currently working with the Maritime and Coastguard Agency in the UK on various projects. I have also just registered to complete a PhD research degree and am interested in stress in off-shore rescue working. I am trying to find out if anyone has conducted any research in this area or with the Coast Guard in general; especially in the area of stress of the health aspects of work.

You may have received an email from me recently. If you did and have already replied, please ignore this letter.

I would be grateful for any information that you can provide – even if you only reply to say that you do not know of any such research being conducted, or send me your thoughts on topics of research in this area, if you have any views. Please reply to me at the email or address above if you have any information.

Thanks in anticipation of your help.

Regards

Sue Kingdom
CPsychol AFBPsS, MMRS

Appendix 4

Pre Survey Letter to all HMCG Staff (Study 1)

Dear Colleague

Re Health and Safety at Work Survey 2003

An opportunity has arisen for those of us working in SAR to take part in a study concerned with the impact of working life on our health, sleep, home life and accident and injury rates. The study is being conducted by Sue Kingdom, a PhD student from Cardiff University. Sue also works for Amey plc, the organisation, which is currently contracted to the MCA to carry out survey and research work. We can take part by completing the attached questionnaire.

The questionnaire has been designed following interviews conducted with CG staff at Swansea, Clyde, London, Thames and Solent Stations. The PCS Union has also been consulted and has given its support. A very similar questionnaire is being given out to employees via the TUC, UNISON and RCN unions. The questionnaire follows on in more detail from the Stress Survey and the BQS review which was conducted in 2001; it also fits in with current research on stress in the workplace published by the HSE.

Whilst the questionnaire may take a little time to complete, it is very comprehensive and will provide us with an in-depth assessment on your views on a wide range of issues, which affect us working in the Agency. **We are therefore writing to ask everyone working in SAR to take time to complete the questionnaire.** The results of the study will provide a very important input on the way in which we work at the Agency in the future. As you are aware, there are numerous demands placed upon us and this is an opportunity to provide information on how we might best make changes to ensure that there is a balance between home and work life.

Please be assured that the questionnaire is completely confidential. Any results fed back to the Agency **will not** be attributed to any one individual. The questionnaires **will not** be returned to the Agency. A pre-paid envelope is provided for you to return your questionnaire direct to Cardiff University. **Please complete the questionnaire by 30 April 2003.**

If you have any concerns or queries, please feel free to contact Sue Kingdom direct on 01291 628855 or email sue.kingdom@amey.co.uk.

Many thanks for your co-operation.

John Astbury

Alison Thorne

STRICTLY CONFIDENTIAL

Health & Safety at Work Survey 2003

Health & Safety at Work Survey

About this Questionnaire – General Instructions

This questionnaire is concerned with the impact of working life on health, sleep and accident and injury rates. The questionnaire is strictly confidential. No individual will be identified with any of the research findings. Your identity and responses to the questionnaire will be completely protected.

Please read each question carefully and mark the response that BEST reflects your knowledge or feelings. Do not spend a lot of time on each one, your FIRST answer is usually the best. Please make sure you mark all answers in the space provided.

Once you have completed the questionnaire, please return it to us in the envelope provided.

Please remember that we are interested in your experiences of your work environment and our conclusions depend on your accuracy.

If you have any queries about the study or the questionnaire, please contact Sue Kingdom on 01291 628855 or email sue.kingdom@amey.co.uk. Please complete it at your earliest possible convenience but no later than the date on the covering letter.

Thank you for your co-operation.

SECTION 1: ABOUT YOU AND YOUR JOB

We would like to ask you some questions about you and work.

About You

1.1 a. What is your job title?

Regional Director/Manager	☐ 0	Sector Manager	☐ 3	CWA	☐ 6
AOM	☐ 1	Watch Manager	☐ 4	Other	☐ 7
DOM	☐ 2	Watch Officer	☐ 5	(please specify)	

b. Which Area /Region of the Agency do you work in?

HQ ☐_0 Scotland and NI ☐_1 Western ☐_2 Eastern ☐_3

c. Which District/Station/Office do you work at?

Aberdeen	☐ _0	Dover	☐ _4	Humber	☐ _8	Portland	☐ _12	Stornoway	☐ _16
Belfast	☐ _1	Falmouth	☐ _5	Liverpool	☐ _9	Shetland	☐ _13	Swansea	☐ _17
Brixham	☐ _2	Forth	☐ _6	London	☐ _10	Solent	☐ _14	Thames	☐ _18
Clyde	☐ _3	Holyhead	☐ _7	Milford Haven	☐ _11	Southampton	☐ _15	Yarmouth	☐ _19

d. Is the job full-time or part-time? (Full-time = 30 hours per week or more)

Full-time ☐₀ Part-time ☐₁

e. Is your job permanent, temporary/casual or fixed contract?

Permanent $\square_0$ Temporary/casual $\square_1$ Fixed contract $\square_2$

f. Excluding Auxiliaries, which one of the following best describes your current position at work?

(* = Total number, not just those who report directly to you)

Manager (25+ employees*) ☐_0 Manager (less than 25 employees*) ☐_1 Supervisor ☐_2 Employee ☐_3

g. Approximately, how many Auxiliaries are you directly responsible for? (please state number)

h. Please give the date you started with the MCA: (Month/Year)

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i. In this job, how many hours per week do you work

on average (including overtime, whether paid or unpaid)? (number of hours)

11

j. What is your work pattern?

Fixed hours $\square_0$ Flexi-time ☐Shift work ☐2

k. Are you currently undergoing training?

Yes ☐ ₁

No ☐_0

I. Prior to working for the MCA, were you employed in a maritime related job?

Yes ☐

No ☐_0

m. Do you have any other paid jobs?

Yes ☐

No ☐_0

Shift Workers ONLY

n. What is the length of your current shift?

6hrs ☐0 8hrs ☐1 12hrs ☐2 Other (please specify) ☐3

o. How long have you worked shifts in this employment? (Years/Months)

/

p. How long have you worked shifts in any previous employment? (Years/Months)

/

q. Are you aware of any health implications for working shifts?

Yes ☐1 No ☐0

r. Do you get any health screening or advice from your employer about working shifts?

Yes ☐1 No ☐0

On Call Workers ONLY

s. Are you on call out of normal working hours (i.e. 9-5)?

Yes ☐1 If yes, how often?
No ☐0

Your job characteristics

The following questions are designed to provide a quick overview of your job characteristics. There are two parts to each question. Please tick the most appropriate box in each case.

1.2 a. Do you work long or unsociable hours (shift work, night work, on call, unpredictable hours)?

Never ☐0 Rarely ☐1 Sometimes ☐2 Often ☐3 Very often ☐4

b. Do you find your working hours stressful?

Not at all ☐0 To some extent ☐1 A great deal ☐2 Not applicable ☐3

1.3 a. Do you work in an environment where you are exposed to noise or fumes/dust or have to handle potentially harmful substances?

Never ☐0 Rarely ☐1 Sometimes ☐2 Often ☐3 Very often ☐4

b. Do you find your work environment stressful?

Not at all ☐0 To some extent ☐1 A great deal ☐2 Not applicable ☐3

1.4 a. Do you have a demanding job (have to work fast, intensively etc)?

Never ☐0 Rarely ☐1 Sometimes ☐2 Often ☐3 Very often ☐4

b. Do you find your job demands stressful?

Not at all ☐0 To some extent ☐1 A great deal ☐2 Not applicable ☐3

1.5 a. Do you have a choice in what you do or how you do your job?

Never ☐0 Rarely ☐1 Sometimes ☐2 Often ☐3 Very often ☐4

b. Do you find your lack of choice in how you do your job stressful?

Not at all ☐0 To some extent ☐1 A great deal ☐2 Not applicable ☐3

1.6 a. Do you have a great deal of say in decisions at work?

Never ☐_0 Rarely ☐_1 Sometimes ☐_2 Often ☐_3 Very often ☐_4

b. Do you find your lack of involvement in decisions at work stressful?

Not at all ☐_0 To some extent ☐_1 A great deal ☐_2 Not applicable ☐_3

1.7 a. Do you have a lot of support at work (from colleagues and superiors)?

Never ☐_0 Rarely ☐_1 Sometimes ☐_2 Often ☐_3 Very often ☐_4

b. Do you find your lack of support at work stressful?

Not at all ☐_0 To some extent ☐_1 A great deal ☐_2 Not applicable ☐_3

1.8 a. Do you have constant pressure due to a heavy workload?

Never ☐_0 Rarely ☐_1 Sometimes ☐_2 Often ☐_3 Very often ☐_4

b. Do you find your workload stressful?

Not at all ☐_0 To some extent ☐_1 A great deal ☐_2 Not applicable ☐_3

1.9 a. Is work often 'on your mind' when you are at home?

Never ☐_0 Rarely ☐_1 Sometimes ☐_2 Often ☐_3 Very often ☐_4

b. Do you find constantly thinking about work to be stressful?

Not at all ☐_0 To some extent ☐_1 A great deal ☐_2 Not applicable ☐_3

1.10 a. Do you receive the respect you deserve from superiors and colleagues?

Never ☐_0 Rarely ☐_1 Sometimes ☐_2 Often ☐_3 Very often ☐_4

b. Do you find this lack of respect at work stressful?

Not at all ☐_0 To some extent ☐_1 A great deal ☐_2 Not applicable ☐_3

1.11 a. Do you feel your efforts and achievements at work are appropriately rewarded?

Never ☐_0 Rarely ☐_1 Sometimes ☐_2 Often ☐_3 Very often ☐_4

b. Do you find lack of reward for your efforts at work stressful?

Not at all ☐_0 To some extent ☐_1 A great deal ☐_2 Not applicable ☐_3

1.12 a. Are you satisfied with your job?

Never ☐_0 Rarely ☐_1 Sometimes ☐_2 Often ☐_3 Very often ☐_4

b. Do you find lack of job satisfaction stressful?

Not at all ☐_0 To some extent ☐_1 A great deal ☐_2 Not applicable ☐_3

1.13 a. Do family matters (and other things outside work) interfere with your work?

Never ☐_0 Rarely ☐_1 Sometimes ☐_2 Often ☐_3 Very often ☐_4

b. Do you find things outside work interfering with your job stressful?

Not at all ☐_0 To some extent ☐_1 A great deal ☐_2 Not applicable ☐_3

1.14 a. Does your job interfere with family life or other activities outside work?

Never ☐_0 Rarely ☐_1 Sometimes ☐_2 Often ☐_3 Very often ☐_4

b. Do you find this interference stressful?

