Beneath the surface:
A psychological exploration of the experiences of commercial fishers

Rebekah Elisabeth Ann Boynton
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For Anne and the fabulous people in my life because of her.
Huzzah.

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Abstract

Commercial fishers face a range of pressures which make it challenging for them to participate in the industry. Previous research has identified a range of factors such as attachment (both to place and livelihood), identity and income flexibility that influence how commercial fishers experience and respond to pressures. However, there is a limited understanding of the processes by which commercial fishers make decisions in the face of threats, and how these psychosocial and economic factors influence their decisions. The aim of this project was to better understand how commercial fishers are impacted by, cope with, and respond to the mix of pressures they face. This was done by exploring the psychological processes by which commercial fishers make decisions in the face of threats. Key psychological constructs in decision making and responding were identified to develop a theoretical framework. This framework was then used to conduct an in-depth exploration of the lived experiences of commercial fishers operating on the east coast of northern Queensland.

Semi-structured interviews were conducted with a sample of 20 commercial fishers (4 female and 16 male) operating on the east coast of northern Queensland. An exploratory qualitative approach was used given there was limited research applying the identified psychological theory with the target population and therefore inadequate evidence to make reasonable predictions about commercial fishers' psychological decisions and responses. A phenomenological framework was employed in the current research as it offered an approach to uncover the meanings of individual experiences and in turn, to develop an understanding of how commercial fishers think, feel, and behave in difficult times. Reflexive thematic analysis was used to identify themes and patterns in the data.

The current research found that of all pressures facing commercial fishers in this study, they were most concerned about the impacts of fisheries management and reported that other pressures they were concerned about were directly or indirectly caused or exacerbated by fisheries management. In contrast, commercial fishers showed little concern about the threat of climate change either in the form of a perceived threat or an emotional response to the threat. The findings of this study have further theoretical implications for contemporary theories of cognitive-emotional decision making and practical implications for the commercial fishing industry. For instance, the findings support the proposition that the theoretical framework guiding the current research contains broad psychological constructs such as threat perception, emotions, and efficacy evaluations which can be used to understand the motivations and responses of individuals in a range of contexts. However, findings also

emphasise the importance of understanding the context in which the theory is applied. For instance, the current research suggests that contextual factors such as identity, attachment (to livelihood and place), and out-group relationships play an important role in how commercial fishers process and respond to threats to their livelihoods and that such factors may alter the typical decision-making process. The findings of this study have practical implications relating to how commercial fishers' ability to cope with and adapt to stressors can be built and maintained, and relating to how fisheries are managed, including reducing the burden of fisheries management on commercial fishers.

Table of Contents

List of Tables

List of Figures

Introduction

The commercial fishing industry contributes important social and economic benefits to local, state, and national communities. Such benefits include the commercial fishing industry's contributions to employment, domestic and international trade, food security, community identities, cultural heritage, and generational environmental knowledge (Mobsby, 2018; Voyer, Barclay, McIlgorm, & Mazur, 2016). However, commercial fishers are faced with a multitude of interacting pressures which challenge their participation in the commercial fishing industry (Pickworth et al., 2006; Schirmer & Pickworth, 2005a). For example, competition and conflict, weather and climate, job characteristics and fisheries management can have negative impacts on the viability of commercial fishers' businesses, their psychological and physical health, and their ability to participate in their livelihood. Further to this, commercial fishers operating on the east coast of northern Queensland face their own unique set of challenges. For instance, given the cultural significance and vulnerability of the Great Barrier Reef, significant management efforts have been directed towards protecting this natural resource. Such management efforts have both direct and indirect impacts on resource users such as commercial fishers through restricting access and activities in marine environments (State of Queensland, 2016).

The behaviour of commercial fishers has significant implications for how the commercial fishing industry is supported and managed to ensure social, economic and environmental sustainability of the industry. For example, commercial fishers' willingness and ability to cope with and adapt to changes such as new or altered fisheries regulation may negatively impact the wellbeing of the industry (with social and economic consequences to individuals and the industry) and the ability of fisheries management to achieve it's goals (such as the protection and conservation of natural resources). Therefore, it is becoming increasingly important to understand the drivers of commercial fishers' behaviour. Previous research has identified a range of psychosocial and economic factors which influence how commercial fishers experience and respond to the pressures they face. Most significantly, commercial fishers demonstrate a strong attachment to their livelihood and the places they perform their livelihood, identification with commercial fishing and low income flexibility which provide some insights into how commercial fishers experience and respond to pressures. However, there is a limited understanding of the processes by which commercial fishers make decisions in the face of threats, and how these psychosocial and economic factors influence their decisions and subsequent responding.

The field of psychology has a rich history of exploring how people make decisions about threats and how these decisions influence their responses to these threats. The current research uses a theoretical framework which was informed by prominent models in the field. For example, the theoretical framework employed in this study was informed by the Protection Motivation Theory (PMT; Rogers, 1975) and the Extended Parallel Process Model (EPPM; Witte, 1992). The PMT and EPPM are two of the most commonly used theoretical models in psychological studies of threat perception and decision-making and are the culmination of decades of research in this field. From these models key cognitive and emotional antecedents to motivation and responses to threats (such as perceived threat, perceived efficacy, and fear) were identified. While such models provide insights into the cognitive and emotional antecedents of motivation and responding, they lack a detailed account of the nature of the resulting responses or coping strategies employed. Consequently, Lazarus' (1966) Transactional Model of Stress and Coping was used to address this limitation and inform the development of a theoretical framework to guide the current research. The works of Lazarus, Folkman and colleagues suggest that rather than fear, negative and positive emotions are part of the decision-making process, and that decision-making processes motivate three types of responses: problem-focused, emotion-focused, and meaning-focused responses which manifest in a variety of forms.

The aim of this project was to better understand how commercial fishers are impacted by, cope with, and respond to the mix of pressures they face by exploring the psychological processes by which commercial fishers make decisions in the face of threats. This aim was achieved by identifying key psychological constructs in decision making and responding to develop a theoretical framework which was then used to conduct an in-depth exploration of the lived experiences of commercial fishers operating on the east coast of northern Queensland. This research addresses the limited understanding of the processes by which commercial fishers make decisions in the face of threats and how psychosocial and economic factors influence their decisions and subsequent responding. By addressing this gap in understanding, this research is positioned to inform a range of theoretical and practical recommendations.

This thesis contains 12 chapters. Chapters 1 presents an overview of what is currently known about the people that make up the commercial fishing industry and the environment they operate in. Chapters 2 and 3 present the theory which informed the theoretical framework guiding the research. This includes a review of theory regarding threat perception and decision making (Chapter 2) and the nature of responses resulting from psychological

decision-making processes (Chapter 3). This is followed by an overview of the guiding theoretical framework and research questions in Chapter 4, and methodology and methods employed in the current research in Chapter 5. The results and discussion are presented across Chapters 6 to 11. Each of these chapters focuses on a key element of the theoretical framework guiding the research including threat perception (Chapter 6), emotional experiences (Chapter 7), perceived efficacy (Chapter 8), motivational drivers (Chapter 9), responses (Chapter 10) and other influencing factors (Chapter 11). Key insights about commercial fishers and the environment they operate in (Chapter 1) and psychological theories of threat perception, decision making, and behaviour (Chapters 2 and 3) are integrated to offer interpretations of the findings. The results and discussions for each theoretical element are presented together, and each chapter builds upon the findings of the previous, so that once the reader concludes these chapters, they have a holistic and integrated view of participants' experiences. This then enables discussion of the theoretical and practical implications of the project as a whole in Chapter 12.

1 Research Context

The commercial fishing industry produces important social and economic benefits to local, state, and national communities in Australia. In Queensland alone, it was estimated that almost 7,500 people were directly employed in the industry and the gross value of production for the Queensland commercial fishing industry was estimated at $AUD 193 million (Mobsby, 2018). The contributions of the commercial fishing industry extend beyond employment rates and the gross value of production. For example, commercial fishing is reported to contribute to resilient local economies; local, national, and international access to local seafood and food security; community identities; cultural heritage; and the generation of environmental knowledge (Mobsby, 2018; Voyer et al., 2016). However, commercial fishers[1] currently face a range of pressures which they may perceive as a threat towards their ability to participate in the industry (Chapter 2 provides a psychological explanation of how and why individuals may or may not perceive threats). The purpose of this chapter is to provide an overview of what is currently known about the people who constitute the commercial fishing industry, and the environment in which they operate[2]. As previously stated, the purpose of the current research is to conduct a psychological investigation of the processes by which commercial fishers make decisions in the face of threats, and how these psychosocial and economic factors influence their decisions and subsequent responding. However, as the current chapter will highlight, examination of human factors in the commercial fishing industry has been dominated by social sciences such as sociology and anthropology. In the absence of considerable psychological literature within this context, the social scientific literature serves as an evidence base which can inform this psychological investigation and support the interpretation of findings. Therefore, this review draws upon many fields to introduce key insights into the nature of the pressures which commercial fishers may face and the human factors that influence commercial fishers' experiences of and responses to such pressures. This chapter will conclude with a discussion of the gaps in the literature which have led to the current research and suggestions for further reading on topics of interest.

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[1] Commercial fishers in this research are those who self-identify as commercial fishers. The definition of what a commercial fisher is differs across stakeholders however generally, a commercial fisher is someone who undertakes activities relating to the take and sale of fisheries resources.

[2] Only literature most relevant to the aims of the research has been presented. Consequently, there is literature omitted that is not directly relevant. A summary of key topics for further reading is presented in Appendix A, page 305.

1.1 Commercial fishers

Commercial fishers' livelihoods are important to them for a range of reasons, including psychologically, socially, and economically. By understanding what contributes to importance of commercial fishers' livelihoods, we can begin to understand why and how pressures that threaten commercial fishers' ability to participate in the industry impact the lives of commercial fishers. Furthermore, these factors may also provide insights into how commercial fishers cope with and respond to such pressures. Through this literature review, it was identified that the psychological, social, and economic importance of the commercial fishing industry was underpinned by commercial fishers' attachment to their livelihood and places they undertake their livelihood, their identification as a commercial fisher, the familial nature of commercial fishing, their income flexibility, and demographic characteristics of commercial fishers.

1.1.1 Demographic profile

To understand the importance that commercial fishers' livelihoods hold for them, it is critical to first understand the demographic profile or typical demographic characteristics of the commercial fishing industry. Of particular interest is the gender distribution of commercial fishers, the nature of family involvement in commercial fishing businesses and the educational background of commercial fishers. As will later be discussed, these demographic characteristics are proposed to underpin the psychological, social, and economic importance of commercial fishers' livelihoods.

It appears that the division of labour in commercial fishing businesses tend to align with traditional gender roles. That is, typically, the people who do the fishing are male (Mobsby, 2018). As a result, the commercial fishing industry tends to be described as a male dominated industry however, the role of women in the industry is increasingly being recognised (for example, Dowling, 2011; Willson, 2016). For example, research has identified that women tend to undertake land-based, unpaid business activities such as managing business finances, organising and employing crew, keeping up to date with legislation, active involvement in decision-making processes for management and policy and provide support (including emotional support) to others in the fishing community (Britton, 2012; Calhoun, Conway, & Russell, 2016; Coulthard & Britton, 2015; Dowling, 2011; Marshall, Fenton, Marshall, & Sutton, 2007; Pickworth et al., 2006; S. Smith, Jacob, Jepson, & Israel, 2003; Zvonkovic, Solomon, Humble, & Manoogian, 2005).

Researchers have found that many fishers report not completing formal secondary or tertiary[3] education (Marshall et al., 2017; Momtaz & Gladstone, 2008; Pickworth et al., 2006; Schirmer & Pickworth, 2005a; Sutton & Tobin, 2012). However commercial fishers often demonstrate extensive experience in the commercial fishing industry (Marshall, Marshall, Abdulla, & Rouphael, 2010; Pickworth et al., 2006). For many commercial fishers, commercial fishing is the only job they have ever known, and they learned to fish from a young age (Marshall, Marshall, & Abdulla, 2009). Knowledge and skills gained in the commercial fishing industry are typically learnt on-the-job through family members, other commercial fishers or are self-taught (Pickworth et al., 2006; Schirmer & Pickworth, 2005a).

Australian commercial fishing operators tend to report a high level of family involvement and often commercial fishers report an intergenerational history of commercial fishing (McPhee, 2008; Pickworth et al., 2006; Schirmer & Pickworth, 2005a, 2005b). In Australia, it is common for fishers to report familial ties to commercial fishing that extends across generations (Pickworth et al., 2006). For example, in one Australian fishing community, researchers found that almost half of the participants reported a family history of involvement in the commercial fishing industry (Pickworth et al., 2006). While fishers often *report* familial connections, Minnegal and colleagues (2003) found that reported familial connections tend to be more common than actual familial connections. Minnegal and colleagues (2003)'s research suggests that in the absence of actual familial connections, reported familial may be a mechanism through which fishers express their attachment to (discussed below) and identification with commercial fishing (discussed from page 9).

While it may be that the demographic characteristics presented here are reflective of the Queensland and broader Australian commercial fishing industry, there is limited evidence to confirm this is the case. This is particularly true when considering the gender and age distribution in the commercial fishing industry. Further reporting of population level data is required to generate an accurate demographic profile of the Queensland and Australian commercial fishing industry however, existing evidence suggests that the demographic characteristics highlight unique characteristics of the industry and as will be demonstrated, may be critical to understand why commercial fishers' livelihoods are important to them psychologically, socially, and economically.

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[3] In the Australian education system, secondary education refers to formal education through high schools and tertiary education refers to formal education through universities, TAFE colleges and vocational education and training providers.

1.1.2 Attachment

The importance of commercial fishing for commercial fishers can be partly understood by examining the tendency for commercial fishers to be attached to their livelihood and the places in which they fish. Attachment can be defined as a bond or sense of connection an individual has formed to people and places among other things (Lewicka, 2011; Scannell & Gifford, 2010) and therefore, understanding commercial fishers' attachment may provide insights into the psychological importance that commercial fishing holds for them. Research demonstrates that it is common to observe strong attachment to place and role in people who work in primary industries, such as fishing and farming (for fishing see, Marshall, Adger, et al., 2019; Marshall et al., 2017; Marshall, Tobin, Marshall, Gooch, & Hobday, 2013; Pickworth et al., 2006; Urquhart & Acott, 2014; Worster & Abrams, 2005; and for farming see Cheshire, Meurk, & Woods, 2013; Hicks, Sappey, Basu, Keogh, & Gupta, 2012).

Scannell and Gifford (2010) proposed a theory of place attachment and argue that place attachment has three elements: person, psychological processes, and place. That is, place attachment is proposed to involve connection between people (individuals and groups) and meaningful places. These connections are proposed to become meaningful through psychological processes (Lewicka, 2011; Scannell & Gifford, 2010). Research has repeatedly demonstrated that commercial fishers tend to feel a strong attachment to their local community and the places they fished (Marshall, Adger, et al., 2019; Marshall et al., 2017; Marshall, Tobin, et al., 2013; Pickworth et al., 2006; Worster & Abrams, 2005).

Research also indicates that commercial fishers also have a strong attachment to their livelihood, not simply the place in which they live and work. For many, being a commercial fisher is more than an income or occupation. Rather, commercial fishers' attachment to the livelihood is evidenced by their perception that their livelihood is a way of life, or a lifestyle, and one to which they are deeply committed (Holland, Abbott, & Norman, 2019; Marshall et al., 2010; 2016; 2017; Marshall, Tobin, et al., 2013; Ross, 2013; Seara, Clay, & Colburn, 2016; Shaw, Johnson, & Dressler, 2011). Similarly, when examining the attachment of farmers, Cheshire et al. (2013) argued that attachment experienced by the farmers was not necessarily place bound. Consequently, Cheshire et al. (2013) proposed a model of attachment in farmers that consisted of attachment to place, and attachment to farming as a practice. Research in the commercial fishing industry suggest a similar pattern of attachment in that commercial fishers can be attached to commercial fishing as a practice, the places in which they fish or both.

Lewicka (2011) argues that little is known about the processes by which people become attached to places however there is arguably less known about the processes by which people, such as farmers and fishers, become attached to their livelihoods. Scannell and Gifford (2010) propose that the psychological processes which contribute to place attachment have affective, cognitive, and behavioural aspects. Place attachment involves (1) a person having an *emotional* connection to a place (Chow & Healey, 2008; Lewicka, 2011; Low, 1992; Manzo, 2003, 2005; Scannell & Gifford, 2010); (2) *cognitive* elements such as knowledge, beliefs and memories that a person associates with a place which makes it important or meaningful (Chow & Healey, 2008; Fullilove, 1996; Lewicka, 2011; Low, 1992; Scannell & Gifford, 2010); and (3) the *behavioural* manifestation of place attachment such as proximity-maintaining behaviours (Chow & Healey, 2008; Lewicka, 2011; Low, 1992; Scannell & Gifford, 2010).

Researchers have proposed common experiences of commercial fishers which may provide insight into how commercial fishers develop an attachment to their livelihood. For example, Garavito-Bermúdez and Lundholm (2017) argue that the educational background of commercial fishers may facilitate their attachment to their livelihood. Specifically, the style of learning common in commercial fishing that enables the accumulation, transfer, and adjustment of knowledge, through work practices provides a mechanism through which commercial fishers develop an attachment to their livelihood. The strong family connection to commercial fishing, manifested through family-based businesses and the intergenerational transfer of businesses and knowledge is argued to be another mechanism through which commercial fishers develop an attachment to their livelihood and the communities in which they fish (Garavito-Bermúdez & Lundholm, 2017; Momtaz & Gladstone, 2008; Voyer, Gladstone, & Goodall, 2014). Furthermore, it is proposed that place attachment is likely to arise when places support goal attainment (Jorgensen & Stedman, 2001; R. L. Moore & Graefe, 1994; Scannell & Gifford, 2010; Stokols & Shumaker, 1981) for example, by providing the resources that are required for achieving a goal. Therefore, it may be that for fishers, they come to value, or become attached to the places in which they perform their livelihood. Such places provide them with access to resources necessary to perform their livelihood such as fish stocks.

Attachment can have both positive and negative outcomes for individuals. In particular, there is an important relationship between place attachment and well-being where while a high quality of life is associated with the maintenance of the attachment and conversely, can have significant negative impacts on quality of life when broken (Scannell,

Cox, Fletcher, & Heykoop, 2016; Scannell & Gifford, 2017). Consistent with this, commercial fishers who reported being attached to the places in which they fish also reported that those places contributed positively to their quality of life and well-being (Marshall et al., 2016). However, commercial fishers reported that should the health of the place in which they fished decline, they would also be personally affected (Marshall et al., 2017).

Furthermore, research in the commercial fishing industry demonstrates that livelihood attachment can have contradictory consequences. For example, researchers found that commercial fishers who were strongly attached to their livelihood had a greater capacity to adapt in the face of change (Marshall et al., 2013). However, researchers also report commercial fishers who are "excessively" attached to their livelihood have a far lower capacity to adapt and are less resilient to change. For example, commercial fishers with a high attachment to their livelihood, have been reported to be more likely to perceive industry change as negative and may subsequently become vulnerable to institutional change (Forster, Lake, Watkinson, & Gill, 2014; Marshall et al., 2007; Sutton & Tobin, 2012), and are likely to be less flexible in the face of change (Marshall & Marshall, 2007). Furthermore, multiple studies have found that the more strongly attached commercial fishers were, the less willing they were to consider leaving the commercial fishing industry despite insurmountable challenges (Himes-Cornell & Hoelting, 2015; Marshall et al., 2007; McGoodwin, 2001). Instead, attachment may result in commercial fishers performing responses that allow them to maintain or enhance their attachment to their livelihood (Kelty & Kelty, 2011; Morgan, 2016). In other words, commercial fishers' livelihood attachment may result in the performance of proximity-maintaining behaviours which may have adaptive or maladaptive consequences.

1.1.3 Collective identity

Research shows that commercial fishers' identity tends to be tied to their role as a commercial fisher (Marshall et al., 2016; Marshall et al., 2017; Marshall et al., 2007; Marshall et al., 2010; Marshall, Tobin, et al., 2013; Worster & Abrams, 2005). The identity of commercial fishers may further explain why commercial fishers' livelihoods are important to them, particularly from a social perspective. Our personal self-concept, or identity, is argued to be made up of multiple identities (Amiot, de la Sablonniere, Terry, & Smith, 2007) including both personal and collective or social identities. While personal identity reflects the characteristics of ourselves that we believe to be unique, collective identity reflects those characteristics of ourselves that are based upon membership within a group (Ashmore, Deaux, & McLaughlin-Volpe, 2004; J. C. Turner & Oakes, 1986).

Collective identity is of particular interest in this context as it reflects the shared qualities of a group (Ashmore et al., 2004; Tajfel, 1974). Research demonstrates that identification as part of a group may form through a top-down process, in which members of the group form their identity through shared characteristics, features, interests or other factors unique to their group (Cheng & Guo, 2015; Jans, Postmes, & Van der Zee, 2012; Postmes, Spears, Lee, & Novak, 2005). Given how identity is theorised to form, certain demographic characteristics may explain how commercial fishers come to identify with their livelihood. For example, as previously discussed, commercial fishers tend to learn on-the-job. It may be the learning and performance of work practices unique to commercial fishing provide a mechanism through which commercial fishers come to identify with their livelihood. Research demonstrates that qualities that contribute to the collective identity of commercial fishers includes a love for the outdoors or the ocean, and a desire for independence, resilience, adventure, and hard work (Garavito-Bermúdez & Lundholm, 2017; Marshall et al., 2007; Morgan, 2016; Pickworth et al., 2006; Worster & Abrams, 2005).

Much like livelihood and place attachment, identity can have both positive and negative implications for individuals. For instance, commercial fishers report that they derive a sense of pride from identifying as a commercial fisher (Voyer et al., 2014). Additionally, individuals who strongly identify as commercial fishers generally have a greater capacity to adapt (Marshall et al., 2013). Research also demonstrates that identification with a group, such as commercial fishers, can provide individuals with a source of wellbeing (Marshall, Tobin, et al., 2013; Saeri, Cruwys, Barlow, Stronge, & Sibley, 2018; Voyer et al., 2014) and facilitates social cohesion between members of the group (Bagguley & Hussain, 2016; J. C. Turner, 1982). However, it appears that the potential loss of livelihood is more traumatic for those who strongly identify as a commercial fisher (Cruwys et al., 2013; Marshall et al., 2007; S. Smith et al., 2003; Voyer et al., 2014). Furthermore, research demonstrates that individuals tend to behave in a way that reinforces their identity (Ellemers, Spears, & Doosje, 2002; Moser, 2016) which may have favourable and unfavourable consequences. For example, researchers have demonstrated that commercial fishers are often resistant to performing responses that conflict with their identity, such as working in roles other than commercial fishing (Marshall et al., 2007; Morgan, 2016).

1.1.4 Income flexibility

For many commercial fishers, their livelihood tended to be an important source of income and they are often unwilling or unable to secure alternate sources of income. For instance, Pascoe et al. (2016) and S. Smith et al. (2003) reported that in most cases,

commercial fishing represented the primary source of income for individual fishers and their household. Furthermore, commercial fishers often perceive they have a low likelihood of securing alternate employment, which further contributes to their lack of flexibility in how they derive an income (Marshall et al., 2009; Marshall, Tobin, et al., 2013).

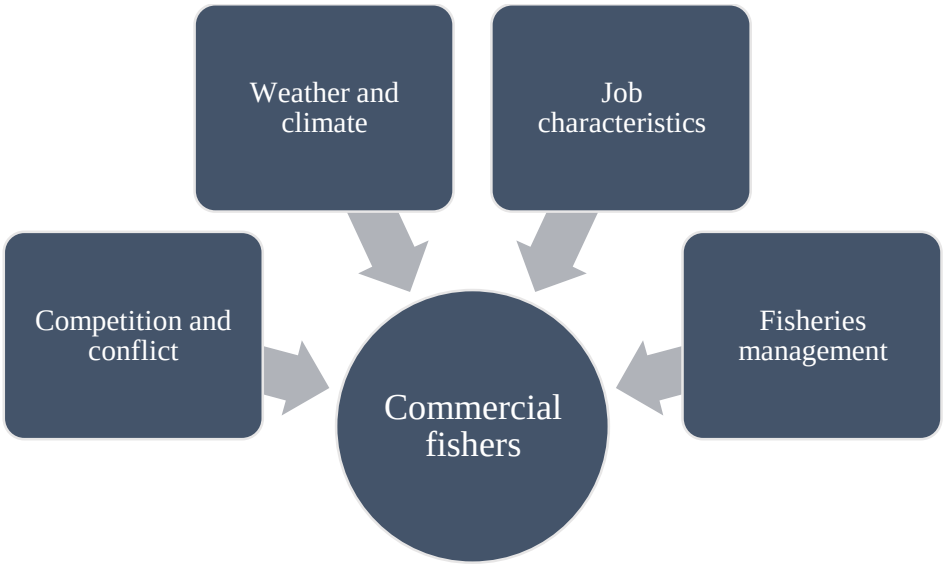
Researchers have identified that demographic characteristics such as age, the familial nature of commercial fishing and the educational profile of commercial fishers may contribute to their unwillingness or inability to secure an alternate livelihood (i.e., income flexibility). For example, it is often reported that compared to their younger counterparts, older fishers are less likely to seek out and secure alternate employment, often a result of a lack of confidence in their ability to do so (Marshall et al., 2007; Marshall & Marshall, 2007; Marshall et al., 2010; Momtaz & Gladstone, 2008; Seara et al., 2016). Additionally, Voyer et al. (2014) reported that commercial fishers were reluctant to find alternate employment as a result of strong familial connections to the industry and were therefore dependent on the income from commercial fishing. Similarly, researchers report that commercial fishers perceive they do not have the skills or education required to secure alternate employment (Marshall et al., 2017; Marshall et al., 2007; Marshall & Marshall, 2007; Marshall et al., 2009; Momtaz & Gladstone, 2008; Shaw et al., 2011). Finally, it has been reported that commercial fishers have a low desire to seek alternate employment. Marshall et al. (2016) reported 66% of commercial fishers in their study did not want to work as anything other than a commercial fisher. Marshall et al. (2007)'s research highlights an intersection between livelihood attachment and the economic importance of commercial fishers' livelihoods. Furthermore, Marshall et al. (2007) report that those who lack income flexibility are more likely to experience stress, which further impacts their ability to adapt to and cope with change. Additionally, research suggests that the ability of commercial fishers to adapt to change is compromised for those who have a lower income flexibility (for example, Marshall et al., 2017; Marshall et al., 2007).

1.2 Industry pressures

Commercial fishers are faced with a multitude of external pressures which potentially challenge their participation in the industry (Pickworth et al., 2006; Schirmer & Pickworth, 2005a). The pressures faced by commercial fishers vary across different contexts and therefore, the current review focuses on those that are most relevant to commercial fishers operating on the east coast of Northern Queensland, the study site for this research. As highlighted in Figure 1 below, four key pressures were identified within the literature: competition and conflict; weather and climate; job characteristics; and fisheries management.

Figure 1

Key pressures facing commercial fishers



1.2.1 Competition and conflict

In executing their livelihood, evidence suggests that commercial fishers face competition and conflict with a range of stakeholders. Three primary forms of competition and conflict were identified: (1) competition and conflict with other resource users; (2) competition with other seafood suppliers; and (3) conflict resulting from perceptions or treatment of the commercial fishing industry.

1.2.1.1 Competition and conflict with resource users. Commercial fishers operating on the east coast of Northern Queensland share their access to marine resources with other commercial fishers, recreational fishers, tourism operators and tourists, and traditional owners of marine resources (Marshall, Bohensky, et al., 2013; Marshall, Curnock, Pert, & Williams, 2019). These stakeholders share (or compete for) not just access to marine resources including natural resources such as fish stocks and fishing grounds, but also infrastructure which allows access to fishing grounds such as boat ramps. It has long been recognised that marine resources, competition, and conflict may arise from multiple actors seeking to access and potentially exploit a common property resource (Bess & Rallapudi, 2007; Charles, 1992; J. C. Johnson & Griffith, 2010). That is, competition and conflict may arise because several fisheries stakeholders (and stakeholder groups) seek to access the same resource (Voyer, Barclay, McIlgorm, & Mazur, 2017).

Fisheries stakeholders seek to use fisheries resources for a range of reasons, which at times, can be competing or conflicting (Bess & Rallapudi, 2007; Hilborn, 2007; J. C. Johnson & Griffith, 2010; Voyer et al., 2017) For example, commercial fishers compete with other

commercial fishers to access resources critical to their livelihood. A range of factors amplify this competition between commercial fishers. For example, researchers report both the number of commercial fishers seeking to access a resource (Pomeroy, Parks, Mrakovcich, & LaMonica, 2016; Suuronen, Jounela, & Tschernij, 2010) and restrictions placed on resource access (Pomeroy et al., 2016) can drive competition between commercial fishers. Furthermore, restrictions placed on resource access can increase the number of commercial fishers competing for access to a particular resource (such as certain fishing grounds) as fishing effort is then concentrated in areas which remain open for commercial fishers to access (Pomeroy et al., 2016; Suuronen et al., 2010). This relationship between restrictions on resource access, fishing effort and competition between commercial fishers highlights that, decisions about how the industry is managed can have flow on effects which impact commercial fishers' ability to participate in their livelihood.

Additionally, there is a history of commercial fishers competing for fisheries resources with recreational fishers (for example, Boucquey, 2017; Kearney, 2001, 2002; Momtaz & Gladstone, 2008; Noble, Harasti, Pittock, & Doran, 2019; Voyer et al., 2017). In the same way that competition and conflict arise between commercial fishers, competition and conflict with recreational fishers appears to arise from accessing the same fisheries resources (Cooke & Cowx, 2006; Kearney, 2002; Momtaz & Gladstone, 2008; Ngoc & Flaaten, 2010; Noble et al., 2019).

Research highlights other drivers of competition and conflict between commercial and recreational fishers including beliefs about who has the right to access fisheries resources and conflicting perceptions about the value and impacts of recreational and commercial fishing. Researchers have repeatedly found that recreational fishers perceive they are entitled to access fishing grounds, and that other marine resource users were perceived as accessing resources owned by recreational fishers (Boucquey, 2017; Kearney, 2002; Noble et al., 2019). This sense of ownership over and entitlement to marine resources may arise from beliefs about differences in environmental impact and economic value of recreational and commercial fishing (Voyer et al., 2017). That is, recreational fishers are reported to perceive that the activities of commercial fishers have a greater negative environmental impact than the activities of recreational fishers (Boucquey, 2017; Voyer et al., 2017) and that recreational fishing provides greater economic and social benefits to communities than commercial fishing does (Kearney, 2002) despite a lack of evidence to support these assertions.

Competition and conflict with tourism operators, tourists, and traditional owners of marine resources appears to have received less attention by researchers, despite these fisheries stakeholders also sharing access to marine resources with commercial fishers. There is some evidence which suggests that increases in tourism results in commercial fishers being displaced, or exiting the commercial fishing industry (Ahmed, 2006; Miret-Pastor, Molina-García, García-Aranda, & Herrera-Racionero, 2019; Schittone, 2001). The cultural significance of traditional fishing activities for Australian Aboriginal peoples and Torres Strait Islanders is recognised at both the state (Queensland) and federal (Australia) level of government. As a result, Australian Aboriginal peoples and Torres Strait Islanders have native title rights to hunt, fish and gather for spiritual, non-commercial, and communal reasons (*Native Title Amendment Act 1998*). However, given that Australian Aboriginal peoples and Torres Strait Islanders, and commercial fishers may access the same fishing grounds, as part of various fishing activities, conflict can arise (Cantzler, 2015). For example, Begg and Murchie (2004) reported a case in which conflict arose between Torres Strait Islanders and non-indigenous commercial fishers due to competing interests in harvesting reef fish in the Torres Strait.

Regardless of the source of competition or conflict, it appears that sharing access to marine resources places pressure on commercial fishers. This pressure manifests through impacts on the ability of commercial fishers to access the marine resources they rely on for their livelihood. Without access to these resources, commercial fishers' ability to effectively participate in their livelihood is compromised and subsequently their ability to earn money is compromised (Grafton, 2005).

1.2.1.2 Competition with seafood producers. Commercial fishers also experience competition with other seafood producers when selling produce to shared markets or consumers. For Australian commercial fishers, two significant sources of market competition are the Australian aquaculture industry and the international seafood industry. The Australian seafood market has seen a net increase in seafood consumption which is assumed to be a result of a growing population as there was an observed decrease in seafood consumed per person (Mobsby, 2018). Recent statistics demonstrate declines in consumption of imported seafood and increases in consumption of domestically supplied seafood (Mobsby, 2018). However, growth in domestic supply appears to be mostly the result of increases in aquaculture production (Mobsby, 2018). Furthermore, globally it is expected that aquaculture will have an increasing contribution to seafood supply (Natale, Hofherr, Fiore, & Virtanen, 2013; Regnier & Bayramoglu, 2017; Bjørndal & Guillen, 2016).

The most significant and common impact of market competition appears to be that a greater supply of alternate products drives prices down. When there is high competition, consumers pay lower prices for seafood, regardless of its source (Bjørndal & Guillen, 2016; Natale et al., 2013; Regnier & Bayramoglu, 2017; Valderrama & Anderson, 2010). Consequently, seafood producers derive lower profits from selling produce and, in some cases, this can result in reduced participation in commercial fishing (Natale et al., 2013; Valderrama & Anderson, 2010).

Consumer preferences partly decide who the winners and losers are of competition between seafood producers. For example, Australian seafood consumers are reported to preference Australian seafood over imported seafood (Christenson, O'Kane, Farmery, & McManus, 2017; Danenberg & Mueller, 2011; Danenberg & Remaud, 2010; Lawley, 2015). Consumer preferences appear to be driven by a range of factors. For example, concerns about sustainability appear to drive consumers to preference farmed seafood (seafood produced by the aquaculture industry) over wild-caught seafood (seafood produced by the commercial fishing industry; Natale et al., 2013). While there may be a preference for aquaculture produce for sustainability reasons, there is evidence that some consumers prefer wild-caught seafood (Bjørndal & Guillen, 2016) and be willing to pay more for wild-caught produce (Davidson, et al., 2012) which suggests there may be a continued market for the commercial fishing industry.

1.2.1.3 Perceptions and treatment of commercial fishing. Finally, the way in which others perceive and interact with the commercial fishing industry is an important aspect of conflict for the industry. Most often, research has focused on the relationships between commercial fishers and (a) fisheries managers or (b) community members.

Studies have highlighted conflict between commercial fishers and **fisheries managers** (for example, MacKeracher, et al., 2018; Marshall & Curnock, 2019; Shaw et al., 2011; Voyer, 2014). It appears that this conflict arises where fishers feel that the motivations of fisheries managers are dishonest (Voyer, 2014) or they have been treated poorly or unfairly by fisheries managers by restrictions placed on them (Shaw et al., 2011; Voyer, 2014). Similarly, commercial fishers have been found to hold low levels of trust towards others including scientists, politicians, and media representatives (for example, MacKeracher, et al., 2018; Marshall & Curnock, 2019). There is limited exploration as to why such distrust or conflict may be present, however it may be that similar to fisheries managers, commercial fishers perceive they are unfairly treated by such stakeholders.

When commercial fishing is generally seen to be appropriate by members of the **community**, conflict between the industry and the community would be expected to be low, but if commercial fishing is not seen to be appropriate or acceptable by people outside the industry, then conflict would be expected to be high. The social acceptability of the industry is important as negative perceptions of the commercial fishing industry can affect the demand for or price paid for seafood, how the industry is regulated and general community support for commercial fishing (Cullen-Knox, et al., 2017; McPhee, 2008).

Investigations into the social acceptability of the Australian commercial fishing industry highlight that for the most part, Australians see commercial fishing to be acceptable (Mazur & Curtis, 2019). However, this support for the commercial fishing industry is not overwhelming. For example, results of public surveys demonstrate that a substantial minority hold negative perceptions of the sustainability of the commercial fishing industry (Aslin & Byron, 2003; Mazur & Curtis, 2019; Sparks, 2011; Young & Temperton, 2008). At a community level, a lack of social acceptability of commercial fishing has manifested as active campaigns to restrict or remove commercial fishers' access to fishing grounds (for example, King & O'Meara, 2019; Voyer et al., 2017). For example, King and O'Meara (2019) reported recreational fishers in Port Phillip Bay (Victoria, Australia) formed networks which intentionally sought to reduce commercial fishers' opportunities to perform their livelihood and attacked the motivations and personal qualities of commercial fishers. Overall, negative public opinion can make it more challenging for commercial fishers to participate in their livelihood (Warren, 2013) and given the relationship between social acceptability and regulations, may also lead to conflict between commercial fishers and fisheries managers.

1.2.2 Weather and climate

As a resource dependent industry, commercial fishing is vulnerable to changes in the natural environment, such as changes brought about by climate change and severe weather events. Consequently, negative impacts on the natural environment are likely to place pressures on commercial fishers (Agrawal & Perrin, 2009). Furthermore, given that the impacts of climate change are proposed to become more severe over time, commercial fishers are likely to become more vulnerable to changes in the natural environment as climate change progresses (Grafton, 2010).

According to the most recent publication of the Great Barrier Reef Outlook Report (Great Barrier Reef Marine Park Authority (GBRMPA), 2019), climate change is currently the single greatest threat to the health and sustainability of marine resources in the Great Barrier Reef region. It is predicted climate change will result in increased atmospheric and

ocean temperatures, increased ocean acidity, rising sea level, and changing ocean currents, (Brander, 2010; Doney et al., 2011; GBRMPA, 2019; Poloczanska et al., 2013; Pörtner & Peck, 2010). According to the GBRMPA (2019), rising sea temperatures pose the most immediate negative impacts on marine resources (such as habitats and fish populations) of the Great Barrier Reef region. Rising sea temperatures and marine heat waves will, and have already, caused mass bleaching events resulting in widespread damage to marine habitats and consequently, fish populations (GBRMPA, 2019; Hoegh-Guldberg et al., 2007; Preston & Jones, 2006). Further, it is predicted that climate change will drive marine biological responses including habitat loss and degradation; shifts in the distribution of fish species; changes in the abundance of natural resources; changes to the functioning of ecosystems; physiological changes in organisms; changes in mortality, growth and reproduction; and changes in biodiversity (GBRMPA, 2019; Last et al., 2011; Nye, Link, Hare, & Overholtz, 2009; Perry, Low, Ellis, & Reynolds, 2005; Poloczanska et al., 2013; Pörtner & Peck, 2010; Robinson et al., 2015; Sumaila, Cheung, Lam, Pauly, & Herrick, 2011).

Additionally, it is expected that severe weather events, such as cyclones, will become increasingly intense as climate change progresses (Christensen et al., 2013; Knutson et al., 2010; Malmstadt, Elsner, & Jagger, 2010; Villarini & Vecchi, 2013). The potential negative environmental impacts of cyclones are particularly concerning for the Great Barrier Reef region given the potential to cause damage to marine habitats over large areas (CSIRO and Bureau of Meteorology, 2018). In addition to impacts on marine resources, severe weather events disrupt fishing activity through temporary decreases in fishing activity and damage to fisheries gear and infrastructure (Cinner et al., 2016; Daw, Adger, Brown, & Badjeck, 2009; Rezaee, Pelot, & Ghasemi, 2016; Uhrin, 2016).

Climate-driven change is expected to have major social and economic implications for commercial fishers as they are highly reliant on marine resources for their livelihood (Marshall, Tobin, et al., 2013). Climate change is reported to drive changes in the productivity and distribution of fish populations targeted by commercial fishers (Weatherdon, Ota, Jones, Close, & Cheung, 2016) and changes in how commercial fishers participate in their livelihoods (Michael, Wilcox, Tuck, Hobday, & Strutton, 2017; Senapati & Gupta, 2017; Stoeckl et al., 2017). It is predicted that consequences of climate change may be felt by commercial fishers through what they can supply to markets and consequently, the profit they make from their livelihood (Michael et al., 2017; Senapati & Gupta, 2017; Stoeckl et al., 2017). Furthermore, the impacts of climate change may be felt indirectly through the implementation of management strategies. In response to environmental challenges such as

climate change, fisheries managers have implemented strategies such as restricting access and activities in marine environments (including commercial fishing) to protect natural resources (State of Queensland, 2016). This impact on how fishers participate in their livelihood may then impact their wellbeing (Ogier et al., 2020). The GBRMPA (2019) warn that marine resource dependent industries must anticipate and prepare for the impacts of climate change. That is, regardless of whether the impacts of climate change are currently observed, or perceived, overwhelming evidence indicates a need for behaviour to change proactively respond to the potential negative consequences that climate change poses (both directly, and indirectly).

1.2.3 Livelihood characteristics

There are certain characteristics of working as a commercial fisher that can place additional pressure on commercial fishers. For example, commercial fishing is known for being a physically intense and dangerous livelihood. Often, commercial fishing is cited as being one of the most dangerous jobs in the world (Conway, 2002; Lincoln & Lucas, 2010a). As a result of the physically demanding nature of commercial fishing, commercial fishers are exposed to a range of health risks including physical injuries, musculoskeletal problems, skin cancer, infectious and parasitic disease, cardiovascular disease, hearing-related problems, and most concerningly, work-related deaths (Brooks, 2011; Davis, 2012; Kucera, Loomis, Lipscomb, & Marshall, 2010; Lincoln & Lucas, 2010b; R. A. Turner, Sainsbury, & Wheeler, 2019). Physical injuries compromise a critical asset of commercial fishers, that being their physical health (Woodhead et al., 2018). To participate in their livelihood, commercial fishers must be able to withstand physical demands that commercial fishing places on their body.

Additionally, commercial fishers often live in regional and remote communities, which face their own set of challenges. Historically Queensland's commercial fishing industry has been distributed across towns and communities across the coast, close to accessible fishing grounds (Fenton & Marshall, 2001a; 2001b; A. Moore et al., 2007; Van Putten, Metcalf, Frusher, Marshall, & Tull, 2014). Of interest for the current research, are those towns and communities located on the east coast of Northern Queensland. The boundaries of the Great Barrier Reef Marine Park (pictured in Figure 2) were used to determine the towns and communities of Queensland that fell within this area. According to the Australian Bureau of Statistics remoteness structure, all towns and communities within this region are classified as regional, remote, or very remote areas (Australian Bureau of Statistics, 2018).

Figure 2

Map of Great Barrier Reef Marine Park (R. G. Smith & Anderson, 2004)

Living in regional and remote communities is reported to bring a unique set of challenges to community members. For example, when compared to urban counterparts, individuals in regional and remote communities are reported to: have poorer access to services and infrastructure, (Regional Australia Institute, 2013); have poorer health and wellbeing outcomes (Health Workforce Australia, 2013; Wakerman et al., 2017); and face economic disadvantage (Bandias & Vemuri, 2005). For commercial fishers living in these regional, remote, and very remote communities across Queensland, this means they face challenges associated with living in these communities, in addition to the pressures of working in the commercial fishing industry.

1.2.4 Fisheries management

Fisheries managers employ a suite of regulatory tools and strategies to meet ecological, social, and economic goals (Morison, 2004). In Queensland for example, fisheries managers seek to promote: environmental sustainability through the protection and conservation of fisheries resources such as the Great Barrier Reef; to ensure access to fisheries resources for future generations; to promote economic sustainability and maintain profitable commercial fisheries; and to support the provision of healthy seafood to communities (particularly in the face of global challenges such as climate change, Australian Fisheries Management Authority (AFMA) 2019; GBRMPA, 2018; Queensland Government, 2017). There are multiple fisheries management bodies responsible for the effective management of commercial fishing in Queensland: AFMA; Fisheries Queensland; GBRMPA; and Australian Maritime Safety Authority (AMSA).

To achieve their management objectives regulators such as AFMA, Fisheries Queensland and GBRMPA typically use two types of regulatory strategies or tools: input controls and output controls (Department of Primary Industries, 2019; Morison, 2004). Input controls are those which seek to control fishing effort by placing constraints on who can catch fish, and where, when, and how fish can be caught to control fishing effort (AFMA, 2019; Morison, 2004). In contrast, output controls restrict what can be caught to control the amount of fish that can be taken from the water (Department of Primary Industries, 2019).

Subsequently, these fisheries managers seek to deter non-compliance and encourage voluntary compliance with relevant legislation and regulations. For example, regulators deter non-compliance by monitoring the activities of commercial fishers and taking enforcement action in response to breaches of law or regulation (Australian Government, 2017, 2018; State of Queensland, 2015). Such enforcement action can range from administrative action (such as a phone call to draw operators' attention to the non-compliance and seek remediation), to cautions (to warn operators that repeat offences may result in sanctions), to penalty infringement notices (when breaches are not considered serious enough to warrant prosecution), and to court prosecution, or suspension or cancellation of fishing authorities (for serious offences, State of Queensland, 2015). These are all examples of *specific deterrence* strategies in which the individual who has committed a breach of law or regulation is punished.

Additionally, fisheries managers in Queensland also deter non-compliance using *general deterrence* strategies in which operators' awareness that they may be punished for breaches of law or regulation is raised. For example, Fisheries Queensland publishes offences

and enforcement outcomes via the media to raise operators' awareness of enforcement action being taken and reinforce messages about sustainability and appropriate behaviour (State of Queensland, 2015). Additionally, AFMA maintains a high profile and visual presence in fishing communities by having fisheries officer conduct regular inspections and patrols in an effort to increase operators' perception that non-compliant behaviours will be detected and punished (Australian Government, 2017).

Specific and general deterrence strategies are traditional approaches to regulation which are based on the assumption that people are consistently rational and perform cost-benefit analyses to maximise benefits for themselves (Becker, 1968; Gunningham & Kagan, 2005; Gunningham, Thornton, & Kagan, 2005; Thornton, Gunningham, & Kagan, 2005). That is, it is assumed that individuals and businesses consider the costs and benefits of complying with law and regulation and act in a way that maximises the benefits to them. Consequently, it is assumed that only punishments (for example, enforcement action) that outweigh the costs of compliance will result in individuals complying with law and regulation (Gunningham et al., 2005). However, human decisions are not typically the result of rational cost-benefit analyses and as such decisions to comply with regulations are more complex (Rangone, 2018). Consequently, it has been recognised that deterrence alone is not sufficient to achieve voluntary compliance, and that it is not always the most effective strategy to achieve compliance.

To encourage voluntary compliance, fisheries managers primarily use communication and education programs. Such programs are used to increase operators' knowledge and understanding of rules and regulations they are obligated to comply with and the negative consequences of non-compliance (including enforcement action and other consequences such as industry sustainability and viability). Furthermore, programs are designed to increase the perception that offenders will be caught and to increase operators' willingness and capacity to comply (Australian Government, 2017, 2018; State of Queensland, 2015). Notably however, there is a great focus on the deterrence elements of regulatory strategies and minimal focus on other elements motivating voluntary compliance behaviour. Fisheries Queensland recognises that stakeholder engagement is a key aspect of facilitating voluntary compliance (State of Queensland, 2015). Research demonstrates that meaningful engagement with stakeholders is critical to stakeholder acceptance of and compliance with rules and regulations in the commercial fishing industry and more broadly (Alemanno, 2015; Armitage et al., 2009; Cinner et al., 2012; Grafton, 2000; Lind & Arndt, 2016; Nash & Walters, 2015; Yates & Schoeman, 2014). Fisheries Queensland engages commercial fishers and other

stakeholders through consultation processes and management strategies which contribute to the design of fisheries management strategies (State of Queensland, 2015).

The regulatory tools and strategies outlined above all seek to constrain the way that a fishery operates to achieve management objectives (Morison, 2004). While the need for such regulations is clear, the commercial fishing industry in Australian is reported to be highly regulated. Figure 3 summarises a recent history of key changes to the Queensland fisheries regulatory environment. The highly regulated and constantly changing nature of industry regulations places pressure on individual commercial fishers (Shaw et al., 2011).

Figure 3

A brief history of regulatory change in Queensland fisheries

Evidence indicates that fisheries managers primarily focus on the ecological outcomes of implementing regulatory strategies, at the cost of the socioeconomic experiences of resource users such as commercial fishers (R. Kelly, Pecl, & Fleming, 2017; Voyer et al., 2014; *Bannister Quest v. AFMA*, 1997). For instance, research suggests that changes in how the industry is regulated can result in negative consequences for commercial fishers' including reduced access to resources that fishers rely on for their livelihoods (McNeill, Clifton, & Harvey, 2018), decreased income (S. Smith et al., 2003; van de Geer et al., 2013), and the cost (financial and otherwise) of responding to regulatory change such as those associated with travelling to new fishing grounds (McNeill et al., 2018; Stevenson et al., 2013; van de Geer et al., 2013; Voyer et al., 2014). Research also demonstrates that fisheries management can have negative impacts on commercial fishers' health and wellbeing for example, through increased stress, anxiety, and other negative emotions (King et al., 2019; Momtaz & Gladstone, 2008). The seriousness of the impact of industry regulation and regulatory changes on the health and wellbeing of commercial fishers is demonstrated through findings that this stress can lead to potential loss of a central part of their identity (S. Smith et al., 2003) depression, suicide, and family breakdowns (Voyer et al., 2014).

1.3 A further note on the research context

The purpose of this chapter was to provide an overview of what is currently known about the people in the commercial fishing industry, and the pressures that they face. This has been done in the context of the aims of the research to ensure that the overview focuses on the literature that is most relevant to the research. Selected topics for further reading which are not discussed in depth in this chapter are presented Appendix A (page 308).

1.4 Research gaps

There are a range of interacting pressures facing commercial fishers, each of which bring a set of challenges for commercial fishers. For example, these pressures are reported to have negative impacts on the viability of their commercial fishing business, their psychological and physical health, and their ability to participate in their livelihood. Commercial fishers operating on the east coast of Northern Queensland face their own unique set of challenges. Not only do they have to contend with the pressures facing commercial fishers across Australia and the globe, but they also have the pressure that comes with living and working in the Great Barrier Reef region. The Great Barrier Reef is an Australian icon under vulnerable to the impacts of climate change (Great Barrier Reef Foundation, 2020; GBRMPA, 2020; Queensland Department of Environment and Science, 2019) and subsequently requires serious protection efforts. One way in which efforts are made to protect

the Great Barrier Reef includes the implementation of extensive zoning plans restricting access and activities across the marine park. Furthermore, the Green paper on fisheries management reform in Queensland (State of Queensland, 2016) highlights the intentions of the Queensland Government to reduce the number of operators to achieve better ecological and economic sustainability. This interaction means that commercial fishers in this region face a unique mix of pressures. Research provides some insights into how individual pressures may impact commercial fishers. However, there is a lack of research considering how commercial fishers are impacted by, cope with, and respond to the mix of pressures they face.

Some past research has identified a range of psychosocial and economic factors that influence how commercial fishers experience and respond to pressures. Most significantly, commercial fishers demonstrate a strong attachment to and identification with their livelihood and low flexibility in how they earn an income which provide some insights into how commercial fishers experience and respond to pressures. However, there is a limited understanding of the processes by which commercial fishers make decisions in the face of the threats they perceive to be present, and how these psychosocial and economic factors influence their decisions.

Given the pressures facing commercial fishers it becomes increasingly important to understand their decision-making processes. Understanding how fishers interpret, cope with, and respond to industry pressures is critical in facilitating better outcomes for both fishers (for example, through decreased regulatory burden) and fisheries managers (for example, through improved environmental outcomes). Furthermore, this understanding is crucial for supporting the wellbeing of those within the industry. Therefore, the current research seeks to apply existing psychological models to better understand (a) how commercial fishers are impacted by, cope with and respond to the mix of pressures they face, and (b) the processes by which commercial fishers make decisions in the face of threats. These gaps in the literature will be addressed by applying existing psychological models which provide insight into how people make decisions and respond in the face of threats.

2 Threat Perception and Decision Making

As humans we constantly evaluate events in our environment and how they may impact upon ourselves, or the people we care about (Lazarus, 1999; Lazarus & Folkman, 1987). When an event does cause danger to us, or those we care about, regardless of whether the danger is actual or perceived, a threat is said to be present. Threats are often frightening, stressful and generally unpleasant. When experiencing such unpleasant or negative emotional states, research indicates that individuals are motivated to respond in a way that reduces these negative or unpleasant emotions (Hovland, Janis, & Kelley, 1953; Janis, 1967; Janis & Feshback, 1953). For example, individuals such as commercial fishers may be motivated to change their behaviour, alter their cognitions, or engage in psychological defences.

Several theories attempt to explain how individuals make decisions in order to respond to threats. Many of these models describe the decision-making process in the context of fear appeals. Fear appeals are persuasive messages that have been designed to arouse fear with the aim of motivating behaviour change (Shen & Coles, 2015). Although originally intended to explain how individuals respond to messages that evoke fear, theories such as the Protection Motivation Theory (PMT, Rogers, 1975) and the Extended Parallel Process Model (EPPM, Witte, 1992) have also been used as theoretical frameworks to understand and explain the cognitive and emotional decision-making process that individuals engage in when exposed to threatening stimuli.

2.1 Key theoretical constructs

Throughout the development of these models, the concepts of fear, perceived threat and perceived efficacy have been identified as key constructs in understanding how people make decisions to respond to threats (Hovland et al., 1953; Leventhal, 1970; Rogers, 1975; Witte, 1992; Witte & Allen, 2000). The endurance of these factors highlights their importance in the field and makes them worth exploring further (see page 35 for a discussion regarding the current application of such constructs). The focus of the current chapter is to define these psychological constructs, and to explore the theorised role of these constructs in decision making according to key psychological models of threat perception and decision making. This review will contribute to building a theoretical framework which will be used to explore and interrogate the lived experiences of commercial fishers, to understand how they interpret, cope with, and respond to the mix of pressures they face, and the processes by which commercial fishers make decisions in the face of threats.

2.1.1 Perceived Threat

A threat is an external stimulus, such as an environmental cue or message that signals potential damage or danger to an individual (Witte, 1992). However, when considering how individuals react to a threat, it is not necessarily the objective presence or the absence of a threat that influences cognitions, emotions, and behaviour. Rather, it is the belief (or the perception) that the threat exists (Witte, 1992). Thus, perceived threat refers to beliefs that someone or something is likely to bring about damage or danger. For example, while there is scientific evidence that climate change poses a threat to natural resources commercial fishers rely on, it is commercial fishers' belief about whether climate change poses a threat which is hypothesised to influence the decisions they make.

Perceptions of threat are commonly reported to be the outcome of an evaluation of the severity of the impacts of the threat as well as an evaluation of the perceived susceptibility, vulnerability, or likelihood of the impacts of the threat occurring (Rogers, 1975; Witte, 1992). For example, a commercial fisher would be described as registering a high level of perceived threat if they believe that the impacts of climate change were to be severe or serious, and if they believed that they were either susceptible to the impacts of climate change, or they feel that the impacts of climate change were likely to eventuate. In contrast, a commercial fisher would be predicted to register a lower level of perceived threat if they believed that the impacts of climate change would be mild, if they saw themselves not to be at risk of experiencing the impacts of climate change, or if they believed that the climate change was unlikely to eventuate.

