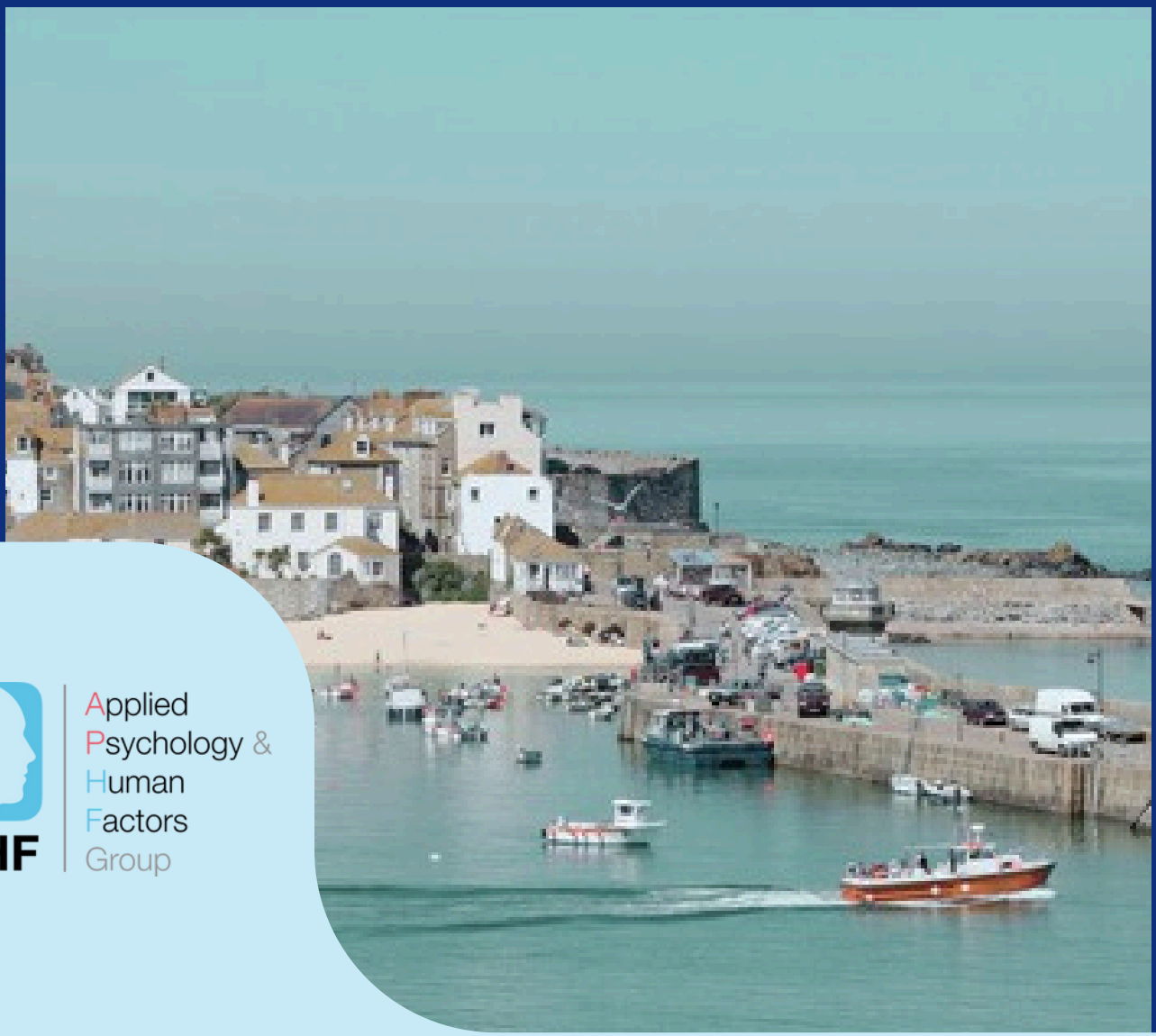

APHF

Applied Psychology & Human Factors Group

NON–TECHNICAL SKILLS IN COMMERCIAL FISHING

WHAT ARE NON-TECHNICAL SKILLS? AND WHY ARE THEY IMPORTANT?

The social and cognitive skills, alongside technical expertise, needed for safe and effective work performance.

Non-technical skills have been studied for more than five decades, and are a **core component of a human factors approach to safety** in high risk industries. These skills are based on evaluation and understanding of the ways in which people think, behave and interact with others within the workplace and encompass cognitive (situation awareness, decision-making, cognitive readiness, task management), social (teamwork, communication, leadership) and personal management skills. **Where these skills are compromised or lacking, adverse incidents can result** - analysis of key industrial incidents (including the Tenerife air disaster, Deepwater Horizon and Three Mile Island) have consistently identified non-technical skill lapses (such as poor decision-making, compromised situation awareness) as a factor within accidents and adverse events.