Not at all ☐_0 To some extent ☐_1 A great deal ☐_2 Not applicable ☐_3

Employer's policies on well-being at work

The following questions are concerned with your employer's policies in relation to your well-being:

1.15 Does your employer have a stress policy in place? Yes ☐₁ No ☐₀

1.16 Does your employer offer any stress management activities? Yes ☐₁ No ☐₀

1.17 Does your employer encourage you to balance your work and home life? Yes ☐₁ No ☐₀

1.18 Does your employer provide/support any childcare arrangements? Yes ☐₁ No ☐₀

SECTION 2: YOUR GENERAL WELL-BEING

2.1 Approximately how many days sick leave have you had in the last 12 months? (Please tick one box)

None ☐₀ 1-5 ☐₁ 6-10 ☐₂ 11-15 ☐₃ >15 ☐₄

2.2 Thinking about the past year, have you suffered from any illness that you think was caused, or made worse by work?

Yes ☐₁
No ☐₀

If Yes, please specify

2.3 Please read each item and then tick the box next to the reply that comes closest to how you have been feeling in the past week. Try to give your first reaction. This will probably be more accurate than spending a long time thinking about an answer. Please answer all questions, and tick only ONE BOX per question.

a. I feel tense or wound up

Most of the time ☐₀ A lot of the time ☐₁ From time to time, occasionally ☐₂ Not at all ☐₃

b. I feel as if I am slowed down

Nearly all the time ☐₀ Very often ☐₁ Sometimes ☐₂ Not at all ☐₃

c. I still enjoy the things I used to enjoy

Definitely as much ☐₀ Not quite so much ☐₁ Only a little ☐₂ Hardly at all ☐₃

d. I get a sort of frightened feeling like "butterflies" in the stomach

Not at all ☐₀ Occasionally ☐₁ Quite often ☐₂ Very often ☐₃

e. I get a sort of frightened feeling as if something awful is about to happen

Very definitely and quite badly ☐₀ Yes, but not too badly ☐₁ A little, but it doesn't worry me ☐₂ Not at all ☐₃

f. I have lost interest in my appearance

Definitely ☐₀ I don't take as much care as I should ☐₁ I may not take quite as much care ☐₂ I take just as much care as ever ☐₃

g. I can laugh and see the funny side of things

As much as I always could ☐₀ Not quite so much now ☐₁ Definitely not so much now ☐₂ Not at all ☐₃

h. I feel restless as if I have to be on the move

Very much indeed ☐₀

Quite a lot ☐₁

Not very much ☐₂

Not at all ☐₃

i. Worrying thoughts go through my head

A great deal of the time ☐₀

A lot of the time ☐₁

From time to time but
not too often ☐₂

Only occasionally ☐₃

j. I look forward with enjoyment to things

As much as I ever did ☐₀

Rather less than I
used to ☐₁

Definitely less than I
used to ☐₂

Hardly at all ☐₃

k. I feel cheerful

Not at all ☐₀

Not often ☐₁

Sometimes ☐₂

Most of the time ☐₃

l. I get sudden feelings of panic

Very often indeed ☐₀

Quite often ☐₁

Not very often ☐₂

Not at all ☐₃

m. I can sit at ease and feel relaxed

Definitely ☐₀

Usually ☐₁

Not often ☐₂

Not at all ☐₃

n. I can enjoy a good book or radio or TV programme

Often ☐₀

Sometimes ☐₁

Not often ☐₂

Very seldom ☐₃

2.4 Please answer Yes or No to the following questions:

a. Are your feelings rather easily hurt?

Yes ☐₁ No ☐₀

b. Would you call yourself 'tense' or 'highly-strung'?

Yes ☐₁ No ☐₀

c. Do you worry about awful things that might happen?

Yes ☐₁ No ☐₀

2.5 Over the past 12 months, how would you say your health in general has been?

Very good ☐₀

Good ☐₁

Fair ☐₁

Bad ☐₂

Very Bad ☐₄

2.6 In general, how do you find your job?

Not at all stressful ☐₀

Mildly stressful ☐₁

Moderately stressful ☐₂

Very Stressful ☐₃

Extremely stressful ☐₄

2.7 How do you find life in general? (Please tick one box only)

Not at all stressful ☐₀

Mildly stressful ☐₁

Moderately stressful ☐₂

Very Stressful ☐₃

Extremely stressful ☐₄

2.8 Have you ever been told by the doctor that you have, or have had any of the following?

Please tick Yes or No for EACH of the categories in the following list.

Angina Yes ☐₁ No ☐₀

High cholesterol level Yes ☐₁ No ☐₀

Diabetes Yes ☐₁ No ☐₀

Stroke Yes ☐₁ No ☐₀

Heart attack (coronary thrombosis,
myocardial infarction) Yes ☐₁ No ☐₀

High blood pressure Yes ☐₁ No ☐₀

Nervous trouble or depression Yes ☐₁ No ☐₀

Asthma Yes ☐₁ No ☐₀

Emphysema Yes ☐₁ No ☐₀

Bronchitis Yes ☐₁ No ☐₀

Breast cancer Yes ☐₁ No ☐₀

Other cancer Yes ☐₁ No ☐₀

2.9 If you have had cancer which part of the body did it affect? (Please specify)

2.10 There are some kinds of health problems that keep recurring and some that people have all the time. In the last 12 months have you suffered from any of the following health problems?

Please tick Yes or No for EACH of the categories in the following list.

Bronchitis	Yes ☐	No ☐	Persistent foot trouble (e.g. bunions, in-growing toenails)	Yes ☐	No ☐
Arthritis or rheumatism	Yes ☐	No ☐			
Sciatica, lumbago or recurring backache	Yes ☐	No ☐	Trouble with varicose veins	Yes ☐	No ☐
Persistent skin trouble (e.g. eczema)	Yes ☐	No ☐	Nervous trouble or persistent depression	Yes ☐	No ☐
Asthma	Yes ☐	No ☐	Persistent trouble with your gums or mouth	Yes ☐	No ☐
Hay fever	Yes ☐	No ☐	Any other recurring health problem (Please specify)	Yes ☐	No ☐
Recurring stomach trouble or indigestion	Yes ☐	No ☐			
Being constipated all or most of the time	Yes ☐	No ☐			
Piles	Yes ☐	No ☐			

2.11 Have you had any of the following symptoms in the last 14 days?

Please tick Yes or No for EACH of the categories in the following list.

A cough, catarrh or phlegm	Yes ☐	No ☐	Backache or pains in the back	Yes ☐	No ☐
Diarrhoea	Yes ☐	No ☐	Nausea or vomiting	Yes ☐	No ☐
Heartburn, wind or indigestion	Yes ☐	No ☐	Feeling tired for no apparent reason	Yes ☐	No ☐
Shortness of breath	Yes ☐	No ☐	Rashes, itches or other skin trouble	Yes ☐	No ☐
Dizziness or giddiness	Yes ☐	No ☐	Blocked or runny nose	Yes ☐	No ☐
Earache or discomfort in the ears	Yes ☐	No ☐	Headache	Yes ☐	No ☐
Swollen ankles	Yes ☐	No ☐	Wheeziness	Yes ☐	No ☐
Nervy, tense or depressed	Yes ☐	No ☐	Toothache or trouble with gums	Yes ☐	No ☐
A cold or flu	Yes ☐	No ☐	Any other complaints in the last 14 days? (Please specify)	Yes ☐	No ☐
A sore throat	Yes ☐	No ☐			
Difficulty sleeping	Yes ☐	No ☐			
Pains in the chest	Yes ☐	No ☐			

2.12 Have you taken any of the following medicines prescribed by a doctor?

Please tick one box in each column to indicate whether you have taken each medicine in the LAST 14 DAYS, in the LAST MONTH, and in the LAST YEAR.

	In the last 14 days		In the last month		In the last year	
Pain killers	Yes ☐	No ☐	Yes ☐	No ☐	Yes ☐	No ☐
Medicines for indigestion	Yes ☐	No ☐	Yes ☐	No ☐	Yes ☐	No ☐
Blood pressure tablets	Yes ☐	No ☐	Yes ☐	No ☐	Yes ☐	No ☐
Sleeping pills	Yes ☐	No ☐	Yes ☐	No ☐	Yes ☐	No ☐
Antidepressants	Yes ☐	No ☐	Yes ☐	No ☐	Yes ☐	No ☐
Medicines for stress or anxiety	Yes ☐	No ☐	Yes ☐	No ☐	Yes ☐	No ☐
Laxatives (bowel opening medicine)	Yes ☐	No ☐	Yes ☐	No ☐	Yes ☐	No ☐
Other medicine	Yes ☐	No ☐	Yes ☐	No ☐	Yes ☐	No ☐

2.13 How likely are you to fall asleep or ‘doze off’ when:

Situation	Chance of dozing			
	Never	Slight	Moderate	High
a. Sitting and reading	☐	☐	☐	☐
b. Watching TV	☐	☐	☐	☐
c. Sitting inactive in a public place (e.g. a theatre or a meeting)	☐	☐	☐	☐
d. As a passenger in a car for an hour without a break	☐	☐	☐	☐
e. Lying down to rest in the afternoon when circumstances permit	☐	☐	☐	☐
f. Sitting and talking to someone	☐	☐	☐	☐
g. Sitting quietly after a lunch without alcohol	☐	☐	☐	☐
h. In a car, while stopped for a few minutes in traffic	☐	☐	☐	☐

Shiftworkers only

i. When working shifts, are there any hours of the night that seem more difficult to work?

Yes ☐

No ☐

If Yes, please specify

SECTION 3: ACCIDENTS AND INJURIES

3.1 Thinking about the last 12 months, have you had any accidents WHILE YOU WERE WORKING that required medical attention from someone else (e.g. a first aider, GP, nurse or hospital doctor)?

None

1

2

3

4

5

6

More than 6

☐

☐

☐

☐

☐

☐

☐

☐

please specify

If you have had more than one accident at work in the last 12 months, please answer the following questions for the most recent accident ONLY.

3.2 a. In which month did the accident happen?

b. What day of the week was your accident?

Monday ☐_0 Tuesday ☐_1 Wednesday ☐_2 Thursday ☐_3 Friday ☐_4 Saturday ☐_5 Sunday ☐_6 Don't Know ☐_7

c. What time of day did the accident happen?

d. When you were injured, were you doing the job you have now? Yes ☐_1 No ☐_0

What was your job title at the time?

What did you mainly do in your job?

Were you: An employee ☐_0 Self-employed ☐_1

e. What kind of accident did you have?

Did it involve: (Please tick all that apply)

Being in contact with moving machinery	☐ _1	Drowning or asphyxiation	☐ _1
Being struck by a moving object (including flying or falling)	☐ _1	Exposure to or contact with a harmful substance	☐ _1
Being struck by a moving vehicle	☐ _1	Exposure to fire	☐ _1
Striking against something fixed / stationary	☐ _1	Exposure to an explosion	☐ _1
Being injured while handling, lifting or carrying	☐ _1	Being in contact with electricity or an electrical discharge	☐ _1
A slip, trip or fall on the same level	☐ _1	Being injured by an animal	☐ _1
A fall from a height up to and including 2 meters	☐ _1	An act or acts of violence	☐ _1
A fall from a height more than 2 meters	☐ _1	Other (Please specify)	☐ _1
A fall from a height but do not know how high	☐ _1		
Being trapped by something collapsing or overturning	☐ _1		

f. Where were you injured? (Please tick all that apply)

Eye	☐ _1	Wrist	☐ _1
Ear	☐ _1	Rest of the arm	☐ _1
Other part of face	☐ _1	Several locations of the arm	☐ _1
Head (excluding face)	☐ _1	Toe (1 or more)	☐ _1
Several locations of the head	☐ _1	Foot	☐ _1
Neck	☐ _1	Ankle	☐ _1
Back	☐ _1	Rest of the leg	☐ _1
Trunk	☐ _1	Several locations of the leg	☐ _1
Several locations of the torso	☐ _1	Other (Please specify)	☐ _1
Finger or thumb (1 or more)	☐ _1		
Hand	☐ _1		

3.2 g. What sort of injury or injuries did you sustain? (Please tick all that apply)

Amputation	☐	1	Concussion	☐	1
Loss of sight of eye :			Internal injuries	☐	1
Temporary	☐	1	Lacerations (cuts) or open wounds	☐	1
Permanent	☐	1	Contusions (bruises)	☐	1
Chemical or hot metal burn to the eye	☐	1	Burns	☐	1
Penetrating injury to the eye	☐	1	Poisoning or gassing	☐	1
Fracture (broken bone) of the :			Sprain or strain	☐	1
Arm or wrist	☐	1	Injuries caused by contact with electricity	☐	1
Foot	☐	1	Injury leading to unconsciousness or requiring resuscitation	☐	1
Leg or ankle	☐	1	Don't know	☐	1
Rib	☐	1	Other (Please specify)	☐	1
Finger, thumb or toe	☐	1			
Skull	☐	1			
Hand	☐	1			
Jaw	☐	1			
Other (Please specify)	☐	1			

Dislocation of the :

Finger, thumb or toe	☐	1	Elbow	☐	1
Ankle	☐	1	Shoulder	☐	1
Knee	☐	1	Neck	☐	1
Hip	☐	1	Spine	☐	1
Wrist	☐	1	Jaw	☐	1
Other (Please specify)	☐	1			

3.2 h. What medical attention did you require? (Please tick all that apply)

Treated by GP	☐	1	Admitted to hospital for MORE than 24 hours	☐	1
Treated by nurse at the GP surgery	☐	1	Other (Please specify)	☐	1
Attended Accident and Emergency (Casualty)	☐	1			
Admitted to hospital for LESS than 24 hours	☐	1			

3.2 i. How soon were you able to start work again after the accident?