2.1.2 Fear

When individuals perceive there to be a threat, it is suggested that they experience unpleasant emotional states, such as fear, as a result. This fear is argued to reflect the perception of the intensity of the threat (Janis, 1967). For instance, a commercial fisher who registered a higher level of perceived threat would be expected to experience more fear than a commercial fisher who experienced a lower level of perceived threat or did not perceive there to be a threat. When fear is experienced, it is claimed that individuals are motivated to reduce the negative and unpleasant emotion (Janis, 1967; Janis & Feshback, 1953). Some researchers claim that the more fear an individual experiences, the more motivated they will be to respond in order to reduce the fear (Witte, 1992). In contrast, other researchers argue a curvilinear relationship between fear and responding (the curvilinear hypothesis). That is, it is argued there is an optimal level of fear arousal which produces adaptive behaviour and both a lack of fear or extreme levels of fear produce maladaptive or defensive responding (Dillard &

Anderson, 2004; Hovland et al., 1953; Janis, 1967; Janis & Feshback, 1953; Rossiter & Thornton, 2004). However, the general consensus among researchers remains that a positive linear relationship exists between fear and adaptive responding (Rossiter & Thornton, 2004). To reduce fear, individuals may attempt to avoid or reduce the source of the threat, or they may attempt to escape from the distressing psychological state through maladaptive or defensive responding (Janis, 1967; Janis & Feshback, 1953). Efforts to reduce the fear will continue until either (a) the threat has been controlled by engaging in behaviours which resolve the threat, or (b) the emotional distress has been reduced by engaging in defensive cognitions or behaviours such as denial or wishful thinking (Janis, 1967). Alternatively, it is theorised that if a threat is not perceived as a threat, or only as a low-level threat, it will fail to arouse an unpleasant emotional state, and consequently the individual will not perform any response (Hovland et al., 1953).

2.1.3 Perceived Efficacy

It is argued that efficacy is critical in determining whether individuals respond adaptively or defensively when threat perception and fear are aroused (Witte, 1992; Witte & Allen, 2000). Perceived efficacy is commonly considered to comprise appraisals of both self-efficacy and response efficacy (Rogers, 1975; Witte, 1992). Perceived *self-efficacy* reflects an individual's beliefs about their ability to perform a response (Bandura, 1977). Perceived *response efficacy* refers to individual's beliefs about how effective the response will be in reducing a threat (Rogers, 1975; Witte, 1992). Some theorists argue that perceived efficacy also comprises appraisals of *response costs* or the perceived costs associated with performing a response such as time, money, effort, and personal costs (Floyd, Prentice-Dunn, & Rogers, 2000; Maddux & Rogers, 1983).

For example, a commercial fisher who believes that they are capable of carrying out a response (high perceived self-efficacy); that the response will be effective in mitigating or reducing the threat (high perceived response efficacy); and that there are low or no costs associated with performing the response (low response costs) is suggested to hold a high level of perceived efficacy. If they believe either that they are incapable of carrying out the response (low perceived self-efficacy; that the response will not be effective in reducing the threat (low perceived response efficacy); or that there are significant costs associated with performing the response (high response costs) then it is argued that they hold a low level of perceived efficacy.

As noted previously, individuals are hypothesised to be motivated to reduce fear by responding either to the source of the threat or to the psychological source of distress (Janis,

1967; Janis & Feshback, 1953). Research indicates that the type of response performed is determined by perceptions of efficacy (Cho & Salmon, 2006; McMahan, Witte, & Meyer, 1998; Witte, 1992; Witte & Allen, 2000). When perceived efficacy is high, individuals tend to adaptively respond to the source of the threat. Conversely, when perceived efficacy is low, individuals tend to respond directly to reduce the psychological distress associated with fear (Cho & Salmon, 2006; McMahan et al., 1998; Witte, 1992; Witte & Allen, 2000). Specifically, when individuals believe they are capable of carrying out a response (high perceived self-efficacy) which will reduce the threat (high perceived response efficacy), they will respond adaptively to reduce or eliminate the threat source (McMahan et al., 1998). Alternatively, when individuals believe they are not capable of carrying out a response (low perceived self-efficacy) or that the response will not be effective in reducing the threat (low perceived response efficacy), they will respond maladaptively or defensively to reduce the psychological source of the fear or distress (Janis, 1967; Witte, 1992; Witte & Allen, 2000).

2.2 Key theoretical models

The PMT (Rogers, 1975) and the EPPM (Witte, 1992) are now two of the most commonly used frameworks for developing and interpreting fear appeals and understanding how people respond to threats. The PMT (Rogers, 1975) and the EPPM (Witte, 1992) frameworks are the culmination of decades of research and theoretical advances in the field of threat perception and decision making and highlight the interactions between perceived threat, fear, and perceived efficacy in the decision making process.

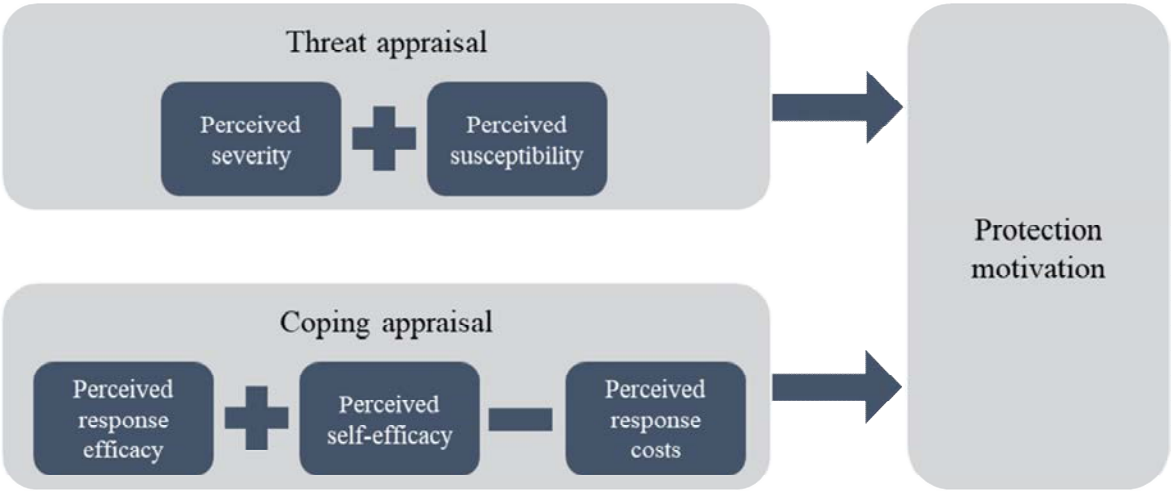
2.2.1 Protection Motivation Theory (PMT)

The PMT was developed with the aim of providing a framework that consisted of a few crucial constructs which explained responding to potential threats or fear appeals (Rogers, 1975). Rogers (1975) criticised previous models for failing to provide sufficient detail or description of key cognitive constructs such as threat appraisal and coping appraisal. In the development of the PMT, Rogers (1975) emphasised that the constructs involved were drawn from the literature but built on previous theory by providing a coherent framework consistent with experimental findings. Rogers (1975) asserted that there were two crucial cognitive mediating processes (see Figure 4) which were required to stimulate what he termed “protection motivation” and in turn adaptive responding. These processes included threat-appraisal and coping appraisal (Floyd et al., 2000). According to the PMT, the threat-appraisal process involves an evaluation of threat severity (perceived severity) and threat susceptibility (perceived susceptibility) (Rogers, 1975). The coping-appraisal process reflects beliefs about the efficacy of a coping response (perceived response efficacy), an individual’s

perception of their ability to carry out that response (perceived self-efficacy) and beliefs about costs associated with performing the response (response costs) (Floyd et al., 2000; Maddux & Rogers, 1983).

Figure 4

Protection Motivation Theory (adapted from Rogers, 1975).



Protection motivation is defined by Rogers (1975) as the intention to adopt protective or adaptive responses to the threat. Protection motivation is argued to be greatest when the threat is cognitively appraised to be severe and is likely to have personal impact, and when an individual holds the belief that their response can minimise or eliminate the impact of a threat (Floyd et al., 2000; Rogers, 1975). If a threat is not appraised as being severe or likely to have personal impact, or if there are no suitable protective responses that can be made, Rogers (1975) proposed that individuals would hold no intentions to perform a protective response and thus perform no response. Therefore, according to the PMT, the greater the perceptions of threat severity and perceptions of threat likelihood and the more effective a protective response is perceived to be, the greater the protection motivation and the likelihood of adaptive responding (Floyd et al., 2000; Rogers, 1975).

The PMT focuses on these cognitive processes and further suggests that protective responding is not produced by fear (Rogers, 1975). Rogers (1975) argued that these frameworks should focus on the cognitive processes involved rather than emotional reactions and processes because long-term protective behaviour (for example, taking actions which reduce the impacts of a threat) results from cognitive representations of the threat, rather than reflexive emotional responding to the threat. As such, it is made clear by the PMT that rather than escaping through emotional responding from fear (for example, through denial of a threat), individuals are responding to actively cope with or avoid a threat (Rogers, 1975).

Unlike previous theories, the PMT provided detail about the specific cognitive processes that produce adaptive responding (Rogers, 1975). The PMT did not however provide a detailed account of the cognitive processes that lead to defensive or maladaptive responding. A detailed explanation of the process of defensive responding was later provided by Witte (1992) by re-emphasising the role of fear, which was lacking from Rogers' (1975) PMT (further discussion regarding the nature of responses is provided in Chapter 3).

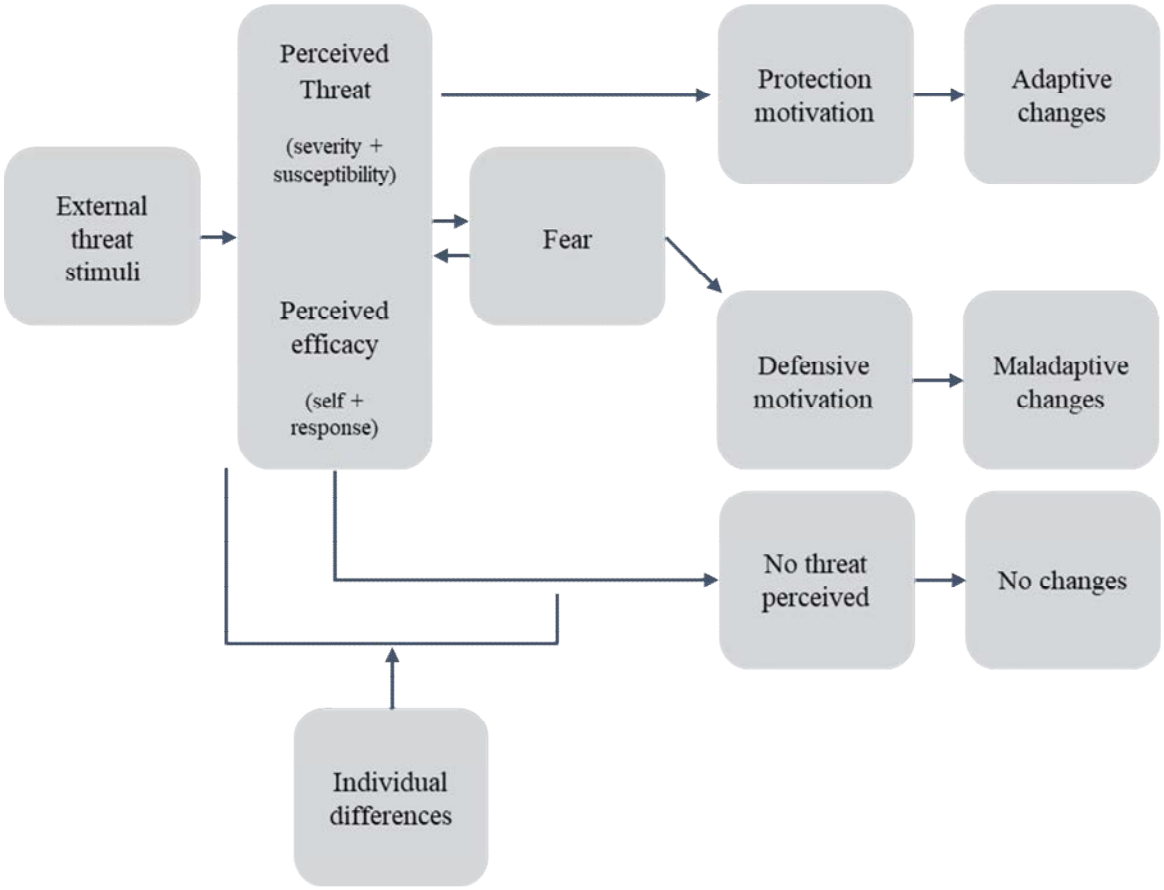
2.2.2 Extended Parallel Process Model (EPPM)

Witte (1992) expanded on previous theoretical frameworks including the PMT by focusing on the fear control process when developing the EPPM. The EPPM was designed to explain why fear appeal messages fail to stimulate adaptive responding, or when and why individuals respond defensively (Witte, 1992). This was achieved by defining the fear control process of the model which was absent from previous theories (Maloney, Lapinski, & Witte, 2011; Witte, 1992; Witte & Allen, 2000). Witte (1992), who criticised the PMT for lacking sufficient emphasis on the role of fear, also re-incorporated fear as a central feature of the theory. In the EPPM, fear is argued to play a key role in fear control processes and defensive responding (Witte, 1992). These developments produced a testable framework to explain why an individual may respond defensively or maladaptively in response to a fear appeal message or other threat signalling stimuli (Maloney et al., 2011).

2.2.2.1 Cognitive and emotional constructs of the EPPM. According to the EPPM, fear, perceived threat and perceived severity are central in explaining responding to threats or fear appeals (see Figure 5 over the page) (Popova, 2012; Witte, 1992). It is argued that for individuals to respond to a threat, the threat first needs to be perceived (perceived threat) before contemplating responding. This perception of threat is proposed to lead to the individual experiencing fear and how the individual responds to reduce the fear is suggested to be dependent upon perceptions of efficacy (Witte, 1992).

Figure 5

Extended Parallel Process Model (adapted from Witte, 1992).



Under the EPPM, perceived threat is described as a personal appraisal of a threat that reflects individuals' beliefs about the severity of a threat and their assessment of how susceptible they are to a threat (Popova, 2012; Witte, 1992). However, there is a slight distinction in terminology employed in this model compared to previous models. Where within the EPPM perceptions of threat susceptibility are referred to, the PMT uses the terms *susceptibility*, *vulnerability*, and *likelihood* seemingly interchangeably. Despite these nuanced differences, according to both the PMT and the EPPM, threat perception involves both the individual's appraisal of the nature of the threat (perceived severity) and an evaluation of their relationship with that threat (perceived susceptibility, vulnerability, or likelihood).

Witte and Allen (2000) suggest that the nature of the threat perception contributes to the intensity of a response. That is, individuals are more likely to respond to a threat when threat perception is high than when it is low. For an individual to register a threat perception that is high, it is argued that an individual will believe that should the threat eventuate, the impacts will be serious (high perceived severity), and they feel that they are personally vulnerable to the impacts of that threat (high perceived susceptibility) (Ruiter, Abraham, &

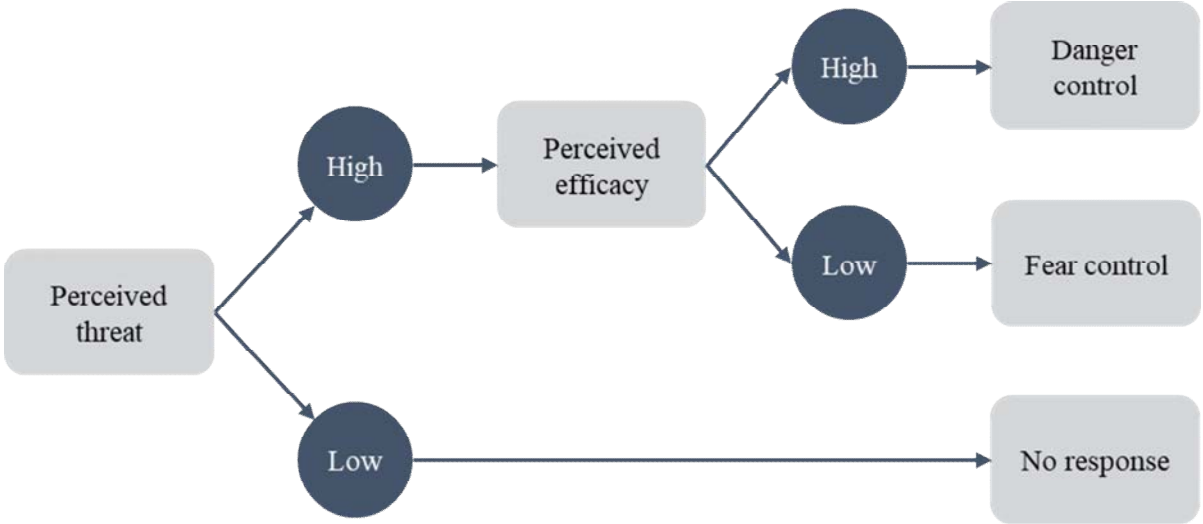
Kok, 2001; Witte, 1992). It is at this point that the EPPM differs from the PMT. Within the EPPM it is discussed how threat perception arouses fear, whereas fear is absent from the PMT. Specifically, according to the EPPM, when threat perception is high, it is proposed that individuals experience greater fear arousal and in turn are more likely to exhibit changes in attitudes, intentions, and behaviour (Popova, 2012; Witte, 1992; Witte & Allen, 2000).

Once an individual perceives a threat to exist, the EPPM suggests that they evaluate the efficacy of a protective response and their ability to carry out that protective response (Witte, 1992). Perceived efficacy is therefore comprised of an appraisal of response efficacy and self-efficacy (Witte, 1992; Witte & Allen, 2000). Although perceived efficacy was conceptualised similarly in the PMT, the PMT focuses on antecedents of protective responses (Rogers, 1975), whereas within the EPPM perceived efficacy is argued to be crucial in determining whether individuals will respond protectively or defensively (Witte, 1992; Witte & Allen, 2000).

2.2.2.2 Outcome constructs of the EPPM. Based upon appraisals of the threat and efficacy, the EPPM suggests that individuals may respond in one of three ways (Witte, 1992). They may perform no response, they may respond to control the danger (protective or adaptive responding), or they may respond to control the fear (defensive or maladaptive responding) (Maloney et al., 2011; Witte & Allen, 2000). Individuals are motivated to respond when fear is aroused and therefore, for a response to be performed it is argued that individuals first need to perceive there to be a threat (Witte, 1992). Figure 6 below summarises the predicted outcomes and preceding factors as per the EPPM.

Figure 6

Predicted outcomes and preceding cognitive factors



2.2.2.2.1 Danger Control. Individuals who appraise a threat and efficacy to be high are most likely to respond adaptively and engage in responses that control the danger according to the EPPM (Witte, 1992). The EPPM suggests that when people fear a threat that they believe they are susceptible to and the impacts of which will be serious, they are motivated to respond to the threat. Furthermore, when perceptions of response efficacy and self-efficacy are also high, individuals are proposed to be motivated to control the danger by performing responses that will mitigate or avoid the threat (Witte, 1992; Witte & Allen, 2000). Danger control processes are argued to be influenced primarily by cognitive processes rather than the emotional processes which are employed in fear control processes (Witte, 1992). As such, the EPPM suggests that adaptive responses which result from danger control processes are deliberately performed to confront the threat (Witte, 1992).

2.2.2.2.2 Fear Control. Individuals who appraise a threat to be high but hold low perceptions of efficacy are proposed to be most likely to respond defensively and engage in responses that control the fear (Witte, 1992). Fear control responses are said to govern responding when individuals believe either they are incapable of carrying out an effective response or that the response will not be effective in mitigating or avoiding the threat (Witte, 1992; Witte & Allen, 2000). When perceived efficacy is low, because individuals remain motivated to reduce fear arousal, the EPPM suggests that they respond in way that will directly lower fear arousal (McMahan et al., 1998). In fear control processes, fear is argued to directly influence the nature of the response. This fear, originally aroused by perceptions of threat, is proposed to intensify when individuals feel that they cannot avoid the threat (Witte, 1992). It is suggested that it is this intensified experience of fear that directly causes defensive responding (Witte, 1992). According to the EPPM, to lower fear arousal individuals may engage in defensive responses and cognitions such as denial, wishful thinking, fatalism, and rationalisation (Grothmann & Patt, 2005; McMahan et al., 1998; Witte, 1992).

2.2.2.2.3 No Response. Those who hold low perceptions of both threat and efficacy are proposed to be the least likely to respond to a threat (Witte & Allen, 2000). For the efficacy appraisal process to be triggered, and in turn for responding to occur, it is argued that a certain level of threat perception is first required. That is, according to the EPPM an individual must perceive there to be a threat before they will begin the efficacy appraisal and will not respond to a threat if it is perceived as being insignificant or if they believe they are not susceptible to the threat (McMahan et al., 1998; Witte, 1992; Witte & Allen, 2000).

Therefore, as highlighted in Figure 6, it is predicted that no response will occur if there is no perceived threat.

2.2.2.3. Other influencing factors. As can be seen in Figure 5, it is proposed within the EPPM that the cognitive-emotional decision-making process and in turn responding are also influenced by factors such as external stimuli and individual differences (Witte, 1992). For instance, it is argued that the perception of threat is influenced by external threat stimuli such as cues in messages and the environment that signal a threat (Witte, 1992). Simply, an individual's perception of threat is proposed to reflect cues that the threat is present. However, the converse is not always true. Although there may be threat cues present in the environment or in a message, individuals do not always perceive there to be a threat. Additionally, in the original conception of the EPPM, Witte (1992) proposed that appraisals of threat and efficacy, and in turn responding, were influenced by individual differences (or individual factors). That is, people evaluate the threat and their ability to respond through the lens of their prior experiences and their culture (Witte, 1992). Individual differences have therefore been used to explain why it is that although two individuals may be exposed to the same threat stimuli, events, or cues, they may exhibit different responses to that threat.

Witte and Allen (2000) concluded that, based upon the findings of their meta-analysis of fear appeal studies, there was insufficient evidence to conclude that individual differences such as personality or demographic characteristics had consistent or stable effects on how individuals processed and responded to fear appeal messages. Instead, Witte and Allen (2000) suggest that effect of individual differences on the outcome of fear appeal messages differs based on the context. It could therefore be argued that individual differences are not relevant factors to consider when studying decision making. Accordingly, applications of the EPPM often focus on the constructs of the EPPM but less often on the contextual or individual factors that may influence these constructs, or interactions between these constructs. However, in the case of the current study, cognitive-emotional decision-making theory is being applied to a novel context (commercial fishing). While evidence in the context of health psychology suggests that individual differences may not be critical in understanding decision making (Witte & Allen, 2000), there is no evidence to suggest that that will also be the case when applying such models to novel contexts. Furthermore, as previously discussed, research in the commercial fishing industry suggests that there are certain individual factors which play a role in how commercial fishers cope with and respond to threats to their livelihood, none of which are captured in the decision-making models discussed. These factors included commercial fishers' attachment to commercial fishing and the places in

which they fish, their identity as a commercial fisher and the extent to which they are flexible in how they earn an income. By assuming that individuals have no role in decision making, it is likely that important influences on commercial fishers' decision making would be omitted. Therefore, despite the advice of Witte and Allen (2000) that it is not necessarily important to consider the role of individual factors, the role of individual factors will be explored in the current study. Furthermore, the review in Chapter 1 highlighted a range of industry pressures which may influence the experiences of commercial fishers including competition and conflict, weather and climate, job characteristics, and fisheries management. For these reasons, the current research will consider how such factors influence the decision-making process.

2.3 Current application of decision-making models of threat perception

The PMT (Rogers, 1975) and EPPM (Witte, 1992) have been used to both test the efficacy of fear appeals and as frameworks for understanding the cognitive and behavioural responses in a variety of health-related threats. Specifically, in the early application of the EPPM, Witte and colleagues (Witte, 1994, 1997; Witte, Berkowitz, Cameron, & McKeon, 1998) used the constructs outlined in the model to design and test the efficacy of fear appeals targeting risky sexual behaviours. As summarised in Table 1 below, this early application has been extended to demonstrate support for the use of the PMT and EPPM in in a variety of health contexts.

Table 1

Applications of the PMT and EPPM in health contexts

Area of interest	Protection Motivation Theory	Extended Parallel Process Model
Cancer-protective behaviours	Baghianimoghadam et al. (2014) Bai et al. (2018) Dehdari et al. (2014) Malmir, Barati, Jeihooni, Bashirian, and Hazavehei (2018)	Birmingham et al. (2015) Evans, Beeken, Steptoe, and Wardle (2012) Montealegre et al. (2014) Morman (2000) Pengchit et al. (2011)
Driving behaviour	Cathcart and Glendon (2016) Cismaru, Lavack, and Markewich (2009) Glendon, Lewis, Levin, and Ho (2018) Glendon and Walker (2013); Morovati, Momeni, Barkhordari, and Fallahzadeh (2012)	Cismaru (2014) Jung and Brann (2014) Ngondo and Klyueva (2018) Pedruzzi, Swinbourne, and Quirk (2016)
Drugs and alcohol	Banerjee and Greene (2012) Ben-Ahron, White, and Phillips (1995) Stainback and Rogers (1983) Wu et al. (2014)	Allahverdipour et al. (2007) Choi, Krieger, and Hecht (2013) R. Shi (2009)
Physical activity	Fruin, Pratt, and Owen (1992) Plotnikoff et al. (2010) Ruthig (2016) M. A. Stanley and Maddux (1986) Wurtele and Maddux (1987)	Bassett-Gunter, Latimer-Cheung, Martin Ginis, and Castelhano (2014) Batchelder and Matusitz (2014) Redmond, Dong, and Frazier (2015) Yun and Berry (2018)
Smoking	Gallopel-Morvan, Gabriel, Le Gall-Ely, Rieunier, and Urien (2011) Kanvil and Umeh (2000) Maddux and Rogers (1983) Sabzmakan, Ghasemi, Asghari Jafarabadi, Kamalikhah, and Chaleshgar Kordasiabi (2018) Thrul, Stemmler, Bühler, and Kuntsche (2013) Yan et al. (2014)	Emery, Szczypka, Abril, Kim, and Vera (2014) Gould, Watt, Cadet-James, and Clough (2015) Popova (2013) Schneider, Gadinger, and Fischer (2012) Wong and Cappella (2009)
Sun-protection	Ch'ng and Glendon (2014) McClendon and Prentice-Dunn (2001) McMath and Prentice-Dunn (2005) Moeini et al. (2018) Prentice-Dunn, McMath, and Cramer (2009)	Pokharel et al. (2018) J. J. Shi and Smith (2016) Stephenson and Witte (1998)

The application of the EPPM or the PMT, or the constructs of these models to the commercial fishing population is largely absent from the literature. No studies were found which employed the EPPM or the PMT however one study was identified which used constructs of these models to explore Tasmanian (Australian) rock lobster fishers' perceptions of climate change threat (Nursey-Bray et al., 2012). Nursey-Bray et al. (2012) found that commercial fishers tended not to perceive climate change to be a threat but that they were vulnerable to the impacts of more immediate issues such as debt, succession, and the day-to-day operations of their fishing business. While this study did explore perceptions of threat, the study did not explore other constructs and outcome variables of the EPPM and PMT such as perceived efficacy, fear, and motivation, nor the relationship between these constructs, perceived threat, and the behaviour of commercial fishers. Given the lack of research, there is currently a lack of evidence which supports or refutes the use of such models to predict and explain the behaviour of commercial fishers.

However, recognising the potential utility of the PMT and EPPM, researchers have explored the applicability of these models in the context of non-health related threats and there is growing support for the use of the EPPM and PMT in such contexts. Of interest, studies have found support for the application of the PMT and EPPM (or constructs of these models) to populations similar to commercial fishers such as farmers, and to environmental threats. For example, Mutaqin (2019), Keshavarz and Karami (2016) and Bagagnan, Ouedraogo, Fonta, Sowe, and Wallis (2019) all claim support for the application of the PMT when investigating farmers' decision making and behaviour in response to environmental threats including natural hazards, drought, and climate change.

While these studies provide support for the PMT when applied to a farming population, each study emphasises the importance of different constructs of the PMT, and in some cases constructs of the EPPM. For example, Mutaqin (2019) explored the utility of PMT constructs in predicting both reactive and proactive coping strategies in response to environmental hazards which threatened farmers' livelihoods. This study found that farmers' evaluation of their ability to cope (their perceived efficacy) was a key determinant of the performance of proactive coping strategies, but not when performing reactive coping strategies. That is, farmers who reported that they were confident in their ability to adapt were likely to perform proactive coping strategies, but those who perceived there to be high costs associated with performing the responses were not likely to perform proactive coping strategies. This study provides evidence of the importance of efficacy evaluations, and the role of perceived costs in efficacy evaluations consistent with PMT theory (Rogers, 1975; Rogers & Prentice-Dunn, 1997). However, threat perception variables were not found to be a significant predictor of behaviour. Mutaqin (2019) reported most farmers indicated they perceived the threat of environmental hazards to be high and therefore, the non-significant role of threat perception was likely a result of a ceiling effect. This finding highlights that threat perception alone does not predict behaviour as in situations where individuals perceive there to be a severe threat that is highly likely to impact them, they do not necessarily respond to that threat.

Keshavarz and Karami (2016) applied the PMT to explore the decision making and behaviour of farmers in response to drought. In contrast to findings reported by Mutaqin (2019), Keshavarz and Karami (2016) reported that both coping and threat appraisal were significant predictors of farmers' protection motivation and subsequent performance of adaptive responses. Findings illustrated that response efficacy was the greatest predictor of pro-environmental behaviour in farmers, and that self-efficacy made a small but significant

contribution to farmers' behaviour Keshavarz and Karami (2016). Farmers' uptake of drought adaptation measures was influenced first and foremost by their perceptions about the efficacy of such measures, and to a lesser extent, their ability to implement these measures. While this study reported threat appraisal to be a significant predictor of behaviour, the findings of the study indicated that various aspects of threat perception had contradictory influences on farmer behaviour. Farmers' perception that drought was a *vulnerability* threat was associated with the performance of protective measures, but farmers' perception that drought was *severe* was associated with a lack of uptake of protective measures. While this unexpected finding could not be explained by the PMT, Keshavarz and Karami (2016) argued that the PMT was a suitable framework for understanding drivers of farmers' responses to drought. Furthermore, given the persistent nature of drought, Keshavarz and Karami (2016) claimed that their study provides support for the application of the PMT to slow-onset threats which emerge gradually over time.

Bagagnan et al. (2019) applied the PMT to explore the drivers of farmers' decisions to adopt measures which support climate change adaptation. Consistent with Keshavarz and Karami (2016), Bagagnan et al. (2019) also found that perceptions of threat were a significant predictor of behaviour and that components of threat perception had contradictory impacts on behaviour. However, in contrast to Keshavarz and Karami (2016), Bagagnan et al. (2019) reported that famers' perception that climate change was a *severe* threat associated with the uptake of adaptation measures, but farmers' perception that they were *vulnerable* to climate change was associated with a lack of uptake of adaptation measures. Bagagnan et al. (2019) provide a potential explanation for the divergent influences of severity and vulnerability on behaviour by considering the role of emotion. As discussed in this chapter, the inclusion of emotion (specifically fear) is a critical feature of the EPPM and a key difference between the PMT and EPPM. Witte (1992) argues that by incorporating fear, the EPPM can predict the performance of maladaptive behaviours rather than just the performance of adaptive behaviours as seen in the PMT. Consistent with EPPM theory, Bagagnan et al. (2019) suggest that high perceptions of vulnerability may have led to intense negative emotions, and in turn resulted in farmers engaging in maladaptive responses to reduce or eliminate the negative emotions they were experiencing. Therefore, while this study was guided by the PMT, the conclusion that emotion may be an important factor in farmers' decision making also provides support for the use of the EPPM in the current study.

These studies provide evidence that the application of the PMT to non-health threats can provide meaningful insights. Additionally, these studies highlight that the PMT alone

does not explain the performance of maladaptive behaviours. Witte (1992) argued that preceding models of threat perception such as the PMT neglected processes that result in maladaptive behaviours. To address this shortcoming, the EPPM adopted the PMT's explanation of the cognitive antecedents to adaptive responses and defined the cognitive and emotional antecedents to maladaptive responses. The current study seeks to understand the range of responses and their associated psychological antecedents that commercial fishers engage in, not just those that are considered adaptive. Therefore, for the purpose of the current research, the inclusion of the second pathway present in the EPPM but absent from the PMT is considered important in constructing a theoretical framework which can be used to examine commercial fishers' decision making and behaviour.

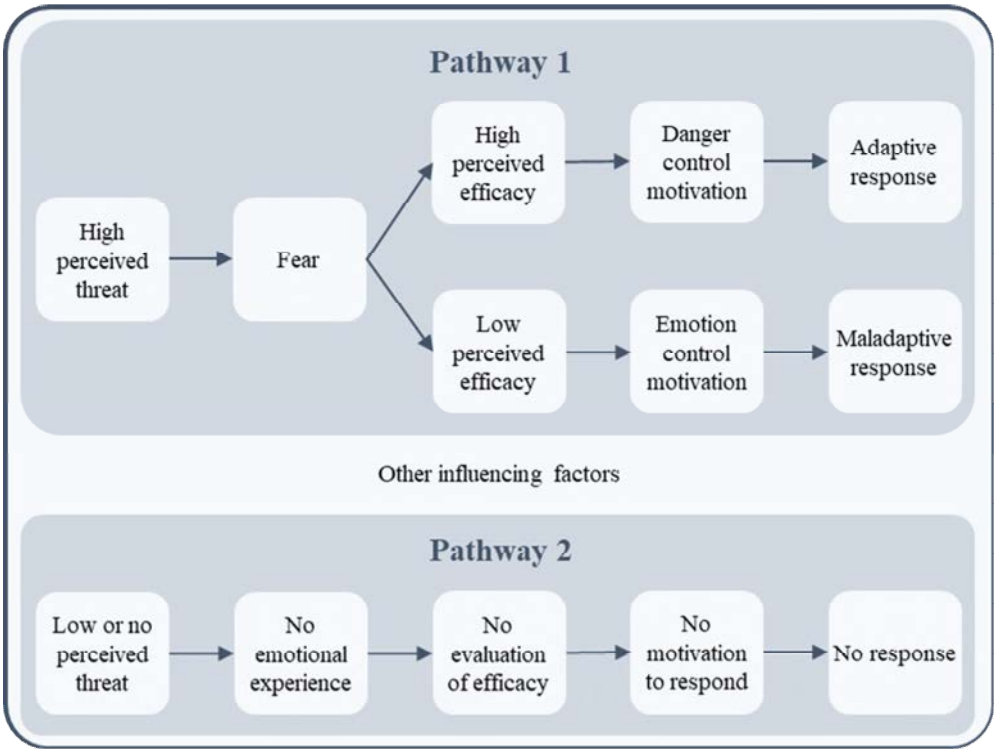
Generally, the application of both the PMT and EPPM is lacking in the context of commercial fishing and to similar populations. However, the PMT and EPPM have been well established in applications to the general population in the context of health threats (as discussed previously) and non-health threats such as climate change (for example, Hart & Feldman, 2014; Hine et al., 2013) and environmental hazards (for example, Ryan, Hocke, & Hilyard, 2012; M. C. Weber, Schulenberg, & Lair, 2018), and the performance of pro-environmental behaviours (for example, Beall, 2015; Perrault & Clark, 2018). Given the demonstrated utility of the PMT and EPPM in a range of contexts, it is reasonable to conclude that their application to a novel context such as commercial fishing can provide meaningful insights with both theoretical and practical implications. Therefore, the application of the theories outlined in this chapter can be used to address the current limited understanding of the processes by which commercial fishers make decisions in the face of threats (see Chapter 1 for further discussion).

2.4 Key theoretical constructs and research gaps

This chapter provided an overview of psychological theories, which attempt to explain how individuals make decisions when confronted with a threat. This review has highlighted that three cognitive and emotional constructs critical to understanding how individuals make decisions to respond to threats: **fear**, **perceived threat, perceived efficacy.** These models also provide insight into how fear, perceived threat, and perceived efficacy influence **motivation**, and consequent **responding** and note that **other factors** may influence decision making and responding. Figure 7 summarises the proposed relationships between each of these factors according to the PMT and EPPM.

Figure 7

Key theoretical constructs and proposed relationships



The theories outlined in this chapter can be used to better understand the processes by which commercial fishers make decisions in the face of threats. However, the models reviewed in this chapter fail to explore the nature of responses that result from the decision-making process, other than to define these responses as adaptive or maladaptive. Consequently, the models reviewed in this chapter have limited utility in understanding how commercial fishers respond to the mix of pressures they face. This gap will be addressed in the following chapter by exploring works which provide a more in-depth understanding of the nature of responses that result from decision-making processes.

3 Responding to Perceived Threats

The Protection Motivation Theory (PMT, Rogers, 1975) and the Extended Parallel Process Model (EPPM; Witte, 1992) explain decision-making processes individuals engage in when confronted with a threat. As outlined in the previous chapter when an individual experiences a negative emotional state (such as fear), it is argued that they are motivated to reduce that negative emotional state. To do so, it is proposed that individuals may either respond to the source of the threat to reduce the negative emotional state indirectly by reducing or eliminating the threat (protective or adaptive responding), or they can respond so as to directly influence the negative emotion (defensive or maladaptive responding).

Models such as the PMT (Rogers, 1975) and the EPPM (Witte, 1992) provide detail about the emotional (in the case of the EPPM only) and cognitive antecedents to responding. However, such theories do not provide a detailed account of the nature of the responses or coping strategies that are employed when engaging in either adaptive or maladaptive responding. To expand on the coping strategies that are employed as the result of danger control processes and fear control processes as described in the EPPM (Witte, 1992), or as a result of protection motivation as discussed in the PMT (Rogers, 1975), the stress and coping literature is considered in this chapter. In particular, works stemming from Lazarus' (1966) Transactional Model of Stress and Coping provide insight into types of coping strategies.

Much like the EPPM, the Transactional Model of Stress and Coping suggests that responding is the outcome of a cognitive-emotional decision-making process. This cognitive-emotional decision-making process involves two appraisal processes, namely the primary and secondary appraisals (Lazarus & Folkman, 1987). The first of these two appraisals involves how the individual perceives the threat in relation to themselves (Carver, Scheier, & Weintraub, 1989). The secondary appraisal involves an appraisal of the individual's ability to cope with or respond to the threat (Carver et al., 1989). As will be demonstrated in the following section, these two appraisal processes share commonalities with both the EPPM (Witte, 1992) and the PMT (Rogers, 1975) and therefore provides a suitable framework to expand upon to understand the types of coping strategies employed as a result of the decision-making processes outlined in the previous chapter.

3.1 Primary appraisal

During the primary appraisal, the individual appraises the nature and the intensity of the threat (Folkman & Lazarus, 1988a; 1988b). This can involve the appraisal of both previous and anticipated threat experiences in which the individual appraises how harmful, threatening, challenging or benign the threat is to them (Lazarus & Folkman, 1987). How

threatening an event is perceived to be is thus a result of both environmental and personal factors. For instance, Folkman and Lazarus (1988b) argue that threat appraisal is influenced by factors external to the individual such as the proximity of the threat, the nature of the threat and the duration of the threat. Furthermore, Folkman and Lazarus (1988b) suggest that personal characteristics such as personal values, commitments and goals may explain why an event may be appraised as threatening by one individual, but not by another. An event is proposed to be perceived as more threatening when it compromises an individual's ability to achieve their goals or maintain their values. Individuals who lack confidence in their ability to overcome the event are also hypothesised to experience higher levels of threat (Folkman & Lazarus, 1988b).

As a result of the primary appraisal, Lazarus and Folkman (1987) hypothesise two outcomes. If the individual perceives that the threat poses no harm to them, then the event will elicit no emotional reaction. If however, the threat is perceived as potentially harmful to the individual or their goals, the individual will experience an emotional reaction and the intensity and nature of that emotional reaction will depend upon what the individual stands to lose (Lazarus & Folkman, 1987).

The primary appraisal process as outlined by Lazarus, Folkman, and colleagues (for example, Folkman & Lazarus, 1988a; 1988b; 1988c; Lazarus, 1998; Lazarus & Folkman, 1987) involves components similar to those described in Rogers' (1975) and Witte's (1992) conceptualisation of threat perception. Whereas Lazarus, Folkman and colleagues refer to the nature of a threat, Rogers (1975) and Witte (1992) describe this evaluation as the perceived severity of the threat, and the meaning that the threat poses to the individual (as described by Lazarus, Folkman, and colleagues) is defined by Rogers (1975) and Witte (1992) as perceptions of susceptibility to the threat. Therefore, while these theories may use different language, they all describe an appraisal process in which an individual performs an evaluation of threat.

3.2 Secondary appraisal

During the secondary appraisal, it is proposed that the individual appraises what they can do to cope with the threat and how the environment will respond to such actions (Folkman & Lazarus, 1988a). An important theme within Lazarus' theoretical framework is the person-environment relationship in which coping and responding occurs. During this secondary appraisal, Lazarus and Folkman (1987) suggest that the individual contemplates what they can do to improve the person-environment relationship. This can be achieved either by performing responses which alter the person (emotion-focused coping) or the environment

(problem-focused coping) in the person-environment relationship (Lazarus & Folkman, 1987). As such, this appraisal comprises evaluations of what can be done, how effective the response will be and the individual's ability to carry out the response. In turn, the evaluations of coping influence the coping strategy that is employed (Folkman & Lazarus, 1988b).

Again, the secondary appraisal process as outlined by Lazarus and Folkman involves components similar to those outlined in Roger's (1975) and Witte's (1992) conceptualisation of coping appraisal and perceived efficacy, respectively. Rogers (1975) and Witte (1992) describe this appraisal as comprising evaluations of the response (environment) and self-efficacy (person). As such, these theoretical frameworks outline an appraisal process in which the individual evaluates their response options, and the efficacy of those options (response efficacy), as well as their individual ability to carry out the coping response (self-efficacy; Rogers, 1975; Witte, 1992).

3.3 Coping and responding

Similar to Witte (1992), Lazarus and Folkman (1987) emphasise the role of emotion in coping or responding to threats. Unlike Witte (1992) however, emotion is not limited only to fear in this theoretical framework. Lazarus and Folkman (1987) originally focused primarily on stress, however later broadened their theoretical framework to include emotion more generally. Lazarus and Folkman (1987) went on to describe coping as a response to emotions such as fear, anger, guilt, and shame. Similar to Witte (1992), Lazarus and Folkman (1987) propose that the nature and the intensity of the emotional response is largely influenced by the cognitive appraisals outlined previously. That is, the emotional response is argued to reflect the perceived intensity of the threat so the greater the perceive threat, the greater the emotional response.

Importantly Lazarus, DeLongis, Folkman, and Gruen (1985) emphasised coping as a mediator of the emotional response. The original emotion experienced when exposed to the threatening event is argued to be transformed after a coping response is performed (Folkman & Lazarus, 1988a). Similarly, theorists such as Witte (1992) suggest that emotion arises because of the perceived presence of a threat and the negative emotional state (specifically fear) is then reduced once an adaptive or maladaptive response is performed.

Lazarus, Folkman, and colleagues (for example, Folkman, 1984; Folkman & Lazarus, 1980, 1985, 1988a, 1988b; Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986; Folkman & Moskowitz, 2004; Lazarus, 1996, 1998; Lazarus & Folkman, 1987), argue there are two common categories of responding: problem-focused coping and emotion-focused coping. This can be directly compared to Witte's (1992) conceptualisation of adaptive and

maladaptive responding, with adaptive changes proposed to arise as a result of danger control processes (in which the individual seeks to control the danger or the threat) whereas maladaptive changes are suggested to arise as a result of fear control processes (in which the individual seeks to control their fear) (Witte, 1992). Therefore, it is suggested here that problem-focused coping as defined by Lazarus and Folkman is synonymous with adaptive changes as described by Witte (1992) and, correspondingly, emotion-focused coping as outlined by Lazarus and Folkman is synonymous with maladaptive changes as described by Witte (1992). The Lazarus and Folkman's work differs to models such as EPPM (Witte, 1992) or the PMT (Rogers, 1975) in that it details the specific types of responses that are performed as a result of the decision-making process. The following section details an overview of the specific response strategies as outlined in works based in Lazarus' Transactional Model of Stress and Coping that can be incorporated into the conceptualisation of threat appraisal and responding as outlined by Witte (1992) and Rogers (1975).

3.3.1 Problem-focused coping strategies

Problem-focused coping includes response strategies in which the individual responds directly to the problem in an effort to minimise its impact (Bonanno & Burton, 2013; Carver et al., 1989; Folkman & Moskowitz, 2000b, 2004; Vitaliano, Russo, Carr, Maiuro, & Becker, 1985). When engaging in problem-focused coping, individuals direct their attention to the source of the threat to eliminate or reduce the threat in an attempt to change the environment in the person-environment relationship (Folkman & Lazarus, 1988b; Folkman & Moskowitz, 2004). Problem-focused coping can involve several unique strategies including active coping, confrontational coping, planning or planful problem-solving, suppression of competing activities, seeking social support and restraint coping (Bonanno & Burton, 2013; Carver et al., 1989; Folkman & Moskowitz, 2004). These commonly cited problem-focused coping strategies are summarised below in Table 2.

Table 2

Summary of Problem-Focused Coping Strategies

Coping Strategy	Description	General Example	Context Specific Example	Outcomes of Strategy
Active Coping	The individual seeks resources available to them and directs them toward resolving the problem or threat[a, i]. This strategy is often referred to more generally as problem-focused coping[d].	I have been taking action to solve the problem facing me[a, b, d, l, m].	I accessed different fishing grounds after restrictions to my usual fishing grounds were introduced so that I could continue fishing.	Changes in the person-environment relationship are directed at the problem so that the threat is reduced or eliminated and in turn, there is a reduction in the negative emotional state associated with the threat.
Confrontational Coping	The individual employed more aggressive problem-focused coping to resolve the problem or threat [e]. This strategy may involve aggression, hostility or risk-taking [e, h].	I fought for what I wanted, or I expressed my anger to the person responsible for the problem[g, m].	I express my frustration to people fishing illegally because I want them to change their ways.	Although a problem-focused strategy, this strategy is often unsuccessful in improving the person-environment relationship and may further increase feelings of distress through the expression of anger and aggression[e].
Planning or Planful Problem-Solving	Individuals rationally contemplate how they are going to cope with or respond to a threat before responding[d, f, g]. This strategy involves considering ways to deal with the threat and identifying the steps required for the individual to respond to the stressful situation which forms the foundation for action, although this strategy does not necessarily involve action[d, e, f, j].	I thought hard about what I needed to do to handle the problem facing me [b, c, d, g.]	I researched how to reduce my carbon emissions before making changes in my business.	Individuals often experience decreases in distress because of an indirect effect on the individual's emotional experience[e]. The individual improves the person-environment relationship, via the person, simply because they have focused their attention on ways in which they can reduce or eliminate the source of the threat[e].
Suppression of Competing Activities	Individuals direct their attention away from other events or priorities, and focus on the stressful situation so that they are better able to concentrate on and respond to the threat causing distress [d].	I tried to stop other activities from distracting me so that I could concentrate on the problem [d].	I focused more of my attention on increasing my catches than other aspects of my commercial fishing business.	This strategy may benefit individuals as they are then better equipped to respond to the source of the threat and avoid competing distractions [d].

Summary of Problem-Focused Coping Strategies Continued…

Coping Strategy	Description	General Example	Context Specific Example	Outcomes of Strategy
Seeking Social Support	Individuals seek support from their social networks which assists them in responding to the threat or problem [d, k].	I asked my friends or family for advice on how to handle the problem [b, c, d].	I worked with another commercial fisher to share our resources and increase our catches.	Social support can improve the person-environment relationship through two pathways. Social support can either be instrumental in solving problems (problem-focused strategy) or can be sought for emotional support (emotion-focused strategy). While instrumental support seeking and emotional support seeking can be distinguished theoretically, in practice these two strategies occur at the same time [d].
Restraint Coping	Individuals withhold responding to wait for the appropriate time to respond [d]. Rather than immediately responding to the stressor or threat, individuals may choose to wait until they have the appropriate resources to effectively respond to the threat. This type of problem-focused responding differs from other types of problem-focused coping as it involves both active and passive aspects to responding rather than just active coping [d].	I waited until the right time to do something about the problem I was facing [d].	I waited until I could afford to purchase new gear to switch to a less fuel-intensive fishing method.	Similar to suppression of competing activities, individuals may be better equipped to respond to the threat by waiting for the appropriate time to respond [d].

Note: [a] Aldwin and Revenson (1987); [b] Amirkhan (1990); [c] Carver (1997); [d] Carver et al. (1989); [e] Folkman and Lazarus (1988a); [f] Folkman and Lazarus (1988b); [g] Folkman and Lazarus (1988c); [h] Folkman et al. (1986); [i] Zeidner and Endler (1996); [j] Lazarus (1998); [k] Terry (1991); [l] Tobin, Holroyd, Reynolds, and Wigal (1989); [m] Vitaliano et al. (1985)

3.3.2 Emotion-focused coping strategies

Emotion-focused coping includes response strategies in which the individual responds so as to manage their personal reactions to the problem (Bonanno & Burton, 2013; Carver et al., 1989; Folkman & Moskowitz, 2004; Vitaliano et al., 1985). When engaging in emotion-focused coping, individuals direct their attention to their emotional experience of the threat and seek to alter their emotional experience, or in other words alter the person, within the person-environment relationship (Carver et al., 1989; Folkman & Moskowitz, 2004). Coping processes that fall under emotion-focused coping include both conscious and non-conscious processes that ameliorate the experience of negative emotions or increase the experience of positive emotions. Emotion-focused coping can involve several unique strategies including denial, distancing, disengagement, active distraction and seeking social support which are summarised in further detail in Table 3 below.

Table 3

Summary of Emotion-Focused Coping Strategies

Coping Strategy	Description	General Example	Context Specific Example	Outcomes of Strategy
Denial	Individuals do not perceive the threatening event to exist, they behave as though the threat is not real, or they perceive the threat to be less severe than what it is[e]. Unlike many other coping strategies, denial often occurs without conscious awareness[f].	I have tried not to think about the problem too much, or I have told myself that the problem isn't real[a, d, e].	I don't believe that climate change will have an impact on my commercial fishing business.	This strategy serves to reduce experiences of negative emotional states and thus can be a useful coping response[e]. Despite the ability of denial to effectively reduce negative emotional states, denial can have negative consequences, particularly if maintained for a longer period[i]. Denial may be effective in the earlier stages of coping, but if an individual engages in prolonged denial, it can impede further coping as acknowledgement of the threat is needed for problem-focused coping to occur[e].
Behavioural and Mental Disengagement	Individuals engage in threat escapism and avoidance as they withdraw from the threat[a, q]. Such disengagement can manifest as both behavioural and mental disengagement. Whereas behavioural disengagement involves outward expression of withdrawal such as giving up, mental disengagement can manifest as engagement in distracting activities so that the individual is not focusing on the threat[e]. Disengagement differs from distancing as a coping strategy as in disengagement, the indivdual engages in escape and avoidance behaviours rather than detachment from the problem[k].	I gave up trying to handle the problem (behavioural disengagement)[d, e, n, p]. I daydreamed about a time where I didn't have this problem or I wished that the problem would go away on its own (mental disengagement)[a, b, e, g, h, j, p].	I have given up trying to stop climate change impacting me.	Disengagement tends to occur when the expectation is that coping responses will have limited efficacy[e]. Disengagement has been likened to phenomena such as learned helplessness, which is proposed to occur when an individual who is repeatedly exposed to inescapable negative consequences, fails to respond to the threatening event in future[m]. During this process, it is argued that individuals learn their response is ineffective and there is nothing they can do the escape the negative consequences. The individual then becomes passive or disengaged when facing the threat[m].

Summary of Emotion-Focused Coping Strategies Continued…

Coping Strategy	Description	General Example	Context Specific Example	Outcomes of Strategy
Active Distraction	Indviduals' attention is directed away from the threat by engaging in non-threat-related activities. Active distraction is a strategy which falls under the broader category of disengagement. Similar to disengagement strategies more generally, an individual's attention is directed away from the threat when engaging in active distraction strategies[c]. In contrast however, active distraction requires that the individual is engaged in activity to disengage from the threat, rather tham remaining passive in the face of the threat[l].	I've been focusing on work or leisure activities to help me stop thinking about the problem[d].	I'm focusing on making my commercial fishing business more profitable so that I don't have to think about the potential impacts of climate change.	Engaging in non-threat-related activity can improve an individual's negative emotional state by enhancing feelings of control and reducing feelings of helplessness or distress and the stress-reducing effects of non-threat-related activity occur because such activities distract the individual from the threat[l].
Seeking Social Support	Individuals seek support from their social networks which provides them with emotional support (for example, moral support, sympathy or understanding) when facing a threat or problem[e].	I talk to my friends or family about how I feel to get emotional support[d, e].	I talk to my friends in the commercial fishing industry about my concerns about challenges we face as commercial fishers to make me feel better.	As discussed in Table 1, social support can improve the person-environment relationship by providing both instrumental (problem-focused strategy) and emotional support (emotion-focused strategy)[e].
Distancing	Individuals orient themselves away from the threat[i, k, o]. Unlike explicit denial of the threat, when an individual engages in distancing they may acknowledge the threat, but may not yet be able or willing to confront the threat[i].	I tried to forget about the problem facing me or I tried not to let the problem get to me[h, j].	I try not to let the potential impacts of climate change get to me.	This form of coping can be adaptive when there is no appropriate or effective immediate action to be taken and can even enhance problem solving during stressful situations[i].

Note: [a]Aldwin and Revenson (1987); [b]Amirkhan (1990); [c]Bonanno and Burton (2013); [d]Carver (1997); [e]Carver et al. (1989); [f]Cramer (1998); [g]Folkman and Lazarus (1980); [h]Folkman and Lazarus (1985); [i]Folkman and Lazarus (1988b); [j]Folkman and Lazarus (1988c); [k]Folkman et al. (1986); [l]Gal and Lazarus (1975); [m]Seligman (1972); [n]Stanton, Kirk, Cameron, and Danoff-Burg (2000); [o]Thompson, Robbins, Payne, and Castillo (2011); [p]Tobin et al. (1989); [q]Zuckerman and Gagne (2003).

3.3.3 Meaning-focused coping strategies

In addition to the more well-known problem-focused and emotion-focused coping strategies, Folkman (2008) further suggested that some individuals engage in meaning-focused coping when responding to stressful situations. Similar to emotion-focused coping, meaning-focused coping typically involves altering the person rather than the environment (as seen in problem-focused coping). In contrast however, while individuals engaging in emotion-focused coping turn their attention towards altering their emotional experiences, when an individual engages in meaning-focused coping, the attention is turned to personal beliefs, values and motivations (Folkman, 2010b). In meaning-focused coping, cognitive strategies are employed to alter the meaning (which is likely to differ from person to person) of the situation for the individual (Folkman & Moskowitz, 2004).