Within high risk industries such as aviation, healthcare, nuclear power, farming and fishing, workers need to be skilled in order to navigate complex, dynamic and hazardous environments. In order **to support workers, and minimise the risk of accident and injury, many of these industries have implemented non-technical skills training** (as an example, within aviation in the UK all commercial pilots must undertake non-technical skills training - encompassed within crew resource management training - on a regular basis to maintain their pilot licence).

Training for

SAFETY

WHY DO WE NEED A TAILORED NON-TECHNICAL SKILLS FRAMEWORK FOR FISHING?

Non-technical skills are a vital aspect of work performance and safety, regardless of the industry. However, the way in which these skills are used differ depending on the context, and the job role of the person using those skills; **a pilot and a fisher will each need situation awareness,** but what they are looking for, the mental picture they form of their environment, and the factors they try to anticipate within their contexts will differ. It's really important, therefore, to develop a tailored non-technical skills framework (listing the relevant skills for the context, along with skill elements and behaviours) to ensure training focuses on the most relevant, and important, skills for a particular context, and that those skills are described using the correct terminology. **Training developed using a context specific framework is more likely to engage workers, and research indicates that training should be tailored for context and role to be effective.**

A tailored framework is not only for formal training purposes - the framework can be used for:

- Supporting new fishers on entry to the industry by raising their awareness of the core skills needed for safety, and providing examples of those skills in practice.
- Crew discussions after a near miss or incident - the framework can help identify where things may have gone wrong, and support learning from incidents.
- Providing a structure for a skipper to provide feedback to deckhands on performance and safety - which should also help identify training needs.
- Helping fishers to identify learning needs, and providing guidance for reflection and self development.

WHAT ARE THE KEY NON-TECHNICAL SKILLS FOR FISHERS?

We conducted three studies (an analysis of incidents, interviews with fishers, and discussion groups with fishing stakeholders) to identify the core non-technical skills considered essential for fishing safety:

- **Task and boat management:** This skill encompasses the appropriate application of safety standards, planning fishing each day, preparing everything needed to fish safely, and putting safety measures in place when working alone.
- **Personal management:** This skill focuses on strategies for managing stress, fatigue and mental health and adapting tasks to personal abilities.
- **Situation awareness:** A core thinking skill, incorporating collecting information on weather and tides before fishing, monitoring the environment to identify and avoid hazards, applying navigational constraints, and avoiding problems by thinking ahead.
- **Dynamic decision-making:** The skill of using information from risk assessments, and evaluation of the situation, to solve problems and reach effective decisions to maintain safety.
- **Leadership:** This skill is most relevant for skippers, and encompasses modelling safety behaviours, guiding task behaviours, protecting worker well-being and building a supportive team environment.
- **Crew communication and teamwork:** Sharing information across the crew, sharing workload and coordinating effectively.
- **Communication with third parties:** This skill focuses on communication with other boats, the authorities and pre-fishing communication to share plans with others.

You can read about each of these skills in detail, including examples of positive and negative behaviours, via the FiNS handbook: **CLICK HERE.**

These skills highlight the dynamic and high-risk domain of fishing, with an emphasis on the importance of pre-planning, ongoing monitoring when at sea, and the need for quick thinking, and problem-solving when things start to go wrong. **Experience will help fishers recognise and respond to hazards and emergency situations, with non-technical skills training having the potential to supplement and enhance that experience - particularly for new fishers.**

WHAT SHOULD WE DO NOW?

Our research, and the FiNS framework, help bring commercial fishing **in line with other high-risk industries by providing a tailored non-technical skills framework to support safety and training.** However, in order to actually make a difference, improve safety and reduce accident and injury rates, the FiNS framework needs to be incorporated into training programmes for fishers. Best practice, as seen within aviation (the industry with the longest history of non-technical skills training) suggests fishers should receive regular non-technical skills training from point of entry into the industry. You can read more about the aviation approach to training via the CAA crew resource management handbook: **CLICK HERE.** Training in non-technical skills can be provided alongside technical skill training, with both assessed via over-arching competencies.

A benefit of non-technical skills training beyond improved safety is that the changes can usually be implemented with no financial cost to the individual (since training focuses on behaviours and does not usually require new equipment), and is **likely to enhance effectiveness and efficiency as well as safety**.

If you would like support in developing or implementing training please get in touch: Dr Amy Irwin, University of Aberdeen, a.irwin@abdn.ac.uk