Same day	☐	0	On the 5th day or longer after the accident	☐	5
Day after the accident	☐	1	Still off work	☐	6
On the 2nd day after the accident	☐	2	Do not expect to work again	☐	7
On the 3rd day after the accident	☐	3	Don't know	☐	8
On the 4th day after the accident	☐	4			

3.3 How many accidents requiring medical attention have you had OUTSIDE work in the last 12 months?

None	1	2	3	4	5	6	More than 6	please specify
☐	☐	☐	☐	☐	☐	☐	☐	
0	1	2	3	4	5	6	7	

3.4 In the last 12 months how frequently have you had minor injuries (e.g. cuts and bruises) that did not require medical attention?

a. at work	Not at all	☐	0	Rarely	☐	1	Occasionally	☐	2	Quite Frequently	☐	3	Very Frequently	☐	4
b. outside of work	Not at all	☐	0	Rarely	☐	1	Occasionally	☐	2	Quite Frequently	☐	3	Very Frequently	☐	4

3.5 How frequently do you find that you have problems of memory (e.g. forgetting where you put things), attention (e.g. failures of concentration), or action (e.g. doing the wrong thing)?

a. at work Not at all ☐₀ Rarely ☐₁ Occasionally ☐₂ Quite Frequently ☐₃ Very Frequently ☐₄

b. outside of work Not at all ☐₀ Rarely ☐₁ Occasionally ☐₂ Quite Frequently ☐₃ Very Frequently ☐₄

3.6 How frequently do you take risks?

a. at work Not at all ☐₀ Rarely ☐₁ Occasionally ☐₂ Quite Frequently ☐₃ Very Frequently ☐₄

b. outside of work Not at all ☐₀ Rarely ☐₁ Occasionally ☐₂ Quite Frequently ☐₃ Very Frequently ☐₄

SECTION 4: LIFESTYLE

In this section, we are interested in finding out about how you live your life. In particular, we are interested in how much (or little) you drink or smoke.

4.1 Do you smoke cigarettes now (i.e. NOT cigars/pipe)? Yes ☐₁ No ☐₀

4.2 How many cigarettes do you smoke per day?

Manufactured

Handrolled

4.3 On average how often do you drink during the week, that is weekdays. *(Please tick ONE box only)*

Never ☐₀

1 - 2 Days ☐₁

3 Days ☐₂

4 Days ☐₃

4.4 How many units do you drink during an average week?

(where 1 unit = half a pint of beer, or glass of wine or one measure of spirits)

units

4.5 On average how often do you drink at the weekends? *(Please tick ONE box only)*

Never ☐₀

1 - 2 Days ☐₁

All 3 Days ☐₂

4.6 How many units do you drink on an average weekend?

(where 1 unit = half a pint of beer, or glass of wine or one measure of spirits)

units

4.7 At what age did you start to drink alcohol regularly, that is, more than once a month?

years

4.8 Do you maintain a desired body weight?

Almost all of the time ☐₀

Sometimes ☐₁

Almost never ☐₂

4.9 Do you take any planned exercise?

Always ☐₀

Usually ☐₁

When possible ☐₂

Occasionally ☐₃

Not usually ☐₄

Never ☐₅

4.10 Do you find time to 'relax and wind down'? Always ☐₀ Usually ☐₁ When possible ☐₂ Not usually ☐₃

4.11 On average, how many hours per week do you spend on a hobbies or interests outside of work activities?

None ☐₀

1-5 hours ☐₁

5-10 hours ☐₂

10+ hours ☐₃

SECTION 5: YOUR WORK ENVIRONMENT

5.1 Now we would like to ask you about where you work. For each question please tick ONE answer that best describes your work.

	Often	Sometimes	Seldom	Never/ almost never
a. Do you work at night?	☐ 0	☐ 1	☐ 2	☐ 3
b. Do you do shift work?	☐ 0	☐ 1	☐ 2	☐ 3
c. Do you have to work long or unsociable hours?	☐ 0	☐ 1	☐ 2	☐ 3
d. Do you have to be "on call" for work?	☐ 0	☐ 1	☐ 2	☐ 3
e. Do you have unpredictable working hours?	☐ 0	☐ 1	☐ 2	☐ 3
f. Does your job ever expose you to breathing fumes, dusts or other potentially harmful substances?	☐ 0	☐ 1	☐ 2	☐ 3
g. Does your job ever require you to handle or touch potentially harmful substances or materials?	☐ 0	☐ 1	☐ 2	☐ 3
h. Do you ever have work tasks that leave you with a ringing in your ears or a temporary feeling of deafness?	☐ 0	☐ 1	☐ 2	☐ 3
i. Do you work in an environment where the level of background noise disturbs your concentration?	☐ 0	☐ 1	☐ 2	☐ 3

5.2 Do you find yourself easily annoyed by noise?

Not at all annoyed ☐0 Rarely annoyed ☐1 Somewhat annoyed ☐2 Rather annoyed ☐3 Extremely annoyed ☐4

5.3 How frequently are you exposed to loud noise?

a. at work

Not at all ☐0 Rarely ☐1 Occasionally ☐2 Quite Frequently ☐3 Very Frequently ☐4

b. outside of work

Not at all ☐0 Rarely ☐1 Occasionally ☐2 Quite Frequently ☐3 Very Frequently ☐4

5.4 How frequently do you suffer from insomnia (not being able to sleep)?

Not at all ☐0 Rarely ☐1 Occasionally ☐2 Quite Frequently ☐3 Very Frequently ☐4

5.5 Now we'd like to ask you about your work and the sorts of things you have to do. For each question please tick the answer that best describes your job or the way you deal with problems at work.

	Often	Sometimes	Seldom	Never/ almost never	Not applicable
a. Do you have to work very fast?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b. Do you have to work very intensively?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c. Do you have enough time to do everything?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
d. Are your tasks such that others can help you if you do not have enough time?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
e. Do you have the possibility of learning new things through your work?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
f. Does your work demand a high level of skill or expertise?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
g. Does your job require you to take the initiative?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
h. Do you have to do the same thing over and over again?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
i. Do you have a choice in deciding HOW you do your work?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
j. Do you have a choice in deciding WHAT you do at work?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
k. Does your work require you to cover for more senior positions?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
l. Does your job require you to carry out tasks for which you feel you have not been adequately trained?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
m. On average, what % of your time is spent on the following tasks?					

	% April-September	% October-March		% April-September	% October-March
SAR			Meetings		
Incident prevention			Training		
Routine work eg radio			Other		
Administration/paperwork					

5.6 This section is about your position at work - how often do the following statements apply?
(Please tick ONE box only)

	Often	Sometimes	Seldom	Never/ almost never	Not applicable
a. Others take decisions concerning my work	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b. I have a great deal of say in decisions about work	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c. I have a say in my work speed	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
d. My working time can be flexible	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
e. I can decide when to take a break	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
f. I can take my holidays more or less when I wish	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
h. I have a say in choosing who I work with	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
i. I have a great deal of say in planning my work environment	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄

5.7 This section is about consistency and clarity at work - how often do the following statements apply?*(Please tick ONE box only)*

	Often	Sometimes	Seldom	Never/ almost never	Not applicable
a. Do different groups at work demand things from you that you think are hard to combine?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b. Do you get sufficient information from line management (your superiors)?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c. Do you get consistent information from line management (your superiors)?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄

5.8 These questions are about your job involvement.*(Please tick ONE box only)*

	Often	Sometimes	Seldom	Never/ almost never	Not applicable
a. Does your job provide you with a variety of interesting things to do?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b. Is your job boring?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄

5.9 Now we would like to ask you about when you are having difficulties at work.*(Please tick ONE box only)*

	Often	Sometimes	Seldom	Never/ almost never	Not applicable
a. How often do you get help and support from your colleagues?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b. How often are your colleagues willing to listen to your work related problems?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c. How often do you get help and support from your immediate superior?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
d. How often is your immediate superior willing to listen to your problems?	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄

5.10 Do you agree or disagree with the following statements about your work?*(Please tick ONE box only)*

	Agree	Somewhat agree	Somewhat disagree	Disagree
a. If a task has to be done well I'd better take care of it myself	☐ ₀	☐ ₁	☐ ₂	☐ ₃
b. I can get very upset when someone hinders me in my duties	☐ ₀	☐ ₁	☐ ₂	☐ ₃
c. As soon as I get up in the morning, I start thinking about work problems	☐ ₀	☐ ₁	☐ ₂	☐ ₃
d. When I come home, I can easily relax and 'switch off' from work	☐ ₀	☐ ₁	☐ ₂	☐ ₃
e. People close to me say I sacrifice too much for my job	☐ ₀	☐ ₁	☐ ₂	☐ ₃
f. For me, family or private life comes first, then work	☐ ₀	☐ ₁	☐ ₂	☐ ₃
g. Work rarely lets me go, it is still on my mind when I go to bed	☐ ₀	☐ ₁	☐ ₂	☐ ₃
h. Every once in a while I like it when others hold me back from working	☐ ₀	☐ ₁	☐ ₂	☐ ₃
i. If I postpone something that I was supposed to do today, I will have trouble sleeping at night	☐ ₀	☐ ₁	☐ ₂	☐ ₃

In these next questions we would like to know whether or not you agree with some statements about your work. If you **DON'T** agree with a statement tick the box marked No, as in this example. Then move on to the next statement.

Example: **Don't agree**

If you agree , to what extent are you distressed by it?	No	Yes	Not at all	Somewhat	Rather	Very distressed
a. I have constant time pressure due to a heavy workload.	☒ 0	☐ 1	☐ 0	☐ 1	☐ 2	☐ 3

If you **DO** agree with a statement tick the box marked Yes AND tick one box to show how much it distresses you, as in this example. Then move on to the next statement.

Example: **Agree**

If you agree , to what extent are you distressed by it?	No	Yes	Not at all	Somewhat	Rather	Very distressed
a. I have constant time pressure due to a heavy workload.	☐ 0	☒ 1	☐ 0	☒ 1	☐ 2	☐ 3

5.11 Do you agree with the following statements?

If you agree , to what extent are you distressed by it?	No	Yes	Not at all	Somewhat	Rather	Very distressed
a. I have constant time pressure due to a heavy workload.	☐ 0	☐ 1	☐ 0	☐ 1	☐ 2	☐ 3
b. I have many interruptions and disturbances in my job.	☐ 0	☐ 1	☐ 0	☐ 1	☐ 2	☐ 3
c. I have a lot of responsibility in my job.	☐ 0	☐ 1	☐ 0	☐ 1	☐ 2	☐ 3
d. I am often under pressure to work overtime.	☐ 0	☐ 1	☐ 0	☐ 1	☐ 2	☐ 3
e. I have experienced or expect to experience an undesirable change in my work situation.	☐ 0	☐ 1	☐ 0	☐ 1	☐ 2	☐ 3
f. My job promotion prospects are poor.	☐ 0	☐ 1	☐ 0	☐ 1	☐ 2	☐ 3
g. My job security is poor.	☐ 0	☐ 1	☐ 0	☐ 1	☐ 2	☐ 3
h. I am treated unfairly at work.	☐ 0	☐ 1	☐ 0	☐ 1	☐ 2	☐ 3

5.12 In these next questions we would again like to know whether or not you agree with some statements about your work. This time, though, the order of 'Yes' and 'No' is changed. So, if you **DO** agree with a statement tick the box marked Yes. Then move on to the next statement. If you **DON'T** agree with a statement tick the box marked No AND tick one box to show how much it distresses you. Then move on to the next statement.