Unlike problem-focused coping and emotion-focused coping, the appraisal processes which lead to meaning-focused coping are not clearly defined, however, the conditions under which meaning-focused coping has been typically observed may provide some insights. For example, Folkman (1997) reported that meaning-focused coping was often observed in situations where problem- or emotion-focused responding resulted in an unfavourable resolution or no resolution. Additionally, meaning-focused coping is often proposed to arise in the face of chronic threats (for example, Folkman & Moskowitz, 2007; Folkman, Moskowitz, Ozer, & Park, 1997). Therefore it may be that people engage in meaning-focused coping when they perceive there to be nothing that they can do to alter their environment (as seen in problem-focused coping) or their emotional response to their environment (as seen in emotion-focused coping). People may form this belief when previous attempts to engage in problem-focused coping or emotion-focused coping has failed, or when they believe a threat to be uncontrollable and persistent. Alternatively, it may be that individuals engage in meaning-focused coping when they perceive that they are capable of altering their personal beliefs, values or motivations and that doing so will have greater benefits, and fewer costs than problem-focused or emotion-focused strategies.

The integration of meaning-focused coping into this theoretical framework, grew from research conducted by Folkman and colleagues (for example, Folkman, 1997, 2008; Folkman, 2010b; Folkman & Moskowitz, 2000a, 2000b). In her research, Folkman (1997) began to recognise that during stressful encounters, the emotional experiences of individuals were not completely negative. During such stressful encounters, participants also reported experiencing some positive emotions (Folkman, 1997, 2008; Folkman & Moskowitz, 2000a). Based upon these findings, Folkman (1997) identified coping strategies that incorporated

positive emotions including positive reappraisal, revising goals and the infusion of ordinary events with positive meaning which are summarised in further detail in Table 4 below. When exploring the commonalities amongst these coping stategies, Folkman (1997) found that not only did these coping strategies share the experience of positive emotions, but they also involved the individual seeking to alter or find positive meaning during coping.

Table 4

Summary of Meaning-Focused Coping Strategies

Coping Strategy	Description	General Example	Context Specific Example	Outcomes of Strategy
Positive Reappraisal	Individuals change the way the threat is perceived so that it is seen in a positive light or attention is directed to the positive aspects of the threat[a, d, j, m].	I tried to learn something new from my experience facing this problem[b, c, h].	I enjoy the challenges of being a commercial fisher, so I see climate change as a new challenge for me to overcome.	People who employ positive reappraisal are argued to be better equipped to face ongoing stress as they view the threatening events in positive terms[c, i, j]. Positive reappraisal allows individuals to experience positive emotions and psychological well-being while facing a threatening event[f, g, j, k].
Goal Revision	Individuals may seek new and positive meaning by finding and setting new goals[d, e, n]. Similarly, individuals may choose to reorder their priorities, so that those that are less achievable receive less attention, whereas those that are achievable are valued more[e].	I have adjusted my goals and values after encountering this problem[l] or I have been on focusing on what really matters[e].	I made the decision to prioritise my family's needs over my fishing business.	Pursuing personally meaningful goals is argued to contribute positively to mental health and well-being[d, n]. However this strategy is not inherently positive or pleasant processes. By letting go of or devaluing unrealistic goals, personal values and beliefs may be contradicted[e] and in turn lead to further distress[j].
Infusing Positive Meaning	Individuals seek to identify existing positive events and meaning in their life[jd].	I try to look for the positives in my life[b, c, h].	I focus on the good in my life such as my family and friends.	This strategy is argued to be important in maintaining well-being when facing enduring threatening events[e].

Note: [a]Bonanno and Burton (2013); [b]Carver (1997); [c]Carver et al. (1989); [d]Folkman (1997). [e]Folkman (2008); [f] Folkman and Lazarus (1988a); [g]Folkman and Lazarus (1988b); [h](Folkman & Lazarus, 1988c); [i]Folkman and Moskowitz (2000a); [j]Folkman and Moskowitz (2000b); [k]Folkman and Moskowitz (2004); [l]Gan, Guo, and Tong (2013); [m]Vulpe and Dafinoiu (2012); [n]Zuckerman and Gagne (2003).

As discussed previously, it has been argued that problem-focused strategies tend to be most effective when the individual can perform a response to reduce the threat, whereas emotion-focused strategies tend to be most effective when behavioural responding is unlikely to be successful or when it is not possible (Carver et al., 1989). Alternatively however, meaning-focused coping may also be beneficial when neither emotion- or problem-focused responses can be made (Carver et al., 1989; Folkman, 2010b). Folkman (2010b) suggests that when facing uncontrollable events, meaning-focused coping may result in more positive mental health outcomes than emotion-focused coping. Furthermore, it is proposed that in the face of chronic stressors, meaning-focused coping may be more effective in reducing distress than problem- or emotion-focused coping (Folkman, 2010b; Zuckerman & Gagne, 2003). In particular, it is argued that meaning-focused coping strategies may be more effective than emotion-focused coping strategies when facing chronic stressors, as emotion-focused coping strategies are often difficult to maintain over long periods of time (Zuckerman & Gagne, 2003).

3.4 A note on language

Theorists such as Lazarus and Folkman refer to problem-focused coping and emotion-focused coping, whereas theorists such as Witte (1992) use the terms adaptive and maladaptive respectively, to describe the same responses. Additionally, the cognitive-emotional pathways that lead to such responses are sometimes referred to as rational (when individuals seek to control the danger) and irrational or faulty (when individuals seek to control their emotions). Here it is argued that the use of language which implies "rightness" and "wrongness" is problematic.

Rational decision-making or adaptive responding could easily be interpreted as being inherently positive or "good." In contrast, irrational or faulty decision-making and maladaptive responding could easily be interpreted as being inherently negative or "bad". For example, the term maladaptive is defined as "interfering with optimal biological, economic, emotional, intellectual, occupational or social functioning within a particular environment, culture or set of circumstances" (Matsumoto, 2009, p. 259). According to this definition, maladaptive responding implies that the response has a negative impact on functioning or even that responses that are maladaptive are the result of faulty or irrational thinking.

Comparable arguments can be made about the use of the term adaptive. Adaptation is defined as "an individual or group's ability to process new or modified information and the consequent psychological, physiological, or behavioural response that allows for effective functioning or goal attainment in a constantly changing environment" (Matsumoto, 2009, p.

15). The definition of adaptation implies that it is an inherently positive process that is driven by logical or rational reasoning.

Responses that seek to control the danger may not always be “adaptive” or the result of “rational” decision making, and responses that seek to control the emotional response to danger may not always be “maladaptive” or the result of “irrational” or “faulty” decision making. Accounts of decision making that employ the use of terms adaptive and maladaptive responding, or rational and irrational thinking, do not take into account the relationship between the person and their environment. Furthermore, theorists such as Lazarus et al. (1985) argue that coping strategies can be adaptive or maladaptive depending upon the context in which the coping strategy is employed. That is, coping strategies are not adaptive or maladaptive nor are decisions rational or irrational in their own right. The functional value of a decision and response is acknowledged to vary and is dependent upon the person-environment relationship (Bonanno & Burton, 2013; Lazarus & Folkman, 1987).

Lazarus and Folkman (1987) emphasise that both the person and the environment are critical in understanding threats and coping. For example, a threat cannot have meaning without a person to interact with it, and a threat cannot be understood without understanding what it is about the environment that is threatening (Lazarus & Folkman, 1987). Therefore, for coping and the functional value of responses to be understood, Lazarus and Folkman (1987) suggest that both the person and the environment need to be considered. Furthermore, the environment is argued to be a dynamic context and thus a decision and response strategy that may have been effective at one point, may not be necessarily as effective later (Folkman & Moskowitz, 2004).

Although the true adaptive value of decisions andresponses must be considered in context, there is some agreement amongst theorists that certain response strategies tend to be adaptive and others tend to be maladaptive. Researchers propose that generally, problem-focused coping strategies such as planning and active coping tend to be adapative and emotion-focused strategies such as denial and disengagement tend to be less adaptive (Carver et al., 1989; Zuckerman & Gagne, 2003). Folkman (2008) however argues that problem-focused strategies only tend to be adaptive when there is something that can be done to resolve the threatening event. In such a situation however, the adaptive response may be to engage in emotion-focused and meaning-focused coping strategies to reduce the experience of negative emotions (Folkman, 2008; Folkman & Lazarus, 1988a, 1988b; Folkman & Moskowitz, 2000b; Zuckerman & Gagne, 2003).

For these reasons, this research rejects the use of language that implies “rightness” and “wrongness” (rational, irrational, faulty, adaptive and maladaptive) where non-judgemental language can be used (problem-focused and emotion-focused). Other terms such as confrontational coping (problem-focused), denial (emotion-focused) and positive reappraisal (meaning-focused) may lead readers to make assumptions about the “wrongness” or “rightness” of such strategies. Such language has been retained as it best describes the response, however judgement regarding the functional value of such responses is not implied.

3.5 Key research constructs

As discussed in the previous chapter three cognitive-emotional constructs were identified as key antecedents to decision making: fear, **perceived threat**, and **perceived efficacy**. In light of the review in the current chapter, the importance of these constructs was re-affirmed, however, for the current research, the construct *fear* was broadened to encompass **negative emotional experiences** more generally. The literature presented in both Chapter 2 and the current chapter support the notion that perceived threat, perceived efficacy and negative emotional experiences **motivate** individuals to respond to threats. The current chapter provided evidence to consider that decision-making processes motivate three types of responses: **problem-focused**, **emotion-focused,** and **meaning-focused** responses. It was argued that problem-focused and emotion-focused responses were used to describe the same responses which were defined as adaptive and maladaptive responses by Witte (1992). However, the terms problem-focused and emotion-focused responding will be used in the current research as it was argued that these terms more appropriately capture the true meaning of the resulting responses. Given the evidence presented in the current chapter, it was determined that meaning-focused responding should be retained as a distinct response option which occurs when problem-focused or emotion-focused responses result in an unfavourable resolution or no resolution. Furthermore, literature reviewed in the current chapter supports the notion that **individual differences** may have an effect on decision making and the resulting responses. The following chapter proposes a theoretical framework to guide the current research which integrates these two perspectives.

4 Guiding theoretical framework and research questions

Commercial fishers operating on the east coast of Northern Queensland face a unique, complex, and intense mix of pressures. Psychosocial and economic factors including attachment (place and livelihood), identity and income flexibility are proposed to influence how commercial fishers experience and respond to pressures. However, there is a limited understanding of the processes by which commercial fishers make decisions in the face of threats, and how these previously identified psychosocial and economic factors influence their decisions. Therefore, the aim of the current research was to better understand (a) how commercial fishers are impacted by, cope with and respond to the mix of pressures they face, and (b) the processes by which commercial fishers make decisions in the face of threats.

While there has been limited exploration of psychological decision making in the commercial fishing industry, there are several psychological theories which attempt to explain how individuals make decisions in order to respond to threats. Chapters 2 and 3 discussed two schools of thought in psychology which consider different aspects of psychological decision making in response to threats. The current chapter presents an overarching theoretical framework for how individuals make decisions and respond to threats by integrating these two schools of thought. If support for these key theoretical constructs is identified in a novel context, the scope and utility of psychological frameworks incorporating such constructs can be expanded.

4.1 Guiding theoretical framework

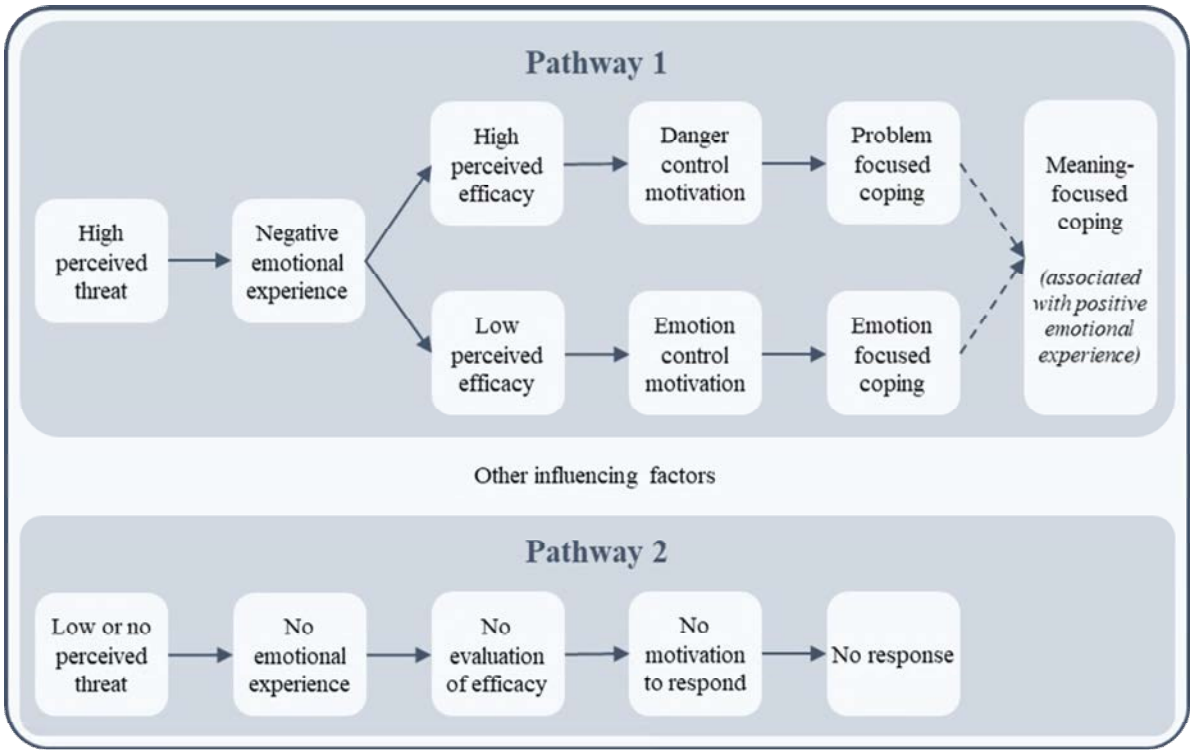
Theorists including Witte (1992), and Lazarus and Folkman agree that there are two cognitive appraisal mechanisms (threat appraisal and coping / efficacy appraisal) which result in an emotional response. The emotional response, in turn, motivates the individual to respond. While there is much consistency between the work of theorists in this area, work by Lazarus and Folkman lacks the specific detail of the cognitive processes involved in responding to threat that is described in much detail by theorists such as Rogers (1975) and Witte (1992). Conversely however, the role of emotions in responding to threats is non-existent in the works of Rogers (1975) and limited in the works of Witte (1992). Works by Lazarus and Folkman provide much more detailed accounts of the types of coping strategies that are employed during responding as these accounts consider the context in which responding occurs.

These differences are likely a result of a focus on opposing ends of the cognitive-emotional process. Theorists such as Witte (1992) and Rogers (1975) focused more on how messages or other external stimuli influence cognitions and in turn behaviour, whereas

theorists such as Lazarus and Folkman focused more on how people coped with or responded to threatening situations and why. Therefore, to provide a fuller understanding of threat perception and behaviour, this integrates both theoretical frameworks to produce the overarching theoretical framework in Figure 8. The theoretical framework of this project draws primarily from the work in the decision making literature (Rogers, 1975; Witte, 1992) to understand the cognitive-emotional processes, and the stress and coping literature (for example, Folkman & Lazarus, 1988a; 1988b; 1988c; Lazarus, 1998; Lazarus & Folkman, 1987) to understand the types of coping responses.

Figure 8

Guiding theoretical framework



4.2 Research questions

Six research questions were developed to align with key components of the theoretical framework (Figure 8). The research questions and corresponding theoretical constructs and components of the theoretical framework are summarised in Table 5. The results and discussion sections of this thesis are organised by these research questions so that the results and discussion for each question are presented together, and an image of the theoretical framework will be used to highlight the focus of each chapter.

Table 5

Summary of research questions

Research Question	**Theoretical construct**	**Component of guiding framework**
What and how do commercial fishers **perceive threats** to their livelihoods and the commercial fishing industry?	Threat perception	• High perceived threat; and • Low perceived threat
What are the **emotional experiences** of commercial fishers in response to threats to their livelihood or the commercial fishing industry?	Emotions	• Negative emotional experience; • Positive emotional experience; and • No emotional experience
How do commercial fishers perceive their **ability to respond**, and how **effective** do they perceive responses are in protecting their livelihood or the commercial fishing industry?	Perceived efficacy	• High perceived efficacy; • Low perceived efficacy; and • No efficacy evaluation
What are the **motivational drivers** for commercial fishers to respond to threats to their livelihoods and the commercial fishing industry?	Motivation	• Danger control motivation; • Emotion control motivation; and • No motivation to respond.
How do commercial fishers **respond** to threats to their livelihoods and the commercial fishing industry?	Responses	• Problem-focused coping; • Emotion-focused coping; • Meaning-focused coping; and • No response
Are there **other factors** that contribute to commercial fishers' decision making and responding, and what are they?	Other influencing factors*	• Other influencing factors

* Other influencing factors do not relate to pre-defined theoretical construct(s); specific theoretical constructs are to be identified from the results.

5 Methodology and Methods

5.1 Qualitative Methodology

This qualitative research project has been approached pragmatically in that the chosen method was selected based upon how best to answer the research questions using the resources available. Nowell and Albrecht (2019) suggest that when seeking to advance theory and explore nuance within existing theory a qualitative approach is most appropriate. Given that this research sought to explore the utility of psychological theory in a novel context, a qualitative approach was the most suitable approach. This approach enables theoretical development by generating an understanding not just of whether this theory is useful in a novel context, but why or why not.

Additionally, a qualitative approach was selected as appropriate as there is currently limited research in this population and therefore inadequate evidence to make reasonable predictions about the emotional and behavioural responses of commercial fishers. Qualitative research methodologies provide the opportunity to gather the depth of data appropriate to gain insight from participant responses to answer the research questions identified above. Furthermore, there is limited evidence of using psychological models in this context and qualitative inquiry allows for contexts-specific findings to be elucidated.

A qualitative approach was deemed most appropriate given challenges to recruitment. The first challenge posed to recruitment was the small target population. The target population of the current study included commercial fishers whose home ports were within the Great Barrier Reef Marine Park (see Figure 10 on page 68). Limited data on the number of current commercial fishers exists however, based upon the 2014-2015 Labour Force Survey, it is reported that there are approximately 1006 commercial fishers operating in Queensland (numbers include those who identified as working in rock lobster and crab potting, prawn fishing, line fishing, fish trawling, seining and netting, fishing, hunting and trapping, and other fishing; Savage, 2015). There is a lack of data available to estimate the number of commercial fishers operating within the target geographical region. It is important to note that the target region does not include major coastal cities (for example Brisbane and the Gold Coast), which based on limited historical evidence (for example, Fenton & Marshall, 2001a; 2001b) it is expected a significant number of commercial fishers would operate from. Given the information available it is evident that the target population was small.

Second, those commercial fishers operating in the target region were spread over a large geographical area. The region of interest starts at the northern most point of Queensland

and extends down the eastern coast to approximately 50 kilometres north of Bundaberg. This total area spans approximately 2000 kilometres of the Queensland eastern coastline. Thus, not only is the target population small, but it was also spread over a considerable geographical region. The geographic spread of participants posed a challenge as it was often difficult to make contact, and in particular face-to-face contact with interested parties.

Finally, the unique work structure of the target population posed a challenge to recruiting and meeting with interested participants. Commercial fishers' work often requires them to be away from land and home, and they are often therefore un-contactable for extended periods of time (Zvonkovic et al., 2005). Consultation with other researchers also working with commercial fishers returned anecdotal evidence that commercial fishers were becoming resistant to participating in research as they felt that their participation was not valued or would not be beneficial to them. This sentiment is further evidenced through reports of misrepresentation by science and media from industry stakeholders such as Seafood Industry Australia, the Queensland Seafood Industry Association and the Fisheries Research and Development Corporation (Seafood Industry Australia, 2020). Given the challenges posed in recruitment and participation, the study was designed to be as flexible as possible for potential participants to allow those who wished to participate could do so. This involved arranging both telephone and face-to-face interviews, where the researcher would travel to the participant's home port when possible, and participants were offered a $50 gift card as a token of thanks for their participation.

The research project methodology borrowed heavily from the philosophy of phenomenology. Although some other qualitative approaches overlap with phenomenology, phenomenology was deemed to be the most appropriate methodology to answer the research questions of this project. Other qualitative approaches that were considered but deemed inappropriate include grounded theory, discourse analysis, narrative research, and interpretative phenomenological analysis (IPA) (J. A. Smith et al., 2009; J. A. Smith & Osborne, 2008; Wertz et al., 2011). The appropriateness of these qualitative approaches was evaluated as follows.

As this project was theory driven, a grounded-theory approach was considered to be inappropriate. Grounded theory is a qualitative methodology in which the researcher seeks to build theory from the data using inductive processes (Pope, Ziebland, & Mays, 2000; J. A. Smith et al., 2009; Wertz et al., 2011). Although the current project does allow for inductive processes, it was largely influenced by psychological models of threat perception and behaviour and thus did not fit the grounded theory framework.

Discourse analysis is a qualitative method that emphasises the examination of communication. This approach focuses on the *way* in which people communicate (J. A. Smith et al., 2009; Wertz et al., 2011) rather than the *experience* of the individual. As the research project focuses on the experiences and understandings of commercial fishers during difficult times, discourse analysis was not considered to be an appropriate methodology to address the research questions.

Similar to discourse analysis, narrative research is concerned with communication, but shares an interest in the experiences of individuals with phenomenological approaches (J. A. Smith et al., 2009; Wertz et al., 2011). Although narrative research does allow researchers to explore the meanings of experiences, there is a focus on the narrative and the structures of communication within these narratives (Bamberg, 2012). Narrative research was rejected as an appropriate methodology for the current project due to the greater emphasis given by this approach to the structures of communication rather than the experiences of individuals.

Finally, the interpretative phenomenological analysis (IPA) framework shares many similarities with phenomenology as phenomenology is one of the primary philosophical elements of IPA. IPA is also informed by the philosophies of hermeneutics (for further discussion of hermeneutics, see section below) and idiography (J. A. Smith et al., 2009). The primary difference between the IPA and phenomenological approach employed in the current study (detailed further below) is the focus on idiographic details present in IPA (J. A. Smith et al., 2009). Specifically, the focus on idiographic details in IPA facilitates a deep understanding of each individual's experiences of phenomena rather than producing an understanding of the collective experiences of a group (J. A. Smith et al., 2009). As the current study sought to understand the experiences of a collective, rather than the specific experiences of individuals within the group of interest, phenomenology (and more specifically hermeneutic phenomenology), rather than IPA, was seen as a more appropriate methodology to achieve the aims of this project.

5.1.1 Rigor in qualitative research

Given the diversity of methodologies and methods employed in qualitative research, there has been much debate about how to judge rigor in qualitative research (Yadav, 2022). Additionally, the reputation of qualitative research has suffered from an impression that qualitative research is inherently less valuable or credible than quantitative research (Harré, 2004; Wertz, 2014). Furthermore, there is a history of judging the quality of qualitative research by standards which are more appropriate for judging the quality of quantitative

research (Yadav, 2022). In this research, the conceptualisation of methodological integrity by Levitt and colleagues (2017; 2018; 2021) has been adopted.

Levitt and colleagues' (2017; 2018; 2021) model of methodological integrity does not specify metrics, procedural requirements or a checklist (as may be done in assessments of quality in quantitative research). Instead, this model takes a principles-based approach (Levitt et al., 2017) and considers the functionality of the research (Nowell & Albrecht, 2019). This enables the examination of research quality with an appreciation of the diversity and complexity of the methods and methodologies that fall under the category of qualitative research (Levitt et al., 2017).

Two key elements of methodological integrity are fidelity and utility (Levitt et al., 2017; 2018; 2021). Fidelity is defined as the intimate connection between the researcher and the phenomenon under study and utility is defined as the connection between the selected procedures and the goals of the research (Levitt et al., 2017; 2018; 2021). Levitt and colleagues (2017; 2021) propose that fidelity is strengthened through data adequacy, perspective management in data collection and data analysis and groundedness. Utility is suggested to be strengthen through contextualisation, the extent to which the research is a catalyst for insight and generates meaningful contributions, and the coherence of the research (Levitt et al., 2017; 2021). The tables below include definitions of the principles that underpin fidelity (Table 6) and (Table 7) utility, and the practices employed in the current research to achieve methodological integrity.

Table 6.

Assessment of methodological integrity (fidelity)

Principle	Definition	Practices employed in the current research
Data adequacy	The extent to which the data collected is sufficient with respect to the goals of the research (Levitt et al., 2021).	• Stating how adequacy was defined in the current research (and why a predetermined sample size or traditional definitions of saturation were inappropriate criteria) and whether that criterion was met (Braun & Clarke, 2021; Levitt et al., 2017; 2021; Nowell & Albrecht, 2019) • Aligning the purpose of the research (to explore the lived experience of commercial fishers) with the data collected (perspectives of commercial fishers; Nowell & Albrecht, 2019)
Perspective management in data **collection**	Recognition of how the researcher's perspectives influence data **collection** and how this influence was integrated or managed in the research (Levitt et al., 2017; 2018; 2021).	• Designing interview questions which enabled participants to direct the focus of the conversation rather than focusing only on the interests of the researcher. • Adjusting interview questions and recruitment strategies based on learnings from early interviews (Levitt et al., 2021). • Building trust and rapport between the researcher and participants through the informed consent process, asking simple questions first and shifting the power dynamic by inviting the participant to be the expert of their own experience (Levitt et al., 2021). • Providing specific examples of the interview questions used to obtain data from participants (Nowell & Albrecht, 2019).
Perspective management in data **analysis**	Recognition of how the researcher's perspectives influence data **analysis** and how this influence was integrated or managed in the research (Levitt et al., 2017; 2018; 2021).	• Describing the theoretical framework (Chapters 2 through 4) that was used to guide the analysis and using the theoretical framework to frame the presentation of the results (Chapters 6 through 11) Braun & Clarke, 2021; Levitt et al., 2017; 2021). • Acknowledging how the phenomenological approach, use of reflexive thematic analysis and the researcher's characteristics and experiences influenced the data analysis (Braun & Clarke, 2021; Levitt et al., 2021).
Groundedness	The extent to which interpretations and findings are supported by quality data and thorough analysis (Levitt et al., 2017; 2018; 2021).	• Describing the reflexive thematic analysis approach taken to generate interpretations and findings (Levitt et al., 2017). • Providing quotes which support conclusions drawn including those are rich and complex (Levitt et al., 2017; 2021). • Conducting independent review of themes and data by the researcher and their supervisors to explore similarities and differences in meanings generated from the data to confirm that the meanings derived were reflected in the data (Levitt et al., 2021).

Table 7.

Assessment of methodological integrity (utility)

Principle	Definition	Practices employed in the current research
Contextualisation	The extent to which findings are considered within their context (Levitt et al., 2017; 2018; 2021).	• Chapter 1 provides readers with an overview of the context in which the research occurs (Levitt et al., 2017). • Chapter 11 focuses on the contextual factors that were identified through the research and how these contextual factors may interact with theory (Levitt et al., 2017; 2021).
Catalyst for insight	The extent to which the data provides rich grounds for insightful analyses (Levitt et al., 2017; 2018; 2021).	• Selecting research participants (commercial fishers) who were best able to provide data that generated insight into the experiences of commercial fishers (consistent with the goals of the research; Levitt et al., 2021). • Providing participants with an opportunity to share insights and information not captured by the researcher's interview questions (Levitt et al., 2021). • Applying robust psychological theory in a novel framework to further nuanced understanding of the theory (Nowell & Albrecht, 2019).
Meaningful contributions	The extent to which the analyses lead to insights which meaningfully advance the aims of the research (Levitt et al., 2017; 2018; 2021).	• Chapter 12 explores how the research findings meaningfully contribute to the development of theory and to improve outcomes for those affected by the research (for example, commercial fishers and fisheries managers; Levitt et al., 2021). • Chapter 5 explores qualitative approaches to inform the decision regarding which qualitative approach was most suitable to achieve the aims of the research before determining that phenomenology was most suitable.
Coherence	The extent to which differences within findings are explained (Levitt et al., 2021).	• The results are presented with respect to the extent to which they reflect what one could expect based on the guiding theoretical framework. Where findings are not consistent with the guiding theoretical framework, underlying reasons as to why this may be the case are explored, particularly in the examination of contextual factors (Levitt et al., 2017). • Conducting independent review of themes and data by the researcher and their supervisors to explore similarities and differences in meanings generated from the data to explore alternate perspectives on the meaning of data (Levitt et al., 2021).

5.1.2 Phenomenology

Phenomenology is a qualitative methodology used to explore the 'life-world' or lived experiences of participants (Flood, 2010; Lindseth & Norberg, 2004; J. A. Smith et al., 2009; van Manen, 1990). The aim of this project was to explore the experiences of a group with a shared occupation of commercial fishing. Phenomenology offers an approach to uncover the experiences and meanings of experiences of those commercial fishers, which in turn can provide insights into their motivations for behaviour. Through phenomenology, we can uncover the meanings of these individual experiences (Wertz et al., 2011) to develop, in this case, an understanding of how commercial fishers think, feel, and behave during difficult times.

Since the founding of phenomenology, two perspectives have come to dominate. The first approach is descriptive or eidetic phenomenology which stems from Husserl's original conception of phenomenology. Eidetic phenomenology is concerned with describing human experiences through qualitative methods (Wertz et al., 2011). In contrast, interpretative or hermeneutic phenomenology grew from the works of Heidegger. Hermeneutic phenomenology posits that the essential meaning of the lived experience is revealed through the interpretation of a text (Lindseth & Norberg, 2004). Wojnar and Swanson (2007) describe the difference between eidetic and hermeneutic phenomenology in terms of reference to context. Eidetic phenomenology has little concern for context. In contrast, context is a central concern in hermeneutic phenomenology. The current study sought to go beyond describing the experiences of participants and instead sought to interpret the meaning of contextualised lived experiences. As such, the current study subscribes to the philosophy of hermeneutic phenomenology (Wojnar & Swanson, 2007).

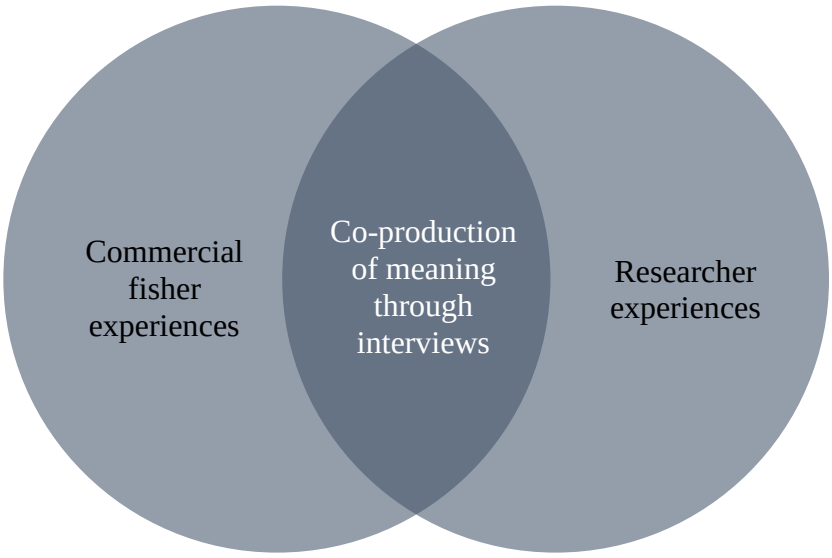
5.1.2.1 Phenomenological methods. The methods employed in data collection and analysis for phenomenological research need to reflect the emphasis of the lived experiences of participants. That is, as a primary aim of phenomenology is to understand the meaning of experiences, the most appropriate methods involve retrospective descriptions from participants (Giorgi & Giorgi, 2008). Semi-structured interviews which are recorded and later transcribed are therefore often the method of choice for phenomenological research (J. A. Smith & Osborne, 2008).

A key feature of hermeneutic phenomenology is the co-creation of meaning through researcher-participant interactions (as highlighted in Figure 9 below). The interaction between the researcher and the participant is acknowledged as an important aspect of

phenomenological research and each party plays a unique role in the production of data, knowledge and understanding (Flood, 2010; Lindseth & Norberg, 2004). According to hermeneutic phenomenology, the researcher is interpreting the experiences described by the participant, who is also making sense of their experience of the phenomenon under study (J. A. Smith et al., 2009). Meanings uncovered in phenomenological research are described as being co-created as a result of interaction and input from both the participant and the researcher (Flood, 2010; Lindseth & Norberg, 2004; Wojnar & Swanson, 2007).

Figure 9

Co-production of meaning through researcher-participant interactions



In this study for example, meanings are uncovered by participants sharing their experiences as fishers in challenging times, blended with the researcher's understanding of psychology (in particular, threat perception, decision making and coping). Semi-structured interview questions were used to facilitate the researcher-participant interaction. Interview questions were developed by the researcher from the literature and the open-ended structure of the questions allowed participants to share their lived experience, expanding on aspects which were important to them. It is through this researcher-participant interaction that interpretations of phenomena are made meaningful (Flood, 2010; Wojnar & Swanson, 2007). The integration of the researcher's knowledge with participants' lived experiences was achieved by the researcher conducting interviews with commercial fishers and by the researcher later interpreting the participants' lived experiences through the lens of cognitive-emotional theories of threat perception and coping (see Chapters 2 and 3).

5.2 Participants

Twenty commercial fishers operating on the east coast of northern Queensland participated in semi-structured interviews. The data collection phase consisted of 14 individual interviews and six participants were interviewed in groups of two. Of the 20 participants, 16 were male (age range 31 to 81 years) and four were female (age range 43 to 58 years). The average age of participants was 53 years (*SD* = 10 years), and they reported being in the commercial fishing industry for an average of 25 years (*SD* = 13 years).

Participants reported working in multiple fisheries within the industry. The most frequently reported fishery was the Mud crab fishery (n = 11). The number of fisheries participants reported working in was between one and seven ($M = 4 \pm 2$)[4]. See Table 8 below for further detail on reported engagement in fisheries.

Table 8

Reported participation in fisheries

Fishery	Number of respondents
Mud crab	11
Inshore Net	9
Offshore Net	9
Reef Line	9
Spanish Mackerel	6
Spotty Mackerel	5
Otter Trawl	3
Beam Trawl	3
Spanner Crab	2
Rocky Reef	1
Other	11

Note. Other reported fisheries included General Estuary, General Line, General Net, Barramundi, King Salmon, Sea Cucumber, Coral Sea, and Marketing or Purchasing).

The study site for this project was the east coast of Northern Queensland and the location of the Great Barrier Reef Marine Park was used to designate the geographical boundaries for inclusion. Participants were deemed to meet the criteria for inclusion if their

[4] To maintain confidentiality of participants, participation in fisheries have been reported at a group level rather than an individual level.

reported main home port was within the Great Barrier Reef Marine Park as pictured below in Figure 10. The exact locations of participants' home ports have not been reported in order to protect the confidentiality of their responses. Further interviews were conducted with interested commercial fishers (n = 3) however these responses were excluded from the current analysis as they did not report operating within the study site.

Figure 10

Map of Great Barrier Reef Marine Park (R. G. Smith & Anderson, 2004).

5.3 Researcher

The primary researcher was responsible for delivering the entirety of this project including design, conduct and analysis of the research. The primary researcher had completed a Bachelor of Psychology (Hons) and had been engaged as a research assistant where she developed her research skills (both qualitative and quantitative). In delivering her Honours

research project, the primary researcher gained experience in the application of psychological models and quantitative analysis. As a research assistant, the primary investigator gained experience in a broader range of research skills including interviewing, transcribing, and qualitative data analysis. The primary researcher lived, worked, and studied in North Queensland (the target region of the research) however had not had direct involvement in the commercial fishing industry. Before conducting the current project, the primary researcher had been engaged on a project involving commercial fishers, which developed her understanding of the challenges facing commercial fishers across Australia. While the primary researcher had prior experience conducting qualitative research as a research assistant, this was the first qualitative research project she had been the primary researcher for, and the first qualitative project of this size she had been involved in.

5.4 Materials

Semi-structured interviews were designed to investigate participant experiences and perceptions of challenges to their livelihood and their industry. The interviews were designed from a phenomenological perspective and were guided by theoretical framework defined in Chapter 4. The primary questions guiding the interviews were “What would you say are the greatest challenges associated with being a fisher?” and “What do you think are the biggest challenges facing the commercial fishing industry?” During the interviews, respondents were prompted to explore these challenges and how they respond to these challenges using questions designed according to the key constructs in the guiding theoretical framework (see Table 9 for sample prompt questions).

Table 9

Sample prompt questions

Theoretical Construct	Sample prompt questions
Perceived susceptibility	How likely do you think it is that this challenge would impact you?
Perceived severity	Can you describe the impact that this challenge would have on you as a fisher?
Perceived self-efficacy	How confident are you that you would be able to *perform behaviour* to reduce the impact of this challenge?
Perceived response efficacy	How effective do you believe that *performing this behaviour* would be in reducing the impact of this challenge?

Climate change was identified in the literature (see page 16 for a discussion) as a significant issue facing the commercial fishing industry and therefore was expected to be

discussed by research participants. However, previous experiences in research with commercial fishers highlighted to the researcher that this was not a primary concern of commercial fishers. Therefore, in line with the iterative process of the phenomenology framework (Finlay, 2012), interview questions were therefore adapted to also explore perceptions of and potential responses climate change. These questions were only raised by the researcher if climate change had not been discussed spontaneously by participants in the course of the interview. It was of particular interest to the researcher in this case, to understand why participants did not acknowledge climate change to be a primary concern particularly given the scientific evidence that climate change does pose a threat to commercial fishers. After completion of the interviews, participants were asked if they wished to raise anything that was not discussed during the interview. Participants primarily used this time to emphasise their thoughts about issues already raised during the interviews.

5.5 Procedure

Ethics approval (H5721) for the study was received from the James Cook University Human Research Ethics Committee. Recruitment for this project commenced in September 2014 and the final interview was conducted in February 2016 at which point the researcher had identified that saturation had been reached. To recruit participants, the researcher shared information about the study through multiple social media pages, in a newspaper article and was invited by a commercial fisher to talk about the research at a local commercial fishing forum. Additionally, the researcher contacted potentially interested groups such as representative bodies and seafood retailers to disseminate the study information. Participants were also recruited using snowball recruitment methods. Once potential participants had received the study information, they were invited to contact the researcher for further information about the study or to arrange a time to participate in the study.

Due to the nature of this recruitment strategy and the small target population, the recruitment process was lengthy. Difficulties in recruitment led to the decision to provide participants with the option to participate face-to-face or over the phone, and alone or as a group. The purpose of providing participants with these options was to make participation as flexible as possible to suit the needs of potential participants. Furthermore, participants were offered a $50 gift card as a token of appreciation for their time and input. Phenomenology does not include strict guidance on the number of participants required for phenomenological inquiry however researchers' suggestions range from fewer than 10 participants (Sandelowski, 1995; Starks & Trinidad, 2007), and as many as 50 (Van Kaam, 1959). The decision to finalise recruitment was primarily determined by agreement between the

researcher and advisors that further interviews were no longer substantially contributing new understandings of participants' experiences in the context of the aims of the research (Brain & Clarke, 2021; Morse, 1995, 2000). Braun and Clarke (2021) argue that when employing reflexive thematic analysis (as done in this research) predetermining sample size is neither appropriate nor practical. Instead, they suggest that pragmatic saturation (an interpretive judgement by the researchers related to the purpose and goals of analysis) is a more appropriate method for determining when a sufficient sample has been recruited (Braun & Clarke, 2021). The sample size of 20 and the agreement (between the researcher and advisors) that pragmatic saturation had been reached was therefore appropriate for a phenomenological study, and one that employed reflexive thematic analysis.

Interviews were conducted over the phone (n = 4) and face-to-face (n = 16; group interviews were always conducted face-to-face). Face-to-face interviews were conducted at a location decided by the participants. As participants often elected to conduct the face-to-face interviews at their home or workplace, the researcher and participant conducted the interview in an area which was away from other family members or workers to ensure what was said in the interview was kept confidential. The average duration of individual interviews was approximately 40 minutes, and the average duration of recorded group interviews were approximately 89 minutes. This resulted in approximately 14 hours of audio data being recorded. The interview recordings were then manually transcribed by the researcher verbatim. For every hour of audio, transcribing took approximately 4 hours. This amounted to approximately 56 hours of transcribing. A selection of the transcripts was spot checked by two members of the advisory panel to ensure the accuracy of the transcripts (MacLean, Meyer, & Estable, 2004).

Prior to the interviews, participants were provided with an information sheet (Appendix B, p. 308) and a form to obtain informed consent (Appendix C, p. 312 and Appendix D, p. 313). Participants were advised that their participation was voluntary and that they could withdraw at any time without penalty. After the participant read the information sheet and had the opportunity to ask questions about the research, written informed consent was obtained for face-to-face interviews and verbal consent was obtained for phone interviews. Consent to audiotape the interview was also obtained before commencing the interviews. All participants that contacted the researcher for an interview provided their consent and no participants withdrew from the study.

After participants provided their consent to participate, the researcher advised participants that the audio recording would commence. The researcher then asked the

participant demographic questions (Appendix E, p. 314) before asking participants the semi-structured interview questions. The demographic questions were answered verbally by those interviewed via the phone, and participants interviewed face-to-face were given the option to complete these questions verbally or by hand. Once demographic information had been collected, the interviewer commenced asking the semi-structured interview questions verbally.

5.6 Analysis

While various phenomenologists provide suggestions for data analysis and interpretation, there is no one strict method for analysing the data of phenomenological studies. Researchers such as Flood (2010), and Giorgi and Giorgi (2008) have however highlighted the importance of selecting procedures that are congruent with the philosophical stance (phenomenology) of the study. Processes outlined by numerous phenomenological researchers do however share commonalities such as familiarising oneself with the data, performing structural analysis of the data and interpreting the data as a whole (Draucker, 1999; Giorgi & Giorgi, 2008; Lindseth & Norberg, 2004).

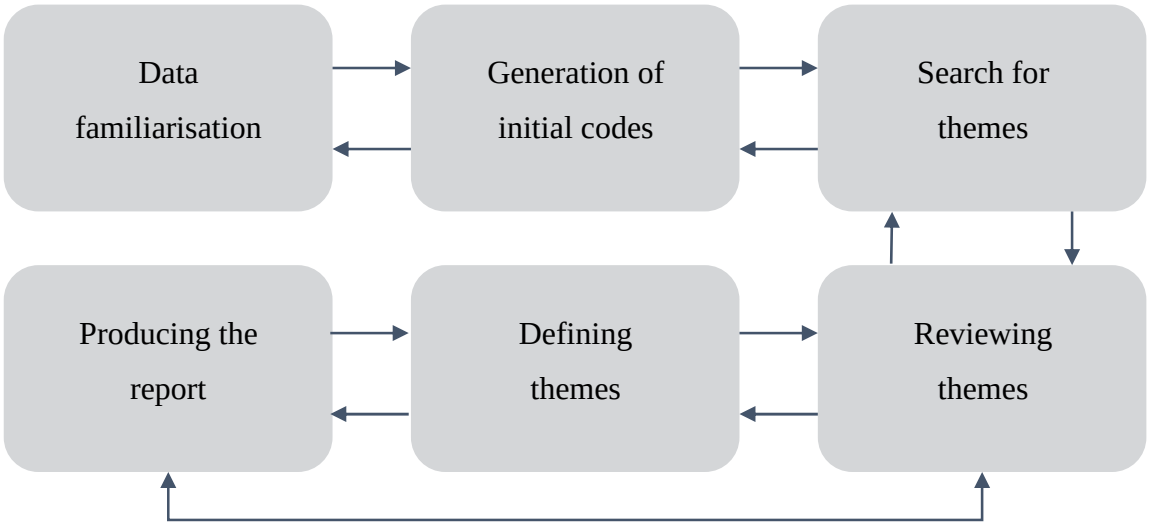
The qualitative data collected in this project was analysed using reflexive thematic analysis as described by Braun and Clarke (2006). Reflexive thematic analysis is a method employed in many qualitative research projects to identify themes and patterns in the data (Aronson, 1995; Braun & Clarke, 2006; Joffe, 2012). Braun and Clarke (2006) emphasise that reflexive thematic analysis is a method for performing the analysis rather than a methodology and is not wed to any particular theoretical framework. Because reflexive thematic analysis is not tied to any specific theoretical framework, it is argued to be appropriate for use with a diverse range of qualitative methodologies such as phenomenology (Braun & Clarke, 2014; Clarke & Braun, 2014; Vaismoradi, Turunen, & Bondas, 2013). Furthermore, reflexive thematic analysis provides a rigorous method for analysis. Therefore, reflexive thematic analysis was identified as the appropriate method to be used to analyse the data in the context of the phenomenological framework of this research project.

Interview data was analysed using via the NVivo 11 program (QSR International Pty Ltd., 2015). The analysis involved the following six phases and identified by Braun and Clarke (2006): familiarisation with the data; generation of initial codes; search for themes; reviewing themes; defining themes and; producing the report. Braun and Clarke (2006) stress that these phases are *reflexive*, not linear, and the researcher should move back and forth throughout the phases as needed as demonstrated in Figure 11. The need for the researcher to

be reflexive and flexible throughout this process and to recognise the guidelines as guidelines rather than rules is also emphasised by Braun and Clarke (2006).

Figure 11

Stages of reflexive thematic analysis



5.6.1 Familiarisation with the data

Familiarisation with the data is a critically important step in the process of thematic analysis in which the researcher both becomes familiar with the data and starts to identify themes or patterns which may be of interest (Clarke & Braun, 2014). To familiarise herself with the interview data, the researcher conducted all interviews and transcribed the interviews verbatim. Transcripts included pauses, interruptions, and other verbal information to contextualise individual's responses. Furthermore, the researcher re-listened to interview audio and re-read transcripts in the early stages of analysis to immerse herself in the data. During this phase, the researcher took notes pertaining to potential codes, themes, and implications. Notes during interviews were recorded on the interview guides; notes made during transcription were recorded alongside the transcript with reference to relevant data in the interview; and notes were also stored in an NVivo 11 (QSR International Pty Ltd., 2015) memo file.

5.6.2 Generating initial codes

Once satisfactorily familiar with the interview data, the researcher worked systematically through the transcripts to code the entire dataset. Data was coded for both semantic and latent content. The researcher coded for semantic content which reflected what the participant said, and the researcher coded for latent content which tended to reflect the researcher's interpretations of psychological phenomena present in the data. Additionally, a

mixture of inductive and deductive coding was employed. Although the data collection and analysis were theoretically driven, the researcher intended to explore psychological phenomena both within and beyond the constructs of the theoretical models outlined in Chapters 2 and 3. Deductive codes and themes were informed by the cognitive-emotional theories of threat perception and coping. The researcher also uncovered data-driven codes and themes considered to be inductive codes. No limitations were placed on data to ensure a full and complex analysis of participants' experiences.

5.6.3 Searching for themes

In this phase of reflexive thematic analysis, potential themes are generated by focusing the analysis more broadly. Potential themes were generated through notes made during the previous phases and codes were collated under these potential themes. The process of theme development commenced during coding and continued after coding was completed. Sub-themes were also developed within these overarching themes during the process of collating codes within themes. The researcher made use of a variety of methods to collate codes including electronic resources such as NVivo 11 (QSR International Pty Ltd., 2015) and visual resources such as post-it notes and printed codes to organise codes into themes. Themes were developed with reference to the research aims and questions and were continually reviewed during this phase.

5.6.4 Reviewing themes

Upon completion of theme development, themes were examined using Patton's (1990) criteria for judging categories of internal homogeneity and external heterogeneity. The internal homogeneity of themes was assessed by examining the fit of codes within the themes they were organised within. Coded data extracts were reviewed to ensure they reflected the themes they were coded under. To assess the external heterogeneity of items, coded data extracts and the themes these were organised under were examined to ensure that they captured a unique aspect of the data. Furthermore, the theme map was examined to explore the appropriateness of the theme map in reflecting the data set as a whole. Themes were reviewed and adapted until the theme map accurately reflected the dataset as a whole (see page 84 for an example of a finalised thematic map of perceived threats).

During theme development the researcher and members of the candidate's advisory panel (two) independently developed themes for sections of the data analysis. The researcher and the advisors then met to discuss the approach to theme development and categorisation to explore similarities and differences in the data analysis. Reasoning for differences in categorisation were discussed and changes to themes were made to reflect analyses agreed

upon by both the researcher and advisors. These discussions enhanced the process of theme development and provided the researcher with an alternate view on potential themes and theme development.

5.6.5 Defining and naming themes

The previously identified themes are further defined in this phase of analysis to identify the essence or central meaning of each theme. A detailed description of each theme was developed which captured the 'story' of each theme with reference to the data, the research aims and questions, and relevant literature.

5.6.6 Producing the report

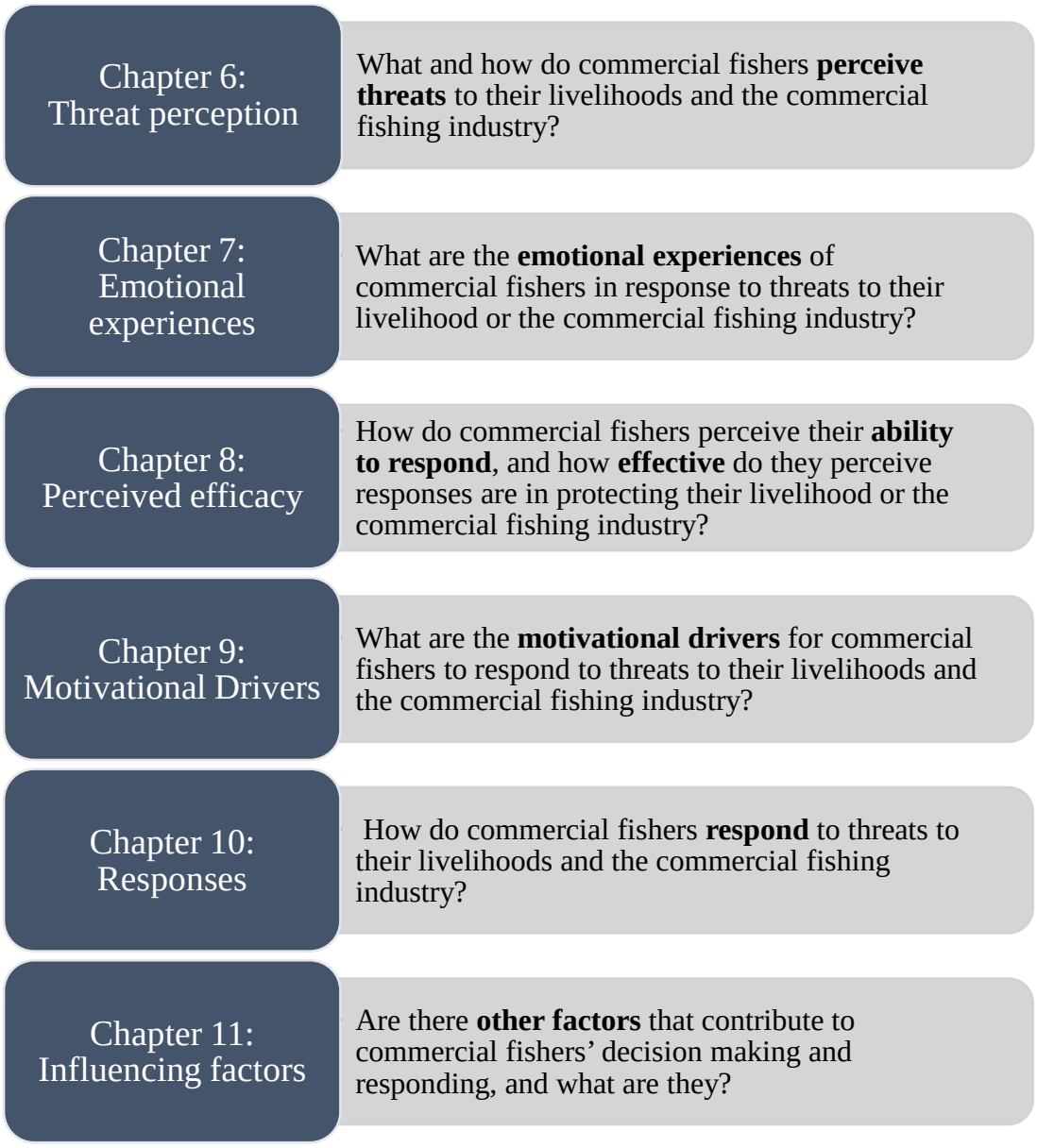
The final phase in Braun and Clarke's (2006) guidelines for reflexive thematic analysis involves suggestions for the write-up of the analysis. During this phase, data extracts for themes were selected as exemplars of the themes based on how well the extract captured the central meaning of the theme. In producing the report, the researcher used pseudonyms to protect the identity of participants. Additionally, the researcher made the decision to retain obscenities (swearing/curse words) in quotations to authentically represent participants' views and experiences. The researcher believed that removing these obscenities would result in a loss of meaning and would strip the emotion from participants' responses.

The results of this research are presented in Chapters 6 to 11 with each chapter focusing on one research question (summarised in Figure 12). In addition to presenting the results, each of these chapters will include a discussion of the results and discuss the alignment between the findings of the study, the guiding theoretical framework and what is known about commercial fishers and the environment in which they operate. Presenting the findings and interpretation of findings together allows for repeated analysis of the alignment between the findings of the study and existing theory and literature and subsequently speculate what findings may be expected in chapters that follow. For example, in chapter 6, results relating to participants' perceptions of threat are presented and interpreted. Depending on participants' perceptions of threat, predictions can be made about the nature of participants' emotional, cognitive, and motivational experiences, and subsequent responding. Subsequent chapters may then confirm or contradict these predictions. It is important to note that while these chapters are presented in a linear fashion, this does not necessarily reflect the lived experiences of participants. Decision making and responding is an iterative and on-going process, however, cannot be presented as such. For example, while participants' emotional experiences are presented following threat perceptions and prior to efficacy evaluations, in reality, emotional experiences persist and change throughout decision making

and responding. Subsequently, results presented in earlier chapters may present unexpected findings. The reflection on the alignment between the results and guiding theoretical framework not only allows for predictions to be made about results yet to be presented, it is used to reflect back on previously reported findings to resolve unexpected findings once further evidence and explanations are presented.