Do you agree with the following statements?
(Please note the order of 'Yes', 'No' is changed)

If you disagree , to what extent are you distressed by it?	Yes	No	Not at all	Somewhat	Rather	Very distressed
a. Considering all my efforts and achievements, my work prospects are adequate.	☐ 1	☐ 0	☐ 0	☐ 1	☐ 2	☐ 3
b. I receive the respect I deserve from my superiors and colleagues.	☐ 1	☐ 0	☐ 0	☐ 1	☐ 2	☐ 3
c. I experience adequate support in difficult situations.	☐ 1	☐ 0	☐ 0	☐ 1	☐ 2	☐ 3
d. Considering all my efforts and achievements, I receive the respect and prestige I deserve at work.	☐ 1	☐ 0	☐ 0	☐ 1	☐ 2	☐ 3

5.13 Please indicate to what extent the following are characteristic of your organisation.

	Extremely Characteristic				Not at all Characteristic
	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
1. Flexibility	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
2. Adaptability	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
3. Stability	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
4. Predictability	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
5. Being innovative	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
6. Quick to take advantage of opportunities	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
7. Willing to experiment	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
8. Risk taking	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
9. Being careful	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
10. Autonomy	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
11. Being rule oriented	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
12. Being analytical	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
13. Paying attention to detail	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
14. Being precise	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
15. Being team oriented	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
16. Sharing information freely	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
17. Emphasising a single culture throughout the organisation	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
18. Being people oriented	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
19. Fairness	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
20. Respect for the individuals right	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
21. Tolerance	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
22. Informality	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
23. Being easy going	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
24. Being calm	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
25. Being supportive	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
26. Being aggressive	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
27. Decisiveness	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
28. Action oriented	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
29. Takes initiative	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
30. Reflective	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
31. Achievement oriented	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
32. Demanding	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
33. Emphasises taking individual responsibility	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
34. Having high expectations of performance	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
35. Provides opportunities for professional growth	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
36. Rewards good performance with high pay	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
37. Security of employment	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
38. Offers praise for good performance	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
39. Low level of conflict	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
40. Confronts conflict directly	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
41. Opportunity for making friends at work	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4
42. Easy to fit in	☐ 0	☐ 1	☐ 2	☐ 3	☐ 4

	Extremely Characteristic			Not at all Characteristic	
43. Emphasises working in collaboration with others	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
44. Expects enthusiasm for job	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
45. Working long hours	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
46. Not constrained by many rules	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
47. Emphasises quality	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
48. Being distinctive-different from others	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
49. Having a good reputation	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
50. Being socially responsible	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
51. Being results oriented	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
52. Having a clear guiding philosophy	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
53. Being competitive	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
54. Being highly organised	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
55. Consultative	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
56. Bureaucratic	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄

5.14 The following questions are concerned with the management of change within the Agency. Please mark the appropriate box to indicate your level of satisfaction with the following statements.

	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
a. The reasons and benefits of change are explained to you	☐ ₀	☐ ₁	☐ ₂	☐ ₃
b. The amount of consultation you receive about change	☐ ₀	☐ ₁	☐ ₂	☐ ₃
c. The amount of support you receive during change	☐ ₀	☐ ₁	☐ ₂	☐ ₃
d. The pace of change in the Agency	☐ ₀	☐ ₁	☐ ₂	☐ ₃
e. The current organisation structure	☐ ₀	☐ ₁	☐ ₂	☐ ₃

5.15 The following section asks you to respond to a series of questions about your relationship with your manager. Please answer all questions by ticking the appropriate box.

a. Do you usually feel that you know where you stand...do you usually know how satisfied your manager is with you?

Rarely ☐₀ Occasionally ☐₁ Sometimes ☐₂ Fairly Often ☐₃ Very often ☐₄

b. How well do you feel that your manager understands your problems and needs?

Not a bit ☐₀ A little ☐₁ A fair amount ☐₂ Quite a bit ☐₃ A great deal ☐₄

c. How well does your manager recognise your potential?

Not at all ☐₀ A little ☐₁ Moderately ☐₂ High ☐₃ Very High ☐₄

d. Regardless of how much formal authority he/she has built into his/her position, what are the chances that your manager would use his/her power to help you solve problems in your work?

None ☐₀ Small ☐₁ Moderate ☐₂ High ☐₃ Very High ☐₄

e. Again, regardless of the amount of formal authority your manager has, what are the chances that he/she would "bail you out" at his/her expense?

None ☐₀ Small ☐₁ Moderate ☐₂ High ☐₃ Very High ☐₄

f. I have enough confidence in my manager that I would defend and justify his/her decisions if he/she were not present to do so.

Strongly Disagree ☐₀ Disagree ☐₁ Neutral ☐₂ Agree ☐₃ Strongly Agree ☐₄

g. How would you characterise your working relationship with your manager?

Extremely ☐₀
Ineffective Worse than ☐₁
Average Average ☐₂ Better than ☐₃
Average Extremely ☐₄
Effective

5.16 The following section asks you to respond to a series of questions about your relationship with your immediate colleagues, or members of your work "team". Please answer all questions by ticking the appropriate box.

a. How often do you make suggestions about better work methods to other team members?

Rarely ☐₀ Occasionally ☐₁ Sometimes ☐₂ Fairly Often ☐₃ Very often ☐₄

b. Do other members of your team usually let you know when you do something that makes their job easier (or harder)?

Rarely ☐₀ Occasionally ☐₁ Sometimes ☐₂ Fairly Often ☐₃ Very often ☐₄

c. How often do you let other team members know when they have done something that makes your job easier (or harder)?

Rarely ☐₀ Occasionally ☐₁ Sometimes ☐₂ Fairly Often ☐₃ Very often ☐₄

d. How well do other members of your team recognise your potential?

Not a bit ☐₀ A little ☐₁ A fair amount ☐₂ Quite a bit ☐₃ A great deal ☐₄

e. How well do other members of your team understand your problems and needs?

Not a bit ☐₀ A little ☐₁ A fair amount ☐₂ Quite a bit ☐₃ A great deal ☐₄

f. How flexible are you about switching job responsibilities to make things easier for other team members?

Not a bit ☐₀ A little ☐₁ A fair amount ☐₂ Quite a bit ☐₃ A great deal ☐₄

g. In busy situations, how often do other team members ask you to help out?

Not a bit ☐₀ A little ☐₁ A fair amount ☐₂ Quite a bit ☐₃ A great deal ☐₄

h. In busy situations, how often do you volunteer your efforts to help others on your team?

Not a bit ☐₀ A little ☐₁ A fair amount ☐₂ Quite a bit ☐₃ A great deal ☐₄

i. How willing are you to help finish work that had been assigned to others?

Not a bit ☐₀ A little ☐₁ A fair amount ☐₂ Quite a bit ☐₃ A great deal ☐₄

j. How willing are other members of your team to help finish work that was assigned to you?

Not a bit ☐₀ A little ☐₁ A fair amount ☐₂ Quite a bit ☐₃ A great deal ☐₄

5.17 The following questions refer to your treatment in the workplace, by your organisation, superiors and/or colleagues. Please indicate whether you are, or have been exposed to the following within the last 6 months:

a. Persistent attempts to undermine your work	Yes ☐ ₁	No ☐ ₀
b. Persistent and unjustified criticism and monitoring of your work	Yes ☐ ₁	No ☐ ₀
c. Persistent attempts to humiliate you in front of colleagues	Yes ☐ ₁	No ☐ ₀
d. Intimidatory use of discipline or competence procedures	Yes ☐ ₁	No ☐ ₀
e. Undermining your personal integrity	Yes ☐ ₁	No ☐ ₀
f. Destructive innuendo and sarcasm	Yes ☐ ₁	No ☐ ₀
g. Verbal and non-verbal threats	Yes ☐ ₁	No ☐ ₀
h. Inappropriate jokes	Yes ☐ ₁	No ☐ ₀
i. Persistent teasing	Yes ☐ ₁	No ☐ ₀
j. Physical violence	Yes ☐ ₁	No ☐ ₀
k. Violence to property	Yes ☐ ₁	No ☐ ₀
l. Withholding of necessary information	Yes ☐ ₁	No ☐ ₀
m. Freezing out, ignoring or exclusion	Yes ☐ ₁	No ☐ ₀
n. Unreasonable refusal of applications for leave, training or promotion	Yes ☐ ₁	No ☐ ₀
o. Undue pressure to produce work	Yes ☐ ₁	No ☐ ₀
p. Setting of impossible deadlines	Yes ☐ ₁	No ☐ ₀
q. Shifting of goal posts without telling you	Yes ☐ ₁	No ☐ ₀
r. Constant under valuation of your efforts	Yes ☐ ₁	No ☐ ₀
s. Persistent attempts to demoralise you	Yes ☐ ₁	No ☐ ₀
t. Removal of areas of responsibility without consultation	Yes ☐ ₁	No ☐ ₀

5.18 The following questions refer to how you cope with sources of stress in your job. Please tick the appropriate answer.

	Never	Very rarely	Sometimes	Often	Always
a. Get together with my supervisor to discuss things	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b. Try to be very organised, so that I can keep on top of things	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c. Talk with people (other than my supervisor) who are involved.	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
d. Try to see the situation as an opportunity to learn and develop new skills	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
e. Put extra attention on planning and scheduling	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
f. Try to think of myself as a winner, someone who always comes through	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
g. Tell myself that I can probably work things out to my advantage	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
h. Devote more time and energy to doing my job	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
i. Try to get additional people involved in the situation	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
j. Think about the challenge that I can find in the situation	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
k. Try to work faster and more efficiently	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
l. Decide what should be done and explain this to people who are affected	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄

5.19 The following questions are concerned with the management of stress in relation to incidents.

a. In terms of managing stress, how useful do you find the way in which incidents are debriefed at the Station?

Never Useful ☐_0 Very Rarely Useful ☐_1 Sometimes Useful ☐_2 Often Useful ☐_3 Always Useful ☐_4

b. How useful do you find the support available outside of the Station in coping with stress from incidents e.g. counselling?

Never Useful ☐_0 Very Rarely Useful ☐_1 Sometimes Useful ☐_2 Often Useful ☐_3 Always Useful ☐_4
I've never used the support available ☐_5

c. Does the Agency provide sufficient support for stress from incidents?

Yes ☐_0 Adequate ☐_1 No ☐_2

d. Are there any types of incidents that you find more stressful to deal with than others?

e. How could the stress/potential stress from incidents be better managed in the Agency?

5.20 The following questions refer to your perception of your role within your working environment.*(Please tick the appropriate answer)*

	Never	Very rarely	Sometimes	Often	Always
1. I have enough time to complete my work	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
2. I feel certain about how much authority I have	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
3. I perform tasks that are too easy or too boring	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
4. I have clear, planned goals and objectives for my job	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
5. I have to do things that should be done differently	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
6. There is a lack of policies and guidelines to help me	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
7. I am able to act the same, regardless of the group I am with	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
8. I am corrected or rewarded when I don't really expect it	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
9. I work under incompatible policies and guidelines	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
10. I know that I have divided my time properly	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
11. I receive an assignment without the manpower to complete it	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
12. I know what my responsibilities are	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
13. I have to bend a rule or policy in order to carry out an assignment	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
14. I have to 'feel my way' in performing my duties	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
15. I receive assignments that are within my training and capability	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
16. I feel certain how I will be evaluated for a raise or promotion	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
17. I have just the right amount of work to do	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
18. I work with 2 or more groups who operate quite differently	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
19. I know exactly what is expected of me	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
20. I receive incompatible requests from two or more people	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
21. I am uncertain as to how my job fits in with the organisation as a whole	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
22. I do things that are likely to be accepted by one person, but not by others	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
23. I am told how well I am doing my job	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
24. I receive an assignment without adequate resources and materials to carry it out	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
25. Explanation of what has to be done is often unclear	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
26. I work on unnecessary things	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
27. I have to work under vague directives or orders	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
28. I perform work that suits my values	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
29. I do not know if my work will be acceptable to my boss	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄

5.21 The following questions are concerned with the way in which training is conducted within the Agency. Please mark the appropriate box to indicate your level of satisfaction with the way in which training is implemented.

	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
a. Support provided from the Training School	☐ ₀	☐ ₁	☐ ₂	☐ ₃
b. Support provided for 'on the job' trainers	☐ ₀	☐ ₁	☐ ₂	☐ ₃
c. The Task Book	☐ ₀	☐ ₁	☐ ₂	☐ ₃
d. The examination system	☐ ₀	☐ ₁	☐ ₂	☐ ₃
e. The amount of training conducted 'on the job'	☐ ₀	☐ ₁	☐ ₂	☐ ₃
f. The general way in which training is conducted	☐ ₀	☐ ₁	☐ ₂	☐ ₃
g. That you have received sufficient training to do your job	☐ ₀	☐ ₁	☐ ₂	☐ ₃

Do you have any suggestions for how training could be better conducted within the Agency?

5.22 These questions are about your job in general. Please tick ONE box only. How satisfied have you been with the following:

	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied	Not Applicable
a. Your usual take home pay	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
b. Your work prospects	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
c. The people you work with	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
d. Physical working conditions	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
e. The way your section is run	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
f. The way your abilities are used	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
g. The interest and skill involved in your job	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
h. The support available from HR if you need it	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
i. The support from HO if you need it	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
j. The amount of union involvement in the workplace	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄
k. The way in which important information is communicated to you	☐ ₀	☐ ₁	☐ ₂	☐ ₃	☐ ₄

5.23 Do your family life and family responsibilities interfere with your performance in your job in any of the following ways? (Please tick ONE box only)

Would you say:

	Not at all	To some extent	A great deal	Not Applicable
a. Family matters reduce the time you can devote to your job	☐ ₀	☐ ₁	☐ ₂	☐ ₃
b. Family worries or problems distract you from your work	☐ ₀	☐ ₁	☐ ₂	☐ ₃
c. Family activities stop you getting the amount of sleep you need to do your job well	☐ ₀	☐ ₁	☐ ₂	☐ ₃
d. Family obligations reduce the time you need to relax or be by yourself	☐ ₀	☐ ₁	☐ ₂	☐ ₃

5.24 To what extent do your job responsibilities interfere with your family life? (Please tick ONE box only)

Would you say:

	Not at all	To some extent	A great deal	Not Applicable
a. Your job reduces the amount of time you can spend with the family	☐ ₀	☐ ₁	☐ ₂	☐ ₃
b. Problems at work make you irritable at home	☐ ₀	☐ ₁	☐ ₂	☐ ₃
c. Your job involves a lot of travel away from home	☐ ₀	☐ ₁	☐ ₂	☐ ₃
d. Your job takes so much energy you don't feel up to doing things that need attention at home	☐ ₀	☐ ₁	☐ ₂	☐ ₃

SECTION 6: THE FUTURE OF WORK IN RELATION TO THE HOME-WORK BALANCE

6.1 Is the MCA an attractive place to work? Not at all ☐₀ To some extent ☐₁ A great deal ☐₂

6.2 Do you feel that you have a balanced home and work life? Not at all ☐₀ To some extent ☐₁ A great deal ☐₂

6.3 Do you believe that the introduction of ICCS could be used to improve the home-work balance eg on call rotation? Yes ☐₁ No ☐₀

6.4 Do you believe that the pairing of Stations could be used to improve the home-work balance? Yes ☐₁ No ☐₀

6.5 Do you believe that minimum manning levels could be adjusted to improve the home-work balance? Yes ☐₁ No ☐₀

SHIFTWORKERS ONLY

6.6 Given the right circumstances, would you consider changing your work pattern to reduce the number of night shifts that you work? Yes ☐₁ No ☐₀

6.7 Under what circumstances would you consider changing your work pattern to reduce the number of night shifts that you work?

ALL

6.8 Do you believe that the Coastguard should become more involved with incident prevention measures? Yes ☐₁ No ☐₀

6.9 Using the existing workforce across the Coastguard, do you have any suggestions for ways in which work patterns or methods could be changed to increase the amount of incident prevention work conducted by the Coastguard without affecting (or to improve) the home-work balance?

6.10 Is there any aspect of your job which is not covered in this questionnaire but which you find to be a source of pressure in your job?

SECTION 7: DEMOGRAPHICS

7.1 Age:

years

7.2 Sex:

Male ☐_0

Female ☐_1

7.3 Current Status:

(Please tick ONE box only)

Single

☐_0

Married

☐_2

Divorced

☐_4

Living with partner

☐_1

Separated

☐_3

Widowed

☐_5

7.4 Education Completed:

(Please tick ONE box only)

None

☐_0

City & Guilds/national diploma

☐_3

GCSE/ 'O' Level

☐_1

BA/BSc

☐_4

AS Level/SCE Higher/Matriculation

☐_2

Higher degree/professional qualification

☐_5

7.5 How would you describe yourself?

White

☐_0

Black African

☐_1

Indian

☐_2

Bangladeshi

☐_3

Black Caribbean

☐_4

Black neither Caribbean or African

☐_5

Pakistani

☐_6

Chinese

☐_7

None of these (Please specify)

☐_8

7.6 What is the total current yearly amount you receive from your wage, pension, benefit allowance or annual salary (before tax is deducted)? Please indicate one category.

less than £2,500

☐_0

£10,000-£15,999

☐_3

£25,000-£29,999

☐_6

£50,000 or more

☐_9

£2,500-£4,999

☐_1

£16,000-£19,999

☐_4

£30,000-39,999

☐_7

£5,000-£9,999

☐_2

£20,000-£24,999

☐_5

£40,000-49,999

☐_8

7.7 Do you receive a Navy pension or some other means to supplement your income from the MCA?

Yes ☐_1

No ☐_0

7.8 Are you paid for overtime that you work?

Yes ☐_1

No ☐_2

THANK YOU FOR YOUR PARTICIPATION

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Appendix 6

Covering Email (Study 2)

Dear SAR Colleagues

Re Health and Safety at Work Survey 2009

You are invited to take part in an independent study being conducted by Cardiff University on health and well-being at work. This is a follow up to a study which the Agency participated in during 2003 but this time, focuses on health, well-being and the impact of dealing with incidents.

The study is being conducted by Sue Kingdom, a PhD student from Cardiff University. Sue also works for Amey plc, an organisation, which has conducted a range of surveys on behalf of the MCA since 2001.

The original 2003 study was designed following interviews conducted with CG staff at Swansea, Clyde, London, Thames and Solent Stations. The 2003 and this 2009 study also follows on from previous work conducted by the Agency and also fits in with current research in the workplace published by the HSE.

We are therefore inviting everyone working in SAR to take approximately 15 minutes to complete the questionnaire. Please be assured that the questionnaire is completely anonymous. Any results fed back to the Agency **will not** be attributed to any one individual. The questionnaires **will not** be returned to the Agency.

The questionnaire is being distributed in electronic format and you can start by clicking on the link below. Please complete the questionnaire by dd/mm/yyyy.

Enter link here

If you have any concerns or queries, please feel free to contact Sue Kingdom direct on 01633 224822 or email sue.kingdom@amey.co.uk.

This study is being supervised by Professor Andy Smith, Director of the Centre for Occupational and Health Psychology. If you have any queries he can be contacted at:

School of Psychology
Cardiff University
63 Park Place
Cardiff CF10 3AS
email smithap@cardiff.ac.uk

Many thanks for your co-operation.

Appendix 7

Health and Safety at Work Survey 2009 - Windows Internet Explorer

https://clara.host.clara.net/www.kenda.co.uk/cardiffuniversity/healthandsafety2009/

hardiness institute

Health and Safety at Work Survey 2009

CARDIFF UNIVERSITY
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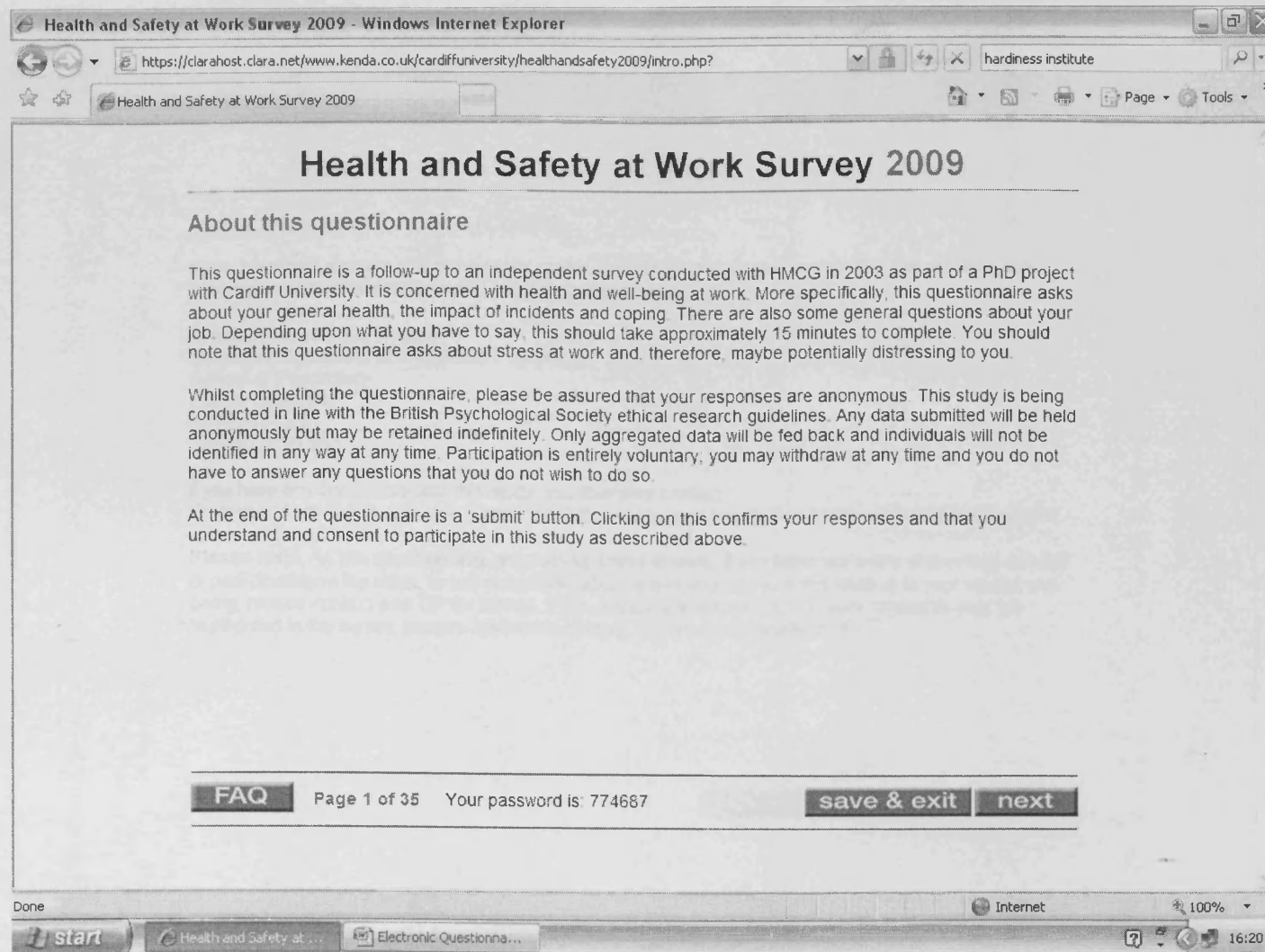
Health and Safety at Work Survey 2009