Figure 12

Thesis structure for results and discussion

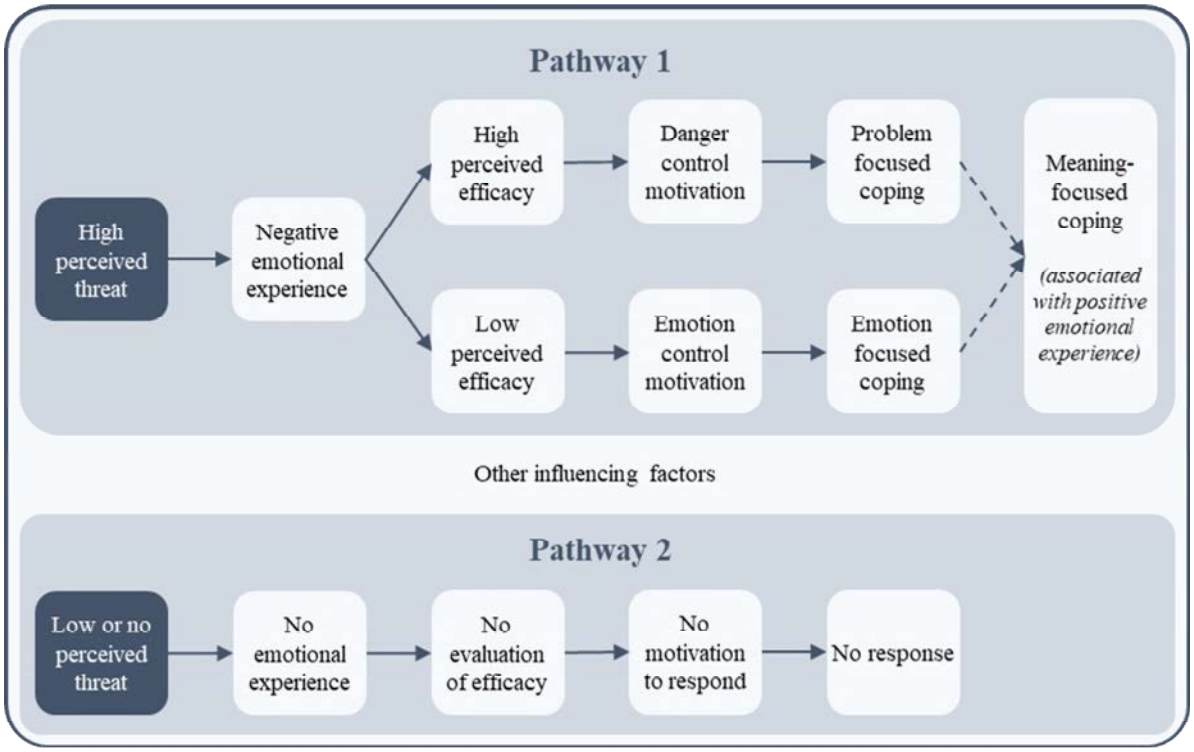


6 Results and Discussion: Threat Perception

The purpose of this chapter is to examine commercial fishers' perceptions of threat (highlighted in the guiding theoretical framework in Figure 13) to understand *what and how do commercial fishers perceive threats to their livelihoods and the commercial fishing industry* (research question 1). This chapter starts with the results of the current study which relate to participants' perceptions of threats to their livelihood and the commercial fishing industry (pages 77 to 112). Following this, a discussion of the findings considering previous research is presented (pages 112 to 122). The chapter concludes with a summary of the findings and by considering how the findings presented in the current chapter align with the guiding theoretical framework (pages 122 to 126).

Figure 13

Guiding theoretical framework and constructs of interest for RQ1



6.1 Results

During interviews, participants were asked about two types of threats: one which was identified by the participant (industry management[5]) and one which was identified from the

[5] Participant-identified threats were explored by asking participants about what they saw as being the greatest threat to them being a fisher, or to the commercial fishing industry. As explored in section 6.1.1. almost all participants (n = 16) discussed the threat of fisheries management.

literature by the researcher (climate change[6]). When discussing the industry management (participant-identified threat), responses tended to reflect perceptions of high levels of threat, which would be expected given that participants were asked to identify what it is they perceived to be a threat. In contrast, when discussing the climate change (researcher-identified threat), participant responses tended to reflect perceptions of low threat or ambivalence about the threat. To understand *how* participants perceived these threats, the relationships between these threats and the perceived consequences of these threats are explored.

As defined in the literature, perceptions of threat comprise evaluations of the severity of a threat, and an evaluation of susceptibility to, or likelihood of the threat (this relationship is highlighted in Figure 14). Perceived severity refers to participants' beliefs about the severity or intensity of the threats in their environment (Rogers, 1975; Witte, 1992). Perceived susceptibility (or vulnerability or likelihood) refers to participants' evaluations of how they will or will not be impacted by the threat (Rogers, 1975; Witte, 1992).

Figure 14

Theoretical relationship between susceptibility, severity, and threat

While such constructs are theoretically distinct, participants' responses highlight that thinking about severity and susceptibility did not occur independently in practice. To explore the nature of participants' perceptions of threat in the current study, the threats discussed during participant interviews will be examined primarily by reporting general perceptions of threat. Where it is possible to extricate perceptions of threat susceptibility and threat severity, the ways in which participants perceive themselves as being susceptible to the threat

[6] The researcher-identified threat was identified through literature presented in Chapter 1 and was explored with participants by asking about their perceptions of climate change and how it relates to them as a fisher and the commercial fishing industry.

(perceived susceptibility) and how severe the impact of that threat is perceived to be (perceived severity) is also reported.

6.1.1 Fisheries management

The primary threat identified by participants was the restrictive management of the commercial fishing industry. When participants were initially asked what they believed to be the greatest threat that impinged on their ability to continue fishing, almost all participants (n = 16) discussed the threat that management posed to commercial fishers and more broadly, the commercial fishing industry. For example, when asked what they believed to be the greatest threat to their livelihood, participants reported, “Rules and regulations.” (Peter), and “I think poor management of [the] fishery as a whole…” (Anthony). A key feature of fisheries management that concerned participants was the complexity of fisheries management and the involvement of multiple fisheries managers. For example, participants reported, “They couldn’t regulate it any more than it is…” (Patricia), and “There are a huge amount of issues and regulations… they’re not feasible…” (Charles). The conflict that participants felt because of fisheries management was further highlighted by the following response:

> All of them combined because it, it’s just such a frustrating scenario that, there’s never a [let up], there’s, there’s never and when this is done, then they’ll redefine the boundaries for something else or they’ll, it’ll be the next round of talks… (Edward)

All participants explicitly discussed how management posed a threat to commercial fishers and the commercial fishing industry during their interviews. Although some participants discussed other threats challenging their ability to continue fishing, fisheries management was the common thread underlying all of the threats reported by participants and indeed was the focus of most interviews and focus groups.

6.1.2 Climate change

Climate change was identified by the researcher as a potential threat facing the commercial fishing industry based upon scientific literature (see Chapter 1). When participants were initially asked whether they perceived climate change to pose a threat to their livelihood or the industry, participant responses reflected varying levels of threat perception. Participant responses were interpreted to reflect moderate, low, or ambivalent and mixed perceptions of threat overall.

6.1.2.1 Ambivalent and mixed perceptions of climate change threat. Most often, participants were ambivalent about the threat of climate change or held mixed views of

climate change. Participants were described as holding mixed perceptions of threat when they demonstrated evidence of simultaneous moderate and low threat perceptions. When participants expressed they were unsure about the threat that climate change posed, they were described as holding ambivalent perceptions of threat. For example, when asked whether they perceived climate change to pose a threat, one participant simply said, "No." (George). However, soon after, they also stated "…we are having a climatic change. Of course. But I think we've had this probably happen a thousand years ago!" (George), highlighting their mixed view about climate change. Similarly, when asked about their thoughts about climate change, the following participant starts their response by denying the threat of climate change. However, as they go on, they respond in a way that demonstrates that they perceive there is potential for climate change to be a threat:

> Absolutely not. Well, it'd have to be an effect there for me to get up and say something. And it isn't alright? Down the road it may be. And, I mean, you get cynical. Obviously. There's too many people on the planet and obviously we have to have an effect. (Charles)

Furthermore, participants reported ambivalence about whether climate change existed or not. Participants reported "…well you know I'm a bit mixed at the climate change thing." (Fred) and "But yeah, I don't know. My, you know, I'm out on climate change, I don't know when I just don't know." (Richard). This uncertainty around climate change also manifested as scepticism, "I [have to] be honest with you, I'm a sceptic…" (Daniel) and the desire for more evidence, "If they could prove that it existed. I'd take a fair bit of convincing of that." (John).

6.1.2.2 Low or no perceived threat of climate change. It was also common for participants to perceive climate change to pose little or no threat to them or the commercial fishing industry. Additionally, aspects of the responses of participants who demonstrated ambivalence towards climate change, also reflected low perceptions of threat. When asked if they believed whether climate change was a threat to them or the commercial fishing industry, participants would often provide brief responses such as "No." (Peter), "It's just bullshit. It's seriously bullshit" (Edward) and "Personally, I don't think it is…" (Daniel). Perceptions of low threat were further demonstrated through responses such as, "I haven't seen a great deal of climate change in my time. I shiver some days and I sweat others. Nothing's changed, it's the same every year." (Victor). Participants reported a range of beliefs about climate change that underpinned low perceptions of climate change threat.

These included beliefs (1) that there were natural causes of climate change, (2) that there was a lack of evidence of climate change, and (3) that the reporting of climate change information was inaccurate.

6.1.2.2.1 Natural causes of climate change. Climate change, or long-term changes in weather patterns were reported to be a cyclical or seasonal *natural* process. Although participants were generally not accepting of the term climate change, they did describe long term changes in weather or weather patterns as cyclical or seasonal processes. For example, participants described these changes by saying, "This, weather systems, temperatures, tides, everything's cyclic." (Edward) and for this participant climate change was "more of a seasonal thing. It's not a climate change thing." (John).

6.1.2.2.2 Perceived lack of evidence of climate change. Participants who did not perceive climate change to be a threat reported that there is a lack of evidence for climate change based on their personal experiences. For example, participants reported, "I can remember sweating me butt off no different as a six-year-old than what I, what I do now as a 50-year-old…. I don't see enough physical positive, evidence, that, that, that shows me that climate change is, is, what it is." (Edward) and:

> You know, I'm getting told all of this stuff and these scientists and people who apparently know and I'm seeing the opposite. Now, what I'm seeing is not written in a book and it's not written on a you know, page that's been given to me to read and go, 'Oh holy shit the world's getting hotter.' This is stuff that I'm seeing every day that I'm dealing with every day. (Anthony)

6.1.2.2.3 Perceived inaccuracy of climate change information. Participants also reported that they did not trust the accuracy of climate change predictions or information about climate change. For example, "I think what they're piping out is a big load of rot anyway." (Peter). Furthermore, participants felt that despite that the severity of climate change was exaggerated; "I don't think it's as big issue as what they're making of it." (Fred), and:

> I don't even believe the figures that they bring up with sea levels are gonna rise up that much… I can't see how much difference it will make. Go and fill a bucket up and stick your arm in it. That's about how much difference it's going to make. (Edward)

6.1.2.3 Acceptance or moderate perceived threat of climate change. Again, aspects of the responses of participants who demonstrated ambivalence towards the existence

climate change also reflected moderate perceptions of threat. Participants tended not to hold strong beliefs that climate change existed, but instead demonstrated that they were somewhat accepting of the idea of climate change. The strongest acceptance of, or belief in climate change was demonstrated by responses such as, “I totally believe in a climate change, and it should be dealt with now and not later when everything’s fucked up.” (Timothy). It was more common however for participants who demonstrated acceptance of climate change to be more reserved in their beliefs. For example, “…global warming may be there.” (Charles), “…the climate change issue is definitely something that the government is considering and to a degree, rightly so.” (Michael), and “I don’t know a lot about it but I’m aware of it and I’m cautiously making sure that I try and do the right thing.” (William). Participants reported a range of beliefs about climate change related to their acceptance that climate change was a threat. These included (1) the belief that there were anthropogenic causes of climate change and (2) beliefs about the distal nature of climate change.

6.1.2.3.1 Anthropogenic causes of climate change. It was reported by participants that they perceived that human must be having an impact on the climate, implying an acceptance of anthropogenic causes of climate change. For example, participants reported, “…what we’re doing with our world, is certainly making an impact on our different climates….” (Patricia) and “…it’s changing all the time but, we’re only pushing it aye. The last couple of hundred years they’ve pushed it, pushed it pretty bad.” (Timothy).

6.1.2.3.2 Perceived distal nature of climate change. Participants accepted that climate change may exist however, also believed that climate change was not a threat for them. For example, the following participants reported that climate change was more likely a threat for future generations, “Climate change, is going to play a part in it, I’m not sure if it’s going to be in my lifetime” (Anthony) and “Climate change is something that is a generational issue. Not necessarily an immediate issue.” (Michael).

6.1.3 Perceived consequences of fisheries management and climate change

During participants’ discussions of the threat posed by fisheries management and climate change, they also reported their beliefs about factors that occurred because of the threat (perceived consequences of threat) including and in addition to impacts on their livelihoods and the commercial fishing industry. Participants’ perceptions of such consequences provide further insight into why they did or did not perceive fisheries management and climate change to be a threat. The perceived consequences reported by participants were mapped in relation to fisheries management and climate change, according

to participants' beliefs about the relationships between these factors. The resulting conceptual map is pictured in Figure 15.

Figure 15

Thematic map of participants' perceptions of threat

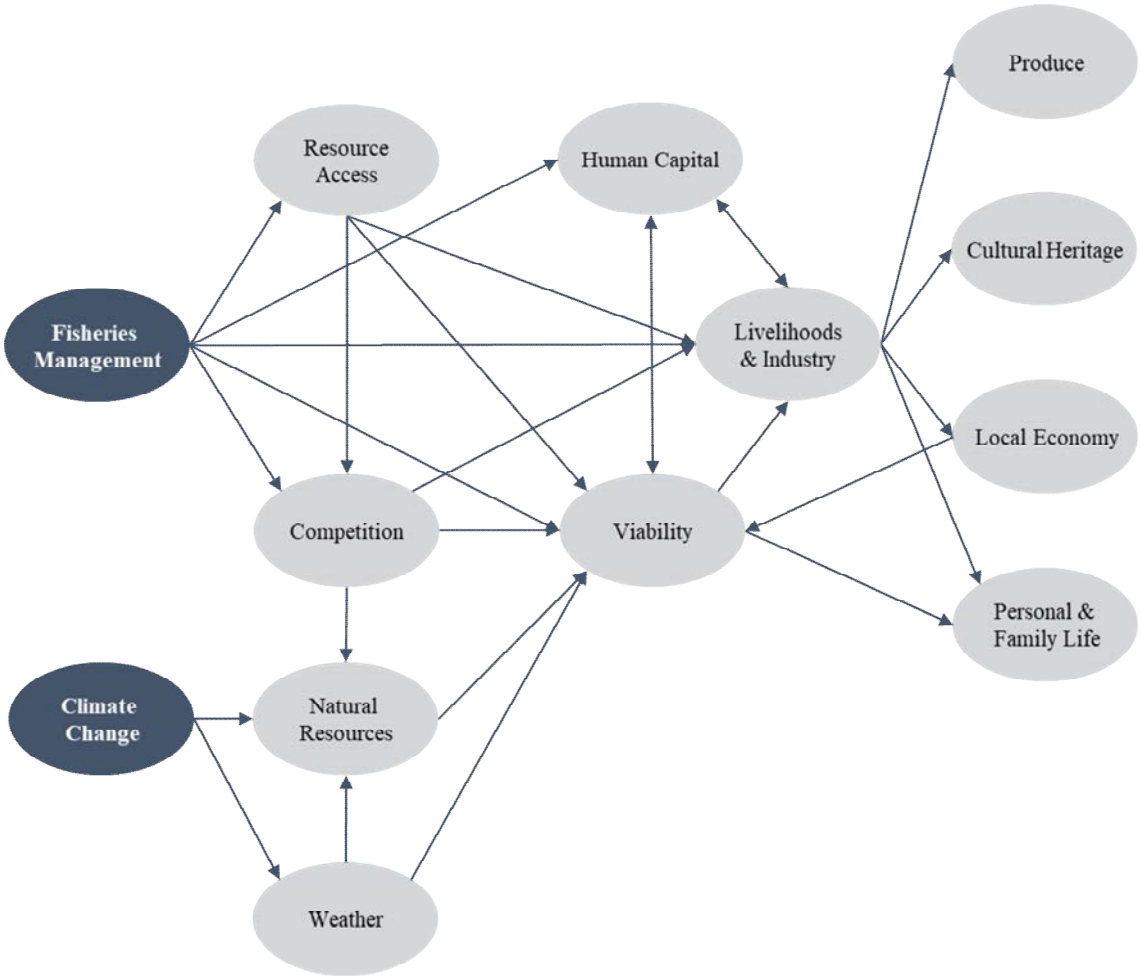


Table 10

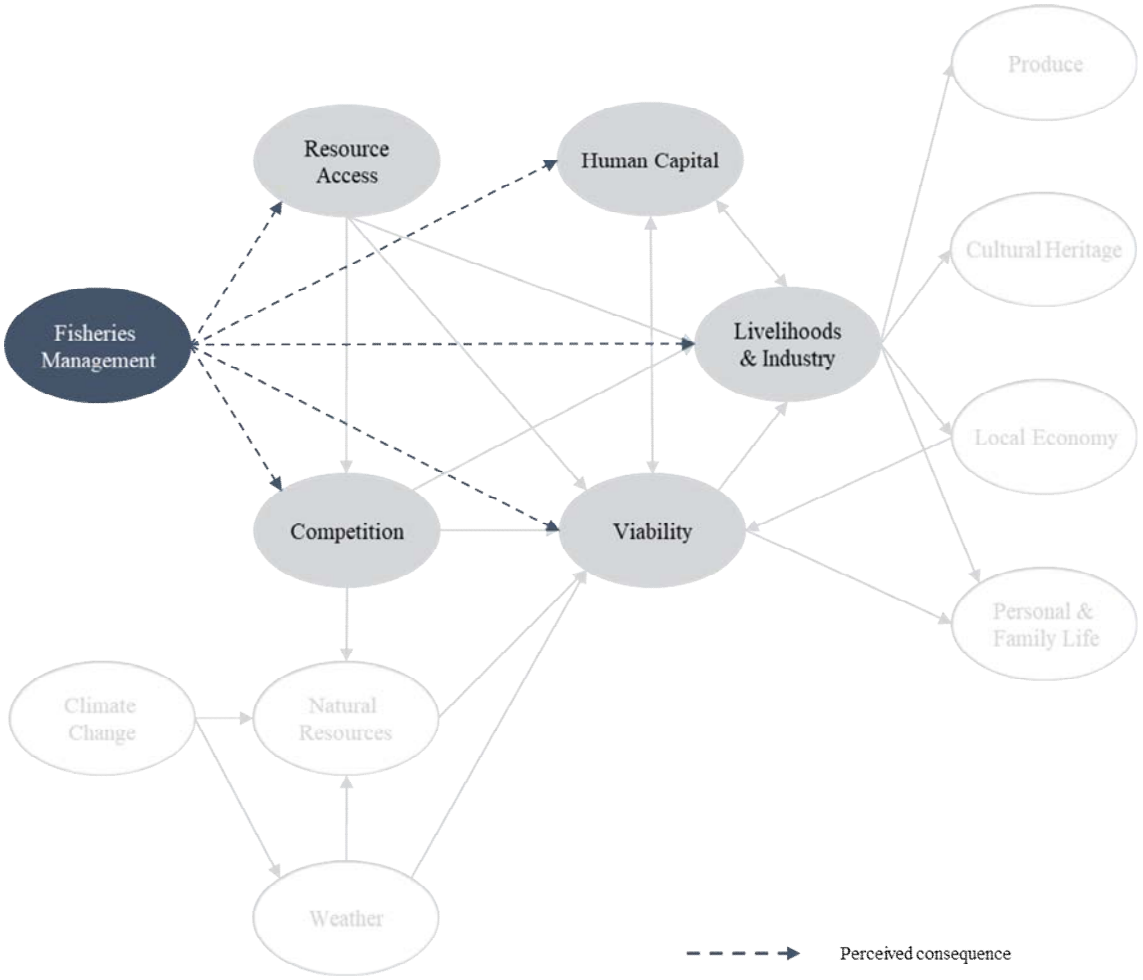
A note for the reader

Structure of the results and discussions
The relationships between factors are explored by presenting the perceived antecedents and consequences for each factor. The interconnected nature of the relationships between factors presents a challenge in how to present the results. The following approach has been taken to guide the reader through the pathways: • Generally, there is one section for each factor in the thematic map. • If the antecedent or consequent factor has already been presented, the relationship between the antecedent or consequent factor, and the factor of focus is presented. For example, where resource access is the factor of focus, the antecedent of 'climate change' had been previously discussed and therefore, the results relating to the perceived relationship between climate change and natural resources are presented. • If the antecedent or consequent factor has not yet been presented, the relationship is acknowledged, and the reader is referred to a later section where the relationship is discussed. For example, where resource access is the factor of focus, the consequences "natural resources" and "weather" have not been previously discussed and therefore, the reader is directed to the relevant sections. • Headings throughout this section are used to signal the factor of interest (for example, 'Perceived antecedents and consequences of human capital) and the specific relationship being discussed (for example, 6.1.3.2.1 Fisheries management impact on human capital).

Overall, participants perceived the most immediate impacts of fisheries management were a loss of resource access, diminished human capital, competition with other resource users and producers, and compromised business viability (highlighted in Figure 16). Participants' responses demonstrate that the participants perceived themselves to be most vulnerable or susceptible to these impacts because of the perceived proximity of the impacts. Participants indicated that such impacts were perceived to be severe, however, a loss of their livelihood and a loss of the commercial fishing industry was perceived to be more severe again. While a loss of livelihoods and the commercial fishing industry was also perceived to be directly impacted by fisheries management, however, this was perceived to be a less immediate consequence compared to others reported. Participants' perceptions about the consequences of fisheries management and the perceived relationships between each of these factors will be discussed in the sections that follow.

Figure 16

Perceptions of consequences of fisheries management

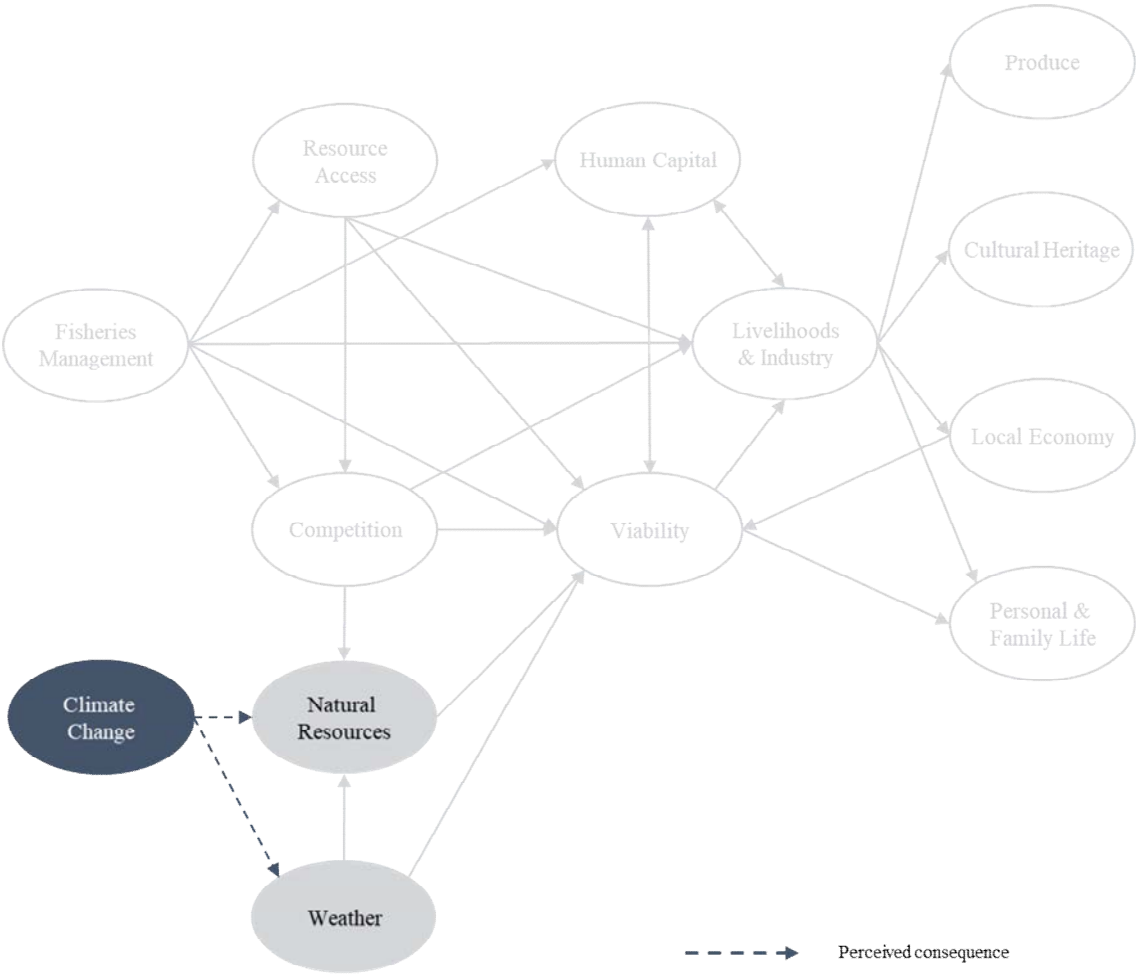


As highlighted in Figure 17, participants perceived that climate change had a direct impact on natural resources and weather. During interviews, participants drew a direct link between natural resources and weather, with viability. In the context of fisheries management, participants' responses highlight beliefs that viability impacts on their livelihood and the commercial fishing industry. Therefore, while participants did not report climate change to lead to a loss of livelihoods or losses within the commercial fishing industry, this conceptual map demonstrates an underlying perceived link via viability. Again, the relationships between factors perceived to be related to climate change (natural resources and weather) are demonstrated in Figure 17. As will be discussed in further detail in the following sections, while participants tended to agree about the relationships between these factors, participants interpreted negative impacts on weather, the health of natural resources and business viability to support their belief that climate change posed a threat, whereas

others used the absence of changes in these factors to support their belief that climate change either did not exist or did not pose a threat.

Figure 17

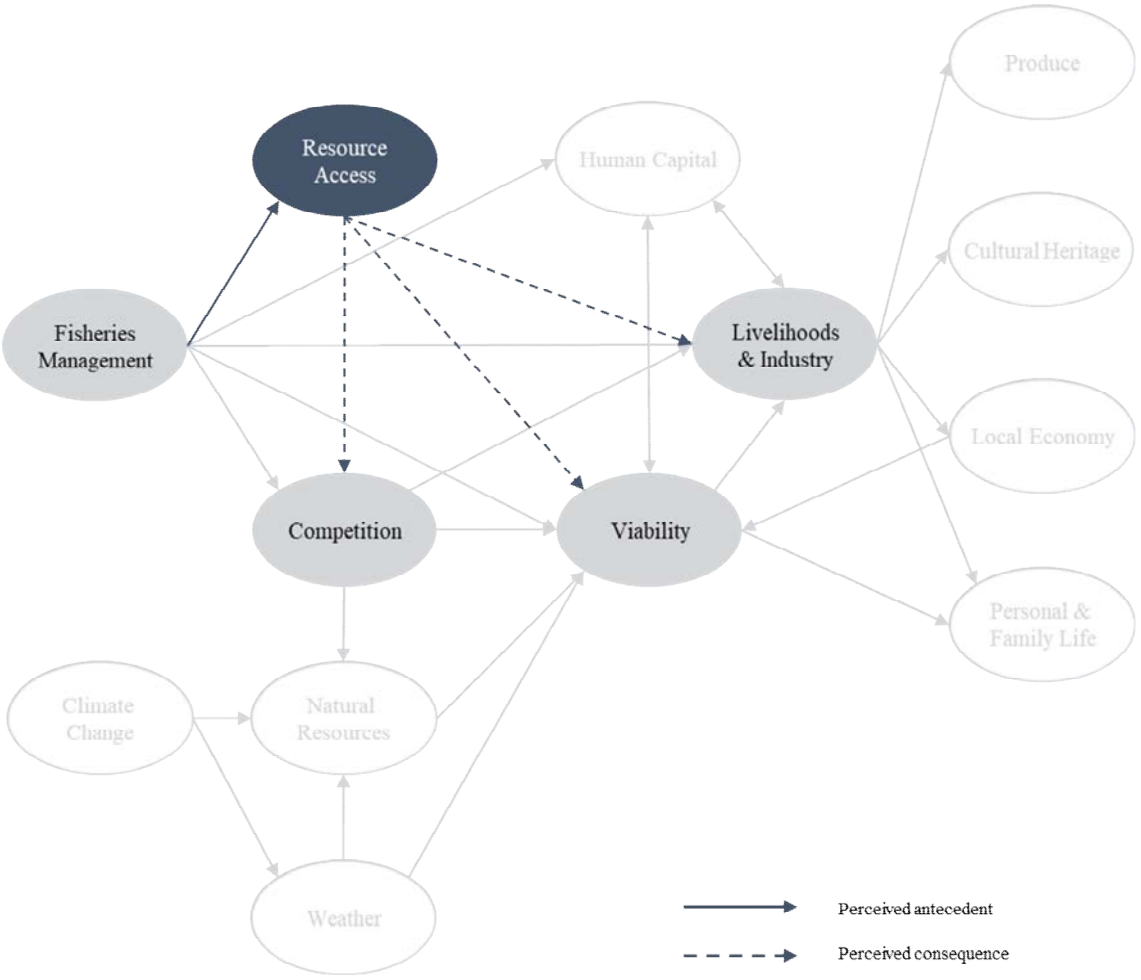
Perceptions of consequences of climate change



6.1.3.1 Perceived antecedents and consequences of resource access. As highlighted in Figure 18, participants reported that fisheries management directly impacted on their resource access. Furthermore, participants perceived their access to resources had a direct impact on livelihoods and industry, their viability, and experiences of competition. The perceived antecedents to resource access will be discussed in the current section, and the perceived consequences of resource access will be discussed in their respective sections throughout this chapter (for competition see page 91; for viability see page 99; and for livelihoods and industry see page 104).

Figure 18

Perceptions of antecedents to and consequences of resource access



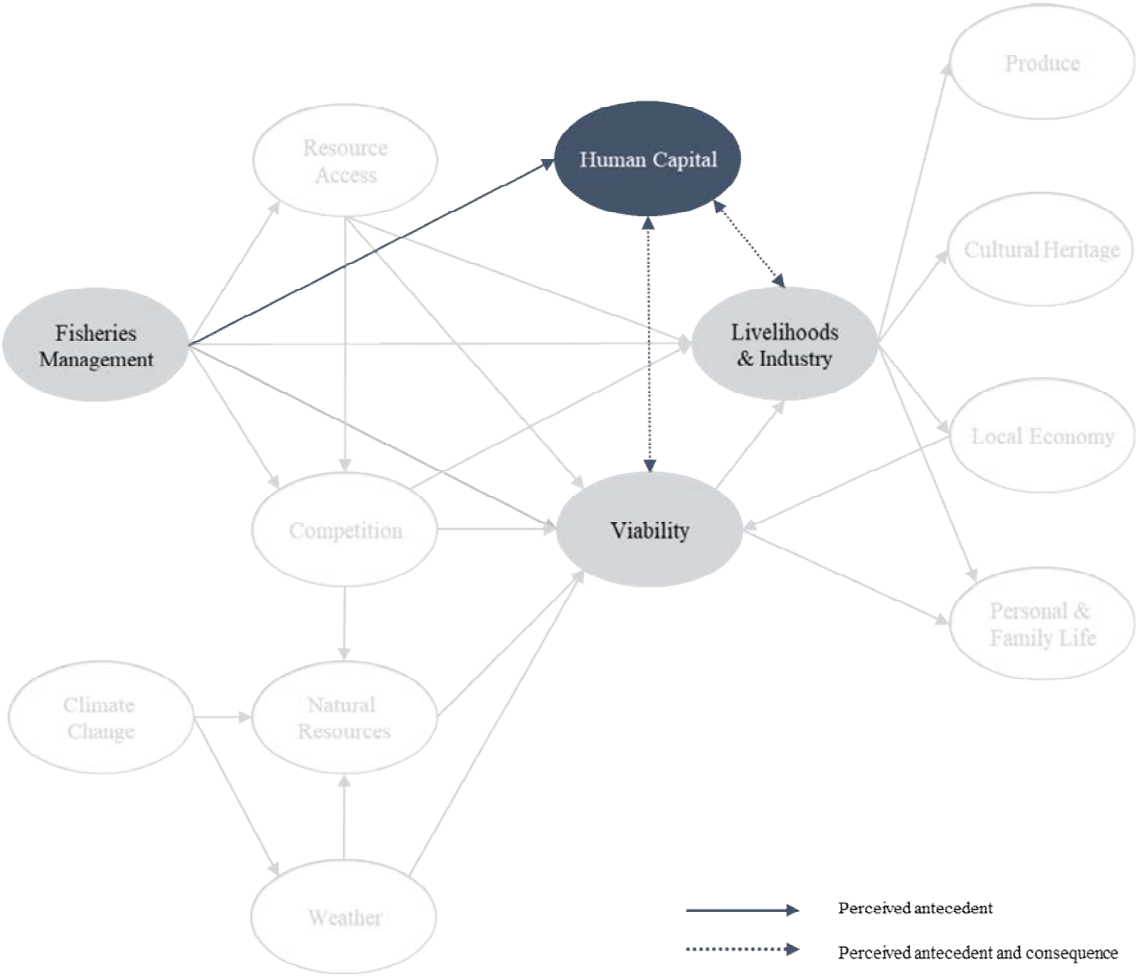
Participants' responses highlighted that they perceived the most direct and immediate impact of fisheries management to be a loss of resource access. Most participants perceived that they were susceptible to losses in resource access (or had previously experienced a loss of access) and perceived such losses were perceived to be severe. Participants reported that they had already experienced a loss of access to fishing grounds because of regulatory changes and that they expected further loss of access. Most participants were concerned about the permanent "closures and reduction in fishing grounds" (Michelle) resulting from previous and future regulatory changes. For example, "…our biggest concern with our industry at the moment is the closure, the closing of any more areas…" (Patricia). In contrast, access to fishing grounds was not perceived to be under threat, for example:

> It's the [location] closures that we're in discussions with… the current administration…. But [I'm] not overly concerned about regulatory threats to the industry as a whole, because I think we… now have a government that's… far more sympathetic to the commercial sector. (Michael)

6.1.3.2 Perceived antecedents and consequences of human capital. As highlighted in Figure 19, participants reported that fisheries management directly impacted on human capital in the industry and there were perceived to be bi-directional relationships between human capital and livelihoods and industry, and human capital and viability. That is, participants perceived that human capital both impacted on, and was influenced by both livelihoods and industry, and viability. The perceived impact of fisheries management, viability, and livelihoods and industry on human capital will be discussed in the current section. Later in this chapter, the perceived impacts of human capital on viability (page 99), and livelihoods and industry (page 104) will be discussed.

Figure 19

Perceptions of antecedents to and consequences of human capital



6.1.3.2.1 Fisheries management impact on human capital. Fisheries management was one of the reasons participants reported causing the difficulties in sourcing and employing crew. For example, the following participant attributed the difficulties they experienced in finding crew directly to fisheries management, “I think poor management of

fishery as a whole, that sort of affects me directly as well umm, also crewing, getting guys to work in the fishery." (Anthony). The same participant reported that this was an issue for other fishers in the industry, which could become increasingly worse over time:

> … you're finding it so hard to crew, and everybody is. Like all the bigger boats are finding it hard to get crews whether it be a prawn trawler, a trout boat. Any fishing boat in Queensland in general. We can't get crew. Well, if that's what it's like now, you know, if you can't get crew, you can't get skippers. (Anthony)

6.1.3.2.2 Livelihoods and industry impact on human capital. Furthermore, participants demonstrated concerns that a loss of livelihoods and industry would manifest through losses of industry human capital because of a loss of fisher knowledge or "…the knowledge we can't get back." (Charles). This concern about the loss of fisher knowledge echoed in the following response:

> So, none of this information like generational fishing information like how to use sounders and target fish and what time of year do these fish come in and all the rest of it, all this information is slowly dying…. decades it takes to pass information on, on doing what we do.… So, 15 years' time is where you're going to see the big problems. Huge problems. The fishery is going to be no longer understood, because it's just all this information is going to skip a generation. And it's very, very hard to rebuild that and to get it back and you know and get guys back into it… (Anthony)

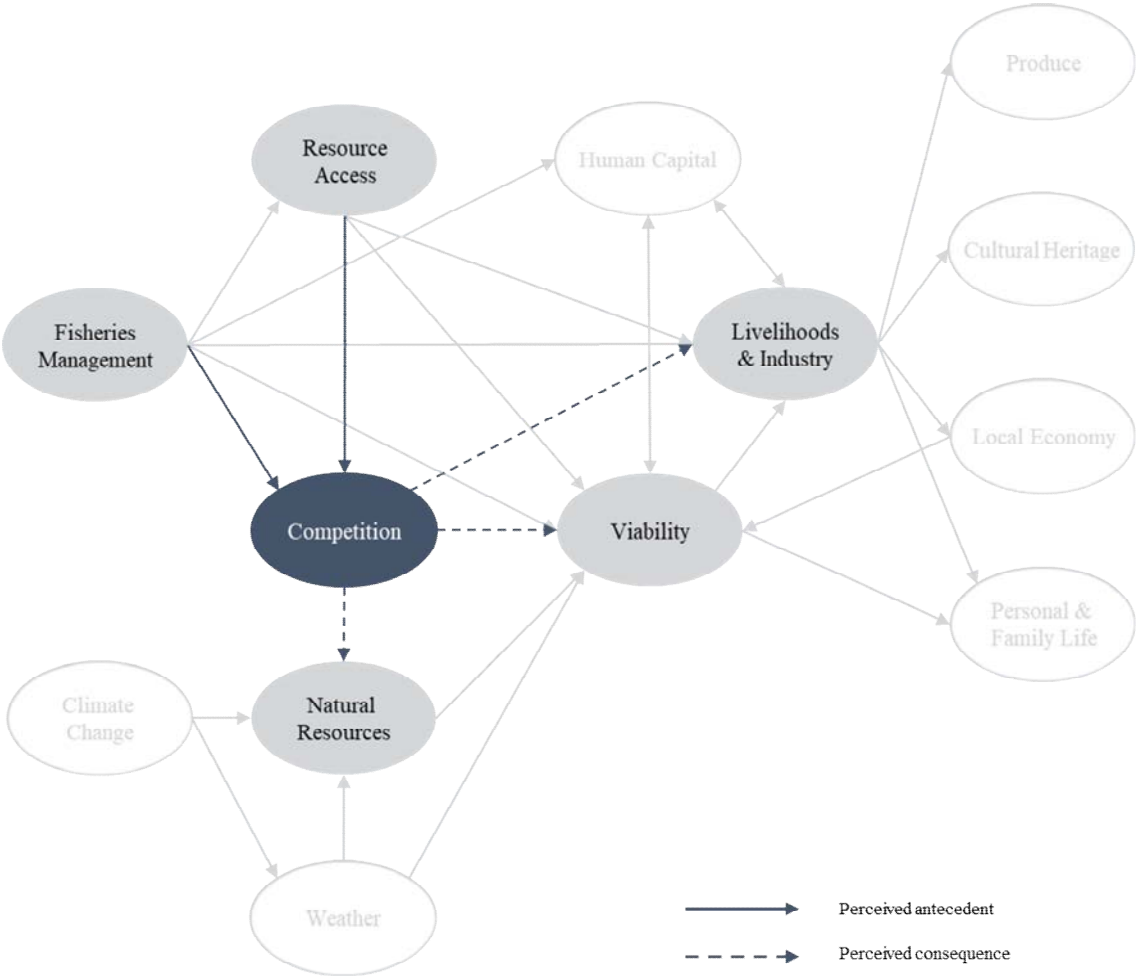
6.1.3.2.3 Viability impact on human capital. Participants reported that because of their poor financial situation, they could not support the financial investment required for human capital. For example, participants reported, "…you can't afford to employ people on weekends" (Richard), and "I haven't been able to afford [to] put on a deckhand…" (Timothy). Additionally, the following quotation highlights this participants' belief that financial viability was critical in supporting human capital in the commercial fishing industry:

> Look at the crew getting off the boats. They're uneducated, they're rough. Their health is appalling. They smoke, they drink. They do nothing to improve their own image… I know the fishing industry world-wide has had… issues with the people that have been involved in it, but it's not something that can't change… it is disappointing that is the way it is, but a big part of it is a lack of, a lack of money… (Michael)

6.1.3.3 Perceived antecedents and consequences of competition. Participants reported competition between commercial fishers and with tourism operators, recreational fishers, and international commercial fishers. As highlighted in Figure 20, participants reported that fisheries management and resource access directly impacted on their experiences of competition. Furthermore, as will be discussed in further detail later in this chapter, participants perceived that competition had negative consequences for natural resources (page 97), viability (page 101), and sustainability of livelihoods (page 105).

Figure 20

Perceptions of antecedents to and consequences of competition



6.1.3.3.1 Competition between commercial fishers. Participants reported that the closure of fishing grounds due to fisheries management not only meant a loss of resource access (see section 6.1.3.1, page 87), but also an increase in fishing effort and competition in areas which remained open to fishers. For example, participants reported that changes that arose because of fisheries management cause there to be "displaced fishing effort" (William) or "More commercial fishers in small areas." (Daniel). Additionally, the following response

highlights the belief that fisheries management decisions were the cause of reduced resource access and displaced fishing effort:

> Oh well like they're gonna start closing more areas, it's gonna put more people into, into confined, confined areas and no one's really gonna make, make um, much of a living out of it at all you know… (Harry)

6.1.3.3.2 Competition with tourism operators. Participants also perceived that they were competing with tourism operators for fishing grounds as a result of the way the industry was managed. Participants reported that there was pressure on fisheries managers to reduce commercial fishers' access to fishing grounds "because of this tourism push" (Julie) and increase tourism operators' access. Furthermore, participants believed that this loss of access to tourism operators occurred as fisheries management unfairly favoured tourism operators over commercial fishers:

> You know, they go on these, these people want these net closures out… to promote tourism and boost our economy. They want to take an industry that's been there for years, hundreds of years… [that employs] a lot of people, highly regulated…family-based businesses… [we] provide jobs.... they wanna take that out, to put in tourism businesses to create jobs and boost the economy. That's ridiculous… we provide jobs, and we're part of the economy. (Patricia)

6.1.3.3.3 Competition with recreational fishers. Participants' responses highlight the belief that they experienced competition with recreational fishers as a result of needing to access a shared resource. The perceived competition or lack of cooperation between commercial fishers and recreational fishers was highlighted in responses such as, "you're always gonna have that animosity between fishermen and recreational. Professional fishermen, recreational." (Charles) and "…this is what I found… it's them and us." (Patricia). The following response highlights the belief that the competition experienced between commercial and recreational fishers was a result of accessing shared resource, and that, recreational fishers were gaining more control of, or access to this shared resource:

> I think once all stakeholders have their slice of the pie, we know that we're limited in the commercial sector, there's no more coming, there, it's finite the amount of people that can do what you do when you put that piece of paper, it's not finite in the stakeholders such as recreational, and they keep having more kids and more stakeholders and more boats. Look at us, more boat registrations, we deserve more

> boat ramps. That's, people, they're divvying their pie up amongst more people. (William)

Furthermore, participants demonstrated beliefs that competition was increasing through reduced co-operation between commercial and recreational fishers. For example:

> That's another thing, a, like, 10 years ago, the reason we're not allowed to net up the creeks on weekends is so that back when everyone used to work Monday to Friday and have weekends off. By not being in the, in the creeks and rivers on weekends, that, that gave recreational fishers the opportunity to go fishing without having nets [inaudible] get in their way you know? That was basically what was done. So now, there's no such thing. (Patricia)

6.1.3.3.4 Competition with international fishers. Participants' responses highlight participants perceived they were competing with international fishers as a result of the way the industry was managed and because they were accessing a shared resource. As the following response highlights, participants perceived that there was a lack of regulatory control over international seafood suppliers compared to Australian suppliers:

> Our biggest, there's no, there's no tariff currently on imported seafood, so how can we compete with Thailand?... I'm trying to sell, a fresh barramundi fillet, or whole barramundi and I'm putting it beside farmed barramundi… how the fucking hell did, did Thailand end up farming Barramundi and sending it to us?... They haven't got management, fisheries management. …. We're competing against that. (Edward)

Additionally, participants were concerned that if the government was to continue closing access to Australian fishers, that other countries would gain the right to access Australian waters. This belief was highlighted through responses such as:

> If we don't utilise our resources, other countries can apply to the world court to use those resources…. So, you're gonna have China, Indonesia, all those countries coming in and stripping our waters of fish with no sustainability at all. (Julie)

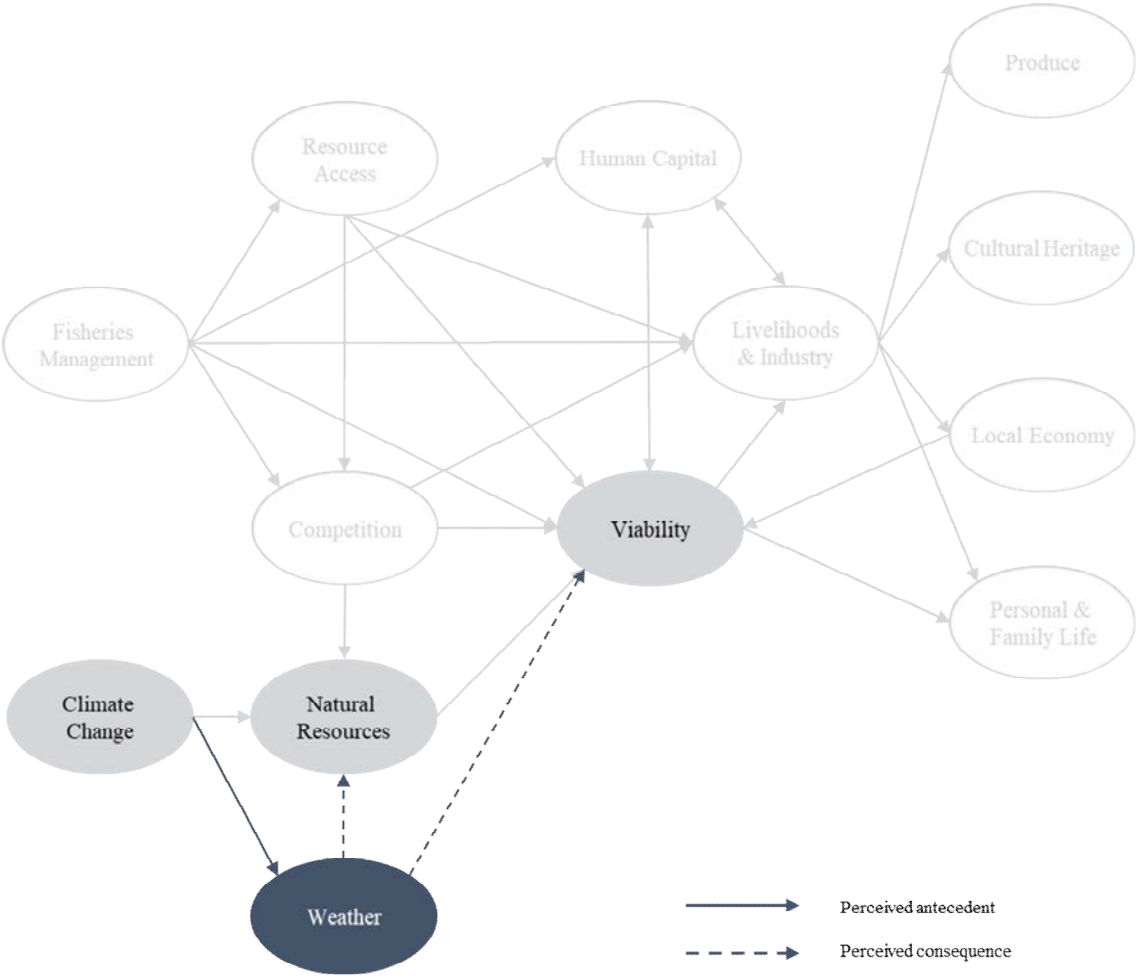
6.1.3.3.5 Competition summary. Participants' responses highlight participants perceived they were susceptible to competition as a result of fisheries management and decreased resource access, and that the impact of this was severe. For example, participants' perceptions of susceptibility were evidenced by reports that they had already experienced the impacts of commercial fishing through increased competition for resource access and

competition in selling to shared markets. Furthermore, participants reported that competition was stressful, could result in further negative consequences on their business viability and the impacts of competition were worsening over time. Therefore, participants perceived competition to be a severe impact of fisheries management.

6.1.3.4 Perceived antecedents and consequences of weather. As highlighted in Figure 21, participants reported a perceived relationship between climate change and weather. Furthermore, as will be discussed later in this chapter, participants perceived that weather had a direct impact on natural resources (page 96) and viability (page 100).

Figure 21

Perceptions of antecedents to and consequences of weather



Participant responses highlighted a shared belief that climate change impacted on the weather, or at the least climate change and weather were related. For example, the following participant reported a relationship between climate change and the weather when they said, “it’s all weather related” (Daniel). Furthermore, the following participant reported their disbelief in the denial of climate change by authorities given the impacts they perceived

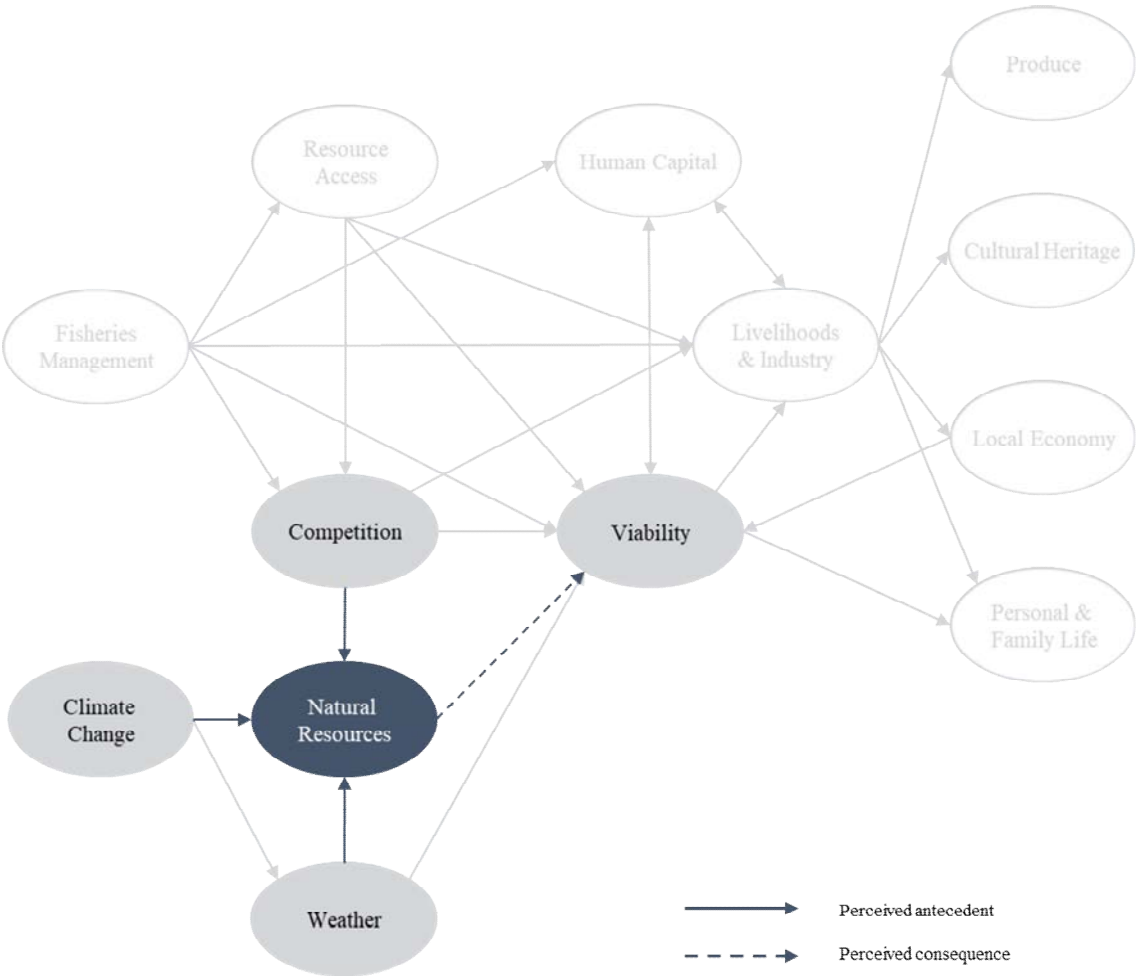
climate change to be having on weather events such as cyclones, “I find it really interesting because the government denying any climate change however, we have a cyclone off the cost in July.” (Julie). While few participants did draw an explicit link between climate change and weather, some did report changes in weather when discussing climate change. For example, the following participants reported increasing intensity and frequency of severe weather events, “We’re just getting violent, more violent storms…” (Peter), and:

> …it seems to be every time you turn around there’s a hurricane killing people anywhere in the world at any point in time or a volcano, or a typhoon, or a cyclone, or a fire, you know what I mean? It just seems to be out of control lately. (Patricia)

6.1.3.5 Perceived antecedents and consequences of natural resources. As highlighted in Figure 22, participants perceived that natural resources were impacted by climate change, weather, and competition. Furthermore, participants reported that the health of natural resources directly impacted on their viability (reported on page 100).

Figure 22

Perceptions of antecedents to and consequences of natural resources



6.1.3.5.1 Climate change impact on natural resources. Participants reported divergent beliefs about the impact on climate change on the health of natural resources such as marine life and habitats. For example, participants reported concerns that climate change was having a negative impact on the health of natural resources, "…the ocean [acidifying] up because the carbon dioxide in it, yeah, that's an issue." (Scott) and:

> …we've got fish in our estuary that we haven't seen in ages, our dolphins have disappeared in our estuary. We have not seen them… the way the fish have been with the lack of rain this year… there are certainly some issues that we've picked up on in the last two years that have yeah, changed the structure of the fish, the way the fish are. We've been seeing fish, floating on the top of the water, big, big fish. (Julie)

However, most participants reported a lack of concern about the impact of climate change on the health of natural resources. For example, the following participants reported an absence of impacts on fish stocks, "… there's no sign to us there's any diminishing in, diminishment in the stocks." (Patricia) and "…I'm seeing fish stocks that are as plentiful as they've ever been, if not more." (Anthony). Participants also reported an absence of impacts on the health of the reef. For example, participants reported that the reef is "…very, very resilient…" (Anthony), and that they "…can't see a thing wrong with it…" (Charles).

6.1.3.5.2 Weather impact on natural resources. As highlighted in Figure 22, participant responses demonstrated an indirect relationship between climate change and the health of natural resources through weather. That is, there is some evidence to indicate a perceived relationship between climate and weather events (see page 94 for results), and participant responses indicate a perception that weather impacts on natural resources. For example, the following participant reported concerns about the impact of severe weather events on fish stocks, "Many, many times he's seen cyclone damage, and many, many times he's seen the coral trout disappear because of it." (Charles). Participants were also concerned about how changes in temperature impacted on marine habitats, "Our temperature in our creek was five degrees warmer all this season than it ever has been since I've been measuring it." (Julie). However, participants' most common concerns related to the impact of cyclones on the reef. Participants reported, "…what [the cyclone] did to the reef, unbelievable…" (Richard), and "…a cyclone… years ago that just blew [the reef] to bits, the place was just demolished." (Anthony).