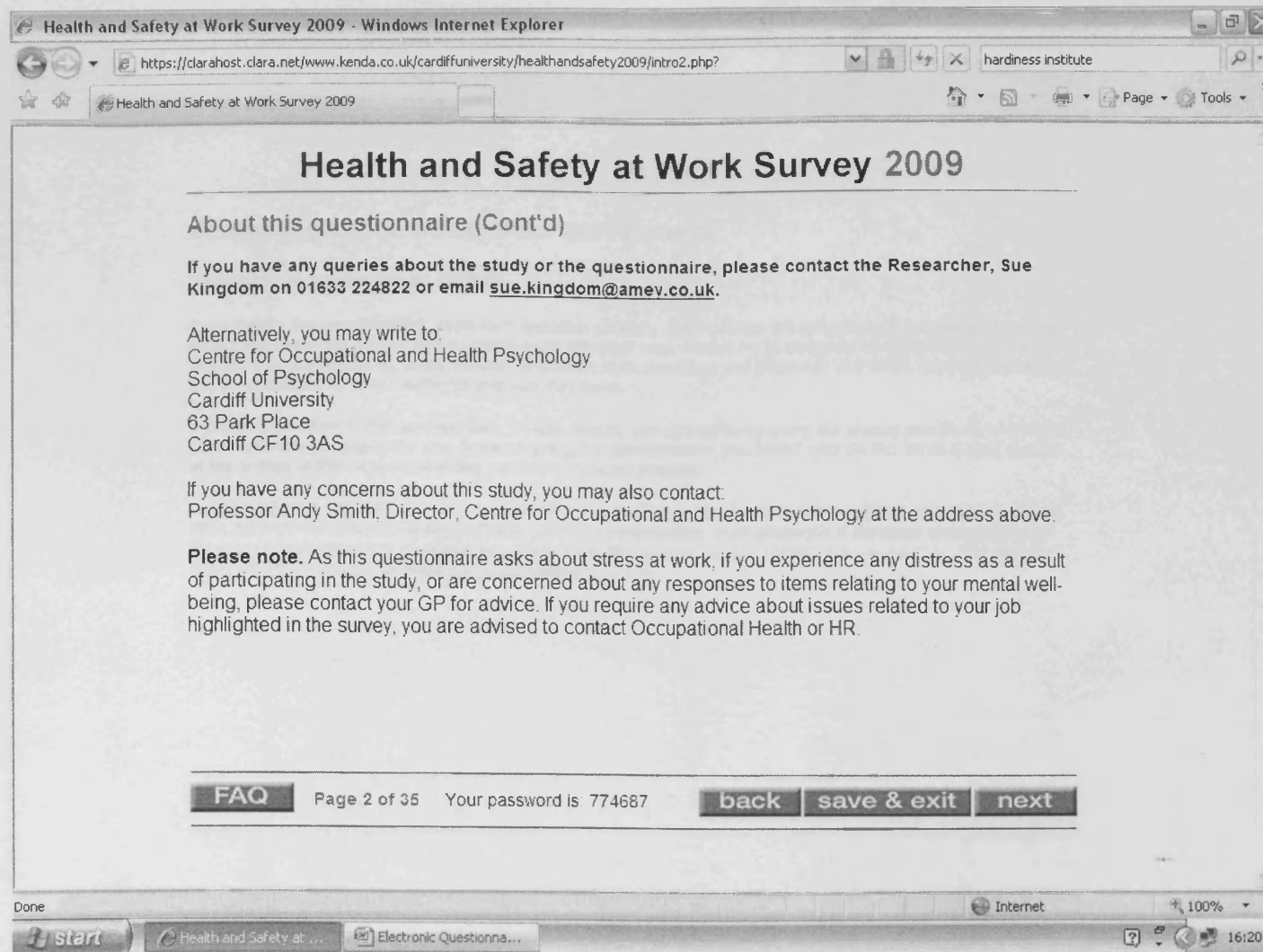
1. If you are visiting this site for the FIRST TIME please now press ENTER to continue.

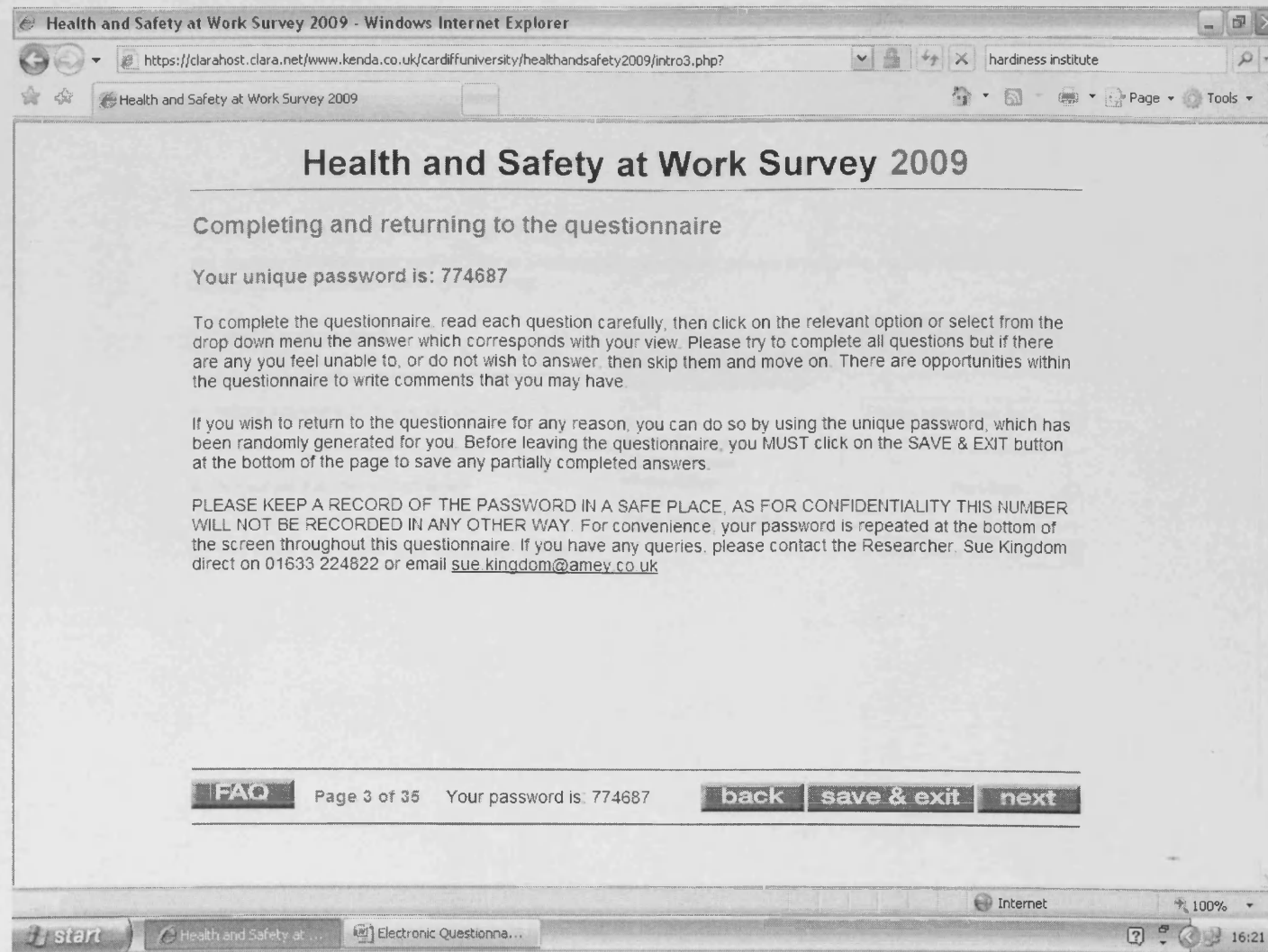
2. If you are RETURNING to the survey please enter your 6 digit password here then press ENTER to continue.

FAQ **enter**

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Health and Safety at Work Survey 2009 - Windows Internet Explorer

https://clara.host.clara.net/www.kenda.co.uk/cardiffuniversity/healthandsafety2009/page1.php?

Health and Safety at Work Survey 2009

Health and Safety at Work Survey 2009

Section 1: About you and your job

For analysis purposes only and in order to understand how different groups around the Agency feel about different issues, please answer the following:

a. What is your job title?

Please select from list ...

Please select from list ...

b. Which Area/MRCC do you do you work in?

Regional Director/Manager
AOM
DOM
Sector Manager
Watch Manager
Watch Officer
CWA
Other (please specify)

Please select from list ...

c. Is your job full-time or part-time?

Part-time ☐

d. How many years have you worked for the MCA?

Please select from list ...

FAQ Page 4 of 35 Your password is: 774687 back save & exit next

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start Electronic Questionns... Health and Safety at ...

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e. Prior to working for the MCA, were you employed in a maritime related job? No ☐ Yes ☐
(If YES, please specify)

f. What is your age range?

g. Are you male or female?

Please select from list ...
Please select from list ...
Less than 20 years
20 - 30 years
31 - 40 years
41 - 50 years
More than 50 years

FAQ Page 5 of 35 Your password is: 774687 back save & exit next

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Section 2: Exposure to incidents and general work conditions

Dealing with incidents is a key function of HMCG. For each of the incidents listed below, please indicate a) the frequency of the incident that you have experienced and b) the degree of stress associated with each incident experienced

2.1 Incidents

	Frequency of Incident	Degree of Stress
a. Fatality – involving child	Please select from list ...	Please select from list ...
b. Fatality – involving adult	Please select from list ...	Please select from list ...
c. Fatality – involving multiple bodies	Very frequently (once a week or more) Frequently (once a month or more) Not very (once a year or more) Rarely (less than once a year) Not at all (never)	Please select from list ...
d. Suicide	Please select from list ...	Please select from list ...
e. Man overboard	Please select from list ...	Please select from list ...
f. Missing person searches	Please select from list ...	Please select from list ...

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	Frequency of Incident	Degree of Stress
g. Having to call off a search	Please select from list ...	Please select from list ...
h. Dealing with relatives of persons in distress	Please select from list ...	Please select from list ...
i. Vessel sinking/ run aground	Please select from list ...	Not at all stressful
j. Having to finish a shift with an incident still in progress	Please select from list ...	Mildly stressful
		Moderately stressful
		Very stressful
		Extremely stressful stressful

k. Have you ever been involved in any other type of incident (not listed above) or has there been an aspect of dealing with an incident, which you have found stressful?

[FAQ](#) [Page 7 of 35](#) Your password is: 774687 [back](#) [save & exit](#) [next](#)

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2.2 General work conditions

As with the incidents in 2.1, for the general work conditions listed below, please indicate a) the frequency of the condition that you have experienced and b) the degree of stress associated with each condition experienced:

	Frequency of Incident	Degree of Stress
a. Tiredness at work	Please select from list ...	Please select from list ...
b. Conflict between work demands and home life	Please select from list ... Very frequently (once a week or more) Frequently (once a month or more) Not very (once a year or more) Rarely (less than once a year) Not at all (never)	Please select from list ...
c. Tension with colleagues	Please select from list ...	Please select from list ...
d. Shift work	Please select from list ...	Please select from list ...
e. Unpredictable nature of the work	Please select from list ...	Please select from list ...
f. Dealing with 'false alarms'	Please select from list ...	Please select from list ...