In contrast, others reported a lack of concern about the potential for weather to impact on the health of natural resources. For example, the reef was seen by participants as a natural

resource that was able to cope with the impacts of weather, "…we just had five months of huge floods, anyway, it never affected any reef." (Charles). Additionally, participants also believed that the reef was able to recover from harm caused by severe weather events such as cyclones, "Ooooh we gotta save the reef. What a lot of codswallop. The reef will look after itself." (George), "I'm [seeing] actually reef coming back and regenerating…" (Anthony), and "…once the reef's been wrecked by a cyclone, then it all just grows…" (Daniel), and:

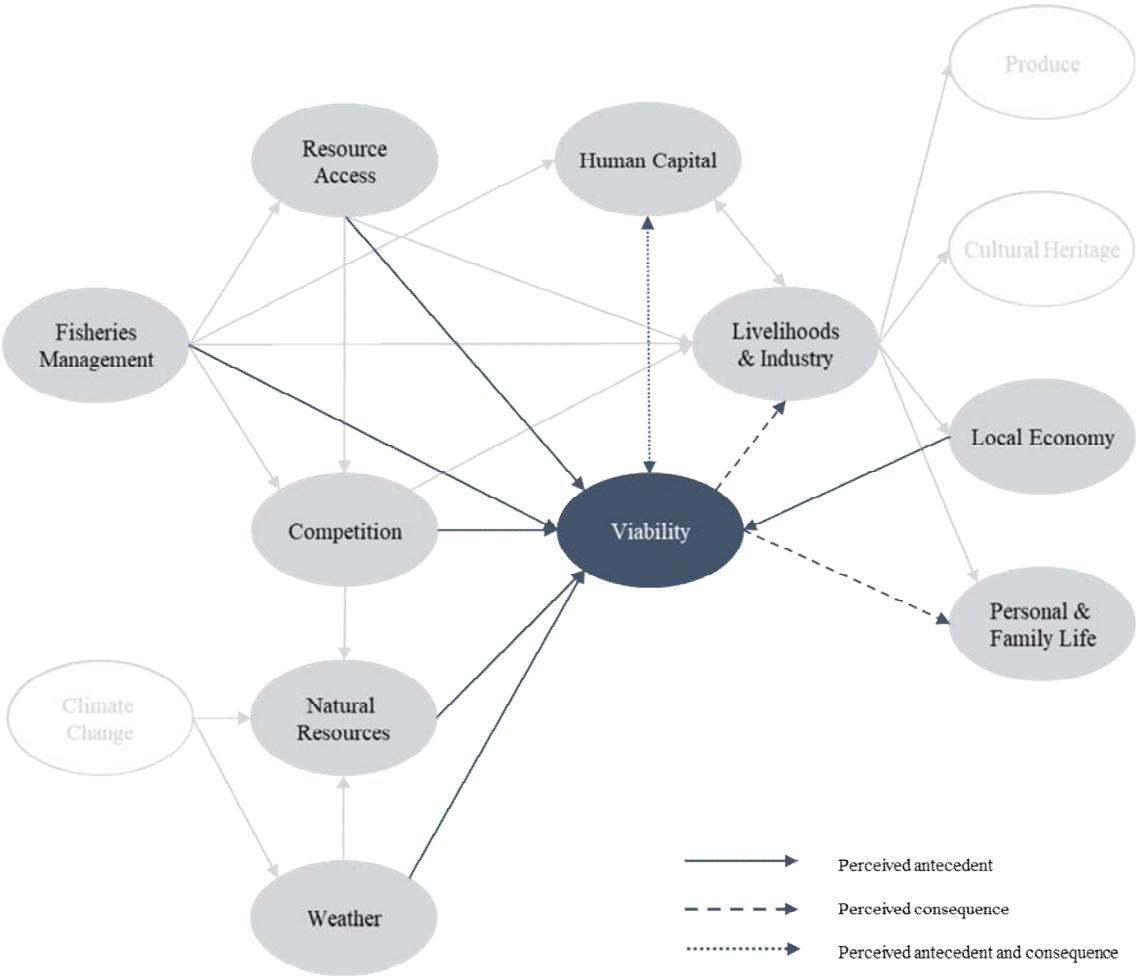
6.1.3.5.3 Competition impact on natural resources. Participants also perceived that competition for resource access between commercial fishers resulted in severe consequences on natural resources. For example, "You know it just, the small areas are just gonna be totally wrecked…. You know they're, they're creating bigger problems." (Daniel).

6.1.3.6 Perceived antecedents and consequences of viability. As highlighted in Figure 23, participants reported that fisheries management, resource access, human capital, their livelihood and the commercial fishing industry, weather, natural resources, competition, and the local economy directly impacted on their viability. Furthermore, participants perceived that their viability had a direct impact on their livelihood and the commercial fishing industry, and their personal and family life. The perceived consequences of viability will be discussed later in this chapter (for livelihood and industry, see page 105; for personal and family life see page 110).

As the following responses highlight, participants were extremely concerned about the viability of their business. For example, participants reported, "Making a fishing business pay. That's the biggest risk and the biggest challenge." (Timothy) and "…it's just very hard to make a living these days." (Richard). Participant responses also indicated that a poor viability was perceived to be severe as it triggered a negative downward cycle. That is, because participants were not financially stable, they felt pressure compromise other areas of their business. In turn, this was perceived to have further negative impacts on the financial viability of their business such as not being able to insure their business, "We can't insure anything, because we can't afford to." (Charles).

Figure 23

Perceptions of antecedents to and consequences of viability



6.1.3.6.1 Fisheries management impact on viability. Participant responses highlighted concerns about how fisheries management compromised their business viability. Generally, participants focused on how fisheries management negatively impacted their business viability. However, one participant discussed their belief that if fisheries management was improved, so would the viability of their business and others' businesses:

> We need to be getting more but if the fishery would manage that better we would find it's easier to catch these fish and we you know we should use less expenses 'cause we don't need to go to work as much, so you'd be cutting expenditure on your business, the resources are getting utilised better, like and then we'd get better crew and it just… it'd have that domino effect you know but to get that you need to start at the top and work your way back. They're the main areas that I can sort of see that effect my day to day of running my business and how it could make it a lot better or a lot more efficient and a lot more viable (Anthony).

Participants commonly reported that there was a cost associated with complying with industry regulations and that these costs were "one thing after another" (Victor). For example, participants said, "…requirements [for] the new AMSA[7] rules and so for coming in…. Yeah, a lot of that's gonna increase costs…" (Larry), and "They're [going to] put this tracking device on… your boat so that they know where you are at all times, and I mean, who's [going to] pay for that? Oh, fishermen can pay for that too… I mean, seriously…" (Edward). Participants were also concerned about increasing operational costs resulting from regulatory changes, "… our overheads have gone up and up and up and with the quota system now, we've had to buy that quota so there's more money outlaid…" (Charles), and:

> Then, I've gotta travel further, now, to go fishing in the future. Then if they close that down, because there's talk about that too, then, my costs have gone increased again, because I'm travelling further. The truck's further, I'm going to an area I don't know I mean so, so all the while, my, my profit margin's getting skinnier and skinnier. (Edward)

These quotations also highlight participants' perceptions of their susceptibility to and the severity of compromised business viability. In particular, participants' perceptions of severity were highlighted by reports that fisheries management had significant impacts on the financial viability of their commercial fishing business. As the following response highlights, fisheries management was perceived to have a direct and serious impact on their income, "Well the, the government changed, changed [a rule] about seven years ago I think it was which ah, cut our income in half." (Timothy).

6.1.3.6.2 Resource access impact on viability. Participant responses demonstrated that a loss of resource access due to regulatory changes contributed to decreased business viability. For example, participants demonstrated concerns about how seasonal closures of fishing grounds threatened their business viability. One participant reported "…it'll be closed [season] soon and that will be the end of us for [type of fishing]" (Julie). This response also highlights how impacts on viability are perceived to lead to a loss of commercial fisher livelihoods and potentially the entire industry.

6.1.3.6.3 Human capital impact on viability. Participants reported additional concerns that the perceived impact of a lack of human capital in the commercial fishing

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[7] Australian Maritime Safety Authority

industry had on their business viability. For example, participants reported difficulties sourcing crew to work for them, “we can’t get men” (William), “…there’s a shortage of skilled labour there.” (Richard) and “I find it hard to employ people…” (Anthony). Participant responses such as the following highlighted that crew were often perceived to be unreliable, “Someone bombed out of his brain, unemployable… You see them out there with no shirt on for Christ’s sake.” (Charles) and “I planned [my business] around crew, so unreliable.” (Anthony).

6.1.3.6.4 Weather impact on viability. Participant responses demonstrate a shared belief that both weather and the health of natural resources impacted on productivity. While participants did not explicitly acknowledge a direct relationship between climate change and productivity, participant responses imply that climate change also impacts on productivity indirectly through weather and the health of natural resources. In the context of climate change, participants were primarily concerned about the impact of weather on their productivity, for example, “…fishing totally relies on weather…” (Daniel). Most participants focused on the negative impacts that weather had on their productivity but that it was something they expected or even accepted as being part of being a commercial fisher. For example, “So weather is the biggest one. That’s the greatest regulator that we have.” (Charles) and “Bad weather’s always been part of our, our livelihood.” (Michelle).

Participants’ concerns about the impact of weather on productivity was further highlighted through concerns about the relationship between specific aspects of weather such as changes in temperature, tides and severe weather events, and productivity. For example, “…we come back to where we are and scratch around here and go back when the tide’s right again and try and catch something else.” (John) and “…if in the instance we have a cyclone and we, our catch rates are really reduced over say an eight- or nine-month period…” (Michelle).

Additionally, participants reported that seasonal changes in weather affected their productivity. Participants reported that the wet season had a positive impact on productivity, whereas periods of drought had a negative impact on productivity. For example, participants reported “we have a good wet season, we have good fishing.” (Daniel) and that, “when there’s drought on the land, there’s drought at sea. We’ve had a bad drought this year, there’s been a drought at sea when it comes to fishing.” (Julie).

6.1.3.6.5 Natural resources impact on viability. Participants also reported that the health of the natural resources was important for business viability. For example, participants reported, “…coral reefs that I fish, and I harvest, that I want to protect more than anything.

‘Cause that’s where my life is going to come from.” (Anthony), and “The catching is irrelevant I reckon… I don’t think it matters how many people, how many fish are caught, in the sustainability of a species. I think… the most important is the habitat for them to breed.” (Patricia).

6.1.3.6.6 Competition impact on viability. Participants reported that their business viability was impacted by competition with other commercial fishers, and in particular, large operators and seasonal fishers. These concerns were highlighted in responses such as, “You know and I can’t compete with their, umm volumes they deal with you know like, and one of those boats comes in with 1000 fish, when I come in with 150…” (Larry) and:

> Farmers, the cane farmers that go netting and, and crabbing the whole off season of their cane. You know that’s what we have another thing, another issue that we can’t come up against is, seasonal people who, who work like six months of the year say in the cane. Cane harvesting. The other six months, they’re out crabbing full on. (Patricia)

6.1.3.6.7 Local economy impact on viability. As highlighted in Figure 23, participants reported that the sustainability of their livelihood and the commercial fishing industry impacted on the local economy (explored further on page 106) which in turn, was perceived to impact back on their business viability. The belief that the state of the local economy could have impacts on business viability is highlighted in the following responses:

> You’re wiping an entire industry as well. But then there’s the fall back, umm, businesses like mine. I can’t access local seafood, restaurants, the ice suppliers that supply tonnes and tonnes of ice to commercial fishers. They lose that sale of all that ice. Um. Your um, your, boat mechanics and stuff. My husband spends probably $12,000 a month, at, at the marine shop there just on new motors and getting this fixed and just maintenance work. What if that’s gone. Like, you know then that they’re losing business. (Michelle)

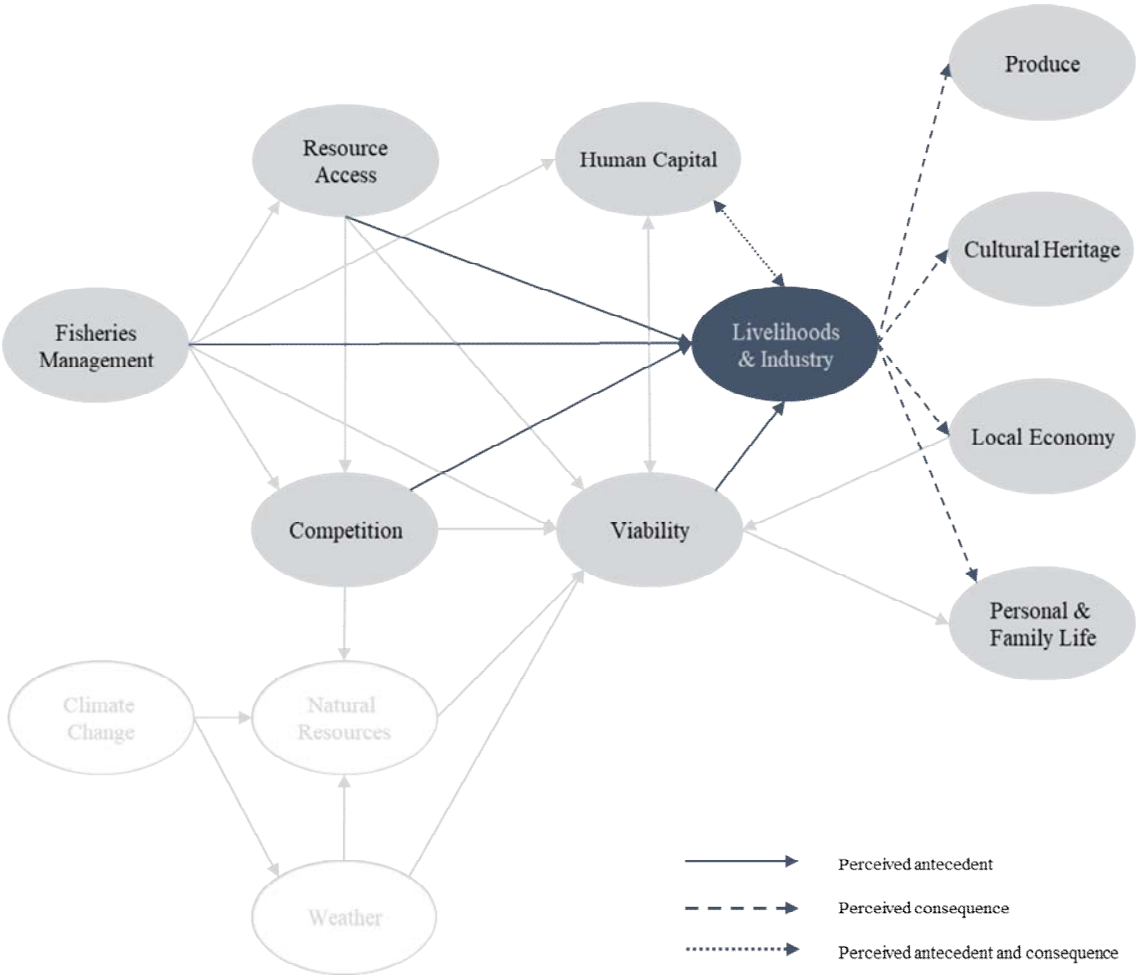
And:

> If we lose that crucial infrastructure, you know, where do I get my fuel, where do I get my ice. Another few boats fall off the planet [Name Removed] might close his doors or [Name Removed] might wind down. You can’t buy fuel, you can’t get ice, you can’t sell your product. (William)

6.1.3.7 Perceived antecedents and consequences of livelihoods and industry. As highlighted in Figure 24, participants reported that fisheries management, resource access, human capital, competition, and viability directly impacted on their livelihoods and the commercial fishing industry. Furthermore, participants reported that there were flow on impacts from a loss of livelihoods and the commercial fishing industry for cultural heritage, the local economy, the mental health of themselves and others, and their personal and family life. Both the perceived antecedents and consequences of livelihoods and industry are discussed in the current section except for two relationships. The perceived impact of human capital on livelihoods and industry was discussed in an earlier section (see page 90) and the perceived impact of livelihoods and industry on personal and family life is discussed in a later section (see page 109).

Figure 24

Perceptions of antecedents to and consequences of livelihoods and industry



6.1.3.7.1 Fisheries management impact on livelihoods and industry. As the following response highlights, participants attributed their struggles to maintain their livelihood to fisheries management, "whatever they do, it affects our livelihood." (Richard). When reporting concerns about a loss of livelihoods participants spoke about declines in the industry that they had previously observed. For example, participants responses indicated a decline in the fishing industry, "I'm one of the very few that are left, doing what I do." (Timothy). Participants described this as a slow decline, where the fishing industry "just slowly disappears" (Susan), and that "fishermen are a slowly dying race" (Edward).

Participants also expected that the commercial fishing industry would continue to decline, for example, "…I can see a lot of boats going down the tube." (Harry). Participant responses demonstrated concerns that further declines in the industry contribute to a lack of certainty about the future of individual's businesses and the commercial fishing industry. For example, "… you've just got absolutely no certainty as to whether you're gonna actually have a job… in 6 to 12 months' time." (John) and "I think our biggest challenge is the uncertainty of where our future is headed, the commercial fishing industry…" (Michelle). Furthermore, participants' responses highlighted concerns that further declines will shut down the industry. This belief was demonstrated in responses such as, "…[the] biggest risk is how much longer we got before it's all closed down." (Peter), "No I think that we haven't got that long…" (Scott), and "…we're gonna be a dead industry." (Julie).

In contrast however, two participants indicated that they were not concerned that they would lose their livelihood. One participant stated, "…it's probably unlikely that I'd stop being able to fish." (Larry) and the other stated that, "I don't have any major concerns [to my] livelihood as a fisherman." (Michael).

Participants reported that fisheries management had the potential to have positive impacts on the industry. For example, this participant report that they believed fisheries managers should focus on the economic state of the industry to improve the commercial fishing industry, "…if the government… puts its management plans in place in like with trying to improve the economic viability of the fishery um, things would change instantly. But they don't…. And that needs to change." (Michael). Similarly, participants reported that improved fisheries management would have economic benefits, for example:

> It just comes from good management… the South Australian Rock Lobster Fishery is a great example, a very good fishery, managed very well… it is a very, very lucrative fishery that is looked after very well and managed well… it's a very, very professional fishery. (Anthony)

6.1.3.7.2 Resource access impact on livelihoods and industry. Participant responses demonstrated that a loss of resource access, particularly due to regulatory changes, contributed to a loss of commercial fisher livelihoods and potentially the entire industry. The perceived severity of participants' experienced and potential loss of fishing grounds was highlighted in the following response, "by the time they're finished the entire east coast fishery will be shut down." (Michelle). This response also highlights that a loss of resource access was perceived to be a threat for the entire industry as well as individual fishers. The impacts of a loss of resource access on livelihoods and industry also appears to be mediated by impacts on viability in that the perceived severity of this threat was further compounded by the belief that closures have shut down areas that are most productive. This belief was highlighted in responses such as, "they're just closing… all the productive grounds down" (Daniel), "when they see an area that's… fruitful for commercial fishermen, it's closed" (Edward) and "now they decide to shut down the most productive part of the coast" (Victor).

6.1.3.7.3 Human capital impact on livelihoods and industry. Participants reported that the sustainability of the commercial fishing industry was compromised because of a lack of new entrants into the industry and because the industry was aging. For example, participants reported, "There are no new people coming into the industry, there is no young ones in there…" (Michelle) and acknowledged that this contributed to the aging of the industry, "All of them are getting older and there's not that many new ones coming…" (Susan). Participants reported that it is difficult for young fishers to enter the industry and that often, they wouldn't advise people to do so. For example, "The older ones are responsible for getting them into the industry, but you wouldn't, you just wouldn't ah, wish anybody the hassles they've got ahead of them." (Daniel). Participants differed in their views about the value of young fishers in the commercial fishing industry. For example, this participant viewed young fishers to be of great value to the industry, "I mean they're energetic, they're full of life, they've got not a problem, fear of work…" (Charles). However, other participants believed that young fishers who did enter into the industry, did so because of a lack of other work opportunities:

> …a couple of the younger ones that are in it now, they can't get jobs anywhere else. So, they've just taken fishing as a last resort…. And they're always gonna, they're

> derros[8] and they're always gonna be derros. It's just the way that the you know it's just the, the way it is…. They can't get other jobs, so they just filter into the fishing as an easy way of life. (Daniel)

It was reported that the impacts of a lack of young fishers were not immediate, but would be felt by the industry in the future:

> … I say, not the next five years or not the next ten years that you're going to see the issues that we're going to have with that. It's in the next 15 or 20 years that they're going to start to pop up. (Anthony)

Furthermore, the same participant reported that a lack of new entrants into the fishing industry would further contribute to the downfall of the industry, "Where it makes it hard is, you're not going to get any new people into it, so what it'll effectively do is kill the industry which is what is happening now." (Anthony).

6.1.3.7.4 Viability impact on livelihoods and industry. Participants were also concerned that poor business viability could result in a loss of their livelihood. This concern was highlighted in responses such as, "…I don't have a whole lot of confidence that, the financial side of it isn't gonna take me out in the end" (Larry) and:

> I honestly can't see that we're gonna be in business in two years' time. I honestly believe if we, I mean, I know all the stuff you guys do confidential, we paid [amount] for our licence last year. It's a [amount] a month just for the, to um, cover that finance, and, yeah, we're in dire straits. We're in really dire straits. We'll lose our house because we had to re-mortgage the home and we've got tenants in our house because of the downturn in the industry in [town], rent's gone down on our house, so, we're only just covering the mortgage on our house. We've, well yeah, we're really in dire straits. And this season for everyone was terrible. (Julie)

6.1.3.7.5 Competition impact on livelihoods and industry. Participant responses highlighted concerns that competition between commercial fishers for resource access had serious consequences on livelihoods and industry. For example, "… don't try and fence us into a smaller and smaller area or our fisheries will become unsustainable, and we will all crash and burn." (William).

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[8] Derro is Australian slang derived from the word 'derelict' and is often used to describe a person who is unkempt or of low social standing.

6.1.3.7.6 Livelihoods and industry impact on cultural heritage. As highlighted in Figure 24, participants perceived losses in livelihoods and industry resulted in a loss of cultural heritage. As reported earlier, they perceived that the experienced and expected declines in the industry occurred as a result of the way that the industry was managed. The following quotation demonstrates the perceived cultural significance of the decline and potential loss of the commercial fishing industry as such a loss would be taking away, "an industry that's been there for years, hundreds of years…" (Patricia).

6.1.3.7.7 Livelihoods and industry impact on local economy. Participants perceived that losses in livelihoods and industry led to negative consequences for the local economy (as highlighted in Figure 24). Furthermore, as reported previously, participants perceived that impacts on the local economy subsequently impacted back on business viability (see section 6.1.3.8.10 on page 101).

While participants were primarily concerned about the consequences of a loss of industry for themselves and others within the industry, participants were also concerned about how such losses would impact on the broader community. Participants believed commercial fishing to be important not only to those within the industry, but also to many others who rely on and benefit from the commercial fishing industry through the provision of services to the industry. The perceived economic importance of commercial fishing was highlighted when participants said, "…the commercial fishing industry and how important it is to, to not just the overall economy of the state and the nation, but to the social structure of smaller communities… and other places along the coast." (Michael), "… the economic benefits to the community is huge" (Anthony) and:

> … I just read something, I just read something last night that somebody put [on] our, fisher's website, about, the small family businesses are baseline businesses for the economy… That's very interesting because it's true… We're only small, but [we're] constant. (Patricia)

Similarly, the following response demonstrates the perceived economic value that commercial fishing provides local communities:

> …when we had those 18 or 19 trawlers and those 20- or 30-line fishing boats, every one of those crew members, would unload their boat here, walk up the pub, spend there, they'd go to the laundromat, they'd go to the grocery store, they'd go to the engineering shop. Those people particularly the crew would get in say on a Friday

> with $2000 in their pocket and by Sunday they were broke... They spent every single cent earned in the town. (William)

6.1.3.7.8 Livelihoods and industry impact on produce. Participants raised concerns about how seafood consumers were going to access seafood if the commercial fishing industry continued to decline. Participants reported that it was important to "keep the industry alive" (Patricia) as it was their role to "work for the public" (Charles) to "supply food to our country" (Michelle). Furthermore, participants saw their role as particularly important when providing access to seafood to people without the resources or ability to do it themselves. For example, participants reported, "…what about the people, the seafood loving public who do not have the ability to get their own fish. That's my job… That's my job to get it for them." (William), "I know a lot of people that own boats, and they haven't got the time [to] come and go fishing, they come buy their fish off me." (Victor), "They haven't got a boat, they haven't got a line to go out and catch it…" (Peter), and:

> … I think it was 92 per cent of Australians don't even fish for their own fish. They go to the supermarket and buy it. And that 92 per cent you know, we're an industry where we're trying to sell them our fish. And they need access to fish as much as the recreational sector. (Larry)

However, participants reported concerns about where seafood would come from, "If the fishermen don't catch it, where is it [going to] come from?" (Michelle) and "…I'd just like to know where they're [going to] get all their fresh product from mate…" (Harry). Furthermore, responses demonstrated that participants felt it would be unfair for consumers to lose access to seafood, "…why should they lose it?" (Victor) and "…what about the people, the seafood loving public who do not have the ability to get their own fish? That's my job." (William).

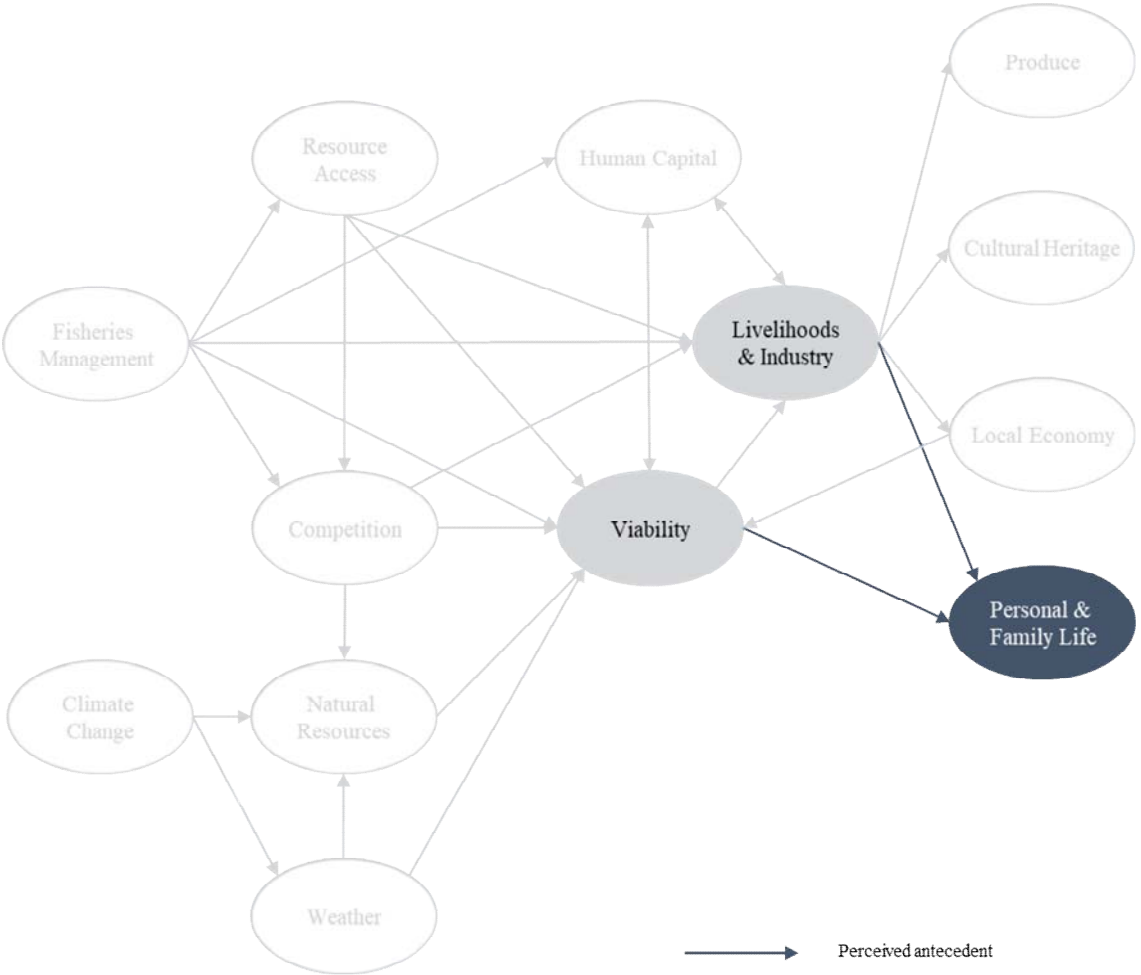
Participants acknowledged that a loss of seafood produce will have negative consequences for seafood consumers. One participant suggested that there would also be negative consequences for recreational fishers because "…all of the bait that we catch in there is for the recreational sector." (Patricia). Concerns about the impact on consumers more broadly were highlighted in responses such as, "So it's the public who get burnt as much as the fishermen…. it was the public that owned it and it was the public that were robbed…" (Charles) and:

> …what a lot of those groups forget, I think it was 92 per cent of Australians don't even fish for their own fish. They go to the supermarket and buy it. And that 92 per cent you know, we're in an industry where we're trying to sell them our fish. And they need access to fish as much as the recreational sector. (Larry)

6.1.3.8 Perceived antecedents of personal and family life. As highlighted in Figure 25, participants perceived there to be a direct impact of livelihoods and industry, and viability on their personal and family life.

Figure 25

Perceptions of antecedents to personal and family life



6.1.3.8.1 Livelihood and industry impact on personal and family life. Participant responses demonstrated that a loss of livelihoods affect participants' personal life and their family. Participant responses highlighted concerns about the impacts that industry challenges have on their family and their relationships. For example, when discussing the impacts of industry challenges one participant reported "…it doesn't only impact on me, it impacts on my family. And I've got a son fisherman… And a grandson, young fella there." (Peter).

Participants reported concerns about family members working in the industry as highlighted in the previous response, but also about those family members who didn't work in the fishing industry. For example, participants discussed the impact that commercial fishing can have on a marriage, "There are very few fishermen on their first relationship. Because it is a killer." (Susan) and that commercial fishing "has cost me a marriage and half of everything I owned…" (Timothy).

Participants also spoke about the compounding effect of issues in their personal or family life affecting how they coped with the stressors they face as a commercial fisher. One couple (married) reported the difficulties in balancing family life with fishing, "…no woman likes being stuck at home with the kids with hubby away…" (Susan). The following response further highlights' how this couple struggled to balance family and fishing, but how this is also compounded by this participant's personal health:

> The family unit doesn't work so you stay here so, we have drought proofed ourselves by diversifying a little bit. But I don't know how much longer it's gonna keep going. I'm I've, I've got [health issue]. I'm undergoing [treatment] at the moment, I don't know how long's left in me (William).

The following response further highlights the difficulty of balancing personal challenges such as illness, family and fishing experienced by this participant's partner (also a commercial fisher):

> Because the way he stays with [his daughter] is structured, half the time because he's on six on two off, it's not the regular same two days during the [season], so someone's gotta pick her up from school or pick her up from the park and 90 per cent of the time he's still at work you know. And his mum's just been diagnosed with cancer. On top of his dad's just been through prostate cancer and, with [a] major heart attack. (Julie)

Furthermore, participants were concerned about the impact of a loss of livelihoods on their family and relationships as commercial fishing businesses were often family businesses that were passed down over the generations. For example, one participant recounted his family history in the commercial fishing industry:

> …the shop was here in 1952, my father and grandfather owned the shop back then, but the grandfather was fishing back must have been in the early 1900s. Um, he used to sell his fish around town, in a horse… [to] sell his, you know his fish he caught. And ah, as the years go on and on after the war and that, he um, father came back and he went down to Brisbane and chased, chased fish down there…. Then he ended back up [here] with his father and they opened the shop up here yeah so there's, well I'm, third generation. (Peter)

Participants reported uncertainty around whether they would be able to pass their fishing business on to the next generation. One participant reported that they had invested in their business to be able to pass it on to his child however he also said, "…I don't know if that [is going to] ever be able to be passed down to her mate…. And that's… my biggest worry now is, what's the future generation [going to] have mate?" (Harry). This concern about not having a business to pass on to future generations was further highlighted in responses such as, "We have no confidence that our business is going to be here in five or 10 years to hand down to our, to our son. (Michelle), "…my husband, he's third generation commercial fisher. We don't even think we're gonna have anything to leave to my son anyway. He is interested, but there won't be anything to give him." (Michelle).

Along with uncertainty about the survival of their business into the next generation, there was also ambivalence about whether fishers wanted to pass their fishing business on to their children. This was due to the difficulties they had personally encountered in the industry. For example, "…I'm glad both my boys didn't follow my footsteps." (Edward), and "…I've got a son…. And I wouldn't let him anywhere near the fishing industry…. I wouldn't like my young fella to be in it." (Daniel). While one participant reported that they would like their fishing business to continue to be passed through the generations, they also said, "…we don't know whether we want them to, go through what we, what we go through." (Patricia).

6.1.3.8.2 Viability impact on personal and family life. Participants were also concerned about how the poor viability of their commercial fishing business had resulted in serious personal financial losses. For example, participants reported, "You know, we're gonna lose four generations of house…" (Julie), and "…that was our um, superannuation….

That was our retirement money…" (Patricia). For this participant, such financial losses had left them in a situation where they had no option but to remain in the industry, "…the only reason I'll stay in it now is because of all the money that I've put into it, is now worth a zap. It goes backwards every year." (Charles).

Participants' perceptions of susceptibility to business viability were further demonstrated by their concern about their vulnerability to financial losses as a result of a high personal financial investment in the industry. The following responses demonstrate the financial investments participants had made in the industry, "So from the initial lay outs that we've had I've spent well over $1 million" (Charles) and "…we've got a huge investment in licencing and quota." (William). Furthermore, participants reported concerns about the declining value of the financial investments they had made. Responses such as these demonstrate the concern about the diminishing value of investments made by fishers into the commercial fishing industry, "But this thing is our investment! Our investment, we just paid [price] for our licence. They bring these net closures in, what are our licences [going to] be worth?" (Julie), and:

> …we have invested a lot of time, effort and money in this industry, this business, this industry is [going to] go places, we're environmentally friendly, we do all the right things, it's good economics and we've invested more and more and more into this, and we've just watched that asset base diminish in value. (Susan)

6.1.4 Results summary

Participants' responses indicate the impacts of fisheries management and climate change are not discrete. Rather, the perceived impacts of fisheries management and climate change are perceived to be interconnected and impact upon one another (directly and indirectly) as highlighted throughout this chapter. For example, it appears that participants perceive a direct relationship between climate and natural resources, and an indirect relationship via weather. Additionally, when mapping the perceived relationships between factors, it appears that there may be a perceived underlying impact of both fisheries management and climate change though various other factors such as resource access, natural resources, weather, competition, and human capital.

Furthermore, participants found it difficult to identify the one particular aspect that they were finding most challenging at that point in time. As the following responses highlight, what was most challenging was that they were facing a range of compounding impacts particularly as a result of fisheries management, "Yeah, so it's not just one, one

issue, that we're having, it's a lot of issues that are really major…" (Patricia) and, "Yep, the multiplier effect and all that, it's just, and how long can you put up with it?" (William).

Participants also felt that the threats they were facing were not separate issues and that these threats were often related to each other. This belief is reflected in the web of relationships between the perceived threat, immediate impacts, and distal impacts, (detailed in figures throughout this chapter) and is highlighted in the following response:

> You know. It, it, so, that, that whole thing is all one in the same I mean everyone says that they're separate issues but they're not. It's because of the government and their push for that, it has made the recreational push even stronger to get their own way… You're bound to have one or two [years] that are not so good, but this added pressure of, we don't know if we'll be able to net next year! They're telling us that [area] is next on the list for closure. (Julie)

And:

> … at the moment, we've got a drought on, you know you have a drought on the land, you got a drought on the sea and fishing is not really good at all…. And, on top of what the government's doing bringing these, buying out these net you know, licences and closing areas down. Yeah, it just doesn't look good. (Peter)

6.2 Discussion

The aim of the current section is to interpret the findings presented earlier in this chapter in light of previous research. First, the findings regarding perceptions of fisheries management and the perceived consequences of fisheries management are interpreted. Following this, the findings regarding perceptions of climate change and the perceived consequences of climate change are interpreted.

6.2.1 Fisheries Management

Fisheries management was a threat identified by participants and was the greatest concern to participants. The finding that fisheries management was perceived to be a threat by commercial fishers is consistent with research conducted in the commercial fishing industry. As discussed in Chapter 1, regulatory authorities responsible for the effective management of commercial fishing in Queensland employ a suite of regulatory tools and strategies to meet ecological, social, and economic goals by constraining the way a fishery operates (AFMA, 2019; GBRMPA, 2018; Morison, 2004; Queensland Government, 2017). Consistent with the current findings, research demonstrates that commercial fishers are

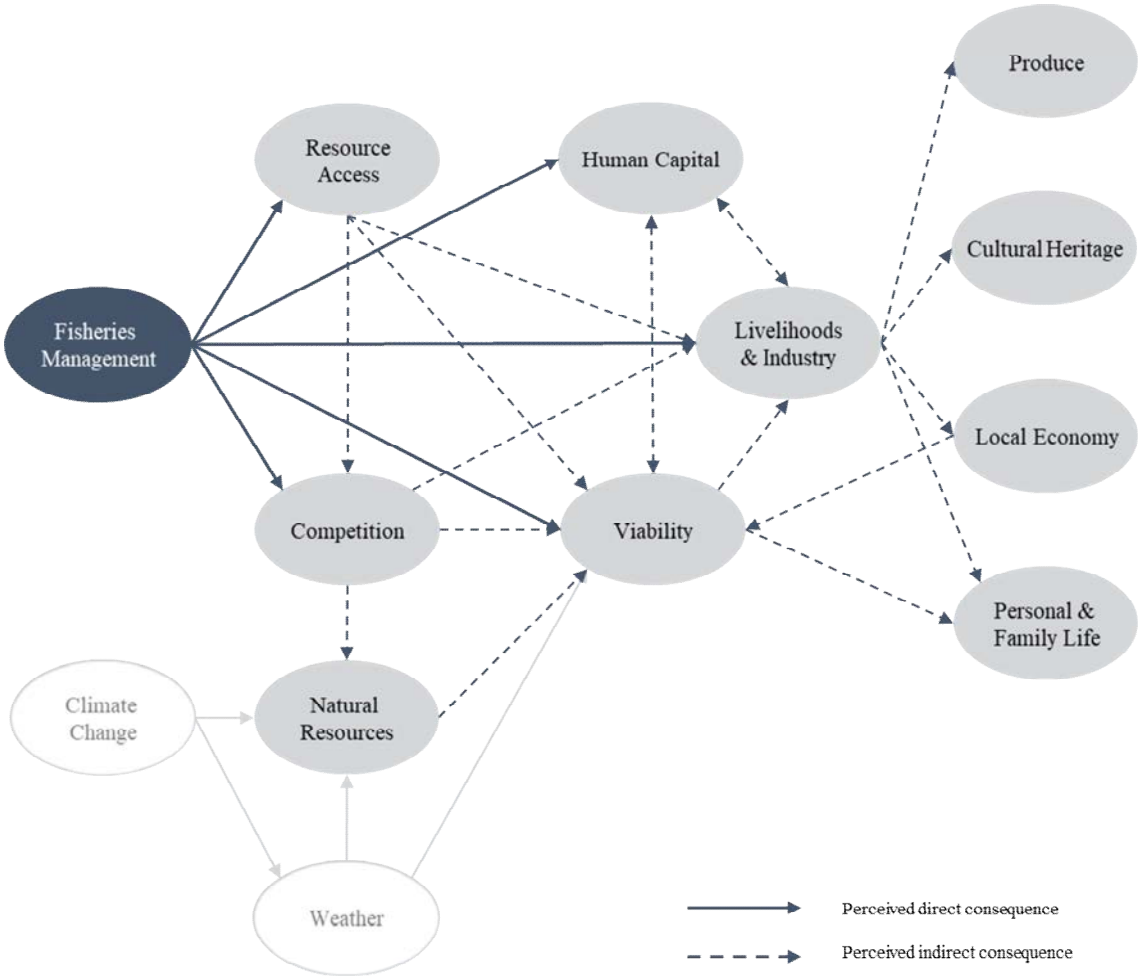
concerned about the impact of fisheries management on their ability to continue fishing (King et al., 2019; Shaw, Johnson, & Dressler, 2011; Voyer, 2014). Additionally, like the fishers in this study, other fishers perceive that fisheries management is restrictive and complex, with severe consequences (Lavoie & Himes-Cornell, 2019).

The Department of Agriculture and Fisheries (DAF, 2019a)[9] has acknowledged that impending changes to fisheries regulation will have varying impacts on individuals, communities, and regions, however, they suggest that such impacts will be difficult to measure. Through this research 10 factors that participants perceived were directly or indirectly (or both) impacted by fisheries management were identified. As will be demonstrated, few of these factors are unique to this research; many have been identified through previous research in the commercial fishing industry. These 10 factors, and their perceived relationship to fisheries management are summarised in the figure over the page.

[9] The Department of Agriculture and Fisheries is one of the regulatory authorities responsible for the effective management of commercial fishing in Queensland.

Figure 26

Summary of factors perceived to be impacted by fisheries management



Participants perceived that their **access to resources necessary for their livelihoods** was directly impacted by fisheries management. Consistent with the current findings, previous research demonstrates that commercial fishers perceive to be, and are directly, impacted by fisheries management through a loss of access to resources necessary to their livelihood (for example, fishing grounds or catch allocations) (McNeill et al., 2018; Morgan, 2016; Stevenson et al., 2013; van de Geer et al., 2013; Voyer et al., 2014).

The perceived impact of fisheries management on resource access may also explain the indirect links made between fisheries management with business viability, the sustainability of commercial fisher livelihoods and competition. For example, researchers have demonstrated that decreased access to resources (such as fishing grounds) as a result of fisheries management has negative impacts on the *viability of fishing businesses* through losses in income (S. Smith et al., 2003; van de Geer et al., 2013; Voyer, 2014) and decreased catches (Richmond, Kotowicz, & Hospital, 2015). Similarly, if fishers were to lose access to

resources they depend on for their livelihood, it is reasonable to expect that this loss will ultimately lead to a *loss of fisher livelihoods.* In support of this, Lavoie and Himes-Cornell (2019) report that resource access restrictions put in place by fisheries managers were perceived to exclude many commercial fishers from the industry. Furthermore, it has been repeatedly demonstrated that commercial fishers are concerned that decreases in resource access led to increased *competition* between resource users. For example, Voyer (2014) reported that from the perspective of commercial fishers, fisheries management decisions to reduce access to fishing grounds led to overcrowding, and conflict and competition between resource users (both recreational and commercial fishers).

The current findings demonstrated that participants perceived that fisheries management had both direct and indirect impacts on the **viability of their commercial fishing business**. Consistent with previous research, commercial fishers identified direct impacts of fisheries management on the viability of their commercial fishing research such as: instability or decreased income (McNeill et al., 2018; S. Smith et al., 2003; van de Geer et al., 2013; Voyer, 2014; Voyer et al., 2014); business costs associated with complying with industry regulations such as time, money and effort (McNeill et al., 2018; Voyer et al., 2014); and increased operational costs and travel as a result of regulatory change (van de Geer et al., 2013). Similarly, the DAF (2019a) has acknowledged that regulatory changes have impacted commercial fishers through increased costs and that these changes have resulted in an increasing cumulative financial impact on commercial fishing businesses.

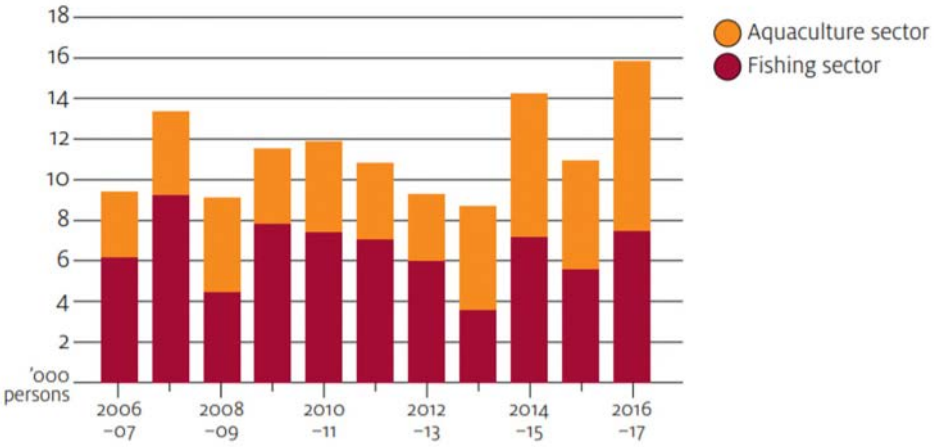
The perceived impact of fisheries management on business viability may also explain the indirect links made between fisheries management with the sustainability of commercial fisher livelihoods, human capital, and personal and family life. Similar to the findings of this study, Lavoie and Himes-Cornell (2019) demonstrate that commercial fishers are concerned that the impact of fisheries management decisions on business viability has the potential to exclude some fishers from the industry entirely because of the financial costs associated with these decisions. Additionally, it is logical that any impacts on the viability of fishers' businesses have the potential to lead to *livelihood loss* and further, it has been demonstrated that fisheries management decisions have contributed to commercial fishers' job loss. It is also reasonable to expect that if commercial fishers are experiencing poor business viability, they may not be able to afford to employ or retain skilled crew and therefore, the viability of their business limits their ability to access *human capital*. Furthermore, fisheries management has been demonstrated to impact on the *personal lives and families* of commercial fishers as a

result of poor business viability manifested as financial strain, decreased income, and instability in work (King et al., 2019; Marshall et al., 2007; Voyer, 2014).

The current findings demonstrated that participants were also concerned about the indirect and direct impacts of fisheries management on the **sustainability of commercial fisher livelihoods**. As found in other studies (for example, Deason, Seekamp, & Barbieri, 2014), commercial fishers in this study expressed concern that fisheries management directly led to a decreasing number of active commercial fishers in the industry. Furthermore, participants' concerns are supported by studies demonstrating livelihood loss and unemployment resulting from fisheries management (for example, Campbell, 2015; Voyer, 2014) despite, as highlighted in Figure 27, employment statistics in the Australian fishing industry do not support an overall trend of decreasing numbers of commercial fishers (Mobsby, 2018). Fisheries managers in Queensland have however proposed and implemented recent changes which have potential to reduce the total number of operators in Queensland (DAF, 2019a; Queensland Government, 2016).

Figure 27

Employment in the Australian commercial fishing and aquaculture industry, 2006-07 to 2016-17 (Mobsby, 2018).



The perceived impact of fisheries management on the sustainability of participants livelihoods may also explain the indirect links made between fisheries management with human capital, consumers' access to produce and the quality of that produce, cultural heritage, local economy, personal and family life. The loss of commercial fishers can be argued to directly translate to a loss of *human capital*, as such fishers are the primary source of industry skills and knowledge. In support of this proposition, Himes-Cornell and Hoelting (2015) suggest that fishers leaving the industry may signal a loss of human capital as that

fishers' departure means there is a loss of knowledge within the fishing community. Research demonstrates that fishers are concerned about the impact of the sustainability of their livelihood and the industry on their *personal and family life* (Kelty & Kelty, 2011; Voyer, 2014). Furthermore, researchers have found that fishers have indeed suffered consequences such as family breakdowns (Voyer, 2014; Voyer et al., 2014) and an inability to make long-term plans in the context of their work and personal life (King et al., 2019). Research has also demonstrated fishers are concerned that if there are fewer fishers in the industry, local communities may lose access to high quality *produce* (Voyer, 2014). Research supports that commercial fishing contributes to food security (Béné et al., 2016) and as was found in this study, it is common for fishers to perceive that they play an important role in their community through the provision of seafood (Momtaz & Gladstone, 2008). Therefore, it is reasonable to expect that the loss of commercial fisher livelihoods may compromise consumers' access to seafood.

The current findings also demonstrated that participants perceived that fisheries management indirectly impacted the *cultural heritage* of the industry via compromised sustainability of livelihoods and the industry. In support of this finding, Garavito-Bermúdez and Lundholm (2017) have reported that fishers are concerned about future losses of cultural heritage and Deason et al. (2014) reported that fisheries management was a perceived cause of such losses. While there is limited supporting evidence, it is reasonable to expect that the compromised sustainability explains the perceived link between fisheries management and cultural heritage. That is, given that commercial fishers perceived fisheries management to cause the loss of livelihoods, it is conceivable that it is the loss of livelihoods that leads to a loss of cultural heritage.

Furthermore, research supports commercial fishers' concern that the loss of commercial fishers' livelihoods or the industry is likely to have impacts for the *economy of their local community*. Fishing businesses make important and valuable economic contributions to support service industries and fishing communities (DAF, 2019a; Kent & Himes-Cornell, 2016; Voyer et al., 2017). Therefore, communities are susceptible to economic disruption when fishers alter how they operate or cease operating completely (Kent & Himes-Cornell, 2016). Fishers were also concerned that their business may suffer when the local economy is compromised as they are reliant on local businesses. For example, the impact of a poor local economy may manifest as the loss of local businesses which provide services to commercial fishers (for example, selling ice and fuel or providing repair services)

or those which they sell produce to (for example, local shops and restaurants), both of which are required to maintain their business and income.

While the findings of this study highlight a perceived direct relationship between fisheries management and increased **competition with resource users and seafood producers**, for the most part, the findings suggest that competition is perceived to be indirectly impacted by fisheries management via decreased resource access (see page 115 for further discussion). However, competition is generally recognised as a common challenge for commercial fishers given the need to share access to a limited resource (Stepanova, 2015; Stepanova & Bruckmeier, 2013) which results in resource user conflict (Abbott, 2014; Brown, 2016; Crowe, Longson, & Joll, 2013). While competition was recognised by commercial fishers as a challenge (and in particular, a challenge that arose due to fisheries management), few identified downstream consequences of competition. Despite this, fishers did make links between competition and their business viability, the sustainability of livelihoods and the industry and the health of natural resources. Reasonably, fishers saw that competition threatened the *viability of their business* and suggested this may manifest as decreased catches or difficulty selling produce. Grafton (2005) argues that commercial fishing is competitive because fish caught by one commercial fisher prevents other commercial fishers from catching it and in turn compromises their ability to earn money.

As suggested earlier, it is logical that anything that threatens commercial fishers' business viability has the potential to compromise the *sustainability of the industry*. Therefore, the continued impact of competition may be perceived to lead to the ultimate decline of the industry. The current research also found that participants perceived fisheries management indirectly impacted the *health of natural resources* via increases in competition (specifically, resource users). Similarly, Voyer (2014) reported that commercial fishers perceived that competition resulted in natural resources such as fishing grounds being overworked, and fish stocks depleted as a result of increased competition.

This research also found that participants perceived fisheries management resulted in compromised **human capital** which manifested as concerns about their ability to employ and retain skilled crew members. There is limited or no evidence to demonstrate that this is a commonly perceived consequence of fisheries management. However, the impact of fisheries management on human capital may be best understood through an indirect relationship where fisheries management impacts on commercial fishers' business viability and the sustainability of livelihoods and the industry (see page 115 and 116 for further discussion). Additionally, these findings highlight recursive relationships between human capital, and business viability

and sustainability of commercial fisher livelihoods and industry. It appears fishers perceived that not only did business viability and the sustainability of livelihoods impact on human capital, but human capital also impacted on business viability and the sustainability of commercial fisher livelihoods and industry. It may be that compromised human capital compounds the relationship between fisheries management and business viability. For example, if fisheries management has led to decreased human capital, fishers may then be unable to find and employ skilled crew. Consequently, their *business viability* may suffer as they do not have the human resources required to run their business effectively. Additionally, fishers saw that declining human capital manifested as an aging industry and a lack of new entrants, which compromised the *sustainability of the industry*, and could contribute to the downfall of the industry.

6.2.2 Climate change

As discussed in Chapter 1, climate change was identified as a potential threat to the commercial fishing industry. The current research found that generally, at best, participants, held mixed or ambivalent views of climate change or, generally, were not concerned about the threat of climate change. Very few participants accepted that climate change was occurring or were moderately concerned about the threat of climate change and no participants perceived climate change to be a great threat to themselves or the industry. This is in conflict with the scientific consensus that climate change is occurring, and subsequently, those who are dependent on the natural environment, such as commercial fishers, are likely to face a new set of pressures due to environmental change as climate change progresses (Agrawal & Perrin, 2009; Grafton, 2010). However, the lack of concern about climate change identified in this study is consistent with research that has explored commercial fishers' beliefs about climate change. For example, Nursey-Bray et al. (2012) similarly reported an absence of strong perceptions of climate change threat in a sample of Tasmanian (Australian) rock-lobster fishers.

The current findings highlighted three main beliefs that underpinned commercial fishers' perceptions of the threat of climate change. These included (1) beliefs about the causes of climate change, (2) the evidence of climate change based on personal experience and reporting, and (3) the distal nature of climate change. Similar to Nursey-Bray et al. (2012) and McGreavy et al. (2018), the current study found that commercial fishers tended to describe climate change as a natural cycle, rather than having anthropogenic causes.

Furthermore, as is common to find in the general population, commercial fishers in this study often based their judgements of climate change on their personal experiences (for

example, Marx et al., 2007; T. A. Myers, Maiback, Roser-Renouf, Akerlof, & Leiserowitz, 2013; Spence, Poortinga, Butler, & Pidgeon, 2011; E. U. Weber & Stern, 2011). These experiences can lead to either a belief in or denial of climate change and in the current study, commercial fishers who did not perceive climate change to be a threat tended to report a perceived lack of evidence for climate change based on their personal experiences. Additionally, commercial fishers who did not perceive climate change to be a threat often reported a lack of trust in the accuracy of climate change predictions. Similarly, studies of the general public have found that individuals perceive climate change information to be biased, exaggerated, unreliable or conflicting and in turn, presents a barrier to the development of the belief that climate change poses a threat (Lorenzoni, Nicholson-Cole, & Whitmarsh, 2007; Lorenzoni & Pidgeon, 2006).

Finally, consistent with other research with commercial fishers (Nursey-Bray et al., 2012) and the general public (Lorenzoni et al., 2007), this study found that the time course of climate change contributed to commercial fishers' lack of concern about climate change. Researchers argue that given that ecological threats such as climate change develop slowly over time, they are vulnerable to temporal biases and that these temporal biases act as a barrier to threat perception (Gifford et al., 2009; E. U. Weber, 2006). Similarly, Nursey-Bray et al. (2012) reported that commercial fishers in Tasmania (Australia) resisted adaptation to climate change because these fishers were unsure about the timeframes in which they needed to take action.

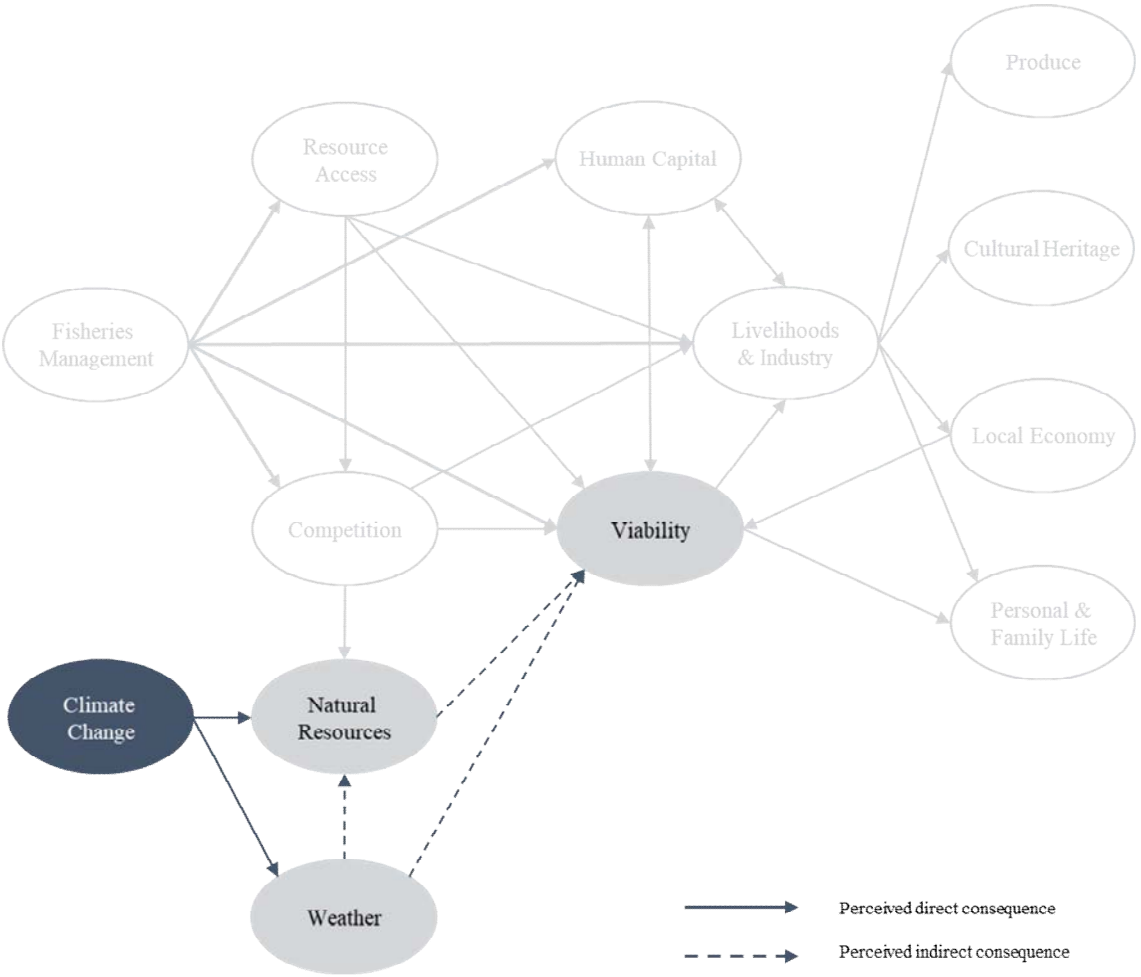
While participants were generally not concerned about the threat of climate change, from interviews with commercial fishers, three factors that commercial fishers perceived were directly or indirectly (or both) impacted by climate change were identified (see Figure 28 over the page). First, the actual link between climate change and changes in **weather** has been clearly demonstrated. For example, climate change is linked to rising atmospheric and marine temperatures, extreme heat and heatwaves, bushfires, drought, extreme rainfall, and other changes in weather (IPCC, 2013; Steffen, Hughes, Alexander, & Rice, 2017). Consistent with the scientific consensus on climate change, commercial fishers perceived that there was a direct relationship between climate change and weather, even when they did not perceive climate change to be a threat.

The current findings demonstrate that participants perceived climate change had a direct impact on the **health of natural resources** and an indirect impact via changes in weather. It is well documented that climate change will have impacts for the natural resources which commercial fishers and other resource dependent industries rely on. In particular, it is

predicted that climate change will drive marine biological responses such as changes to the distribution of fish species, changes in the abundance of natural resources, changes to the functioning of ecosystems, physiological changes in organisms, changes in mortality, growth and reproduction, and changes in biodiversity (Last et al., 2011; Nye et al., 2009; Perry et al., 2005; Poloczanska et al., 2013; Pörtner & Peck, 2010; Robinson et al., 2015; Sumaila et al., 2011). Furthermore, research demonstrates that long-term changes in weather and extreme weather events are likely to have significant negative impacts on natural resources such as fish habitats and fish stocks (Hobday et al., 2018). Similar to research conducted by McGreavy et al. (2018) it was found that commercial fishers did make a connection between climate change and the health of natural resources. However, fishers in this study often did not perceive there to be evidence that there had been a change in the health of natural resources such as fish stocks or marine habitats.

Figure 28

Summary of factors perceived to be impacted by climate change



Finally, the current findings demonstrated a perceived indirect link between climate change and the **viability of commercial fishing businesses** via impacts on natural resources and weather. Participants reported a great awareness that they business was reliant on the health of natural resources and weather conditions that were suitable for fishing. McGreavy et al. (2018) similarly demonstrated commercial fishers had an awareness of the relationships between natural resources, weather, and business viability, but in contrast, found that commercial fishers were concerned about the financial impacts resulting from impacts on natural resources and weather in the context of climate change.

Despite participants not drawing a direct relationship between climate change and fisheries management it is likely that in reality such a relationship exists. In response to environmental threats such as climate change, fisheries managers have implemented strategies to protect natural resources (such as the Great Barrier Reef) for example, through restricting access and activities in marine environments (State of Queensland, 2016). For instance, in Queensland, a priority of the Reef 2050 Long-Term Sustainability Plan (that is, Australia's strategy for protecting and managing the Great Barrier Reef; Commonwealth of Australia, 2021) is to reduce impacts from water-based activities. One of the ways in which they seek to achieve this is through the implementation of the Queensland Sustainable Fisheries Strategy 2017-2027 (State of Queensland, 2017) which includes the management of commercial fishing. Therefore, it may be that climate change has in part triggered a fisheries management response which at least partially leads to the consequences outlined by commercial fishers in this study. It is then possible that the consequences commercial fishers associate with fisheries management partly represent tangible consequences of climate change on commercial fishers. However, participants did not report perceiving fisheries managers actions to be a consequence of climate change, and this gap in perception may partly explain participants' perceptions of fisheries managers and their actions. For instance, because participants do not perceive the actions of fisheries managers to be a consequence of climate change, they may see fisheries managers and their actions as being unfair or without reason (see page 11.3.2 Out-group relationships227 for further discussion of commercial fishers' perceptions of fisheries managers).

6.3 Conclusion

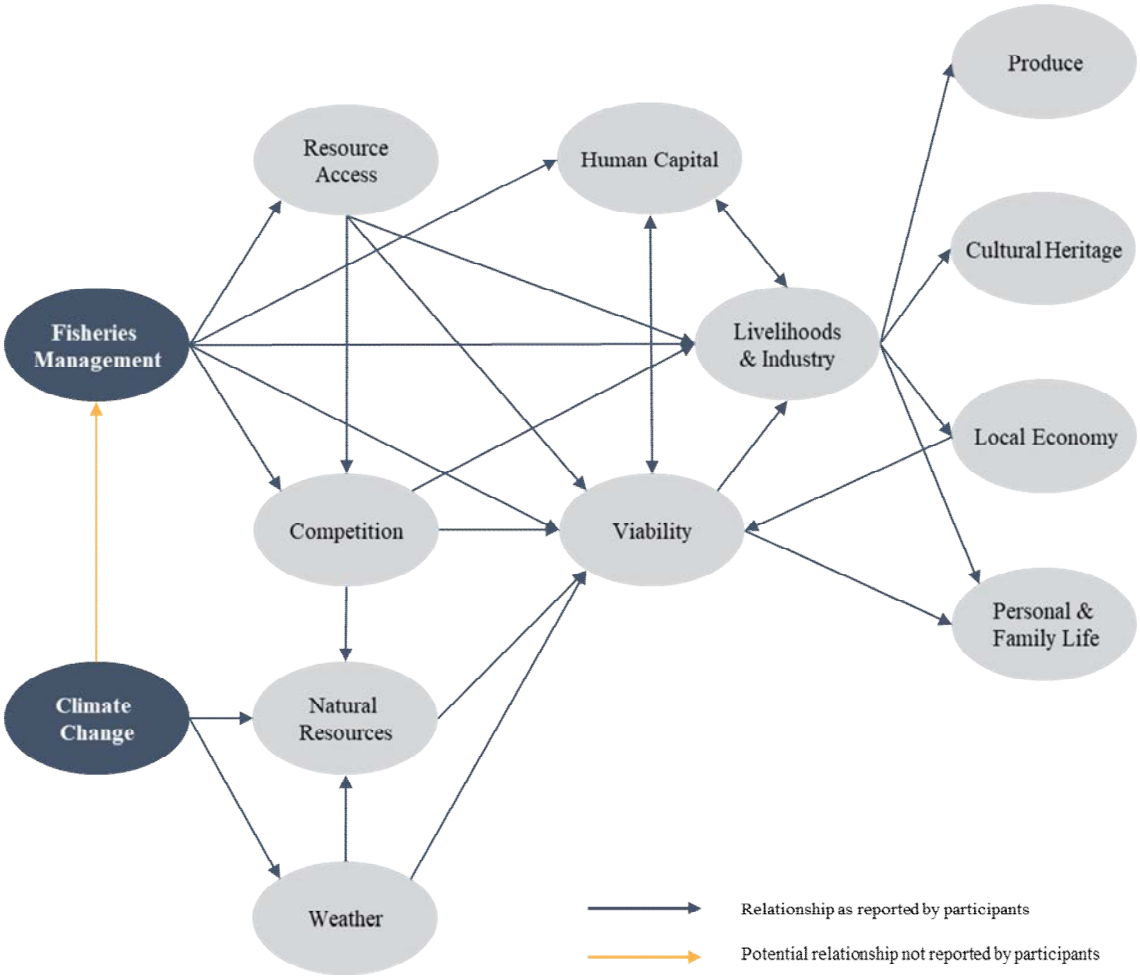
The aim of the current chapter was to understand commercial fishers' perceptions of threat to their livelihoods and the commercial fishing industry. It was found that commercial fishers in this study perceived fisheries management posed a threat to their livelihoods and the commercial fishing industry. In contrast, participants tended not to perceive climate

change as a threat to their livelihood and to the commercial fishing industry. As previously demonstrated, few of the perceived consequences of fisheries management and climate change identified in the current study are unique to this research and had been identified in previous studies of the commercial fishing industry. However, what is unique to this research is the identification and mapping of perceived relationships between these factors. This study is the first in the commercial fishing literature to explore and map the relationships between the factors as commercial fishers perceived them to be impacted by fisheries management and climate change.

The thematic map below (Figure 29) highlights how participants perceive the consequences of fisheries management and climate change are related to one another. While participants discussed fisheries management and climate change as distinct threats, this conceptual map highlights the intersections between the perceived threats of fisheries management and climate change. That is, according to commercials fishers' accounts, the viability of their businesses was a critical point of connection between the perceived consequences of fisheries management and the perceived consequences of climate change. However, as discussed above, there may be a key relationship between climate change and fisheries management absent from commercial fishers' perspectives of threats to their livelihood (highlighted in Figure 29 in orange). While few participants reported perceiving climate change to be a threat, given the evidence that there is a relationship between the strategies fisheries managers implement and climate change, it is concluded that the consequences reported here in the context of fisheries management, may partially represent the tangible impacts that climate change is having on commercial fishing.

Figure 29

Thematic map of threats and perceived consequences



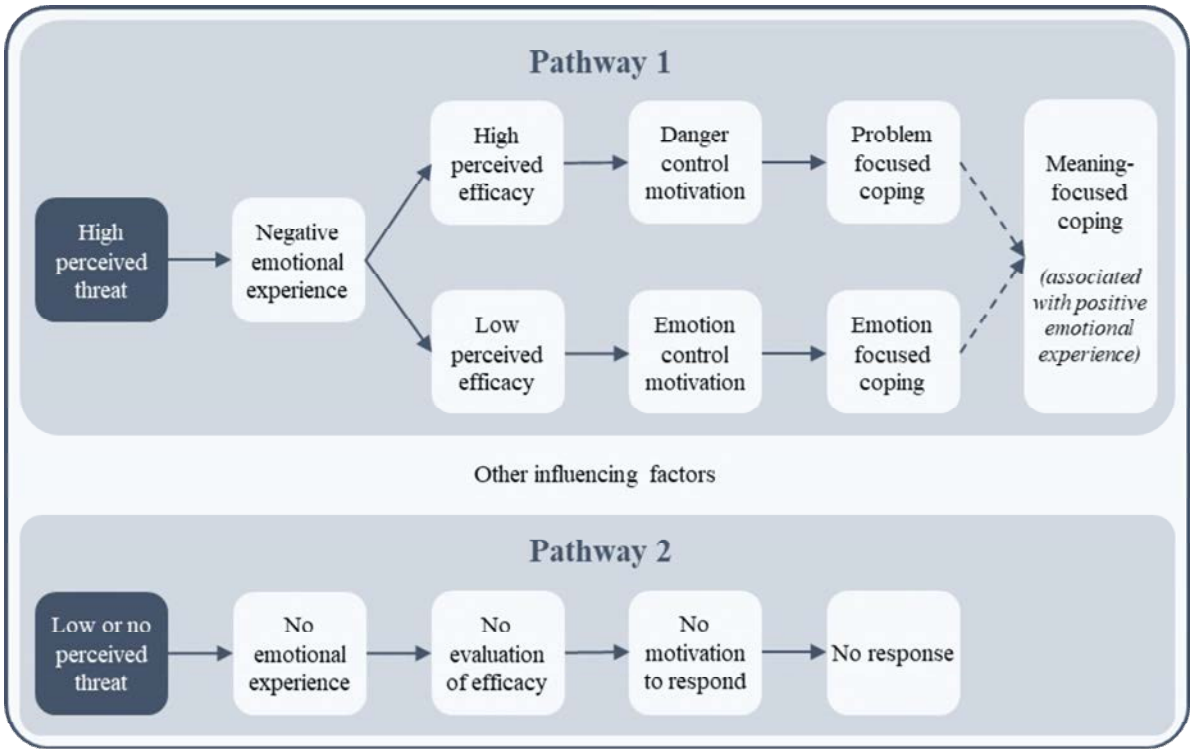
6.3.1 Alignment between findings and guiding theoretical framework

As highlighted in Figure 30, according to cognitive-emotional decision-making models, the belief, or the perception that a threat exists is the first critical influence on cognitions, emotions and behaviour (Lazarus & Folkman, 1987; Witte, 1992). It was found that individuals perceived that fisheries management, and its associated impacts were severe or serious (perceived severity), and that they were susceptible to the impacts of fisheries management (perceived susceptibility). In contrast, it was found that commercial fishers generally did not perceive the threat posed by climate change to be severe, and they did not perceive themselves to be susceptible to the impacts of climate change. These findings are consistent with the theoretical models that propose threat perception is determined by evaluations of severity and susceptibility (Rogers, 1975; Witte, 1992). However, it was often difficult, or impossible to untangle perceptions of severity and susceptibility in participants' responses in a meaningful way. As such, it is suggested here that while the concepts of

perceived severity and perceived susceptibility are theoretically distinct, in practice, they may be intertwined in the lived experience of individuals.

Figure 30

The role of threat perception in decision making and responding



Furthermore, the results demonstrated that the perceived proximity of a threat or impact played a role in participants understanding of threat. That is, commercial fishers demonstrated greatest concern for those factors that posed the most immediate consequences such as resource access, human capital, business viability and competition when compared to other serious consequences such as the loss of a livelihood or the impacts of climate change. There are several potential explanations for this. It may be that individuals are directing their attention to the most proximal threat rather than distal threats. Alternatively, individuals may feel that they are better equipped to respond to proximal threats, given the concrete nature of proximal threats, and the complex and abstract nature of distal threats such as climate change and a loss of livelihood. The role of threat proximity is not captured in cognitive-emotional decision-making models however, it could be expected that all other things being equal (perceptions of threat severity and susceptibility), the factor that is most concerning will be the one that is the most proximal in nature (see page 243 for further discussion of the implications of this finding).

Given the critical role of threat perception, and participants' threat perceptions of fisheries management and climate change, these findings can be used to predict participants' subsequent emotional experiences. For fisheries management, it was found that perceptions of threat tended to represent a high perception of threat and therefore, it appears that *Pathway 1* has been triggered. There are two critical points where emotions are proposed to be experienced when threat perception is high. First, it is expected that individuals will experience negative emotions as a result of perceiving there to be a threat. Second, it is possible that individuals may experience positive emotions if engaging in meaning-focused coping. Therefore, it is expected that commercial fishers will report emotional experiences associated with fisheries management, and these emotional experiences may be positive or negative.

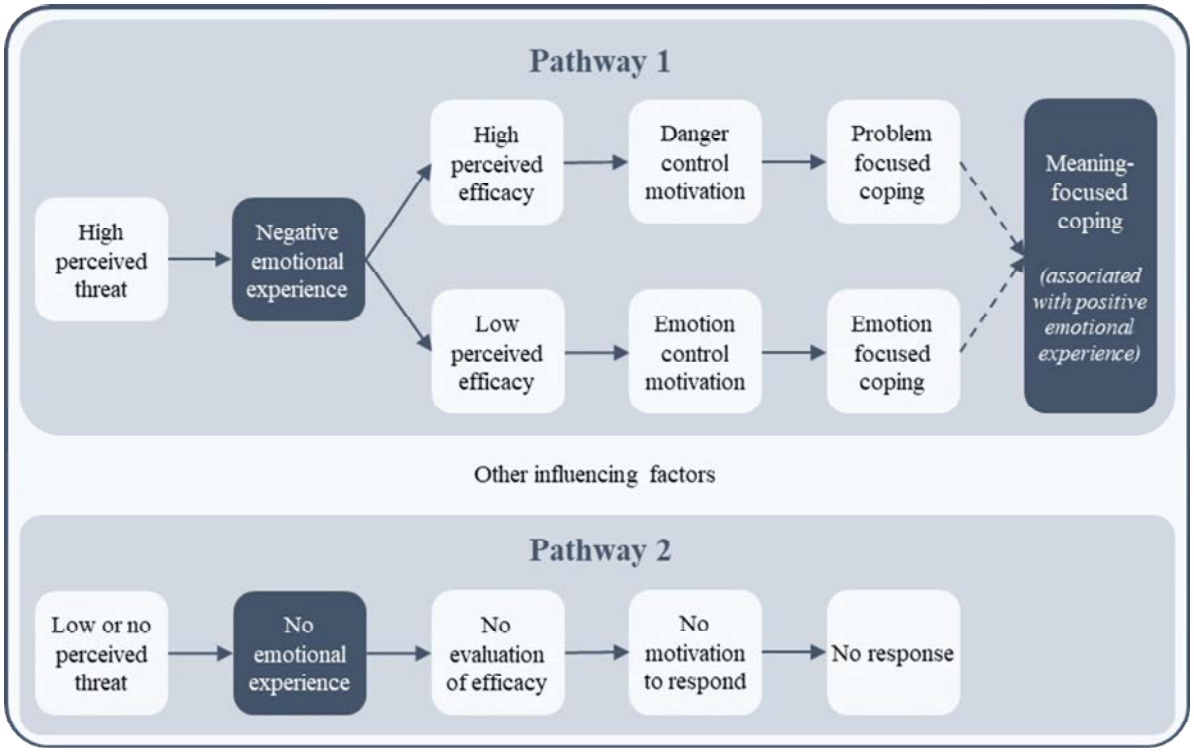
In contrast, participants tended to register a low level of, or no perceived threat in the context of climate change and therefore it appears that *Pathway 2* has been triggered. The beliefs that commercial fishers reported about climate change appear to be barriers to threat perception and subsequent responding, or potentially drivers of denial. The findings suggest that commercial fishers would be unlikely to perceive climate change to be a threat if they believed that (a) climate change was a natural or cyclical process, and not due to anthropogenic causes; (b) evidence from their personal experiences of weather and the health of natural resources suggested that climate change was not occurring; (c) evidence of climate change presented by others such as the media or scientists was inaccurate or exaggerated; or (d) climate change was a distant threat. Given that these were commonly held beliefs by commercial fishers in this study, it is expected that there will be no or little emotional experience in response to climate change.

7 Results and Discussion: Emotional Experiences

The purpose of this chapter is to examine commercial fishers' emotional experiences in order to answer the research question, *what are the emotional experiences of commercial fishers in response to threats to their livelihood or the commercial fishing industry* (research question 2)*?* As suggested in the previous chapter, given commercial fishers' evaluations of threat, it could be expected that they do report emotional experiences in response to fisheries management, but not in response to climate change. Furthermore, the emotional experiences in response to fisheries management could be expected to be either, or both, negative and positive emotional responses. The current chapter presents the findings, interpretation of findings and concludes by examining the alignment between these findings and psychological theory.

Figure 31

Guiding theoretical framework and constructs of interest for RQ2



7.1 Results

As predicted, participants' responses highlight beliefs that fisheries management and its perceived consequences had impacts on their and others' emotional experiences. In contrast, few participants spoke about their emotional experiences of climate change. Participants' emotional experiences were dominated by negative emotional experiences such as despair, depression, frustration, and anxiety. Furthermore, participants' concerns about, and

experiences of poor mental health further demonstrate the negative emotional experiences of participants. Only a few participants reported positive emotional experiences including feelings of hope about fisheries management.

7.1.1 Feelings of despair

For the most part, the emotional experiences reported reflected feelings of despair or a loss of hope. For example, "…there's no hope left in our industry… And I don't know one fisherman who has hope left." (Julie) and "We've got no hope." (Michelle). Participants expressed that they could not see positives in the commercial fishing industry, "I wish I could tell you something really good about this industry." (William), and "You know I was always, always seen the light at the end of the tunnel but in the last five years… don't see any light at the end of the tunnel." (Peter), "… I just don't see how there's a future in it." (Daniel), and "I honestly can't see that we're gonna be in business in two years' time." (Julie).

Furthermore, participants shared their fatalistic thoughts of the industry, further demonstrating their feelings of despair and a complete loss of hope. For example, participants reported, "I'm not convinced that anything is gonna change. For the better." (Edward), "No I think that we haven't got that long and it's a waste of time…" (Scott) and "We've seen the writing on the walls." (Peter). Furthermore, participants from a focus group agreed, "I can't say to him it's gonna be okay." (Julie), "Because it's not gonna be okay." (Michelle).

Feelings of despair were so intense that participants described it as feeling depressed or misery. For example, when discussing the threats facing them one participant reported, "…it's really depressing." (Julie) and "all it's doing, is just making my life a misery, as well as everybody else…" (John). Such feelings of depression were also demonstrated in the following participant's experience:

> …sometimes we wake up and we go oh stuff it, I'm over this shit. You know, I just want a normal life where we don't have to have this thinking all the time and you're going around in your brain and depression… (Patricia)

Participants also discussed their observations of feelings of despair in other commercial fishers and did so with more ease than when discussing their own emotional state. For example, it was reported, "…I think the problem… is that a lot of these fishermen aren't finding things to smile at anymore." (Julie) and "Yeah, trying to network with the local guys and that's the worst part. It's got to a point that the level of morale, particularly after the recent round of net closures." (William).

The severity of the feelings of despair participants discussed was further demonstrated through their concerns about the issue of suicide. Participants reported that other fishers had previously suicided, "You know I can see other fishermen and what they're going through and, and um, yeah, the um, there's a few that have taken their lives over the years." (Peter) and "As for the men …. They've watched their friends drop themselves…" (Julie). Furthermore, participants were concerned that other fishers would continue to take their lives, "…I'm concerned, I think we're going to be going to a lot of funerals over the next few years." (Julie). This final quotation further highlights participants' concerns about suicide in the commercial fishing industry:

> And, and guys are hurting and worried. You know. They're dropping, dropping through the floorboards. I, I think what's rattled this town is in the last three or four years we've had two suicides. We had um [Name Removed], you know he wasn't, stuck for money…. He wasn't a rich man, but he could pay his way and he was a really good fisherman, he just, and I'm not saying the red tape or anything, it was just to do what he does became too difficult…. And it became too much for him. And to be quite honest. It might seem a bit raw talking about [Name Removed] now. I think that played a role there too you know. I find that really, really sad. (William)

Importantly, participants were not probed to discuss suicide or their concerns about mental health during the course of the interviews. Discussions of mental health and suicide arose naturally in conversations directed by the participants. The unprompted discussion of a topic that is often difficult for people to discuss further highlights the severity of the emotional impacts of fisheries management and associated consequences as perceived by participants.

7.1.2 Feelings of frustration

Participants explicitly spoke about their feelings of frustration during particular experiences. For example, this participant reported an experience in which he was frustrated by other commercial fishers:

> But even before that, there'd be times where my boat'd be tied up and there'd be like a good pay and I wouldn't be going to work because I was at a meeting in [city], representing these blokes. And that [inaudible] yet they wouldn't get off their arse and turn up to a meeting and that's the most frustrating part. I find it very rewarding when you can kick a goal but, we haven't kicked a goal for a while. (William)

Similarly, participants reported feeling frustrated when they felt they weren't being listened to. For example, the following participant reported:

> They did consult with commercial fishermen, but, but they didn't listen to us. They didn't, they didn't engage, they just, they invited us to the table and when we tried to, partake and provide input, they just nod their head and then they go ahead and do what they want anyway. And that's, that's, it's really frustrating to, to get asked to participate with a voluntary code of best practice, on, on something that we've gotta do the work, we're the ones that do the voluntary work. (Charles)

Participants also reported experiences which demonstrated they felt frustration without explicitly acknowledging their feelings of frustration. Instead, participants recounted experiences in which they felt frustrated and during such recounts, participants often displayed other verbal (for example, through tone of voice and language use) non-verbal (for example, changes in facial expressions and hand gestures) cues of frustration. For example, this participant's response and their use of negative language demonstrates their frustration in this situation:

> It feels like, they're listening to these dickheads and not to even their own scientific evidence isn't being looked [at]. Their own people. Their own department of fisheries information is not being utilised, over these morons who making these stupid comments for their own use. (Patricia)

Furthermore, when discussing issues that they found frustrating participants demonstrated they also felt frustration in that moment. Participants often used short language and expletives to express the intense frustration they were experiencing. For example, "Isn't that a bit ridiculous? There's just so much bullshit." (Victor), "Fuck" it!" (Victor) and "It just shits me hey? It fucking shits me." (William).

7.1.3 Feelings of anxiety

Participant responses also demonstrated that they experienced anxiety about fisheries management and for some participants, about climate change. During interviews, participants were asked to discuss what they believed to be the most significant challenges or threats facing them, and therefore by discussing their concerns about fisheries management and the perceived consequences of fisheries management, were also demonstrating that they felt anxious or worried about these threats. Participants also explicitly expressed their feelings of

worry during interviews. For example, participants said, “But it’s a frightening thing to know that the foe we’re up against…” (Charles);

> In the last few years, once, earlier and you know, and I say 15, five to 15 years and beyond that ago, we used to worry ourselves sick. About what happening, what, what was gonna happen? Where were we gonna, how were we gonna get through you know and whatever? (Patricia)

And:

> You’re bound to have one or two that are not so good, but this added pressure of, we don’t know if we’ll be able to net next year! They’re telling us that [area] is next on the list for closure. (Julie)

Very few statements demonstrated any emotional response regarding climate change (researcher-identified threat). Participant responses which did demonstrate an emotional response reflected a negative emotional response and in particular demonstrated feelings of worry or fear about climate change. Such concerns about climate change, however, were followed by qualifying statements. For example, one participant acknowledged that climate change is concerning if it is real:

> I think, I don’t know, I don’t understand really the dynamics. I’ve been told that all our carbon or whatever is heating the place up and this and that. If that is the truth and that is what’s happening and well, yeah it is a little bit scary, but I don’t know. (Anthony)

Similarly, this participant acknowledged that climate change is scary, however the world more generally is a scary place too, “But yeah when you listen to people, different people, or you know, intelligent people talk about different issues, it is a scary thing but in a general picture all around the world’s a scary thing isn’t it.” (Scott).

7.1.4 Feelings of hope

Very few positive emotional experiences were described by participants however participants reported some feelings of hope in response to fisheries management. There were no reports of positive emotions in response to climate change. One participant reported that they were “just hopeful” (William) about regulatory changes that would allow them to expand their business to pass on to the next generation. Another participant’s response demonstrated that they were hopeful that the image of the fishing industry could change, “Look I know the fishing industry world-wide has had that, that, that issues with the people

that have been involved in it, but it's not something that can't change. You know I do believe that it can change." (Michael).

7.2 Discussion

The findings demonstrate that as expected, commercial fishers reported emotional experiences in response to fisheries management, but not in response to climate change. Consistent with this expectation, the results demonstrate that in response to fisheries management, participants experienced both negative and positive emotions, however negative emotions dominated. Commercial fishers' negative emotional experiences reflected a range of emotions such as despair, frustration, and anxiety. Previous research has repeatedly demonstrated that commercial fishers experience a wide range of negative emotions in response to fisheries management including depression, anger, outrage, and anxiety (King et al., 2019; Marshall et al., 2007; McNeill et al., 2018; Momtaz & Gladstone, 2008; Richmond et al., 2015; Schirmer & Pickworth, 2005a, 2005b; S. Smith et al., 2003; Voyer et al., 2014). Furthermore, in research conducted by King et al. (2019), it was reported that commercial fishers attributed their primary source of stress to how the commercial fishing industry was managed, as was found in the current study.

The finding that commercial fishers' emotional experiences were dominated by negative emotions (in the context of fisheries management), and particularly with feelings of despair suggests significant negative impacts on commercial fishers' wellbeing. This is arguably, the most concerning negative impact of fisheries management on commercial fishers (see the practical implications of the research for discussion of proposed actions required to address this issue, starting page 243). Commercial fishers' livelihoods have been found to contribute positively to their well-being (Coulthard & Britton, 2015). However, repeatedly, researchers have demonstrated that the mental health of the commercial fishing community is of great concern (King et al., 2019; McNeill et al., 2018; Momtaz & Gladstone, 2008; S. Smith et al., 2003; Voyer et al., 2014). Consistent with the current findings, previous research linked the poor mental health of commercial fishers with the management of the commercial fishing industry (King et al., 2019; McNeill et al., 2018; Schirmer & Pickworth, 2005a, 2005b). King et al. (2019) found that commercial fishers reported fisheries management to be the greatest cause of or contributor to feelings of stress. While fishers in this study did not draw explicit and direct links between their mental health and fisheries management, the results point to the argument that fisheries management is the ultimate source of this stress. Additionally, McNeill et al. (2018) reported that mental health impacts persisted even when those suffering acknowledged that regulatory changes had little or no

impact on them or their business. That is, compared to experiencing the impacts of a threat, perceiving there to be a threat can be as impactful, if not more, on an individual's emotional experience (Witte, 1992). While it was not the intention of this or other research, commercial fishers raised the issue of suicide (King et al., 2019; Voyer, 2014). Such unprompted discussions of suicide highlight the perceived severity of the mental health impacts of fisheries management and the subsequent consequences of fisheries management for commercial fishers. Furthermore, Woodhead et al. (2018) argue that there is a serious lack of attention paid to mental health issues in commercial fishing and that mental health concerns are likely to be more widespread than the literature suggests (see 243 onwards, for a discussion of how the great need for mental health interventions may be met).

In contrast, the results also demonstrated that commercial fishers experienced positive emotions such as hope. While studies with commercial fishers have focused on the negative emotions associated with industry stressors or challenges such as fisheries management, they do not provide evidence as to whether commercial fishers experience positive emotions in the face of stress. However, research has demonstrated that commercial fishers often experience positive emotions associated with job satisfaction (Pollnac & Poggie, 1988; 2006; 2008; Pollnac, et al., 2011; 2015; Seara, et al., 2017). Folkman and colleagues (for example, Folkman, 1997, 2008; Folkman, 2010a; Folkman & Moskowitz, 2000a, 2000b) demonstrated that people under stress sometimes experience positive emotions in addition to negative emotions (see Chapter 3 for a more detailed discussion of the role of positive emotions). While limited, this research provides further evidence that individuals may experience positive emotions in the emotional response to perceived threats and is the first to demonstrate this finding in the context of commercial fishing.

7.3 Conclusion

The aim of this chapter was to explore the emotional experiences of commercial fishers in response to threats to their livelihoods or the commercial fishing industry. It was found that commercial fishers in the current study experienced both negative and positive emotions in response to fisheries management. Consistent with previous research in the commercial fishing industry, commercial fishers' emotional experiences were dominated by negative emotions such as despair, frustration, and anxiety. The current research also found that commercial fishers experienced positive emotions, such as hope, in response to threats to their livelihoods or the commercial fishing industry. While this finding has not been replicated in the commercial fishing industry, this finding is consistent with the proposal by Folkman and colleagues (for example, Folkman, 1997, 2008; Folkman, 2010a; Folkman &

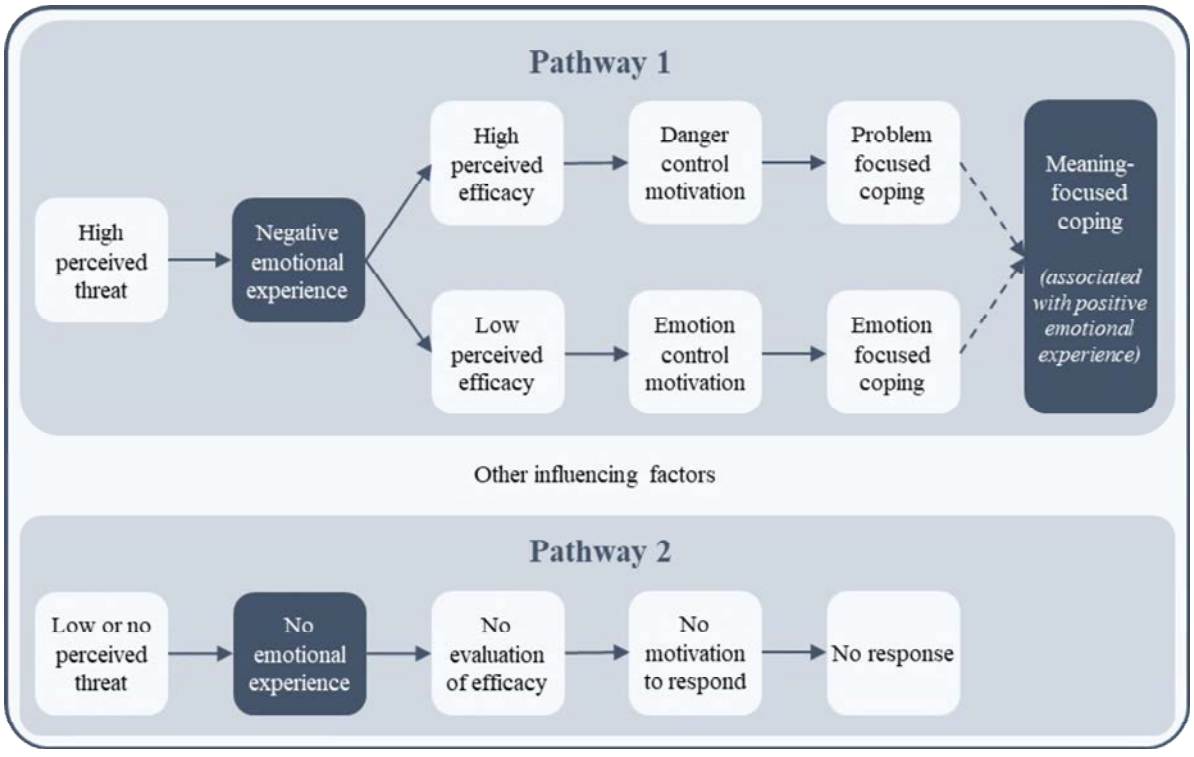
Moskowitz, 2000a, 2000b) that people often experience both negative and positive emotions in the face of threats. Given that commercial fishers tended not to perceive climate change to be a threat, the absence of associated emotional experiences found is consistent with psychological theories of threat perception (for example, Witte, 1992).

7.3.1 Alignment between findings and guiding theoretical framework

According to cognitive-emotional decision-making models, different emotional experiences are proposed to arise as a result of differences in perceptions of threat (see Figure 32). It is proposed that when individuals perceive there to be a threat, they will experience negative emotions such as fear as a result (Hovland et al., 1953; Janis, 1967; Janis & Feshback, 1953; Witte, 1992). The intensity of negative emotional experience is proposed to reflect the intensity of the perceived threat (Janis, 1967). For fisheries management, given the evidence of high perceptions of threat, the findings that individuals experienced both negative and positive emotions is consistent with theory proposed by Lazarus and Folkman. Furthermore, these findings demonstrate that for negative emotions, individuals experience a range of emotions beyond fear.

Figure 32

The role of emotions in decision making and responding



As expected, negative emotions appear to have been triggered by the threat of fisheries management, which reflected high perceptions of threat. It is subsequently expected

that individuals will continue to follow *Pathway 1* and perform an efficacy evaluation. While positive emotions are not expected as a direct result of high threat perception, it can be argued that the presence of positive emotions provides evidence of engagement in meaning-focused coping. Therefore, it could be expected that there will be evidence of commercial fishers engaging in meaning-focused coping in response to fisheries management.

Additionally, the range of emotions experienced by commercial fishers may provide further insights into the types of responses they perform. Research demonstrates that negative emotions such as sadness, fear, and anger lead individuals to perform certain expressive or instrumental behaviours. For example, researchers have found that when individuals feel *anger*, they are more likely to be motivated to behave aggressively, lash out, cause psychological of physical harm to others (Frijda, Kuipers, & Ter Schure, 1989; Harth, Leach, & Kessler, 2013; Roseman, Wiest, & Swartz, 1994). In contrast when individuals experience *fear*, people tend to engage in avoidance behaviours, such as running away from the feared object, and seeking safety (Frijda et al., 1989; Roseman et al., 1994). Additionally, experiences of sadness tend to lead people to inaction and intentionally or unintentionally seeking comfort from others (Frijda et al., 1989; Roseman et al., 1994). Given commercial fishers' experiences of anger, fear, and sadness it could then be expected that they would perform a range of behaviours including aggressive behaviours (due to anger), avoidance behaviours (due to fear) and inaction and seeking social support (due to sadness).

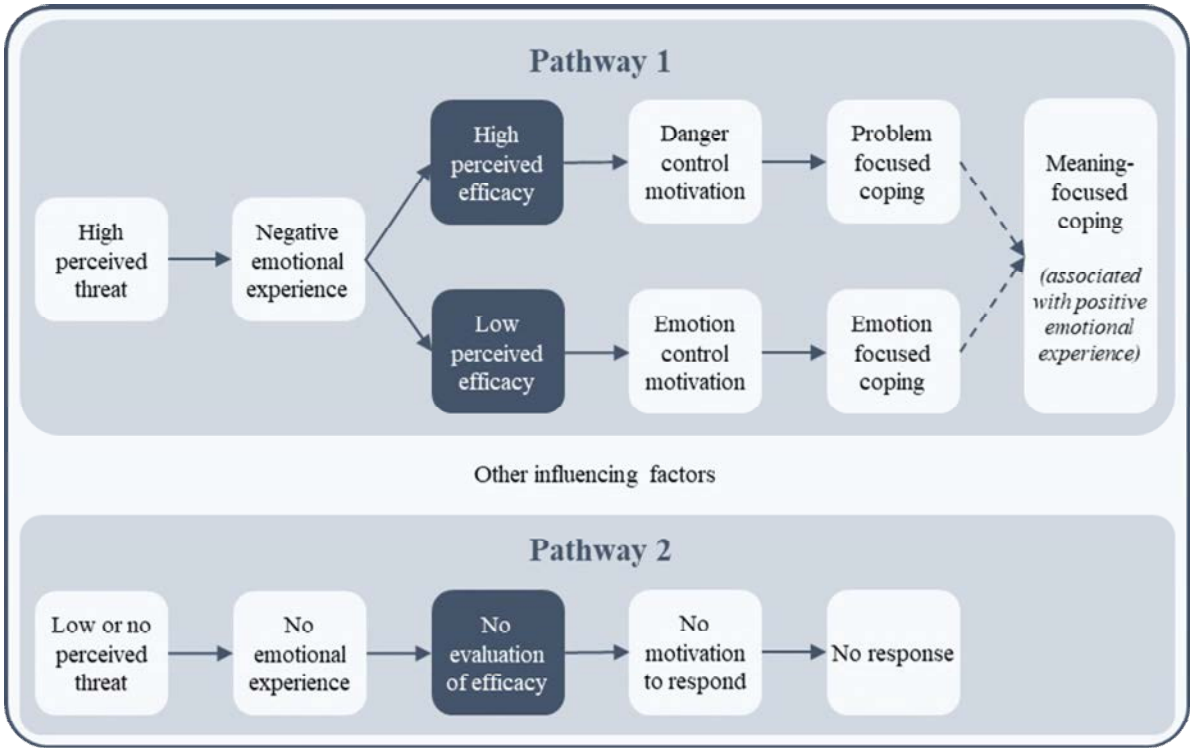
In contrast, participants' emotional experiences in response to climate change provide further evidence that *Pathway 2* has been triggered. Given that commercial fishers tended not to perceive climate change to be a threat and the absence of associated emotional experiences, it is subsequently expected that individuals will continue to follow *Pathway 2* and no efficacy evaluation will be undertaken in the context of climate change.

8 Results and Discussion: Perceived Efficacy

The purpose of this chapter is to examine commercial fishers' evaluations of efficacy (see Figure 33) to develop an understanding of *how commercial fishers perceive their ability to respond, and how effective they perceive responses are in protecting their livelihood or the commercial fishing industry* (research question 3). Given previously reported findings that participants perceived fisheries management to be a threat, and the subsequent experience of negative emotions, it was expected that participants would perform an evaluation of efficacy in the context of fisheries management. In contrast, it was expected that participants would not perform an evaluation of efficacy in the context of climate change given they typically did not perceive climate change to be a threat and did not report emotional experiences associated with climate change.

Figure 33

Guiding theoretical framework and constructs of interest for RQ3



Efficacy evaluations are commonly considered to comprise both self-efficacy and response efficacy (Rogers, 1975; Witte, 1992). Furthermore, Rogers (1975) argues that response costs also contribute to overall evaluations of efficacy. The current chapter starts by presenting the results and discussion relating to perceptions of self-efficacy (pages 137 to 151) and is followed by the results and discussion relating to perceptions of response efficacy and responses costs (page 151 to 168). The results and discussion of perceived response

efficacy and perceived response costs are presented together simply because there was considerable overlap in the reporting of results for these two constructs. The chapter concludes with a summary of findings for both perceived self-efficacy, response efficacy and response costs, and by considering how the findings presented in the current chapter align with the guiding theoretical framework (pages 169 to 170).

8.1 Perceptions of self-efficacy

Perceived *self-efficacy* reflects an individual's beliefs about their ability to perform a response (Bandura, 1977). Theoretically, it is the efficacy evaluations that are specific to responses which are considered most important in influencing behaviour (Luszczynska, Scholz, & Schwarzer, 2005). However, participants' self-efficacy evaluations did not appear to be closely tied to specific responses. Instead, the results suggest that there were more general, underlying factors which contributed to, or detracted from commercial fishers' self-efficacy, or their belief in their ability to perform a range of responses (often referred to as general self-efficacy). Therefore, the analysis and interpretation of participants' self-efficacy focuses on more general factors which appear to underpin their self-efficacy.

8.1.1 Results

Individuals' beliefs about their ability to carry out a response is formally known as perceived self-efficacy (Bandura, 1977). During interviews it was identified that commercial fishers' evaluations of efficacy centred on more general efficacy factors which either contributed to or detracted from their overall evaluations of efficacy. These factors included knowledge and experience, and perceived control.

8.1.1.1 Knowledge and experience. Participants discussed their knowledge and experience and how such knowledge and experience contributed to or detracted from their perceptions of their self-efficacy. During interviews, participants discussed knowledge and experiences which related to fishing and industry practices, in addition to general knowledge and experiences.

8.1.1.1.1 Fishing and industry practice-based knowledge and experience. Participants believed their previous experiences in the commercial fishing industry and the knowledge they had gained through such experiences contributed to their ability to perform adaptive responses (high perceived self-efficacy). For example, when prompted to discuss relevant skills or resources they drew upon when responding to a threat, participants reported the crucial role of experience, "Experience is everything…. It's just not something that you can teach. It's just something you, you just learn, you learn over the period of time." (Daniel),

and “But I knew where I went wrong then so I suppose I could have drawn on that to get it right this time, yeah.” (Richard).

Participant responses demonstrated that fishers typically learnt to fish with on-the-job training. This was highlighted by responses such as, “Training these people out on the job, it’s so hard, you’re putting them straight into just you know adverse conditions with weather and it’s dangerous. You’re gonna not only hurt yourself but hurt someone else on the boat.” (Anthony) and “…traditionally the industry used to be more small boat than big boat… there’s got a be a training ground somewhere and to a point, small boats were almost a training ground for the bigger boats.” (Larry). While participants reported that to learn to be a fisher, you needed “on-the-job training” they also demonstrated their concerns about the lack of educational services available to fishers. For example, it was reported, “Very, very big problem in the problem in the education side, there is nowhere where you can go to get any of this training.” (Anthony) and “Education is so empowering and that develops so much resilience. There’s not, there’s no program within the commercial fishing industry to encourage commercial fishers to educate themselves.” (Michael). For these participants, a lack of access to educational services appears to be a barrier to developing self-efficacy, either in themselves, or others.

Participants also acknowledged that their fishing experience helped them to adapt to changes in the weather, “…you can cope with, you have that, understanding as a fisherman…” (Julie) and by fishing in new areas:

> I knew I had fished that area that we moved to occasionally before, so I knew, I already had the knowledge of the area of what to do…I don’t think anything else has helped, it’s just, just the knowledge that I’ve gained over the years.” (Harry)

In contrast, one participant demonstrated a perception of low self-efficacy and attributed their lack of ability to respond to threats in the industry to a lack of industry experience:

> I don’t think I’ve been in the industry long enough to [sort of] have a view about what I could do… in a lot of respects [on that side] of the industry I’m still [sort of] learning how everything happens. (Larry)

Additionally, participants were concerned that they were not confident that they had the requisite knowledge or understanding of climate change (low perceived self-efficacy). For example, participants reported, “I don’t know enough about, all the information…” (Patricia),

"I can't explain it [because] I'm not a weather guru." (Fred) and "I think, I don't know, I don't understand really the dynamics." (Anthony).

8.1.1.1.2 General knowledge and experience. Participants discussed general knowledge and experiences which made them feel confident in their ability to respond to threats in the industry (high perceived self-efficacy). Participants discussed how knowledge and experiences gained through education and trade qualifications contributed to their ability to respond to threats. For example, the following participant reported their tertiary education contributed to their ability to communicate with members of out-groups:

> Oh well I've got a science-based background, I've got a tertiary education, um, and I've dealt with politicians a fair bit in the past… so I have no problems… I can converse quite comfortably with people and put my position across, so just my basic… education background is what gets me through. (Michael)

Similarly, this participant acknowledged that their trade qualification, which complemented their industry skills, had contributed to their ability to maintain the viability of their commercial fishing business:

> …before I was a fisherman, I was a [trade worker], ah, I [worked in trade] for 8 years until that, that finished…. The next best thing was going fishing and ah, having the knowledge of all of those things, years, and years of knowledge about the boat to be maintained, keep mine running ah, the amount of time that I've been on boats out of probably 30 odd years. 30 something years. I know when things are [going to] go wrong with machinery and this and that. And I can, I'll fix it beforehand. It saves you a lot aye. (Timothy)

Participants also reported a perceived lack of knowledge or experience external to the industry which they observed in themselves or others. For example, participants reported that fishers lacked knowledge and skills as a result of not undertaking formalised or traditional education, "And the core of it that the average fisher is very poorly educated" (Michael) and, "Well, [if] you understand fishermen, like me-self, I never finished high school, I never went to university so, all the paperwork is just a battle aye." (Timothy). Participants raised concerns that this lack of knowledge would act as a barrier for others seeking to maintain or secure an adequate income:

> …but one of the fellas I've employed, he gets me to do all the writing for him… there's no [news] for those fellas… now he wants a future you know as far as I'm

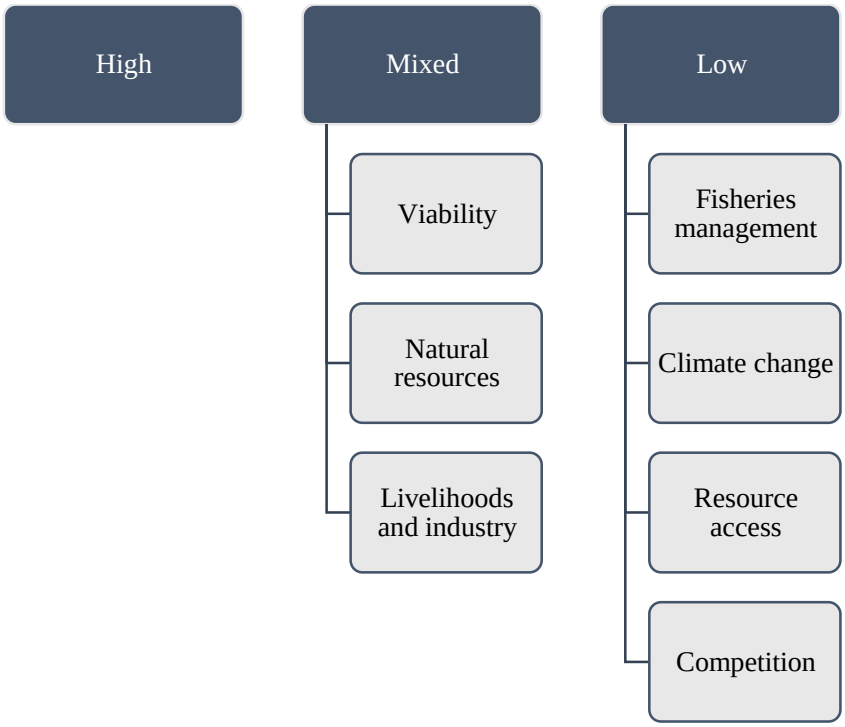
> concerned, I can see this as sort of endangering their future too, because he can't write well enough to do and do his tickets, so, he's not [going to] get them. (Larry)

8.1.1.2 Perceptions of control. Participant responses highlighted that participants differed in the degree to which they had control over threats to their livelihood or the commercial fishing industry, or the associated outcomes of such threats. For participants in this study, perceptions of control over threats appeared to be linked to their confidence in their ability to respond to a threat or in other words, their self-efficacy. That is, when they perceived a threat (or consequence of a threat) was beyond their control (described as low perceptions of control), they tended to lack confidence in their ability to respond to that threat. In contrast, when they perceived a threat (or consequence of a threat) was within their control (described as high perceptions of control), they tended to be more confident in their ability to respond to that threat. Additionally, participants demonstrated some evidence of perceiving certain threats were simultaneously partly within their control, and partly beyond their control. Such responses were categorised as mixed perceptions of control.

Within this study, participants' perceptions of control have been explored in the context of fisheries management and climate change as well as the perceived consequences of each including resource access, viability, competition, natural resources and losses in livelihoods and industry. As highlighted in Figure 34, there were no domains over which participants held high perceptions of control for, some which they held mixed perceptions of control over and some of which they felt they had little or no control over. Participants did not discuss their perceptions of control over the remaining factors identified in the threat map presented previously (page 121) including: human capital, cultural heritage, produce, local economy, and personal and family life.

Figure 34

Summary of participants' perceptions of control



8.1.1.2.1 Mixed perceptions of control. Participant responses indicate that participants held mixed perceptions of control over viability, natural resources and livelihoods and industry. Participant responses demonstrated a perception that they did have a fair amount of control over business **viability** (high perceived self-efficacy), however few participants demonstrated such perceptions. Of the few, most felt they (or other commercial fishers) had personal control over, or responsibility for, the success of their fishing business. For example:

> …so those fishers that are doing well, tend to be frowned upon by other fishers, 'Oh well, you know… he's a rich bastard and he's doing this and he's doing that.' No, he might just be working harder and might be, might think a little more about what he does on a day-to-day basis, not just at sea but also financially. (Michael)

Participants reported experiences in which they attributed positive outcomes to their personal behaviour. For instance, this participant recounted how the success of their fishing business was due to their efforts to structure their business, "So, I structured my business to work around that problem… If you structure a fishing business right these days, there's no problem with the industry being viable…" (Anthony). Furthermore, participants attributed some outcomes, and in particular a lack of success in others, to a perceived lack of individual

responsibility. For example, responses indicated that other commercial fishers would turn to financial assistance from the government to support their business, "…there are too many people in there [wanting for their] handout…" (Scott) and that "Most people immediately would say 'Oh we want money.'" (William). As the following quotation highlights, this participant was frustrated by others who did not take personal responsibility:

> If you wanna be successful in business and successful in the fishing industry you can be. But you need to be proactive, you need to put a lot of effort into it… you're not gonna get this sitting at the end of a rum bottle, on the end of a cigarette or the end of a joint. It's not gonna happen. But the industry's permeated with people like that. (Michael)

While responses of participants did reflect the belief that some of their actions had implications for the success or failure of their fishing business (high perceived control), participants tended to perceive it was not within their control (low perceived self-efficacy). For example, this participant reported that they perceived they were unable to achieve their business goals and expand their business because governing bodies had failed to deliver promised changes, "…we wanna keep doing tomorrow what we're doing today and we wanna expand our business… and they haven't delivered on what they said they were gonna do." (William). Furthermore, as highlighted in the following response, participants raised concerns that the viability of their business was constrained by the management structures in place:

> …with your licences, you're pretty restricted to what you're doing with the type of licence that you've got… you're less viable because… for arguments sake, if the… crabs are crook and the fish is crook, you can't go out and chase… different types of fish and that. (Daniel)

Additionally, there were participants who felt that they were somewhat in control of their business viability, but that they could only be successful if their efforts were supplemented with financial support from others. This was highlighted in the following response, "…without any funding we can't do it on our own. We cannot do it on our own." (Richard). This belief reflects a perception that the individual has some level of control over the outcome, but external forces also have control over the outcome.

Participant responses demonstrated that they perceived that they had some impact upon or control over the **health of natural resources** such as marine habitats (high perceived

self-efficacy). However, not unreasonably, they reported that this control was not total (low perceived self-efficacy). This was reflected in responses where participants spoke of their concerns about damage to their local area due to commercial fishers who show a lack of care for the local area, or who "don't give a shit" (Scott). For example, participants said, "…they don't look after their area because they can run down and basically bastardise someone else's area with no repercussions…" (Larry) and "…where I crab now… we throw all our soft crabs back… we get other people come in behind us and they take everything mate you know." (Harry).