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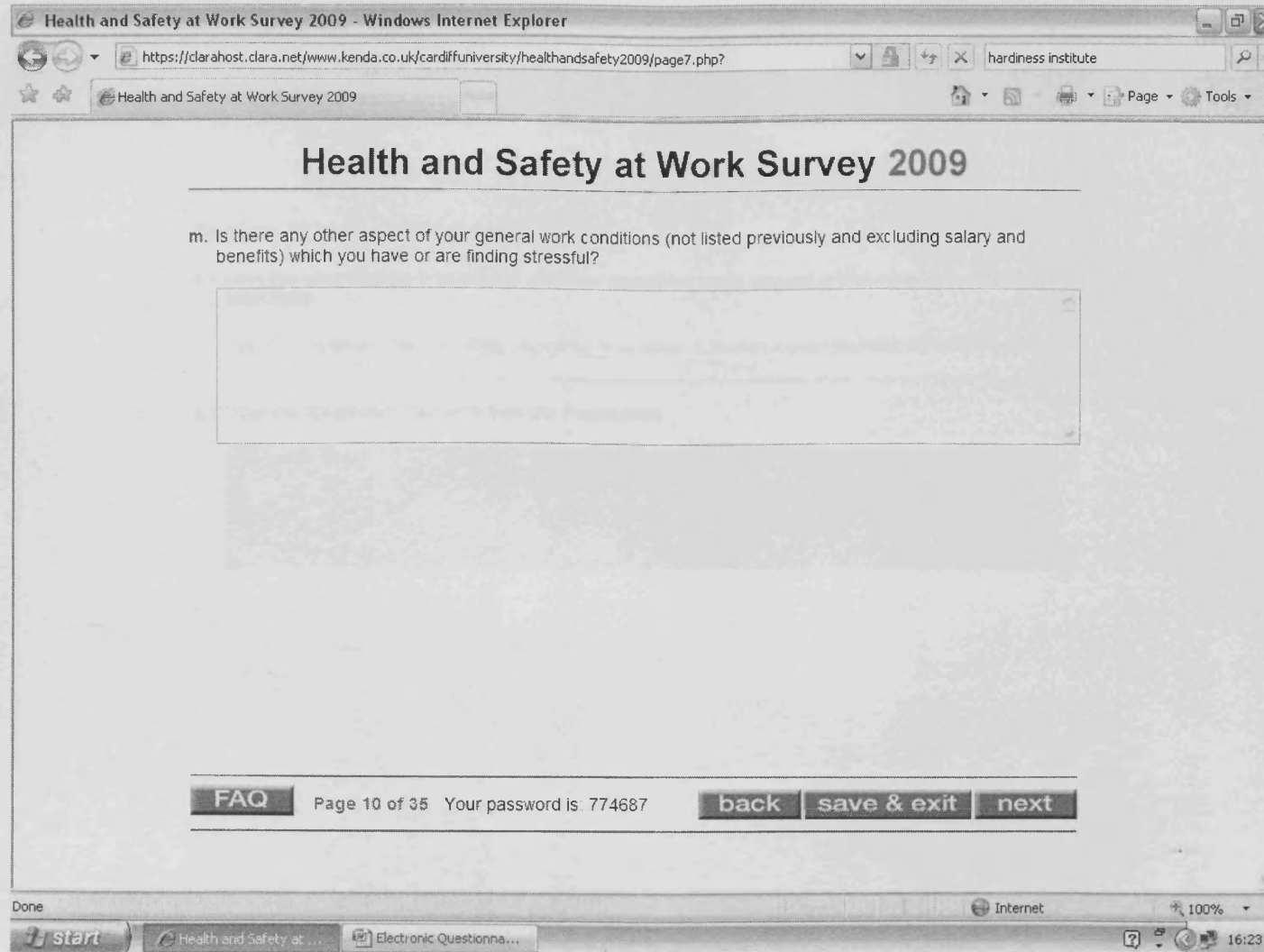
Health and Safety at Work Survey 2009

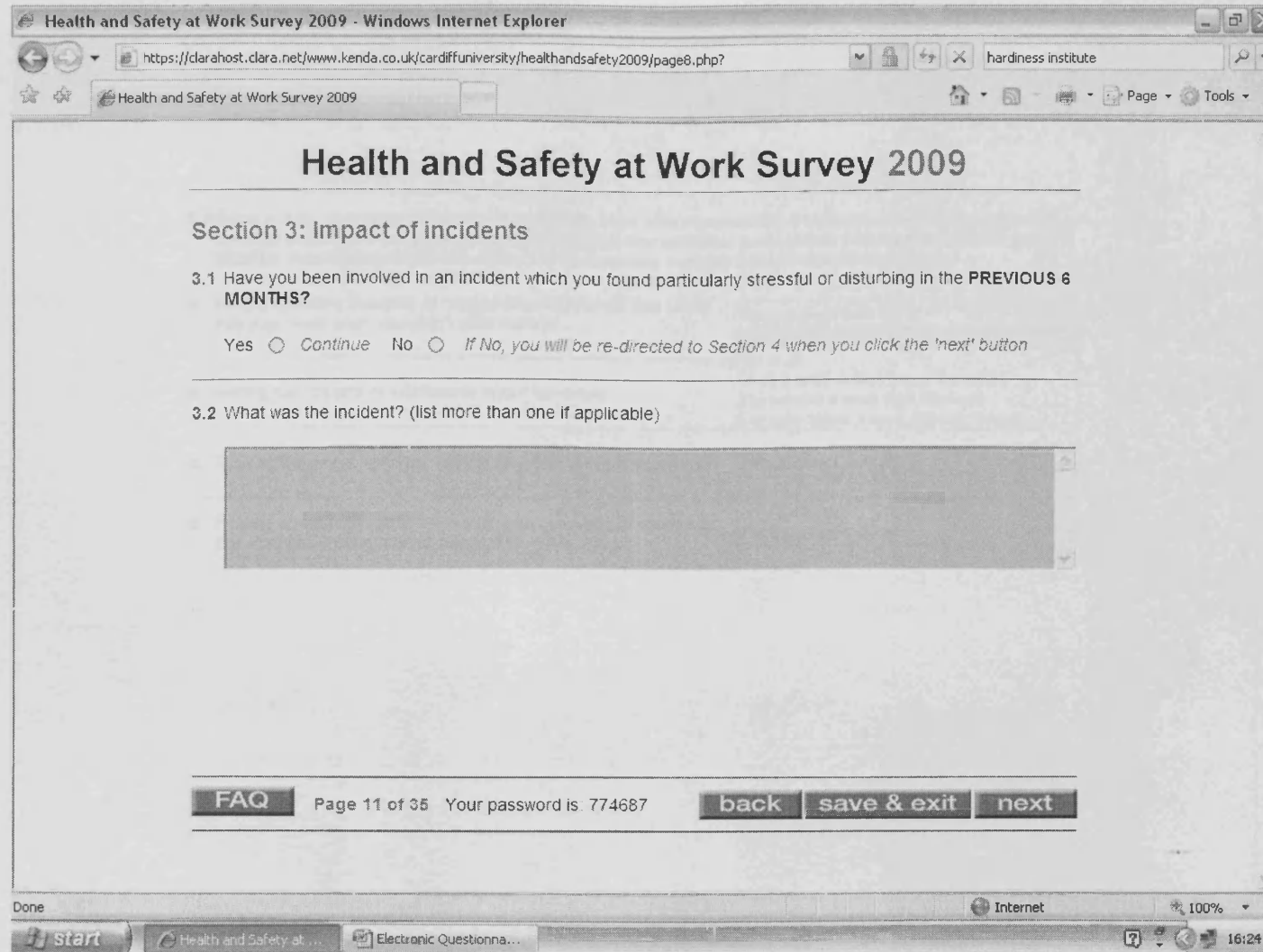
	Frequency of Incident	Degree of Stress
g. Waiting for the next call	Please select from list ...	Please select from list ...
h. Doing overtime	Please select from list ...	Please select from list ...
i. Management of organisational change	Please select from list ...	Not at all stressful Mildly stressful Moderately stressful Very stressful Extremely stressful
j. On the job training	Please select from list ...	
k. Bullying	Please select from list ...	Please select from list ...
l. Lack of support from manager	Please select from list ...	Please select from list ...

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3.3 Below is a list of problems that people sometimes have after experiencing a traumatic event. Read each one carefully and choose the answer that best describes how often that problem has bothered you **IN THE PAST MONTH**. Rate each problem with respect to the traumatic event(s) that you have stated above.

a. Having upsetting thoughts or images about the event that came into your head when you didn't want them to

b. Having bad dreams or nightmares about the event

c. Reliving the event, acting or feeling as if it were happening again

d. Feeling emotionally upset when you were reminded of the event (for example, feeling scared, angry, sad, guilty, etc.)

Please select from list ...

Please select from list ...

Not at all

Once a week or less (once in a while)

2 to 4 times a week (half the time)

5 or more times a week (almost always)

Please select from list ...

Please select from list ...

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e. Experiencing physical reactions when you were reminded of the event
(for example, break into a sweat, heart beating fast)

f. Trying not to think about, talk about, or have feelings about the event

g. Trying to avoid activities, people or places that remind you of the event

h. Not being able to remember an important part of the event

i. Having much less interest or participating much less often in important activities

Please select from list ...

Please select from list ...

Not at all

Once a week or less (once in a while)

2 to 4 times a week (half the time)

5 or more times a week (almost always)

Please select from list ...

Please select from list ...

Please select from list ...

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j. Feeling distant or cut off from people around you

Please select from list ...

k. Feeling emotionally numb (for example being unable to cry or unable to have loving feelings)

Please select from list ...

Not at all
Once a week or less (once in a while)
2 to 4 times a week (half the time)
5 or more times a week (almost always)

l. Feeling as if your future plans or hopes will not come true (for example, you will not have a career, marriage, children, or a long life)

Please select from list ...

m. Having trouble falling or staying asleep

Please select from list ...

n. Feeling irritable or having fits of anger

Please select from list ...

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o. Having trouble concentrating (for example drifting in and out of conversations, losing track of a story on television, forgetting what you read)

p. Being overly alert, for example, checking to see who is around you, being uncomfortable with your back to a door, etc.)

q. Being jumpy or easily startled (for example, when someone walks up behind you)

Please select from list ...

Please select from list ...

Not at all

Once a week or less (once in a while)

2 to 4 times a week (half the time)

5 or more times a week (almost always)

Please select from list ...

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3.4 Have any of the problems you rated above in 3.3 interfered with any of the following areas of your life **DURING THE PAST MONTH?**

a. Work	Yes	☐	No	☐
b. Household chores and duties	Yes	☐	No	☐
c. Relationships with friends	Yes	☐	No	☐
d. Fun and leisure activities	Yes	☐	No	☐
e. Relationships with your family	Yes	☐	No	☐
f. Sex life	Yes	☐	No	☐
g. General satisfaction with life	Yes	☐	No	☐
h. Overall level of functioning in all areas of your life	Yes	☐	No	☐

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3.5 To what extent have the problems interfered with work, your social life or family life?

a. Work

b. Social life/leisure activities

c. Family life/home responsibilities

3.6 Approximately how long was the duration of your distress following the incident(s) stated?

Not at all
Mildly
Moderately
Markedly
Very severely

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Section 4: General outlook, coping and incidents

4.1 Please answer the following 18 questions to the best of your ability and as honestly as possible.
There are no right or wrong answers

a. By working hard, you can always achieve your goal	Please select from list ...
b. I don't like to make changes in my everyday schedule	Please select from list ...
c. I really look forward to my work	Not at all true Somewhat true True Very true
d. I am not equipped to handle the unexpected problems of life	Please select from list ...
e. Most of what happens in life is just meant to be	Please select from list ...
f. When I make plans, I'm certain I can make them work	Please select from list ...