Participants' responses indicated that they perceived they had little control over the **sustainability of livelihoods and industry** (low perceived control). For example, participants reported, "There's nothing we really can do. We just get what we get. We get what we're given." (Patricia), "…there's bloody nothing we can do really." (Charles), "There's nothing we can do! It's like we're backed into a wall… Absolutely backed into a wall." (Michelle) and "We're screwed Rebekah, it doesn't matter what we do. The fishermen are a slow dying race… if the state boys don't get you the federal boys get you. If the federal boys don't get you, AMSA[10] gets you, the tax man gets you… it's not a real pretty picture to be in at the moment." (Edward).

Participants further demonstrated their belief that they had little control over the future outcomes in the industry through reports that they perceived management authorities were in control of the long-term future of the commercial fishing industry. For example, participants reported, "The people running it should be making sure that it's going to be run well in the future." (Anthony), "You can't keep doing this to us. Set out a 20-year plan, for the long-term future of the industry." (Julie) and "It's all in their hands mate." (Harry). Furthermore, participants reported that management authorities could support the future of the industry specifically by providing support for industry infrastructure, research, education, policing and boosting the public perception of commercial fishing. For example:

> … the government should be identifying crucial infrastructure in every port up and down the coast. Just making sure that it's preserved, to keep industries going… State government support, infrastructure, even if it's just fancy words saying we have identified crucial infrastructure projects that are vital to the survival of commercial

[10] Australian Maritime Safety Authority (AMSA)

> fishing… we need a helping hand from the government to make sure that we keep that infrastructure in place. (William)

8.1.1.2.2 Low perceptions of control. Responses indicate that participants held low perceptions of control over fisheries management, climate change, resource access and competition. As reported previously, the perceived restrictive **management of the commercial fishing industry** was the primary threat identified by participants. Participant discussions also demonstrate the perception that they had little or no control over how the industry was managed (low perceived self-efficacy). Participants tended to perceive that out-group such as the regulators held power and control over how the industry was managed, and that such out-groups failed to provide opportunities to the participants (and other commercial fishers) to influence the outcomes. For example, participants reported, "I think we all just feel that we've… been defeated by the government and it's like yeah. We've got nothing to fight with." (Michelle), "…but what can we do, I don't know that we can do much more… we've been to all the government departments… and the door's closed." (William), and:

> So as to what more we can do I don't know that there's much more that we can do as such personally. I think William has really made, probably extreme is probably too strong a word but he's made absolutely major efforts to do absolutely everything he can whether it be travelling, speaking to all the people, filling out the paperwork. I don't know much more that he can actually do. (Susan)

Participants' perceived lack of control over the fisheries management outcomes affecting them was often discussed in the context of consultation processes for management decisions such as regulatory changes and closure of fishing grounds. Participants reported they felt that fisheries managers "…need to have those discussions with the fishing industry." (Susan). Participants reported they were not given consultation opportunities and therefore perceived they had little or no control over changes affecting them and the industry. This belief was highlighted in statements such as, "It just seems to be done, you read about it when the letter comes out in the mail, you know that this has changed or that's changed…" (Harry).

Furthermore, participant discussions highlighted a common belief that even when they had the opportunity to engage in consultation, management authorities had made decisions prior to consultation or that decisions were already "signed, sealed and delivered" (Victor) and that their involvement would not change that outcome. For example, participants demonstrate their belief that they had little to no control over the decisions made by

management authorities in quotations such as, “When you look at these net closures that went on recently… blatantly obvious that nothing was gonna change right from the word go effectively…” (Larry) and “…they invited us to the table and when we tried to partake and provide input, they just nod their head and then they go ahead and do what they want anyway.” (Edward).

Participant responses demonstrated a shared perception that they had little or no control over **climate change** (low perceived self-efficacy) and that others were responsible for the current state of the climate. For example, participants reported, “…for Australia… when Rudd[11] committed to whatever it was… in that summit in Bali[12]… China and Pakistan walked away from it. If there’s an issue, aren’t they the ones who should be tackling things?” (Fred) and “I can’t see… what the fishing industry does in the water, has got that much to do with climate change compared to Adani[13] digging heaps of coal out and burning it over in India.” (Timothy).

However, other participants indicated that they believed that no one could control the climate. For example, participants reported, “We are not in control of the earth’s climate.” (Michael). Participants’ perception that the climate could not be controlled is further highlighted by a common belief that the climate has always been changing and will continue to do so. For example, participants shared the following beliefs about climate change, “…it’s changing all the time.” (Timothy), “…climate change has always been there.” (Harry), “It was there a million years before, and a million years afterwards.” (Scott), and:

> Climate has been changing from the moment this planet evolved um, so from its very, very early beginnings, when it started to coalesce into a mass. The climate has continued to change and alter and will continue to do so, irrespective of whether humans are here or otherwise. (Michael)

Participant responses tended to reflect a perception that they had little control over losses in **resource access** as a result of fisheries management (low perceived self-efficacy). As the following quotation highlights, participants perceived that their access was controlled or restricted by regulatory tools such as marine zones and limits on their catches (total allowable catch or quota):

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[11] Kevin Rudd served as the Prime Minister of Australia from December 2007 to June 2010 and June 2013 to September 2013.
[12] The 2007 United Nations Climate Change Conference (held in Bali, Indonesia).
[13] At the time of the interview, Adani Mining had proposed a thermal coal mine in Central Queensland.

> … a couple of my problems comes from things like I've got massive, big green zone out the front of here that you know because we've got to TAC a total allowable catch [now a fisheries quota] I don't understand why we're not allowed to utilise the area that we have. And I think that's going to be one the biggest problems… (Anthony)

Furthermore, the following quotations demonstrate that participants felt that they (and other fishers) have little or no control over the decision to implement regulatory tools, "Like we've had licences taken off us, fishing areas taken off us. [We've had put on us] all these regulations and fees and that." (Timothy) and:

> Seventy-two hours before the election this was announced. We didn't even know it was on the table, this group was… lobbying for net free zones… we had no consultation…. The only ones that knew about that was Bill Byrne[14]… we knew nothing of it. There was no consultation. And we've always been promised, when Peter Beattie[15] was in power… we were promised consultation processes for any major changes, and if this isn't a major change… our fisheries minister has not even met with any… of the commercial fishing associations that are all affiliated, and they all speak for us. They won't meet with them. (Patricia)

Participants tended to perceive they had little control over **competition** with other in-group members, and members from out-groups (low perceived self-efficacy). Generally, participants reported that competition resulted from the way that the industry was managed, which, as previously reported, participants perceived they had little or no control over. For example, the following response demonstrates this participant's perceived lack of control over increased competition between commercial fishers due to displaced fishing effort:

> Because we work so hard for sustainable fishing in our area… to have another up to 12 fishermen, fishing that area, and they'll be fishing all the time… we're in a really big conundrum, we don't know what to do, we don't know whether to just give up now and say it's too hard, or we have to get bigger and buy a boat and fish in areas, which is really hard. (Julie)

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[14] Bill Byrne served as the Minister for Agriculture, Fishers and Rural Economic Development from them November 2016 to October 2017.

[15] Peter Beattie served as the Premier of Queensland from June 1998 to September 2007.

Furthermore, participants tended to attribute the competition they experienced with international fishers and domestic competitors (recreational fishers and tourism operators) to external forces such as supermarkets and consumers who favoured cheap imported seafood, and management authorities who allowed seafood to be imported and favoured providing access to fishing grounds to others.

8.1.2 Discussion

The findings demonstrate that, as expected, commercial fishers contemplated their ability to respond in the context of fisheries management. Unexpectedly however, the findings also provide evidence of commercial fishers contemplating their ability to respond in the context of climate change. The following section provides an interpretation of the self-efficacy findings in the context of fisheries management and climate change in light of previous literature.

8.1.2.1 Self-efficacy in the domain of fisheries management. Individuals' overall perceptions of self-efficacy in the context of fisheries management were underpinned by commercial fishers' beliefs about their knowledge and experiences, and their perceptions of control. Commercial fishers tended to have confidence in their industry-specific knowledge and experience but lacked confidence in their knowledge and experience beyond the commercial fishing industry. This finding is consistent with research that demonstrates that while commercial fishers have extensive knowledge and experience in the commercial fishing industry, they tend to have limited knowledge and experience beyond commercial fishing. For instance, for many commercial fishers demonstrate extensive experience and knowledge in the commercial fishing industry (Marshall et al., 2010; Pickworth et al., 2006) and tend to acquire industry-specific knowledge and experience on-the-job (Pickworth et al., 2006; Schirmer & Pickworth, 2005a). However, for many commercial fishers, commercial fishing is the only job they have ever known (Marshall et al., 2009). Furthermore, research suggests that commercial fishing experience is a crucial determinant of success in the fishing industry (Morgan, 2016) and that more broadly, working as a fisher often positively contributes to fishers' perceptions of self-efficacy (Coulthard & Britton, 2015). Therefore, it can be argued that this industry-specific knowledge and experience tended to positively contribute to commercial fishers' perceptions of their self-efficacy. In contrast, a lack of knowledge and experience beyond the commercial fishing industry detracted from commercial fishers' perceptions of their self-efficacy.

Perceptions of control appeared to detract from commercial fishers' perceptions of their self-efficacy as they often felt that they lacked control over fisheries management and its

subsequent consequences. To date there has been limited exploration of commercial fishers' perceptions of control however King and colleagues (2019; 2014) provide a useful framework that might explain the generalised lack of perceived control presented by commercial fishers in this study. King and colleagues (2019; 2014) propose two types of stressors faced by commercial fishers: traditional risks and modern uncertainties. King and colleagues (2021) suggest that traditional risks are ones which commercial fishers perceive they have some control over the impacts such as the physically dangerous nature of the job, severe weather, isolation, and financial concerns. In contrast, modern uncertainties tend to be ones which commercial fishers feel they cannot anticipate or change (low perceived control) such as regulatory changes, changes to resource access and public image (King, et al., 2021).

Consistent with the current findings, King and colleagues (2019; 2014) suggest that commercial fishers have little ability to control or change how the fishing industry is managed. Similarly, researchers have demonstrated that commercial fishers lack a sense of control over accessing the resources they rely on for their livelihood (Barnett & Eakin, 2015). Considering the definitions of traditional risks and modern uncertainties, it is arguable that fisheries management in this context represents a modern uncertainty to commercial fishers. Furthermore, fishers' responses suggest that fisheries management may exacerbate both traditional risks (such as business viability or financial concerns) and modern uncertainties (for example resource access). The results discussed here provide further evidence to support this proposition given that commercial fishers felt they lacked control over many of the perceived consequences of fisheries management and further to this, they attributed their lack of control to their perception that such consequences were under the control of fisheries managers.

8.1.2.2 Self-efficacy in the domain of climate change. Perceptions of self-efficacy in the context of climate change were evaluated through individuals' perceptions of control over climate change and its associated consequences. Specifically, individuals perceived that they had little or no control over climate change. In research conducted with the general population, it is reported that often people perceive they have little control over climate change (Gifford, 2011; Lorenzoni & Pidgeon, 2006; Swim et al., 2009). Gifford (2011) suggested that given that climate change is a global issue it is not surprising that many people have a lack of perceived control. Some fishers in this study attributed their perceived lack of control to the belief that climate change is a natural process that no one can control. Again, research demonstrates that this belief is common in the general population and that subsequently people may avoid climate-related action (Gifford, 2011; Lorenzoni et al., 2007;

Swim et al., 2009). Furthermore, some commercial fishers reported that climate change was under the control of others who had significant power to bring about change (such as politicians) or cause significant environmental consequences (such as mining companies). Taylor, Dessai, and de Bruin (2014) suggested that when individuals perceive that societal actors have the appropriate power and resources to address the scale and complexity of the threat posed by climate change, they also tend to have a sense of control. Therefore, if the inverse is true, the lack of control exhibited by commercial fishers may be a result of perceiving that societal actors such as politicians and mining companies lacked the necessary resources or motivation to appropriately respond to climate change.

8.1.2.3 Summary and conclusion. The current results highlight that commercial fishers' perceptions of self-efficacy were overwhelmingly low. This appears to be primarily a result of commercial fishers perceiving to have little or no control over threats in their environment such as fisheries management and climate change (potential explanations for the unexpected presence of efficacy evaluations in the context of climate change will be explored, see page 206 for a discussion). Research demonstrates that individuals' perceptions of control also have consequences for the emotional experiences and wellbeing. For example, it has been found that when an individual feels as though they lack control, they are more likely to experience negative emotions (Chipperfield, Hamm, Perry, & Ruthig, 2017; Chipperfield, Perry, & Stewart, 2010; Skinner, 1996; Skinner & Wellborn, 1994). In contrast, when individuals feel that they have a high degree of control, they are more likely to experience positive emotions (Chipperfield et al., 2017; Chipperfield et al., 2010; Skinner, 1996; Skinner & Wellborn, 1994). Commercial fishers' general perceived lack of control may therefore be a further contributor to the negative emotional experiences reported in this study.

Commercial fishers' wellbeing may also be impacted by their feelings that they lacked control. Seligman (1972) brougth attention to the impact of uncontrollable events on wellbeing and proposed a model of depression in which depression would arise as a result of extended exposure to seemingly uncontrollable events (see also, Maier & Seligman, 1976; Miller & Seligman, 1975). Researchers have continued to provide evidence of this relationship between perceived control and well-being. It has been demonstrated that when individuals feel they have a high degree of control, they tend to score highly on wellbeing measures such as life satisfaction, optimism, hope and resilience (Chipperfield et al., 2017; Chipperfield et al., 2010; Skinner, 1996; Skinner & Wellborn, 1994). In contrast, when individuals lack a sense of control, they are more likely to suffer poor wellbeing such as depression and pessimism (Chipperfield et al., 2017; Chipperfield et al., 2010; Skinner, 1996;

Skinner & Wellborn, 1994). Therefore, commercial fishers' general lack of a sense of control may not only be leading to discrete negative emotional experiences but may also be contributing to their long-term wellbeing experiences.

Typically, investigations of self-efficacy focus on the role of specific self-efficacy, or an individual's evaluation of their ability to respond in a specific evaluation. However, participant responses in the current study point to evaluations of factors which contributed to their general ability to respond (general self-efficacy). Bandura (1997) proposed that while distinct constructs, these two forms of self-efficacy are not independent. Rather, an individual's evaluation of their ability to respond in a specific situation (specific self-efficacy) is partly based on their evaluation of their general ability to respond (general self-efficacy). Therefore, given that general self-efficacy tended to be low in this sample of commercial fishers, general self-efficacy may contribute to low perceptions of specific self-efficacy, lowering their perceived ability to perform certain responses. Despite the differences in general and specific self-efficacy, it is suggested that general self-efficacy may act similarly to specific-self efficacy but on a broader level. For example, when general self-efficacy is low, individuals are more likely to engage in emotion-focused responses such as disengagement and when general self-efficacy is high, individuals are more likely to engage in problem-focused responses such as active coping and information seeking (Luszczynska, Gutiérrez-Doña, & Schwarzer, 2005; Luszczynska, Scholz, et al., 2005). So, while specific self-efficacy determines whether the individual engages in a specific response, general self-efficacy appears to determine the broader category of responding. Therefore, the findings reported in this section can still be used to make predictions about the nature of responding (see page 169).

Additionally, Scholz, Doña, Sud, and Schwarzer (2002) suggest that general self-efficacy is an important factor when individuals are facing novel challenges. When responding to novel challenges, individuals may have to learn and perform new responses to overcome these challenges. Arguably, both threats identified in this research require fishers to do things they have never done before such as trying new fishing practices or even working in an unfamiliar role. In such cases, Scholz et al. (2002) suggest that individuals would be more likely to engage in new or unfamiliar responses when general self-efficacy is high. Again, given that general self-efficacy tended to be low in this sample of commercial fishers, general self-efficacy may be a factor limiting the performance of new and unfamiliar responses.

8.2 Perceptions of response efficacy and response costs

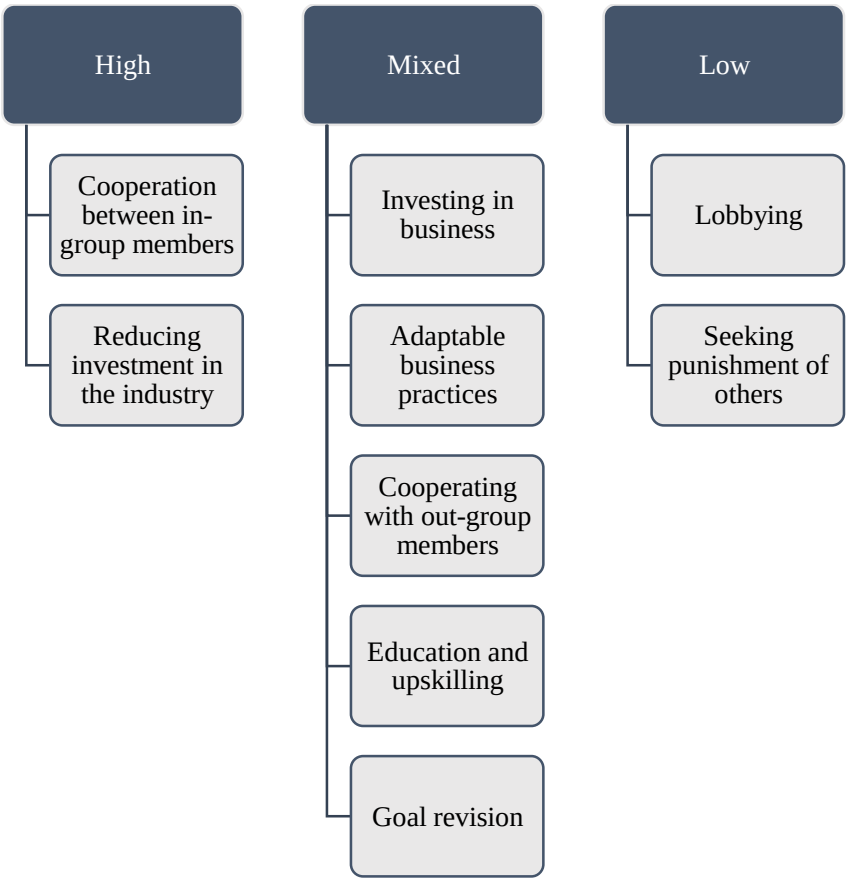
Perceived *response efficacy* refers to individual's beliefs about how effective the response will be in reducing a threat (Rogers, 1975; Witte, 1992) and perceived *response costs* refers to individual's beliefs about the costs of performing that response (Rogers, 1975). Unlike participants' perceptions of self-efficacy, participants' perceptions of response efficacy and response costs were specific to particular responses and therefore, the analysis and interpretation of participants' response efficacy focuses on the efficacy of specific responses. While this section does focus on specific responses contemplated or performed by commercial fishers, the focus of this section is on commercial fishers' beliefs about how effective these responses are, and perceived costs associated with performing these responses. The types of responses reported by participants are reported in Chapter 10 (pages 181 through 199).

8.2.1 Results

Based on the interview data, it was identified that participants evaluated the efficacy and costs of a subset of responses they had performed or considered in the context of fisheries management but were absent in the context of climate change. Response efficacy was evaluated based on participants' beliefs about the ability of the response to deliver the intended positive outcomes and the perceived response costs were evaluated based on participants; beliefs about negative outcomes associated with the response. The results in this section are presented according to evidence of high, low, or mixed perceptions (as mixed perceptions reflect a mix of high and low efficacy, these perceptions have been presented last) of response efficacy and for each response where there is evidence of participants' evaluation of response costs, the perceived costs of performing that response are identified. Following this, the response costs are summarised to provide an overview of perceived response costs across the range of responses that participants contemplated. Accordingly, Figure 35 summarises the responses reported by participants and indicates whether participants perceived these responses to have a high or low response efficacy, or attributes of both high and low response efficacy.

Figure 35

Summary of participants' perceptions of response efficacy



8.2.1.1 High perceived response efficacy. Participant responses indicate that participants held high perceptions of response efficacy for cooperating with in-group members and reducing investment in the industry.

8.2.1.1.2 Perceived efficacy of cooperation between in-group members. Participants tended to evaluate the efficacy of cooperating with people within the in-group for instrumental support as being mixed. Participants' perceptions of high response efficacy were demonstrated through the belief that this response was effective in facilitating collective action, reducing competition, supporting them to maintain their livelihood and to support them emotionally. The following responses demonstrate that participants perceived that cooperation between fishers was important for collective action to support the commercial fishing industry, "I think what it's going to do is give the small fishermen… a voice." (Patricia), "…we're working towards… trying to get all these little segregated groups of no voice, back into on big group to say, 'Enough's enough.'" (Julie) and "Let's… get a representative structure that works so we have a voice, so we can defend ourselves." (William). This is further highlighted by the following participant's response, "It's crucially

important that we get something going because, um, as I said, the industry's very divided and divisive. And divided we stand and divided the industry will fall." (Michael).

Participant responses highlight the importance that support from fellow commercial fishers had been in them maintaining their livelihood. For example, "When [I got my boat] … when it was made, those blokes helped me put it all together. Otherwise, you couldn't." Additionally, these participants reported that by working with other fishers, they were able to avoid competing with one another for resources:

> … I got a young [business] partner… who's oh 32… he's got a licence and I've got a licence and we'll work side by side… for safety and… companionship he runs his boat, I run my boat, if we need a hand, we help each other. At the end of the week, we just divvy up you know and, and the other thing about that is we're not fighting each other. (Daniel)

However, participants reported financial costs associated with this response. For example, one participant reported they had to withdraw their support because it was no longer an option for them financially:

> … I gave [fisher] a licence for a couple years for nothing. All the gear, just so he could get going… he kept putting his money back into the best gear, he had the best crab pots, he had all these exclusion devices… He's had to work all his life and umm, poor bugger. Feel that sorry. I can't keep giving it to him for nothing. There's a limit… So, I said, 'Mate I've gotta take the licence off you or you've gotta pay money.' (Charles)

8.2.1.1.3 Perceived efficacy of reducing investment in the commercial fishing industry. Participants' responses indicated high perceptions of efficacy for reducing their investment in the commercial fishing industry by downsizing their commercial fishing business. Participants' perceptions of high response efficacy were demonstrated through the belief that this response was effective in maintaining or improving their fishing business. For example, "Yeah, it's cutting costs… its kept me going aye?" (Timothy). However, participants perceived there to be negative impacts associated with performing this response (response costs). For example, this participant reported financial costs and that their fishing gear was suffering, "I've had to spend money to cut costs… fishing gear, isn't quite up to scratch like it used to be." (Timothy). Additionally, this participant reported that there was extra time and effort required manage their finances:

> …the time factor… I suppose the easy way to look at it is the amount of time I'm logging in and juggling money into accounts to make sure payments get paid. I could spend anywhere up to a day a week trying to do that stuff at times. Now you take a week out and try and spend four days of the week at sea… (Larry)

8.2.1.2 Low perceived response efficacy. Participant responses indicate that participants held low perceptions of response efficacy for lobbying to management and seeking punishment of others.

8.2.1.2.1 Perceived efficacy of lobbying to management. Participants tended to judge lobbying to fisheries managers to be ineffective (low response efficacy) in delivering the intended outcomes. For example, participants reported that it was "virtually impossible" (William) to bring about change by lobbying and when asked how much success they had had with lobbying one participant replied, "No, zero." (Charles) and further stated, "… the lobby's just been a waste of time…" (Charles).

Participants perceived that there were costs associated with this response including money, time, and effort. For example, participants reported that they would "Spend a lot more time on the phone, travelling." (Susan), and time "Sitting in meetings… writing letters to ministers, newspapers…" (William). The time and effort involved in lobbying is further highlighted in the following responses:

> And he's chased up all different people to get the different information that he wants to have to back up what he's actually saying so there's been trips… there's been phone calls, there's been, thank goodness he's got unlimited chatterbox on his phone… (Julie)

And:

> But I went to um, a consultant, and I paid a consultant I think $1800 to, to go through it, to make sure that the science they were using there was right… and we paid… out of our own pocket on behalf of our fishermen here to put something in. And you know what… They just, discounted everything. Like, I might as well have just got that $1800 and pfft! (William)

8.2.1.2.2 Perceived efficacy of seeking punishment of others. Participants tended to judge that seeking the punishment of others doing wrong was ineffective (low perceived response efficacy) in seeing those people punished. For example, participants said the following about people who were not commercial fishers, selling fish illegally, "I've tried to

catch a couple out and um get their name and number and ring the fisheries, but it hasn't worked for me yet so, I think they know now that that's what I will do." (Michelle) and:

> You hear through the talk of the people and you know, a lot of them get on Facebook too and put their catch you know and they get all these coral trout and they've grabbed more than their bag limits, and they, silly they think they are, it's going on to Facebook, you're only allowed a certain amount you know, but ah, you know I suppose fisho's hands are full, they can't do much about it. You know. It goes on all the time. (Peter)

There was no evidence of an evaluation of response costs associated with seeking the punishment of others.

8.2.1.3 Mixed perceived response efficacy. Participant responses indicate that participants held mixed perceptions of response efficacy for the majority of responses.

8.2.1.3.1 Perceived efficacy of investing in commercial fishing business. Participants tended to evaluate the efficacy of investing further in their commercial fishing business as being mixed. Participants' perceptions of high response efficacy were demonstrated through the belief that this response was effective in maintaining or improving their fishing business. For example, this participant reported that increasing their investment in their commercial fishing business gave them more control, "…it's irrelevant what the margin is as long as it's all yours. Every piece of fish that's sold in this area was mine… I'm still in absolute control." (Charles) and this participant reported that their investment resulted in time-efficiencies, "…I bought a smaller boat which is a lot more economical running, it goes a lot quicker than say your bigger boats so I can get past these areas quickly." (Anthony). In contrast, participants' perceptions of low response efficacy were demonstrated through beliefs about the limited utility of this response. For example, the following participant reported that they did not expect this strategy to continue working long-term, "But when do you stop doing that thinking something's gonna change?" (William).

Additionally, participants identified response costs associated with investing in their commercial fishing business, including significant financial costs, "…talking about the new boat we wanted, they want us to put it in survey… But it all costs money… [it's] gonna cost us like tens of thousands of dollars more…" (Patricia) and costs of time and effort as reported by focus group participants:

> We're not allowed to sell any fish product at all to the market, because we don't have a seller's licence… (Julie)

> And it's a huge amount of paperwork, there's management plans, and it's 20 pages of essays that you've gotta write… (Michelle)

8.2.1.3.2 Perceived efficacy of engaging in adaptable business practices. Participants tended to evaluate the efficacy of adaptable business practices (such as adaptable fishing practices and diversification of income) as being mixed. Participants' perceptions of high response efficacy were demonstrated through the belief that engaging in adaptable business practices was effective in maintaining or improving their livelihood and income and in some cases, leveraged their existing investments in the industry. For example, the follow quotations highlight how participants experimented with fishing practices to find ways to maintain or improve their livelihood, "You find out a little bit of adjustment on something might make something go a bit better… You're constantly… changing your fishing gear… your areas, your times… the type of fish that you're looking for." (Timothy), and:

> You can't just put a net in the water and think you're gonna catch a fish Victor's learnt over time, over many years, when and where to go… And we still get it wrong! 'Cause if we knew what the fish knew, we'd be very rich and there wouldn't be many fish…we've [fished] in a river… a tree had fallen down off the bank…. And we [fished] around that tree and we got two baskets of [fish] which we never get… So, unless you know to do that, to try that, you don't catch those fish. (Patricia)

Additionally, participants' responses highlight a belief that diversifying their income streams was effective in maintaining their income. Generally, participants reported that diversifying their income streams was effective in maintaining their viability (high perceived response efficacy). For example, participants reported, "Yeah, that's why we did open the shops to have that extra income…" (Michelle), "…it helps us just fill in a little bit of a gap…" (John), and "… it pays the bills…" (William). Participants attributed the financial success of other commercial fishers to the diverse nature of their businesses, "I know [commercial fishers] that are actually doing reasonably well, but most of those fishermen have got business in other areas too." (Larry). Additionally, having diverse income streams was seen to be extremely important in helping participants remain in the industry, as is highlighted in the following response, "you've gotta do that to… survive through the year." (Peter).

Participants' responses highlight that having a complementary livelihood allowed them to leverage their existing infrastructure and skills to maintain their income and their

commercial fishing livelihood. For example, the following quotations demonstrate how their investments in infrastructure could be leveraged through an alternate livelihood, “I basically wanted a boat that I could also put people on and show them a fishing boat without having it sort of tied up down at the marina so to speak.” (Anthony) and “…we’ve still got $400,000 worth of boats and motors and fishing gear sitting there… they say they want us to go into the commercial tourist industry. And all become charter boats…” (Julie). Additionally, this participant used their trade skills in their commercial fishing business, “As far as skills and that well obviously I’ve saved a lot of money doing my own mechanical work…” (Larry).

In contrast, participants’ perceptions of low response efficacy were demonstrated through beliefs that engaging in adaptable business practices had failed to deliver the intended benefits. For example, the following responses highlight that these participants perceived that despite engaging in adaptable business practices, their financial situation had not adequately improved, “Susan works a second job… But I thought we’d be a lot better off and a lot more comfortable than what we are.” (William), and “… everybody thinks we’re rich, my wife works two jobs and I work two jobs. Next week I’ll be driving the boat me-self.” (Richard).

It was for this reason that participants perceived that tourism was not a suitable alternate livelihood. For example, participants reported, “The tourism opportunities are there now Rebekah. Nobody takes them up because it’s not viable. There’s been tourism, businesses come and go, in these areas over the years that, that failed. Because it’s not viable…” (Patricia) and:

> All our government just thinks is, ‘Oh yep, we’ll block out commercial fishing,’… they believe that tourism’s going to take over and repair the country because everyone’s suddenly gonna go fishing…. Oh sorry, my grandmother’s not gonna go fishing. My father’s not gonna travel up here to go fishing… (Michelle)

Perceived response costs associated with these types of responses including financial costs, the cost of travel, costs of time and effort, negative consequences for others and increased vulnerability. For example, participants reported financial costs, “…it’s been reasonably effective, our, our running costs are higher, ‘cause as I said we’re 200 kilometres from basically where I go on occasions to fish… therefore… expenses are higher.” (John) and “I’ve spent hundred thousand, hundreds, I don’t know… a lot of money. I’ve got a new experiment every year with my fishing gear.” (Timothy). Furthermore, participants reported costs of time and effort, “Then, I’ve gotta travel further, now, to go fishing in the future. Then

if they close that down, because there's talk about that too, then, my costs have gone increased again, because I'm travelling further." (Edward). Travelling itself was perceived to be a cost. For example, "…one's man-made regulations, that's the next biggest issue we have because before our travelling time is doubled…" (Charles) and "…it's all of those, time, money and personal costs I guess… there's a fair bit more travelling involved… to move down to there and stay down there and then return back to here again." (John). Participants also reported personal costs associated with travelling, "I've had to travel away where there's more fish. To remote areas, which has cost me a marriage and half of everything I owned…" (Timothy). Participants also reported that moving fishing locations can have negative consequences for other fishers:

> Well like I said on occasions do move to another area but all that does is put another fisherman on top of what is already well and truly you know covered by local fishers… basically I don't really like to do it. (John)

Furthermore, participants reported that diversifying cost them time and effort. For example, it was reported, "… we're open seven days a week. So, before it was mainly a five-and-a-half-day week job, now it's a seven day a week both myself and my wife… there's a lot of time put into that." (Richard), and:

> … [my partner]'s had to go back and [work] this year which you know, there' working up to 18 hours a day… six on and two off. But then that two off he's meant to go out and do some [fishing]… he turns around and looks at home and you know there's all this other stuff with people… 'Can you do this for us? We'll pay you this amount.' … so [he] gets stuck doing all that... (Julie)

Participants were also concerned about the negative consequences of their actions on others. For example, the following participant reported that other commercial fishers suffered because of their decision to start a retail business, "So once I started retail, I encroached on the buyer down the road, he has a retail… I've hurt him from what I've done…" (Richard).

Participants were concerned that alternate livelihoods in fishing related businesses did not reduce their vulnerability to impacts on the commercial fishing industry, "That's good and bad because I get a lot of flow on, detrimental effects from that. Like, if the fishermen themselves aren't making any money, they don't spend any on this mechanical business." (Larry), and:

> Yeah, that's why we did open the shops to have that extra income, but there's my next problem… two years ago, our commercial fishing boat the skipper ran it into the reef and sunk it and um, it took us six months to find another boat and get back in business and everything and we were six months without that boat supplying us fish. I um, I had to sell imported fish and I was absolutely devastated, I was mortified… Like if I can't buy Queensland seafood to sell in my shop, where does that leave me? That just takes my whole, my businesses are gone as well. (Michelle)

8.2.1.3.3 Perceived efficacy of cooperating with out-group members. Participants tended to evaluate the efficacy of seeking instrumental support from out-groups (such as fisheries managers and the general public) as being mixed. Participants' perceptions of high response efficacy were demonstrated through the belief that this response was effective in achieving mutually beneficial outcomes and reducing conflict. For example, these participants reported sharing their fishing plans with fisheries managers for their mutual benefit:

> … we would ring the fisheries officer here, and say we're going to [fishing area], we'll be there for four days, we're gonna [fish], you know over near [island]. If you get any phone calls… so it was easier for them to know that it was us there, they could come and look, check on us if they wanted to, they only did it, once I think, we were out checking the net and they came to the camp and they checked our ice box you know, had a look in the ice box. (Patricia)

And:

> Because they know what's going on. They've actually, we've actually, they've got a file, [on there's] many fishermen that want to participate, they've got our float colours, what our nets look like, what our pots look like, all of our information in a folder, so if one of our nets goes missing which they do regularly, and then they see it in the creek, 'cause what was happening was then they're coming back to us going you've got an illegal net in, we're going no we don't we haven't been anywhere near there. (Julie)

Additionally, this response demonstrates the perceived importance of cooperating with fisheries managers to achieve a favourable outcome for all parties:

> … the concern is that if we just take the, the hard line approach and just say look we don't want any changes, which fundamentally we don't um, it's probably not gonna

> be enduring because you'll simply get a change of administration and the next government will come in and do something far more radical, so we're trying to get a balanced approach to this and get something in place that is enduring. (Michael)

The following responses demonstrate that engaging with members of the public was effective in reducing conflict, "…our interaction with the public, we've worked really hard with the regulars who are down there all the time, we don't have an issue with them anymore…" (Julie) and "Most people you sit down and get talking to one on one, or you, you reason with, yeah so you know, there isn't anything wrong with what you're doing." (Scott). Furthermore, the following response demonstrates that engaging with members of the public was so effective in reducing conflict that it was perceived to increase appreciation of commercial fishing amongst the general public:

> … we're selling the fresh fish; we're answering all the questions under the sun that they [ask]. They're on to us, they see us, they like our product, the price is pretty good and it's fresh because we can say, 'Oh it was caught on Thursday about two and half miles out there.' They're there enjoying it, the fact that it doesn't come from a big company. And it's fresh, looks fresh, tastes fresh. We even give them a recipe or some way to cook it when they get it. We wrap it in paper, the whole thing's great, they [inaudible] enjoy it, getting fish off the fishermen… being there on the spot, and ah standing up [inaudible] smile at them and tell them the truth, people actually [acknowledge] you [away they go happy] … (Timothy)

In contrast, participants' perceptions of low response efficacy were demonstrated through beliefs that cooperating with out-groups had failed to deliver the intended benefits. For example, participants reported that their participation had no impact on the outcome of formal engagement processes, "What we worked out over the years, when they say, they're thinking about doing something, it's all signed, sealed and delivered." (Victor) and "As to how much of a difference it makes… It doesn't." (Susan). Furthermore, participants felt that their participation in formal engagement processes could be used against them. For example, participants reported:

> …when I say about asking for a level playing field, we, we, we fill our logbook out, we complete it, we tell 'em what quantity of fish we caught, what species fish we caught, where we caught it, to the, to the lat' and long' just about… And then, down

> the track, when they see an area, history's shown me that when they see an area that's, that's fruitful for commercial fishermen, it's closed. (Edward)

And:

> …we sat in our own home, we had this man… from GRMPA, at our home, with a lot of fishermen from the area and we put the lines on the maps… they've got the information on our logbooks anyway… we put it all out there. The first round of maps that came out. Where we put our lines were coloured yellow and green. So, where do you put your trust? You know? Where do you put your trust? (Patricia)

Additionally, participants reported that their engagement with members of the general public had a limited reach. For example, this participant reported that their strategy was limited by who they engaged with, "…it contributes to, I suppose a range of people within my… friends, my domain, it doesn't go much further but does it?" (Edward). And this participant reported that there were existing promotional resources, which had limited impact as it had not been shared with the general public:

> So, this all of a sudden Drawing the Line[16] came up…. When I saw it, I was so impressed…. Drawing the Line was well done, and it was accurate, we had the best academics in the best positions to back it and call it the way it was, yet it's never been aired in Australia, and it never will be because WWF[17] will never allow it to be aired. I'll bet it's never been aired anywhere in the world. (Charles)

Response costs perceived to be associated with engaging with fisheries managers included costs of time, money and effort and lost fishing time. For example, participants reported that participating in formal engagement processes was expensive and time-consuming, "But if they only could realise how much time and money I've spent out of my own pocket going to meetings…" (William) and, "I've spent a lot of time voicing my opinion but, I haven't got the luxury of taking a month off and going and campaigning somewhere or… engaging someone because we can't afford to!" (Edward). Furthermore, participants reported that participating in formal engagement processes resulted in a loss of fishing time, for example, "…that's the way fishing is and like if you make an appointment there, they've

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[16] Drawing the Line is a 2013 documentary about the Australian commercial fishing industry and the impact that the implementation of marine parks has on fisher livelihoods.
[17] World Wildlife Fund

gotta weigh up do I go and make some money or go and spend some money. It's not a hard decision." (Larry) and:

> But because we're so limited like you say, we're only getting say 120 good days to actually go out deep water. And I mean, when we do these meetings, it could be one of them. I mean, you don't earn a lot of money over the year, but you earn a lot of money in a day. And that's a lot of those meetings and time we put in. (Charles)

8.2.1.3.4 Perceived efficacy of education and upskilling. Participants tended to evaluate the efficacy of education and upskilling be mixed. Participants' perceptions of high response efficacy were demonstrated through the belief that this response was critical in enabling them to maintain or improve their fishing business and effective in preparing people for entry into the industry. For example, the following responses demonstrate that these participants attributed their ability to respond to their previous educational experiences, "Going to university and doing other things in the interim has definitely broadened my ability to, when I moved into the industry it's given me the chance to really make the most of it." (Michael), and:

> …I go through this sorta stuff **gestures to pile of papers** and I read it so that I, I can, I can at least participate at a level where I try and have discussions with them, otherwise people walk all over the top of you as fisherman… (Edward)

It was also reported that education not only enhanced the individual abilities of this participant's crew, but also helped to bring about positive cultural change in his business:

> …we have a lot of educated people in the vessels. So, what happens that we don't, we've got, a lot of people have been with us for a long time, um, we've got quite a few university graduates … So, what happens is when you get people coming in that, aren't used to that sort of ideal and that, that way of operating, because the majority are doing the right thing. The minority then get drawn into the right way of doing things… So, we're in the system of dragging people up the ladder, not dragging them down the ladder. (Michael)

Additionally, participants reported that new fishers are better prepared to enter the fishing industry after formal training:

> …but those people will understand that through the training. So, they can make a better-informed decision whether they're going to like the job and you know if you've

> got a funding place who're sending people through that training, you're eventually going to generate more people into the industry. (Anthony)

In contrast, the following participant perceived that formal education providers did not adequately educate commercial fishers (low perceived response efficacy):

> He said, 'Well, if it had been TAFE certificates, we would have looked at them.' I said, 'Well that's the problem with the country today.' Industry educated people not TAFE. Because it's probably wrong overall but you might, anyone I've seen teaching at TAFE, the people that couldn't survive in industry. That's why they're there. And that's probably not right, right across the board. But the people I've run into, yeah, they were absolute duds. (Charles)

However, participants reported costs associated with this response. For example, participants perceived that education incurred costs such as time and effort, "…they don't have the time! To sit and read 900 pages of stuff." (Julie).

8.2.1.3.5 Perceived efficacy of goal revision. For participants, goal revision included exiting the industry and participants tended to evaluate the efficacy of leaving the industry to be mixed. Participants' perceptions of high response efficacy were demonstrated through the belief that this response was effective in maintaining their income. For example, participants reported, "I know a lot of guys on fishing boats who have gone and done their skippers ticket who are driving tugboats… things that are easy to work for better money." (Anthony) and "…the biggest problem is keeping the 55-year-old with a viable income otherwise; he was from the mines. Very capable bloke. Otherwise, he'll have to go back to doing something like that. And we're buggered without him." (Charles).

However, participants' responses indicated they did not perceive this response to be sufficiently effective (low perceived response efficacy) given that they were highly financially invested in the industry and were unlikely to recuperate their investments if they were to leave the industry. For example, this participant reported:

> I was in a situation I just couldn't walk away because I had too much money invested in the whole infrastructure to do what I was doing… the only reason I'll stay in it now is because of all the money that I've put into it, is now worth zap. It goes backwards every year. (Charles)

Furthermore, participants reported that selling their business and associated infrastructure was not an option as there was no one who was interested in buying into the

industry, “When they cut the income of something in half, it’s not worth as much. So, if no one wants it, you’re stuck with it.” (Timothy) and:

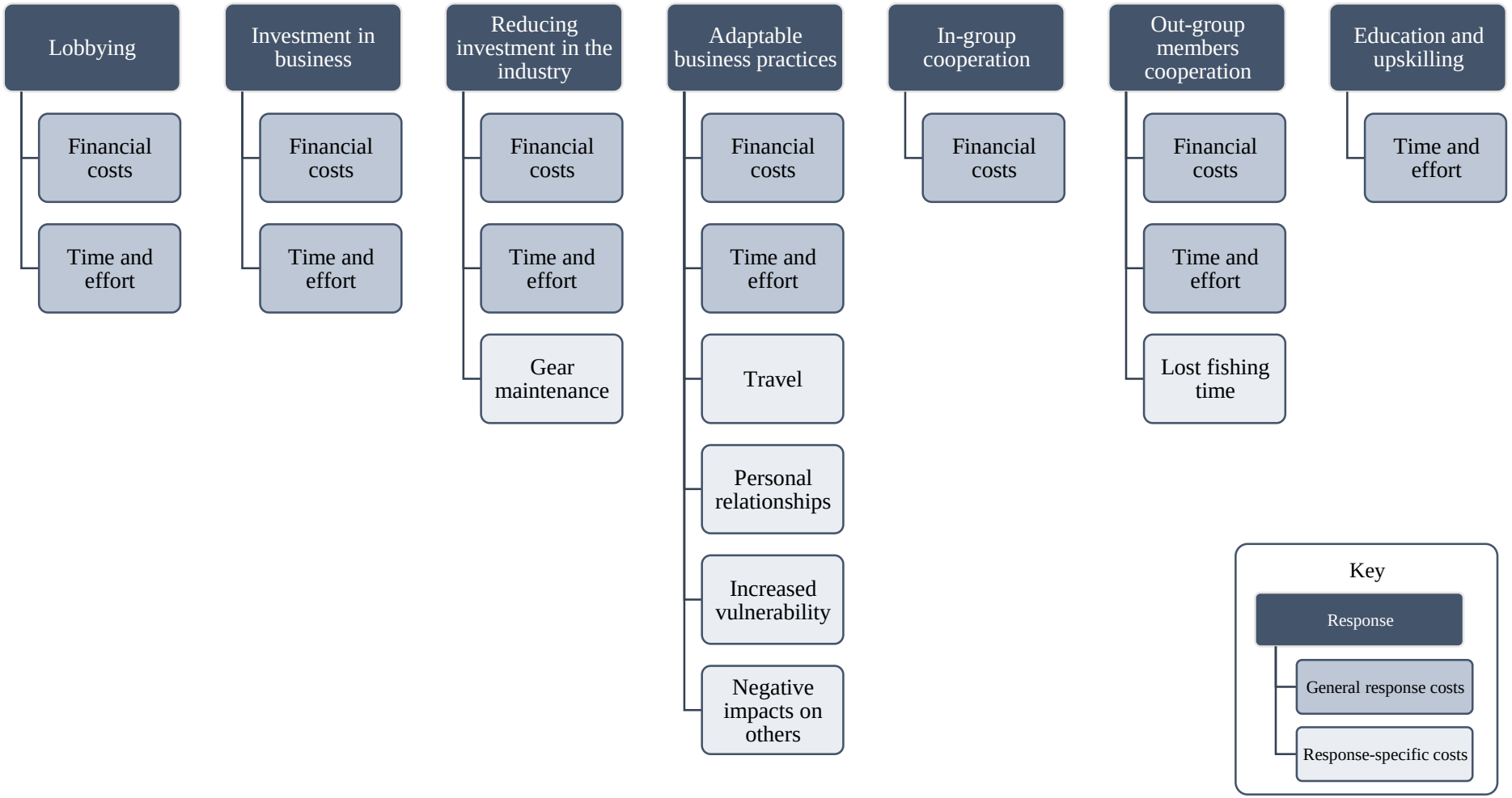
> …we’ve got half a million dollars’ worth of assets sitting at home and you know it’s not just the licence… we’ve still got $400,000 worth of boats and motors and fishing gear sitting there, if we have to sell, who’s gonna buy it? (Julie)

There was no evidence of an evaluation of response costs associated with exiting the industry.

8.2.1.4 Summary of perceived response costs. As discussed throughout this section, participants discussed a range of perceived costs associated with performing these responses. Of these perceived response costs, participants reported a range of perceived costs which appear to be specific to the response being contemplated. Furthermore, participants associated a range of responses with financial costs and the costs of time and effort (general response costs). Both the response-specific and general perceived costs are mapped according to the associated responses in Figure 36 to highlight the perceived response cost profile for each response. There was no evidence of perceived response costs for, seeking punishment of others, and goal revision in participant responses and therefore, these responses are not captured in the figure over the page.

Figure 36

Perceived response cost profiles



8.2.2 Discussion

As was expected, commercial fishers in this study contemplated the efficacy and costs of responses in the context of fisheries management but not in the context of climate change. The following section provides an interpretation of the response efficacy and response cost findings considering existing literature.

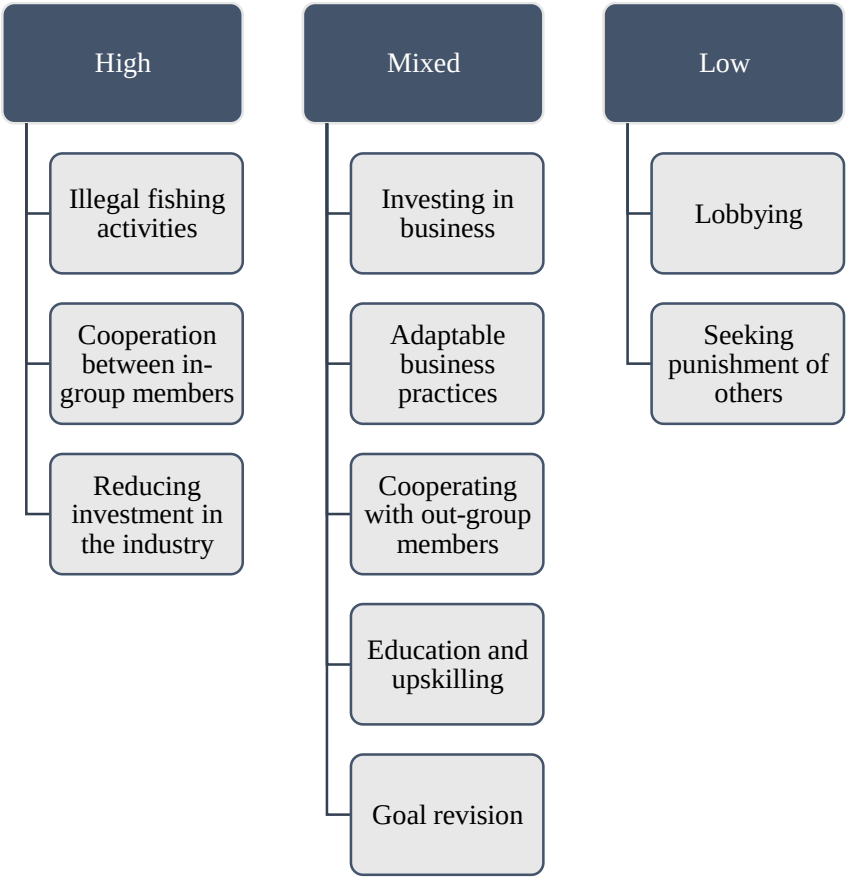
8.2.2.1 Perceived response efficacy. The findings of this study indicate that commercial fishers contemplated the efficacy of 10 responses in the context of fisheries management (response efficacy). To date, there has been limited exploration of commercial fishers' perceptions of response efficacy. However, there has been some investigation of the observed efficacy of such responses. For example, this study found that commercial fishers held mixed perceptions of response efficacy when contemplating *investing in their commercial fishing business* which was based in a belief that this was an effective strategy short-term but not long term. Correspondingly, Morgan (2016) found that similar investment strategies had limited utility and argued that such strategies may be effective short-term, but unlikely to be effective long term. Additionally, commercial fishers perceived that *downsizing their commercial fishing business* would allow them to improve the viability of their business. In line with commercial fishers' perceptions, Coulthard and Britton (2015) reported that by downsizing their business, fishers had lower operating costs and greater income as a result. Commercial fishers in the current study saw that engaging in *adaptable business practices* such as income diversification could be effective in maintaining their livelihood and income and similarly, researchers have reported that income diversification is a commonly employed strategy to improve fishers' financial security (Campbell, 2015; Forster et al., 2014; Holland et al., 2017). Researchers reported that cooperation between fishers leads to decreases in conflict between fishers, catch variability and personal risks (Salas & Gaertner, 2004) and similarly, commercial fishers saw this strategy as being effective in facilitating collective action, reducing competition, seeking emotional support, and maintaining their livelihood.

The current study extends what is known about commercial fishers' perceptions of response efficacy in two primary ways. First, previous studies appear to have focused on a limited range of responses, and in most cases, one form of responding. Therefore, the current study provides a holistic view (pictured in Figure 37) of how commercial fishers perceive the efficacy of various responses they may consider performing in response to the perceived threat of fisheries management. These findings enable understanding of how different perceptions of responses compare to one another. Secondly, it appears that previous research

has focused on behaviours which would be considered desirable by fisheries managers and policy makers, such as making changes to the operation of a commercial fishing business. While it is important to understand the antecedents to such desirable behaviours, it is also important to understand why commercial fishers may or may not perform behaviours considered to be undesirable such as lobbying or seeking punishment of others. For example, fisheries managers and policy makers may wish to discourage undesirable behaviours, and the current findings regarding response efficacy have implications for how this may be achieved.

Figure 37

Summary of participants' perceptions of response efficacy



8.2.2.2 Perceived response costs. The current project has not only provided insights into the nature of commercial fishers' perceived response efficacy for specific responses which has been lacking, it has also highlighted a series of factors which commercial fishers perceive act as a barrier to them performing these responses. The most commonly cited barriers to action were that performing the response would incur financial costs and require time and effort. The money, time and effort are commonly cited as perceived barriers to

behaviour in a range of contexts including health behaviours (S. Kelly et al., 2016; Quimby & Angelique, 2011), pro-environmental behaviours (Kollmuss & Agyeman, 2002; Lorenzoni et al., 2007) and the commercial fishing industry (van de Geer et al., 2013).

The results of this study point to some context-specific considerations in the context of money, time and effort, and other barriers identified. For commercial fishers, the costs of time, money and effort often manifest as travel to fishing grounds (Richmond et al., 2015; Stevenson et al., 2013; van de Geer et al., 2013; Voyer et al., 2014). Consequently, if commercial fishers are travelling to new fishing grounds, they may incur further costs such as learning about the new fishing grounds (van de Geer et al., 2013) and may have to fish less productive grounds (McNeill et al., 2018; Suuronen et al., 2010). Additionally, commercial fishers saw time as a valuable resource and time performing responses acted as a barrier as it took away time that they could have spent fishing to earn their income. Commercial fishers believed that seeking alternate employment would incur serious financial costs through the loss of investments in the industry such as fishing boats and gear which they would be unable to sell. Similarly, Coulthard and Britton (2015) reported that commercial fishers were unlikely to exit the industry unless there was an opportunity to sell their fishing gear and infrastructure.

Commercial fishers were also concerned about the potential negative consequences for themselves and others if they were to perform certain responses. For example, personal consequences included concerns about the quality of their fishing gear if they decreased their financial investment in maintenance; that they would increase their vulnerability to industry change; and in line with findings reported by Shaw et al. (2011) commercial fishers perceived that their engagement with fisheries managers may be used against them. Furthermore, commercial fishers were concerned that their behaviour would have negative consequences for others, such as making it more difficult for another commercial fisher to maintain their livelihood.

This research also identified one enabling factor: the ability to leverage existing investments in infrastructure and industry skills. Commercial fishers reported this enabling factor in the context of engaging in adaptable business practices however Coulthard and Britton (2015) suggest that this may be a key factor in commercial fishers seeking alternate employment. That is, commercial fishers may be more likely to seek alternate employment if they perceive that they can leverage their existing infrastructure and make use of their skills as a commercial fisher.