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g. No matter how hard I try, my efforts usually accomplish little	Please select from list ...
h. I like a lot of variety in my work	Please select from list ...
i. Most of the time, people listen carefully to what I have to say	Not at all true
j. Thinking of yourself as a free person just leads to frustration	Somewhat true
k. Trying your best at what you do usually pays off in the end	True
l. My mistakes are usually very difficult to correct	Very true
m. It bothers me when my daily routine gets interrupted	Please select from list ...

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start Electronic Questionna... Health and Safety at ...

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n. I often wake up eager to take up life wherever it left off

o. Lots of times I really don't know my own mind

p. Changes in routine provoke me to learn

q. Most days, life is really interesting and exciting for me

r. It's hard to imagine anyone getting excited about working

Please select from list ...

Please select from list ...

Not at all true

Somewhat true

True

Very true

Please select from list ...

Please select from list ...

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4.2 When thinking about incidents that you have been involved with in the **LAST 6 MONTHS**, how frequently have you used the following methods for coping and how helpful have you found them?

	How Frequently	How Helpful
a. Black humour	Please select from list	Please select from list
b. Talking with colleagues	Please select from list	Please select from list
c. Looking forward to going off duty	Very frequently	Please select from list
	Frequently	Please select from list
d. Keeping thoughts/feelings to self	Not very frequently	Please select from list
	Rarely	Please select from list
	Not at all	Please select from list
e. Thinking about own family	Please select from list	Please select from list
f. Thinking about outside interests	Please select from list	Please select from list

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	How Frequently	How Helpful
g. Avoid thinking about what you are doing	Please select from list ...	Please select from list ...
h. Thinking about positive benefits of work	Please select from list ...	Please select from list ...
i. Try to be very organised so that you can keep on top of things	Please select from list ...	Very helpful
j. Try to see the situation as an opportunity to learn and develop new skills	Please select from list ...	Helpful
k. On Station incident de-briefing sessions	Please select from list ...	Not sure
		Unhelpful
		Very unhelpful

4.3 Are there any other methods of coping with the impact of incidents which you use but are not mentioned above in 4.2 a - k?

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Done Internet 100% 16:28

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4.4 Do you feel that you are given sufficient time to recover emotionally between incidents?

-----Please select from list-----

4.5 Do you find that regular exposure to incidents makes you:

Yes
Adequate
No
Don't Know/Not Applicable

4.6 To what extent are your peers supportive after critical incidents?

-----Please select from list-----

4.7 To what extent do any concerns that you may have about confidentiality and risk to career prospects deter seeking personal help after critical incidents?

-----Please select from list-----

4.8 To what extent would better training and pre/post-incident briefing have helped you to cope more successfully with previous critical incidents?

-----Please select from list-----

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Done Internet 100% 16:29

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4.9 To what extent would better equipment have helped to cope more successfully with previous critical incidents?

4.10 To what extent has previous maritime experience helped you to cope more successfully with critical incidents?

4.11 Have you ever made use of a formal counselling service via the Agency to help you deal with the impact of a critical incident?

a. If YES. How useful did you find it?

Any comments:

b. If NO, why not?

-----Please select from list-----
Please select from list-----
Not at all
Rarely
Sometimes
Always
Not Applicable

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back save & exit next

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4.12 In your opinion, does the Agency provide sufficient support for stress/potential stress from incidents?

If No, please comment

-----Please select from list-----
-----Please select from list-----
Yes
Adequate
No
Don't Know

4.13 What could be done to improve support in dealing with the impact of incidents?

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Section 5: Your general well-being

5.1 In the **LAST 12 MONTHS**, have you had any accidents that **required** medical attention from someone else (e.g. first aider, GP, nurse or hospital doctor)?

a. **WHILST WORKING** Please select from list ... If more than 6, please specify ...

b. **OUTSIDE WORK** Please select from list ... If more than 6, please specify ...

5.2 In the **LAST 12 MONTHS**, how frequently have you had minor injuries (e.g. cuts and bruises) that **did not** require medical attention?

a. **AT WORK** Please select from list ...

b. **OUTSIDE WORK** Please select from list ...

Not at all
Rarely
Occasionally
Quite frequently
Very frequently

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5.3 In the **LAST 12 MONTHS**, approximately how many days sick leave have you had?

5.4 Over the **LAST 12 MONTHS**, how would you say your health in general has been?

Please select from list ...

- Very good
- Good
- Fair
- Bad
- Very bad

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5.5 Have you taken any of the following medicines prescribed by a doctor? Please select the relevant option to indicate whether you have taken each medicine in the **LAST 14 DAYS/ LAST MONTH/LAST YEAR** or **NOT AT ALL**

a. Pain killers	Please Select ..
b. Medicines for indigestion	Please Select ..
c. Blood pressure tablets	In the last 14 days
d. Sleeping pills	In the last month
e. Anti-depressants	In the last year
f. Medicines for stress or anxiety	Not at all
g. Laxatives (bowel opening medicine)	Please Select ..
h. Other medicine (please describe below)	Please Select ..

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5.6 In the **LAST 12 MONTHS**, have you suffered from any illness that you think was caused, or made worse by work?

No ☐ Yes ☐ If Yes, please specify and comment below:

5.7 In general, how do you find your job?

5.8 How do you find life in general?

Please select from list ...

Please select from list ...

Not at all stressful

Mildly stressful

Moderately stressful

Very stressful

Extremely stressful

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start Health and Safety at ... Electronic Questionna... Internet 100% 16:32

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5.9 The following items are concerned with your feelings and thoughts at work during the **LAST MONTH**.
In each case, please indicate how often you felt or thought a certain way.

IN THE LAST MONTH, how often have you ...

a. Been upset because of something that happened unexpectedly?	Please select from list ...
b. Felt that you were unable to control the important things in your life?	Please select from list ... Never Almost never Sometimes Fairly often Very often
c. Felt nervous and 'stressed'?	Please select from list ...
d. Dealt successfully with day-to-day problems and annoyances?	Please select from list ...
e. Felt that you were effectively coping with important changes that were occurring in your life?	Please select from list ...
f. Felt confident about your ability to handle your personal problems?	Please select from list ...

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g. Felt that things were going your way? Please select from list ...

h. Felt that you could not cope with all the things that you had to do? Please select from list ...

i. Been able to control irritations in your life? Please select from list ...

j. Felt that you were on top of things? Please select from list ...

k. Been angered because of things that were outside your control? Please select from list ...

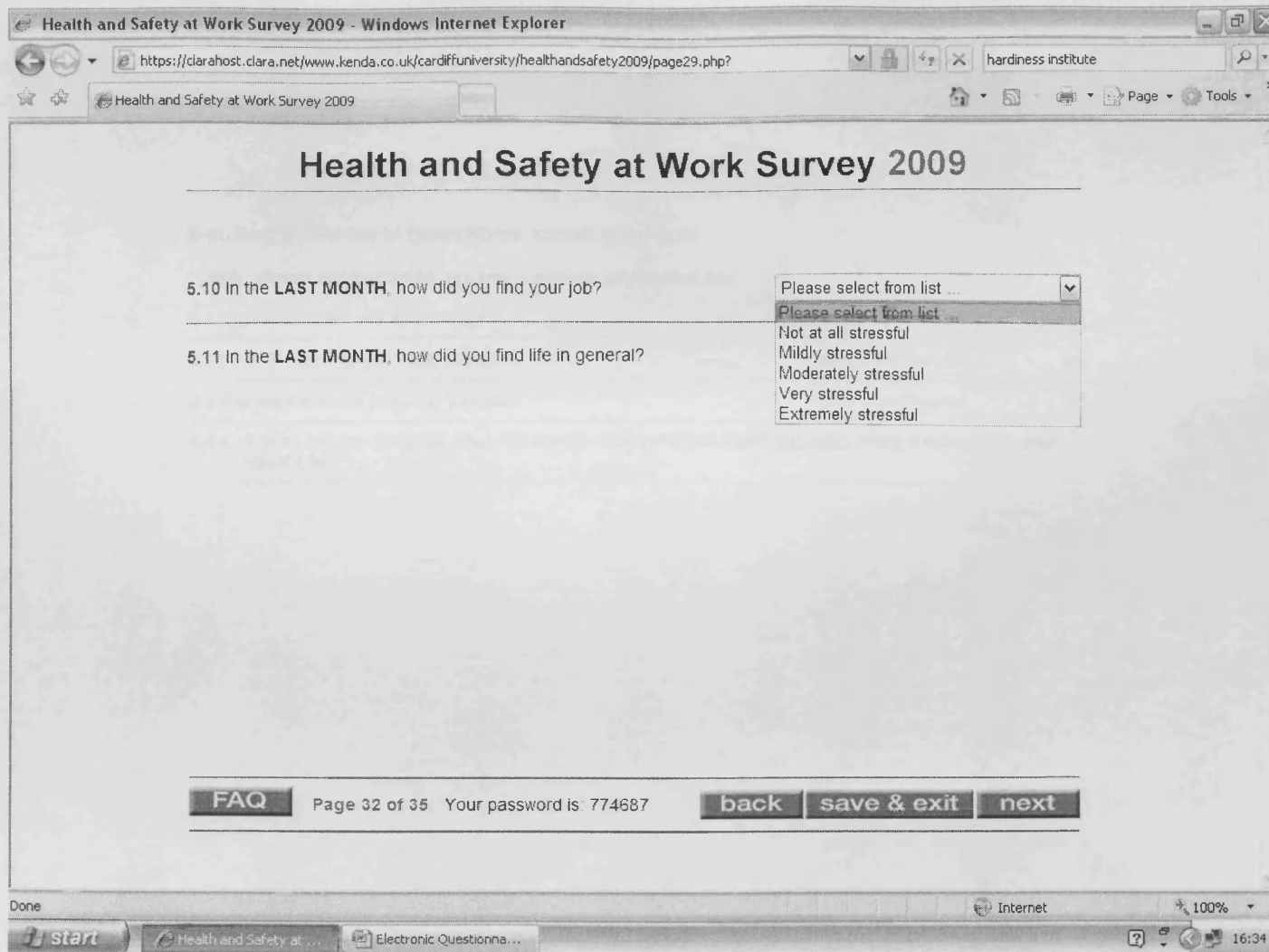
l. Found yourself thinking about things that you have to accomplish? Please select from list ...

m. Been able to control the way you spend your time? Please select from list ...

n. Felt difficulties were piling up so high that you could not overcome them? Please select from list ...

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start Health and Safety at ... Electronic Questionna... Internet 100% 16:34



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Section 6: General questions about your job

Finally, please answer these general questions about your job:

6.1 How satisfied are you with your job?

6.2 To what extent do you enjoy your job?

6.3 How motivated are you to do your job?

6.4 a. If there was one thing that you could change about **your job itself** (excluding salary and benefits), what would it be?

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Done Internet 100% 16:34

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6.4 b. How stressful do you find this aspect of your job?

c. If **very** or **extremely** stressful, please comment:

Please select from list ...

- Please select from list
- Not at all stressful
- Mildly stressful
- Moderately stressful
- Very stressful
- Extremely stressful

6.5 What was your main reason for joining HM Coastguard?

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Done Internet 100% 16:35

start Health and Safety at ... Electronic Questionna...