8.3 Conclusion

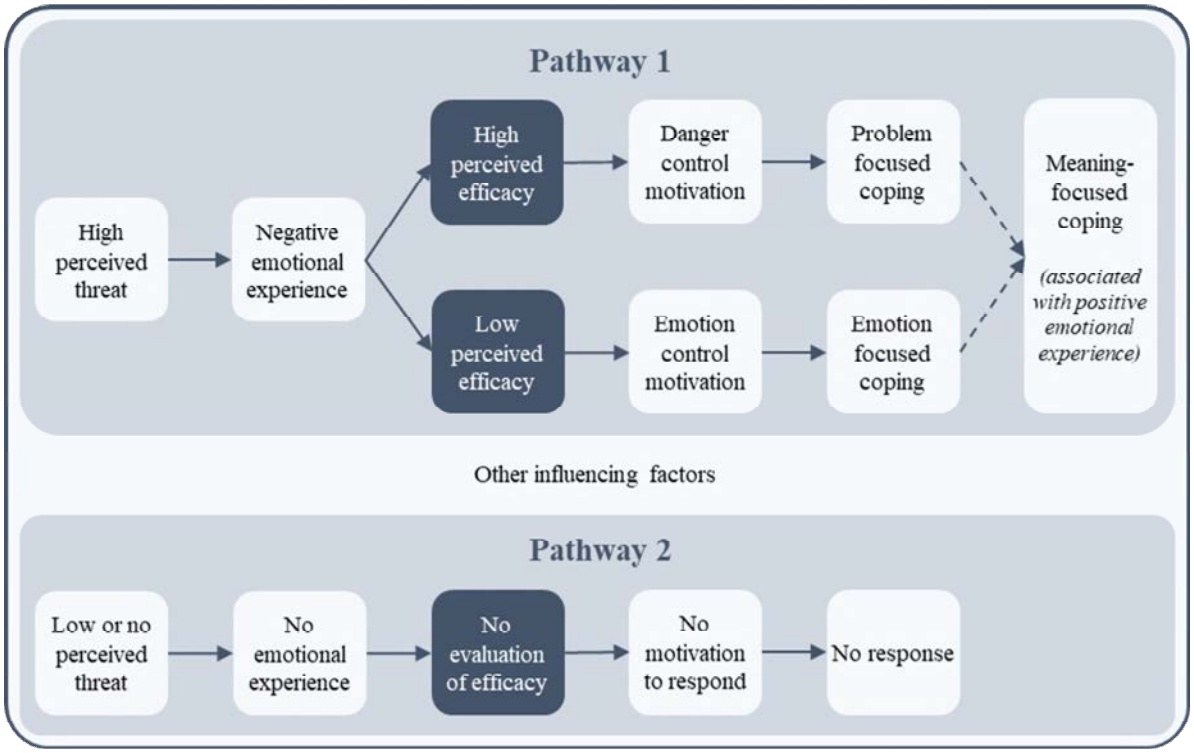
The third aim of this research was to understand commercial fishers' evaluations of efficacy. Psychological theories argue that perceptions of efficacy comprise an evaluation of both self-efficacy, response efficacy and in some cases, response costs (Witte, 1992; Witte & Allen, 2000). In the context of fisheries management, it was found that individuals' perceptions of both self-efficacy and response efficacy tended to be mixed. In the context of climate change, individuals' perceptions of self-efficacy tended to be low or moderate and there was no evidence of an evaluation of response efficacy. Furthermore, in the contexts of fisheries management, for most responses commercial fishers reported costs associated with performing those responses. Therefore overall, individuals' perceptions of efficacy were mixed in the context of fisheries management and at most, low or moderate in the context of climate change.

8.3.1 Alignment between findings and guiding theoretical framework

As highlighted in Figure 38, according to cognitive-emotional decision-making models, when *Pathway 1* is engaged individuals perform an evaluation of efficacy but when *Pathway 2* is engaged individuals are unlikely to perform an evaluation of efficacy. Given the findings that individuals' perceived fisheries management to be a high threat, and the subsequent experience of negative emotions, it was expected that individuals would perform an evaluation of efficacy. As shown in Figure 38, evaluations of efficacy are proposed to be critical in determining the subsequent motivational experiences. The results demonstrate that individuals' perceptions of efficacy tended to be mixed in the context of fisheries management and subsequently, it is possible that individuals may engage in either danger control motivations or emotion control motivations. However, given that it is argued that for danger control motivations to be triggered evaluations of efficacy should be high, it is more likely that in most cases individuals would engage in emotion control motivations than danger control motivations.

Figure 38

The role of perceived efficacy in decision making and responding



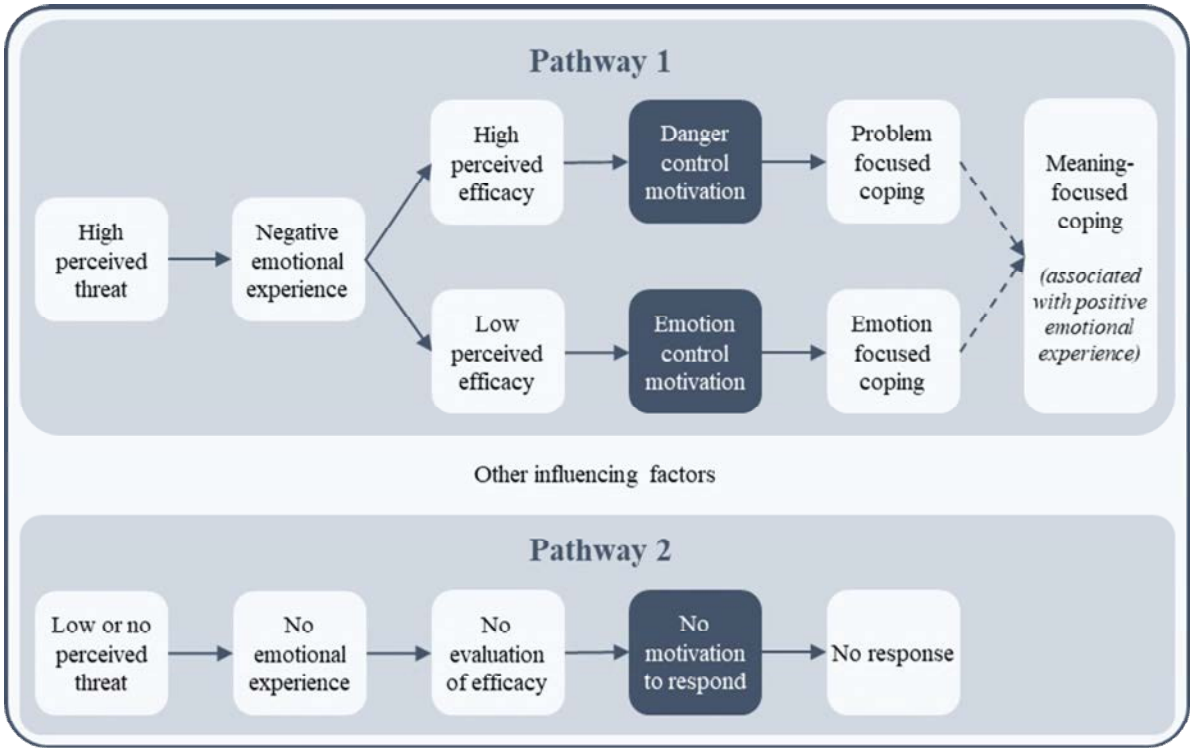
For climate change, contrary to what was expected, there is some evidence that individuals had engaged in an efficacy evaluation and that efficacy was evaluated to be at best, low to moderate. This was unexpected as the absence of perceived threat and associated negative emotions would suggest that individuals would not perform an efficacy evaluation. This finding does not necessarily discount that *Pathway 2* has been engaged in the context of climate change, but it does provide new evidence that *Pathway 1* has also been engaged despite a lack of evidence of preceding factors (high threat perception and negative emotional experiences). Potential explanations for this unexpected finding will be explored while examining the role of responses and specifically emotion-focused responses (see discussion on page 206). Based on findings that *Pathway 2* had been engaged (there was low or no perceived threat and an absence of negative emotions), it is possible that individuals will demonstrate no motivation to respond to climate change. However, given the evidence that an efficacy evaluation has been performed, and that this tended to be low, it is also possible that individuals will demonstrate evidence of emotion control motivations.

9 Results and Discussion: Motivational Drivers

The purpose of this chapter is to explore commercial fishers' motivational experiences to answer the question, *what are the motivational drivers for commercial fishers to respond to threats to their livelihoods and the commercial fishing industry?* As discussed in Chapter 2, psychological theories such as the EPPM (Witte, 1992) hypothesise that perceptions of threat give rise to negative emotional states such as fear. The experience of such negative emotional states is then proposed to motivate individuals to respond (Rogers, 1975; Witte, 1992). Based on findings previously reported, it was argued commercial fishers may exhibit both danger control motivations and emotion control motivations, but that it was more likely that behaviour would be driven by emotion control motivations both in the context of fisheries management and climate change.

Figure 39

Guiding theoretical framework and constructs of interest for RQ4



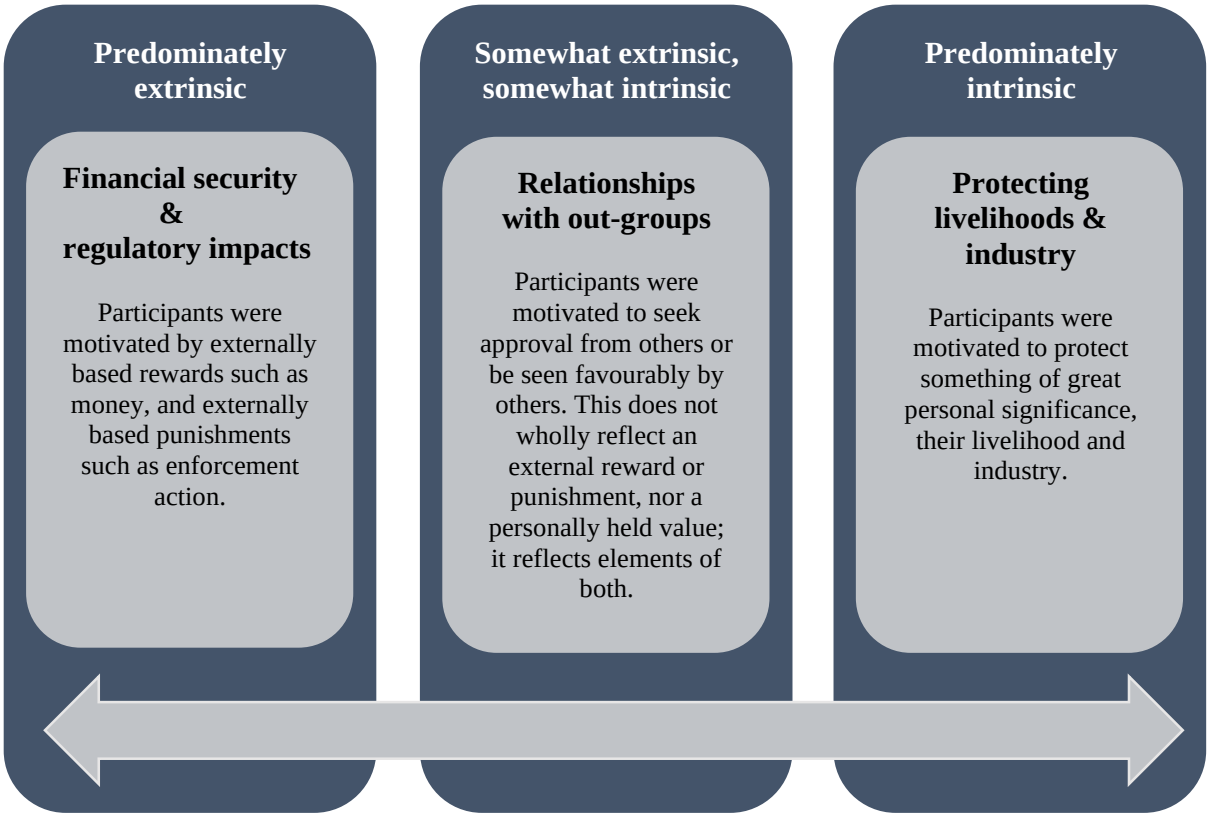
9.1 Results

Through reflexive thematic analysis of participants' responses, several drivers of participants' motivations were identified all of which reflected danger control motivations. Participant discussions relating to motivation did not explicitly demonstrate motivation to control their emotional response despite the previous finding that participants exhibited a high perception of threat and low perception of self-efficacy in the context of fisheries management (potential explanations for this unexpected finding will be explored while

examining the role of other influencing factors (see discussion on page 209). To explore the nature of commercial fishers' motivation, the drivers of motivation have been mapped along a motivational continuum (see Figure 40). This continuum reflects motivation from an external source (extrinsic motivation) or internal sources (intrinsic motivation). That is, extrinsic motivation involves performing a behaviour to avoid punishments (for example compliance action) and receive rewards (for example earning money). In contrast intrinsic motivation involves performing a behaviour because of a sense of personal satisfaction or enjoyment in the performance of the behaviour. The placement of drivers along this continuum does not reflect their absolute standing on the continuum, rather placement of each driver is based on their relative standing to each other along the continuum.

Figure 40

Motivational profile of participants



9.1.1 Predominantly extrinsic motivators

As reported above, the motivations to achieve financial security and to avoid regulatory impacts were defined as the most extrinsic motivators when compared to other motivational drivers. Both of these motivators were defined as predominately extrinsic motivators as participants' responses indicate they were motivated by externally based

rewards such as money, and externally based punishments such as enforcement action (which may also be monetary).

9.1.1.1 Motivation to achieve financial security. Participants often reported the reason for their decisions or behaviour was driven by the need to earn a reasonable income, to maximise their profits, compensate for financial losses or to prevent future losses, all of which were interpreted to be *external factors*. Participants reported, “it pays the bills” (William), and “I’ve gotta go to sea and earn some money.” (Susan). Others were motivated to supplement their income to compensate for previous losses and reduce the risk of future losses. For example, participants reported “we have to go somewhere to try… supplement the income that we’ve lost through those previous zoning issues.” (John) and “I wanted to… see what mistakes were being made there before I bought my own and invested my own money.” (Anthony).

9.1.1.2 Motivation to avoid regulatory impacts. Participants’ responses highlighted that they were motivated to avoid the impacts of regulation such as compliance action and the loss of fishing grounds. Compliance action and access to fishing grounds were interpreted as being *external factors* as they were forces originating external to the individual. For example, one participant reported that if they did not comply with regulations, they would suffer compliance action:

> …it’s a requirement that you gotta do, it’s a minimum requirement that you’ve gotta satisfy otherwise you’ll… be prosecuted… you might get away with one night or two nights, but you can’t keep doing stuff and breaking regulations and get away with it. (Edward)

Participants reported feeling that they did not have a choice, and that they simply had to comply with regulations once they were in place. For example, participants said, “Oh, you’ve just gotta comply.” (Edward), and “Do it every day. We’ve either gotta adapt or cope with regulations…” (Scott). However, participants reported the desire to maintain their current access to fishing grounds and to stop further closures of fishing grounds. For example, participants said, “I think the key… to getting the results that I think the commercial fishing industry as a whole in Australia, which is maintaining… a high level of access…” (Michael), and “…we’re trying to fight hard as we can to try and stop these closures…” (Harry).

9.1.2 Somewhat extrinsic, somewhat intrinsic motivators

Participants' responses demonstrate that they were motivated to improve their relationships with out-groups. This motivator appeared to involve seeking approval from others or being seen favourably by others. Consequently, the source of this motivation does not reflect an external pressure such as a punishment or a reward and therefore, does not reflect a predominately extrinsic motivation. However, the motivator also does not reflect a predominately intrinsic motivation, as approval from others is not an internally generated motivation. Rather, describing this motivator as somewhat extrinsic and somewhat intrinsic motivator appears most appropriate.

For example, it was reported that "…it would be a good thing… if we could just talk without arguing." (Larry). In particular, participants were motivated to increase understanding of the commercial fishing industry and in turn improve their relationships with management authorities and the general public. For example, participants felt that it was important to talk "…to ministers… to the government and explaining in real terms how this industry operates." (Michael). Participants demonstrated their motivation to improve their relationship with management authorities through responses such as, "I'm prepared to negotiate and all work together." (William) and:

> …to try and improve… public relations, or the relations between fishers and the regulators rather than the fisher being on a boat and fisheries coming, 'Ah dirty rotten bloody fisheries bastards.'… We want to have a great working relationship with our fisheries managers, and we ensure that the crew maintain that… that's important and these other guys don't do it. (Michael)

Similarly, participants felt that it was important to "make the public aware" (Charles) and "improve our public perception" (Michael). The motivation to improve the general public's understanding of commercial fishing was further demonstrated through responses such as, "We approach people too... we've gone around to schools over the years, talked to people about what we do…" (Patricia) and:

> …I wish I had about five million bucks to put some ads on TV and a few reality things about what it's like and what it isn't like and what is happening and what ain't happening. Because they do get a lot of… misleading things about what's happened. (Scott)

Additionally, participants' responses demonstrate their motivation to improve their relationship with the general public. For example, participants said, "…I just really, really like people to know there is a very professional side of our industry and what we do, and we really care about. And we want to see it portrayed that way…" (Anthony), "we try to push it, put ourselves out there as positive people" (Patricia) and:

> …all you wanna do to get along with everybody… It's just a matter of getting along and all being obliging and moving over for each other…. They have as much right to be there as we do… it's just a matter of getting along in life… (Scott)

9.1.2 Predominantly intrinsic motivators

Finally, participants were motivated to protect their livelihood and their industry. Relative to other motivations, this motivation was defined as the most intrinsic motivation because it appeared that participants were seeking to protect something of great personal significance (see page 213 for a discussion of participants' attachment to being a fisher and to the places they fish and page 218 for the significance of commercial fishing for their identity). Participants' motivation to avoid losing their livelihood was highlighted in responses such as "…we wanna keep doing tomorrow what we're doing today." (William). Participants commonly spoke about "surviving" to avoid losing their livelihood. For example, participants said the following about avoiding losing their livelihood, "…you've gotta do that to you know… helps you survive through the year." (Peter).

Furthermore, the following participant demonstrated that they were motivated to avoid leaving the industry. For example, one participant demonstrated this when they shared their thoughts about leaving, "I'll have to look at when the time comes… I hope it doesn't come to that stage, but… people are gonna have to start looking for different avenues or something mate…" (Harry). As highlighted in the following response, others focused their motivations on avoiding losing the industry, "We're involved in trying to fight for the whole industry." (Julie).

Furthermore, participants reported motivations to protect the industry by improving how the industry operates. Participants' responses highlighted they were motivated to improve human capital of the industry through education. For example, participants reported the motivation behind investing in fisher education, "…is to increase the people who are coming to work… we need to generate younger people into work and into the industry as a whole." (Anthony). Participants' motivation to improve human capital is further demonstrated through their motivation to support others in the industry. For example, one

participant reported they wanted to support their family through tough times, "…I've got sons, and a grandson, and I've got to try and help them through the bad times." (Peter). As highlighted in the following quotation, participants had a desire to support the mental health of others in the industry, "How do we speak to them? How do we encourage them, how do we get them to get out of bed in the morning and go for another, you know, just keep plodding on day by day?" (Julie) and to provide practical support, "A lot [of] help ends up being financial gain but it's not really, hand over money to each other, it's just… lend an esky here and you know help out with other things there." (Larry).

When discussing their motivations to improve the industry, participants also focused on their desire to contribute to industry decision making and management. As the following response highlights, participants wanted the opportunity to contribute to industry decision making, "Oh, I was just like you know, like the people that sit down and make up these issues that affect us, would just give a bit more courtesy and… consult with us." (John). Similarly, other participants agreed, "I think there definitely needs to be a lot more industry interaction with the… regulatory changes that are going to be coming into place or potentially go into place, there needs to be more, more liaising with commercial fishers." (Michael). Participants also demonstrate a desire to have more accountability for the management of their local area. One participant said, "…one of me views is we should look after our local area… if you're paying for what happens in [your local area] well that's your area." (Larry). Similarly, another participant said, "…I feel, we should break it into smaller and more manageable areas, at least we can self-police it and say what's happening… they just need to put us into smaller areas… we've [got to] be accountable." (Scott).

As highlighted in the following response, participants also demonstrated a desire to contribute to industry research to improve the state of the industry:

> We've had scientists on our boat, we've had fisheries observe us, we never knocked them back…. [scientist] comes on our boat… and we give him, we measure fish, we give him the guts and the heads… for his research. We do as much as we possibly can to improve, what we do as an industry. (Patricia)

9.2 Discussion

This chapter focused on understanding the factors that motivated commercial fishers to respond to their livelihoods and the commercial fishing industry. It was found that in the context of fisheries management, commercial fishers were motivated by a range of factors which varied (relative to other factors) according to the extrinsic-intrinsic value of the

motivating factors, and according to whether the motivation was to approach or avoid an outcome.

The most extrinsic motivators of commercial fishers' behaviour include a motivation to achieve financial security and a motivation to avoid regulatory impacts. Commercial fishers appear to be motived by their need to earn a reasonable income, maximise their profits and compensate for or prevent financial losses. Research demonstrates that for many commercial fishers, just as found for the fishers in this study, their livelihood was an important source of income. For instance, Pascoe et al. (2016) and S. Smith et al. (2003) reported that in most cases, commercial fishing represented the primary source of income for individual fishers and their household. Furthermore, Marshall et al. (2017) described commercial fishers in their study as being economically dependent on their livelihood and Kelty and Kelty (2011) report that money was a top motivator for commercial fishers. It is not surprising to find that the income that commercial fishing provides for fishers is important to them and subsequently explains why fishers would be motivated to maintain or improve their financial security.

It appears that the regulatory strategy of Queensland's fisheries management is based on the premise that commercial fishers are motivated to comply with regulations out of fear of being caught and punished for breaches otherwise (Murphy, Bradford, & Jackson, 2016). The presence of commercial fishers' motivation to avoid regulatory impacts such as compliance action suggests that the regulatory strategy had the intended impact of deterring fishers from committing regulatory breaches using punishment mechanisms which are extrinsic in nature (such as fines and imprisonment). It was also found that commercial fishers were motivated to avoid a loss of access to fishing grounds (through the introduction of restrictions) which they also perceived as being a regulatory impact. The motivation to avoid the loss of fishing grounds is consistent with their motivation to achieve financial security. That is, if they were to lose access to fishing grounds necessary to the performance of their livelihood, commercial fishers' ability to achieve financial security would be compromised.

Relative to fishers' motivations to avoid regulatory impacts and seek financial security, commercial fishers' desire to improve their relationships with out-groups was judged to be more intrinsically motivated. It was found that commercial fishers were interested in improving relational factors with fisheries managers and the general public to improve cooperation and understanding of the commercial fishing industry. It may be that commercial fishers' motivation to improve their relationships with others for various reasons.

For instance, this motivation may be consistent with their more extrinsic motivations in that, if commercial fishers have better relationships with fishery managers and the general public, they may be able to more effectively perform their livelihood and as a consequence achieve improved financial security. Additionally, cooperation with fisheries managers may be perceived as a way to help avoid regulatory impacts. For example, cooperating with fisheries managers may present fishers with a mechanism for influencing fisheries management decisions and consequently, the impacts that fisheries management decisions have on them and other fishers. Alternatively, commercial fishers' motivation to improve their relationships with outgroups may be related to the impacts that such relationships have on their wellbeing (for further exploration of this idea see page 227 for further discussion of outgroup relationships and page 232 for discussion of the potential interaction between outgroup relationships and motivation).

Finally, the most intrinsic motivations of commercial fishers' behaviour include the motivation to avoid the loss of their livelihood and the industry (avoidance motivation) and to improve industry functioning (approach motivation). These motivations appear to be underpinned by commercial fishers' attachment to being a commercial fisher (for a further discussion of commercial fishers' livelihood attachment see page 213). Research similarly demonstrates that commercial fishers are motivated to avoid leaving the industry due to their attachment to their livelihood (Marshall et al., 2016; 2007). Furthermore, commercial fishers in this study appear to be motivated to protect the industry from collapse. In addition to being motivated at an individual level, they were motivated at a group level to avoid the loss of the commercial fishing industry. This suggests that commercial fishers' attachment was not just to their role in the industry, but to the industry as a whole. Typically, research focuses on how commercial fishers' attachment explains their motivation to remain a fisher (or avoid a loss of their livelihood, for example Kelty & Kelty, 2011) however the current research suggests that attachment to being a commercial fisher and to the industry may also play a role in facilitating commercial fishers' desire to improve industry functioning. Research has highlighted commercial fishers' desire to participate in activities such as fisheries management decisions (for example, Momtaz & Gladstone, 2008) however few have identified the factor motivating such action. It appears that attachment to be a commercial fisher and to the industry in this case functioned as a motivating factor not only to maintain, but also to improve their livelihood and the industry.

9.3 Conclusion

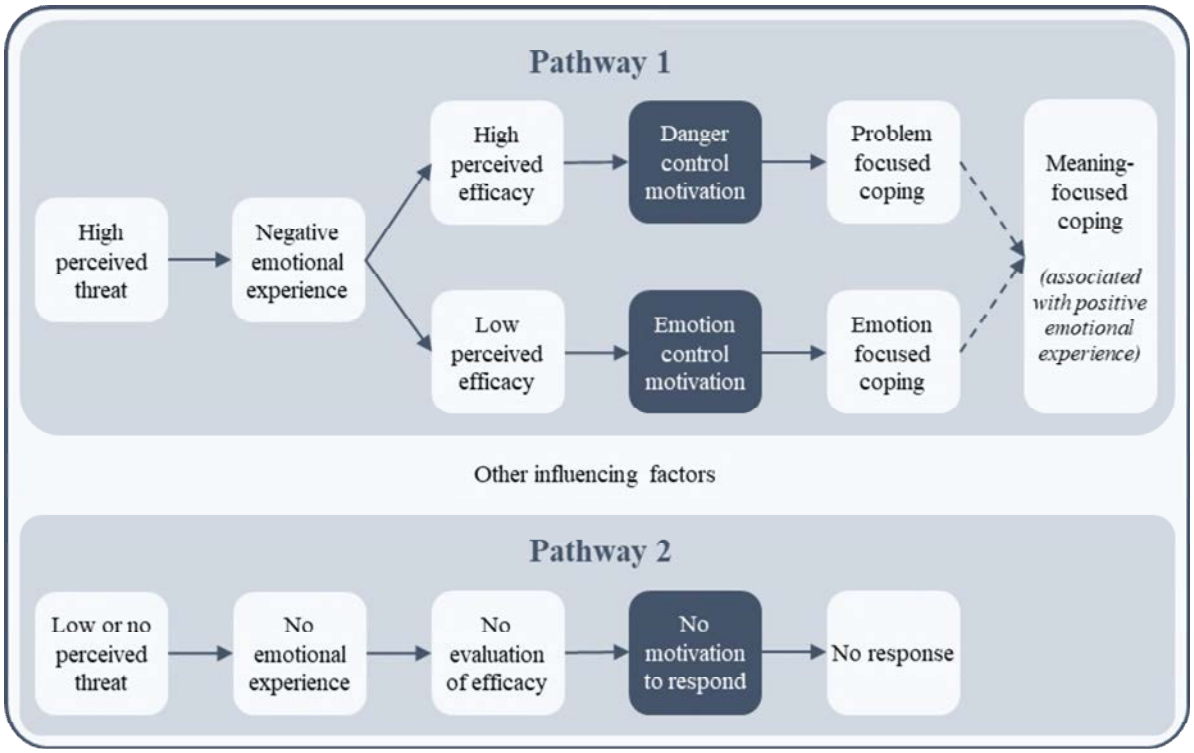
As previously demonstrated, few of the factors identified are unique to this research and have been identified in previous studies of the commercial fishing industry. However, what is unique to this research is the exploration of the nature of these motivations. To understand the nature of commercial fishers' motivations (in the context of fisheries management), the relative standing of the five motivations identified was mapped along a continuum from extrinsic motivation (motivated by an external source) to intrinsic motivation (motivated by an intrinsic source).

9.3.1 Alignment between findings and guiding theoretical framework

As highlighted in Figure 41, according to cognitive-emotional decision-making models, when *Pathway 1* is engaged the nature of motivations is proposed to be determined by evaluations of efficacy and when *Pathway 2* is engaged it is expected that individuals will demonstrate no motivation to respond.

Figure 41

The role of motivation in decision making and responding



For fisheries management, it was previously predicted that individuals would be more likely to engage in emotion control motivations than danger control motivations given their mixed perceptions of efficacy. Despite these mixed perceptions of efficacy, participants did not explicitly demonstrate motivation to control their emotional experiences and only evidence of danger control motivations was identified. The unexpected presence of danger

control motivations suggests that there are other factors influencing individuals' motivations. Potential explanations for this unexpected finding will be explored while examining the role of other influencing factors (see discussion on page 209.)

While the findings focus on the danger control motivations of participants, these results do not discount the possibility that individuals were also motivated to control their emotional experience. The method used in this project (interviewing) does not necessarily allow for cognitions, emotions, motivations, and responses that the individual is not aware of to be gleaned. Therefore, the absence of motivation to control emotional experiences may be a result of participants' lack of conscious awareness of such motivations rather than the actual absence of such motivations. Additionally, commercial fishers' evaluations of efficacy which were judged to be low suggest that this sub-pathway of *Pathway 1* has been engaged and therefore, emotion-focused coping responses are likely to be exhibited.

These results build on the previously reported findings and provide evidence that both sub-components of *Pathway 1* have been triggered in the context of fisheries management. Evidence of the first sub-component was demonstrated here through the identification of danger control motivations; and it is likely that the other sub-component of *Pathway 1* was engaged given the finding that evaluations of efficacy were mixed. Given these findings, it could be predicted that it is likely that individuals may engage in both problem-focused coping and emotion-focused coping. Additionally, given the previously reported evidence of positive emotions it is also likely that individuals may have engaged in meaning-focused coping.

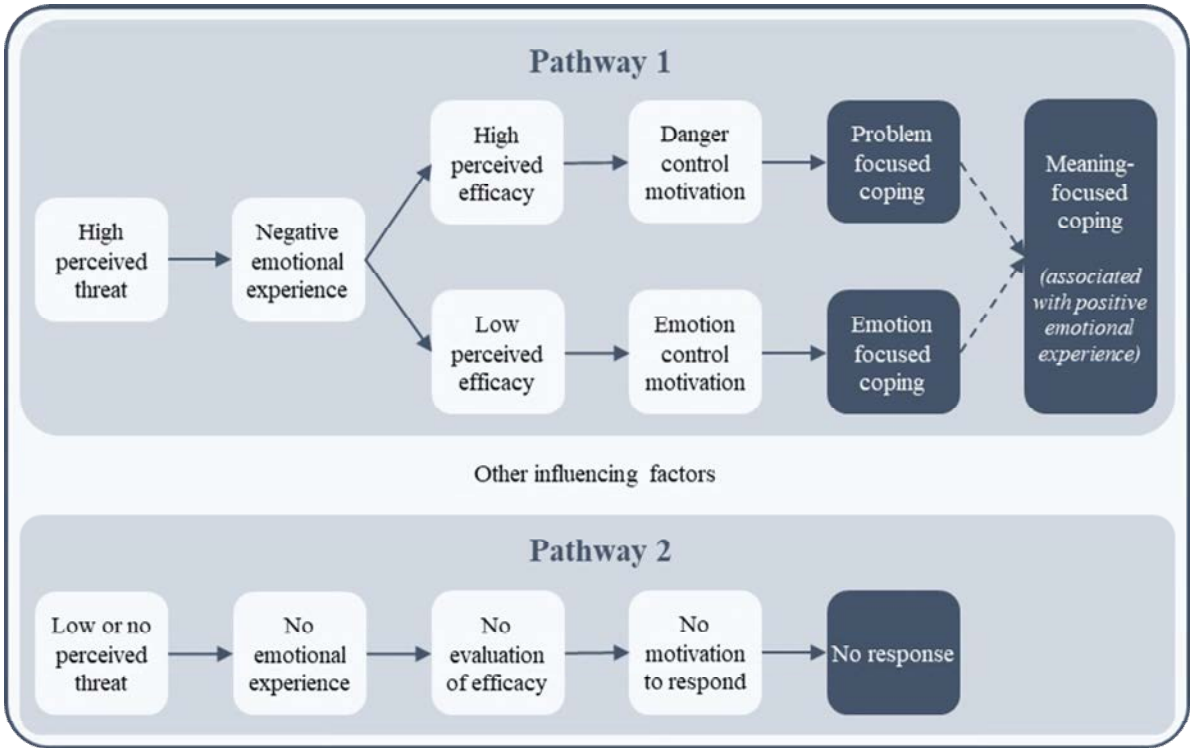
Regarding climate change it was expected that individuals may demonstrate emotion control motivations or no motivation to respond. The absence of motivations to respond to climate change lends partial support to this hypothesis. However, just because no evidence of emotion control motivations was found in this study, does not mean that commercial fishers did not experience them. Taking all the reported findings thus far for climate change, it is possible that individuals will either perform no response or emotion-focused coping. As of yet, there is no evidence that participants engaged in meaning-focused coping in the context of climate change in this study, however, while unlikely it is still possible that participants have engaged in meaning-focused coping should emotion-focused coping have failed.

10 Results and Discussion: Responses

The purpose of this chapter is to explore *how commercial fishers respond to threats to their livelihood or the commercial fishing industry* (research question 5, Figure 42). Based on findings reported in previous chapters, it was argued that commercial fishers would respond to the perceived threat of fisheries management using a range of problem, emotion, and meaning-focused strategies, but in contrast, in response to climate change, commercial fishers would either perform no response, or engage in emotion-focused strategies.

Figure 42

Guiding theoretical framework and constructs of interest for RQ5



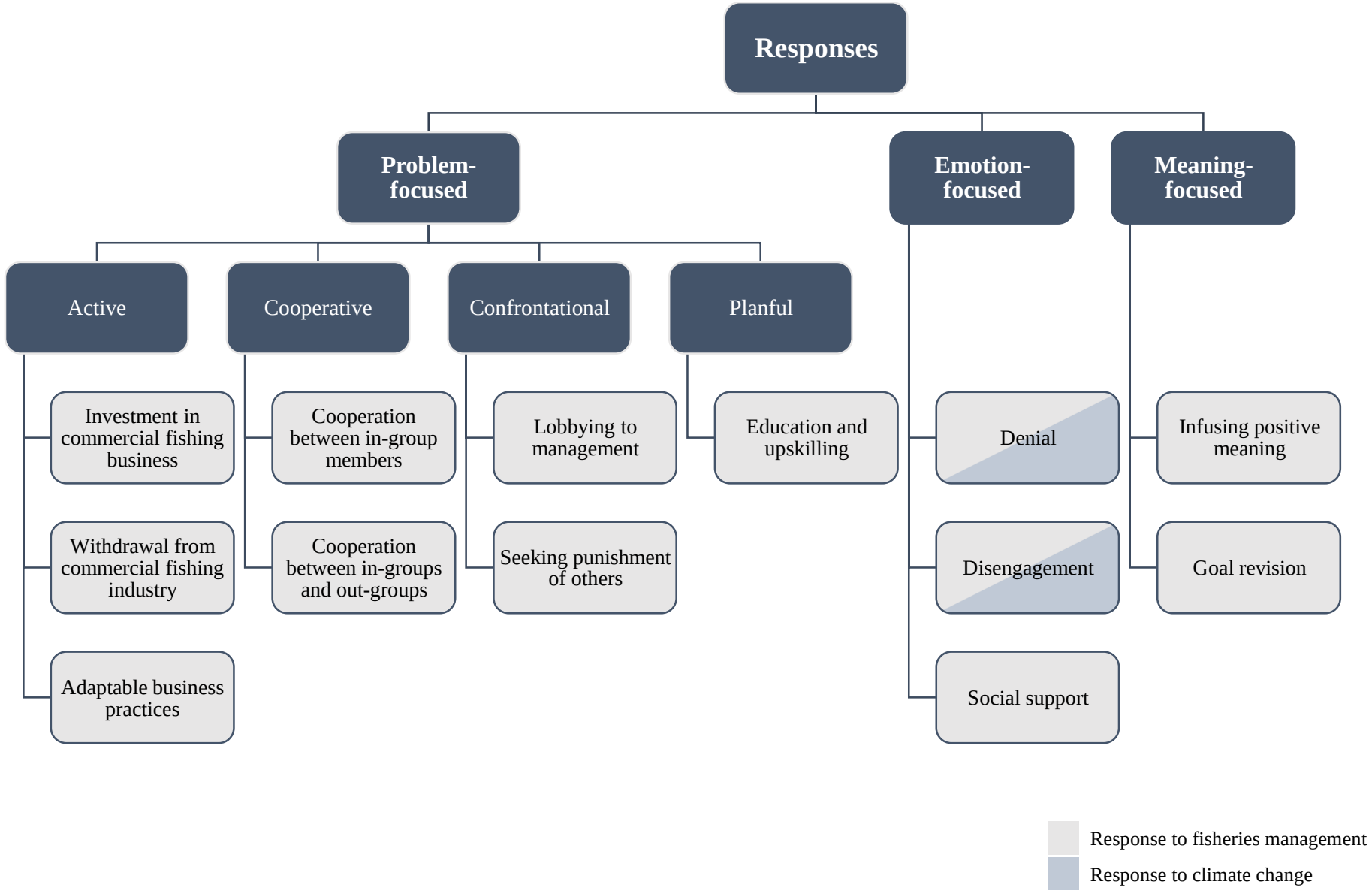
10.1 Results

During interviews, participants were asked about the coping and response strategies they employed as a result of their experiences of threat. The coping and response strategies employed by participants can be categorised under three broad categories identified in the literature: problem-focused, emotion-focused, and meaning-focused coping. Problem-focused coping strategies are those that are directed at resolving the problem, emotion-focused coping strategies are directed at resolving the negative emotional state and meaning-focused coping strategies are directed at altering personal beliefs, values, and motivations (Folkman & Lazarus, 1980, 1985, 1988a, 1988b, 1988c; Folkman et al., 1986; Folkman & Moskowitz, 2004; Lazarus, 1996, 1998; Lazarus et al., 1985; Lazarus & Folkman, 1987). When discussing the coping strategies that they employed, participants were also prompted to

consider the efficacy of their responses (perceived response efficacy). The specific strategies that participants use under these broad categories and participants' perceptions of the efficacy of these strategies (perceived response efficacy) are summarised in Figure 43 and reported in the current chapter.

Figure 43

Summary of participant responses

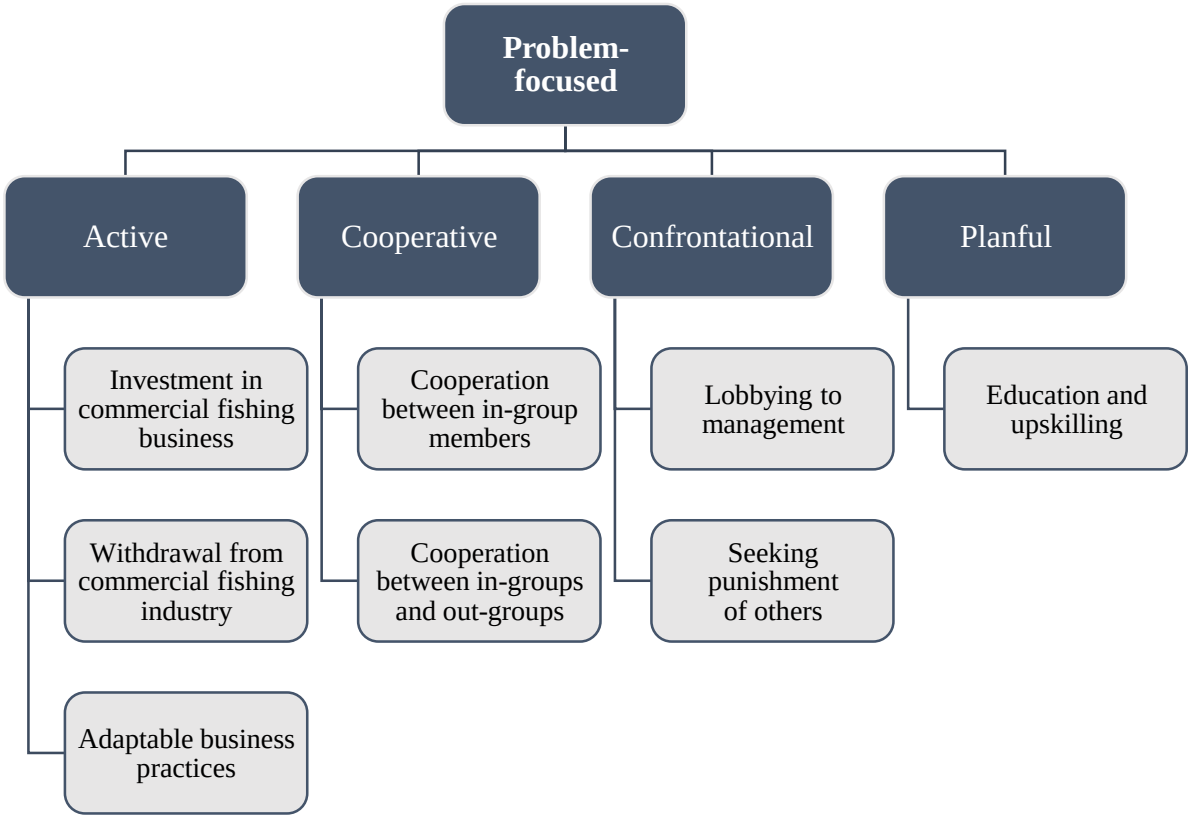


10.1.1 Problem-focused strategies

As defined in Chapter 3, problem-focused strategies are those that are directed at the threat in an effort to minimise its impact (Bonanno & Burton, 2013; Carver et al., 1989; Folkman & Moskowitz, 2000b, 2004; Vitaliano et al., 1985). That is, the individual seeks to change the environment in the person-environment relationship to eliminate or reduce the threat, and in turn minimise their experience of negative emotions (Folkman & Lazarus, 1988b; Folkman & Moskowitz, 2004). Through reflexive thematic analysis of participants' experiences, it was identified that participants employed four unique problem-focused strategies: active coping, cooperative coping, confrontational coping, and planning (or planful) problem solving in response to fisheries management (see Figure 44).

Figure 44

Participants' problem-focused coping strategies



10.1.1.1 Active problem-focused coping strategies. Active coping is often referred to more generally as problem-focused coping as it involves taking action to eliminate or reduce a threat (Carver et al., 1989). When engaged in active coping strategies, the individual seeks the resources available to them and directs such resources towards resolving the threat (or changing the environment in the person-environment relationship) (Aldwin & Revenson,

1987; Zeidner & Endler, 1996). Participants did not report engaging in active coping strategies in response to climate change however when discussing the challenge of fisheries management, participant responses demonstrate the use of three broad types of active coping strategies including (a) investing more time, money, and effort into their business, (b) reducing their investment in the industry, and (c) engaging in adaptable business practices.

10.1.1.1.1 Investment in commercial fishing business. Participants reported that they had increased their financial investment in the industry as a strategy to overcome challenges posed by fisheries management. For example, participants reported, "…we've had to get to the bank to restructure all our loans…" (Julie) and one participant said the following about their decision to purchase quota, "Because I'm trying to offset the ones that I paid a lot of money for with the cheap ones trying to get my cost base down." (William). Additionally, participants reported increasing their workload. For example, participants reported, "...I've got [a] massive, big green zone out the front here… I don't understand why we're not allowed to utilise the area that we have… I basically have to work bad weather and things like that…" (Anthony), "…we need seafood coming up the wharf so I've gotta keep fishing." (Richard), and:

> …when you put, another few people on top of what's here, like I go out and catch… enough for what I need for me customers. So that's enough for me. But if you got someone there knocking off the cream, I harvest it. So, I've got to fish all the time. (Victor)

10.1.1.1.2 Reducing investment in the commercial fishing industry. Participants also reported reducing their investment in the industry by decreasing the size of their business or cutting costs as a strategy to overcome the challenges posed by fisheries management. As highlighted in the following responses, participants reported that they were decreasing their financial vulnerability by cutting costs in their business, "I've done my utmost to cut costs. That's the only way I can do anything off my own back, is to cut costs in my own operation. And I have slashed costs..." (Timothy), and:

> So, I bought a boat that I don't need anybody else to work with me, so I cut my human resources straight out because that is a problem I see. So, I structured my business to work around that problem. Same as the green zones… I bought a smaller boat which is more economical running, it goes a lot quicker than say your bigger boats so I can get past these areas quickly. (Anthony)

10.1.1.1.3 Adaptable business practices. Participants demonstrated they had engaged in adaptable business practices including being flexible in their fishing practices and diversifying their income streams to overcome the challenges posed by fisheries management. Participants reported that to be flexible in their fishing practices, they were flexible in the locations they fished, and they experimented with fishing practices. Participants reported travelling to new fishing grounds as a consequence of regulatory changes, "We have to go somewhere to try, and you know supplement the income that we've lost through those previous zoning issues." (John). Furthermore, participants experimented to find ways to improve their fishing practices, "You're constantly, from the day you start… you're changing your fishing gear, you're changing your areas, your times… the type of fish that you're looking for." (Timothy). To diversify their income streams, participants diversified the fisheries they worked in, and seeking income from complementary livelihoods. For example, "…we have drought proofed ourselves by diversifying a little bit." (William) and:

> I do a little bit of this and a little bit of that… I'm not as sort of full time on one thing… I'm diversifying in what I do… the barra closure's coming off on the first of Feb, I'll go chasing barra for a month, then I'll come back, and I'll go chasing prawns. When the prawns finish, I go out and chase Spanish mackerel. You know, I have a dip in everything… (Peter)

Working in various other complementary livelihoods was also a strategy used by participants. For example, the following participant also worked as a farmer, "…farming and fishing has been hand in hand because ah the fishing, the fishing that I do is the farm slack period… through the wet season." (Daniel). Another participant used their trade skills to supplement their income as a fisher, "I've got the mechanical side of the business too." (Larry). One participant started their own commercial fishing training business, "I own another business… I also train commercial fishing." (to ensure confidentiality of responses, the participant pseudonym has been omitted in this instance). And participants said, "…we started a retail business." (Richard), and "I'm lucky because I've got the shop here behind me but um, but if I didn't have this shop, it'd be hard out there." (Peter).

10.1.1.2 Cooperative problem-focused coping strategies. Cooperative coping strategies are those that involve working with others to facilitate individuals or groups to change the environment in the person-environment relationship. That is, action which is intended to reduce or eliminate the threat is driven by cooperative behaviour. Participants

reported cooperative coping strategies that included both cooperation between in-group members, and cooperation between in-group and out-group members.

10.1.1.2.1 Cooperation between in-group members. Participants reported two broad types of responses which involved cooperation with other in-group members: (a) cooperation for collective action of the in-group and (b) seeking social support (or cooperation) to support individual action. Participants reported they were working to unite commercial fishers as a group, to bring about industry change. For example, one participant reported that they had helped establish a network amongst fishers where they provided each other support such as, "we all kind of help each other and what, the amount of letters that are being written to MPs and um, well submissions that have been put into the government…" (Michelle).

Participants also recounted experiences where they had either provided or received instrumental support from other commercial fishers, demonstrating the reciprocal nature of cooperation between commercial fishers. The follow participant described how they had benefited from the support of his fellow commercial fishers, "When [I got my boat] … when it was made, those blokes helped me put it all together. Otherwise, you couldn't." (Charles). The reciprocal nature of the cooperation between fishers is further highlighted through responses such as:

> Yeah well, there's sort of a group, a circle of friends that I'm in, all with other small boats you know, we do help each other quite a bit…. A lot helps ends up being financial gain, but it's not really hand over money to each other, it's just…things like, lend an esky[18] here… help out with other things there. (Larry).

10.1.1.2.2 Cooperative strategies between in-groups and out-groups. Participants reported coping strategies they had engaged in which involved cooperating with members of various out-groups. Specifically, participants' engagement with management authorities, members of the general public and researchers. Participants reported being involved in both informal and formal engagement opportunities with **management authorities** to overcome the challenges posed by fisheries management. For example, participants reported "…going to meetings…" (William). as part of formal engagement processes with fisheries managers. This participant's response reflected a cooperative problem-focused coping strategy as they worked with management authorities to reduce their carbon emissions, "We've worked with

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[18] Esky is an Australian brand of portable coolers and the word "esky" is commonly used in Australia to refer to portable coolers.

GBRMPA[19] on a carbon emissions calculator with making our boats more economical less fossil fuel burn, more efficiency." (William). Participants reported informally engaging with management authorities via face-to-face and telephone interactions to be transparent about their fishing practices. For example, the following participant reported "… we would ring the fisheries officer here, and say we're going to [fishing area], we'll be there for four days, we're gonna [fish], you know over near [island]." (Patricia). Additionally, participants used informal engagement to educate management authorities about the commercial fishing industry, for example:

> … a majority of our regulators don't fully understand how [the fishing industry] works, so you know we've had the federal fisheries minister on the boat going through with her how our electronics operate, how we physically catch the fish, what our limitations are on a fishing day so she can understand and see what goes on, so they don't have this sort of clouded view, of what, what's happening… (Michael)

One participant reported that they engaged with **scientists** to support industry research. For example, this participant reported, "We've helped put [scientific evidence] there. We've had scientists on our boat, we've had fisheries observe us, we never knocked them back." (Patricia).

Participants reported various using various methods for engaging with the **general public** to educate the public about the commercial fishing industry and promote their business. They report they did so by taking advantage of informal opportunities to engage with the public to promote their produce and their work. For example, participants reported, "… I'm so proactive for local fish, I promote that it's local Queensland catch." (Michelle), "… you're always trying to promote you're local and you're fresh and all that… you're just trying to do the right thing." (Scott) and:

> You know, [fishing]'s part of the Australian life. I go into a creek and people come up and talk to me…. If they haven't got a fish, I'll give 'em one. But if they don't wanna talk to me, well they don't get a fish. Simple as that. But I have no problem giving anyone a fish… it might be worth $50, who gives a shit… I'm happy giving it to them. You know, we're not all there just to rape and pillage and it's all bullshit. (Victor)

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[19] Great Barrier Reef Marine Park Authority (GBRMPA)

Participants also employed engagement strategies that required forward planning. For example, one participant reported that they attended the local high school with other industry representatives to educate students about the industry:

> …so, I try and get out there… every year… [teachers] invite me over the Marine Ed course… With one of the fisheries officers here… he and I went around the schools, and we talked about um, the environment and the commercial industry's point of view. (Patricia)

Another participant reported that his father once held a local seafood day to celebrate and promote local seafood:

> … when my father was alive, he had the shop here he'd run um, he'd get his shack room and he'd have a bloody seafood day, a local seafood day and they'd put the marquees up and, they'd have a special on scallops or something else and they'd get the public'd come down and look and they'd do a few cooking displays and different things… (Scott)

Participants reported using various forms of media to engage with the general public. For example, one participant used social media, "I've started a campaign on Facebook and, I got a site on there… I'm trying to educate people…" (Edward). One participant reported that they had created a short film about the industry to use as an education and promotional tool:

> Years ago, I had to sit down to those tribunals and go over there and I thought righto they don't even know what we do. So, I jumped on with these blokes as an extra… alls I had was a video camera and that is the best fishing show I've ever seen, I didn't know what I was doing. We had a good editor, but no music nothing. So, if I had to stand up and put up my case, I could spiel there in front of them. (Charles)

Additionally, participants reported using traditional media such as newspapers. For example, participants reported:

> … we've done a couple of articles… I had caught fish on Saturday and Sunday, and we took it to the fish market on Monday and I rang them and said, would you like to come down and get some photos of the fish we just caught because we caught it locally and it's going to be sold locally. (Patricia)

10.1.1.3 Confrontational problem-focused coping strategies. Confrontational coping strategies are those in which the individual takes a more aggressive approach to

altering the environment in the person-environment relationship. When using a confrontational coping strategy, individuals are directing their efforts towards reducing or eliminating the threat, however, do so in a way that may involve hostility, aggression or risk taking (Folkman & Lazarus, 1988a; Folkman et al., 1986). Participants reported confrontational coping strategies including lobbying to management authorities and seeking the punishment of others.

10.1.1.3.1 Lobbying to management. The most commonly reported confrontational strategy used by participants was lobbying (attempting to influence management authorities). For example, participants said, "Lobby. We've had to lobby more now than we ever had in our lives." (William), and "Alls I can do is just lobby the ministers and departments." (Charles). While lobbying involves engaging with management authorities, lobbying reflects a more confrontational than cooperative style. The confrontational and aggressive nature of lobbying is highlighted in the language used by participants. For example, participants often more aggressive language such as "fight," "pushing" and "kicked and screamed" to describe their behaviours. For example, participants reported, "Oh, mate… we're trying to *fight* as hard as we can to try and stop these closures." (Harry), "[I] just keep *pushing* Queensland fisheries to get on with the process." (William), and "So we *kicked and screamed* all the way, and we still are today." (Richard). Participants reported collecting signatures for petitions to protect their access to fishing grounds to use as evidence to support the industry when lobbying. For example, one participant said:

> On some of these websites that [recreational fishers]'ve got umm, they're trying to get petition, to get people to sign a petition for the nets out, right? We're trying to get a petition as well, from people that still want access to local fresh fish in our, from our waters too. (Patricia)

10.1.1.3.2 Seeking punishment of others. Participants reported that they would take action to catch and punish people who were catching and selling seafood without an appropriate licence. For example, participants reported experiences where people who caught seafood without the appropriate licences attempted to sell their produce to the participant, who then attempted to contact the management authorities, "Yeah, rather than just telling them to go away, I'm, now I'm like, 'Yeah sure, of course, come in!' And then I ring the fisheries and try and tee it up with them." (Michelle).

10.1.1.4 Planful problem-focused coping strategies. Similar to other problem-focused strategies, the individual's efforts are directed at reducing or eliminating the threat.

Unlike other problem-focused coping strategies however, planning or planful coping does not necessarily involve action (Carver et al., 1989; Folkman & Lazarus, 1988a, 1988b). The focus of planning or planful coping is contemplation of how to cope with or respond to the threat and then taking the necessary steps to prepare before taking action (Carver et al., 1989). Participants reported engaging in a range of activities to educate themselves to enhance their ability to cope and respond to challenges presented to them. For example, the following participant reported that they took the time to understand how the industry worked before investing in it, and attributed their success to what they had learnt by doing this:

> … I ran a commercial trout boat for five years, a 20-metre boat before I decided to buy a business up here, I wanted to understand the industry and I wanted to run a business… before I bought my own and invested my own money. (Anthony)

Similarly, participants said, "… we're proactive, we keep up with the latest changes in the industry, and abreast of the changes that could come, good, bad, indifferent…" (William). As highlighted in the following responses, participants reported that they accessed information through industry publications, via the internet and word-of-mouth to stay informed, "See that, Fisheries Research and Development Corporation, that's a big, that's been around for years, we subscribe to that magazine, and we read it and there's a lot of information that's given by the industry into that." (Patricia) and "Oh mainly internet, trying to find out what the latest rules are, or trying to find out something and that. You know but it's mainly word of mouth trying to keep up with it all." (Scott). The following participants also reported that they planned to undertake formal education, "I'm just about to do a Cert 4…" (Anthony), and:

> … I'm gonna have to start going to TAFE which means I'm gonna be running my car into TAFE cause I'm gonna have to get my bookwork qualifications underway so I can start doing that and earning more money… (Julie)

Additionally, participants reported that they supported others in the industry to develop their skills and abilities through formal education. For example, one participant reported that they had established a commercial fishing training business. This participant reported that they recognised there was a lack of training opportunities for participants and took action to fill this gap (to ensure confidentiality of responses, the participant pseudonym has been omitted in this instance). Additionally, one participant reported that they facilitated educational opportunities for his crew:

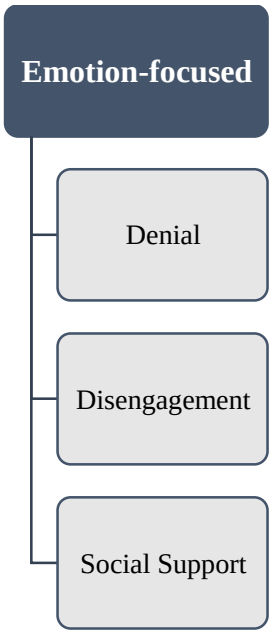
> … I encourage the fishers that I have on the boats to improve their education be it through adult education courses or otherwise, to read more, to improve their level of understanding of things on a broad scale, not just with what we're doing. (Michael)

10.1.2 Emotion-focused strategies

As defined in Chapter 3, emotion-focused strategies are those in which the individual responds in a way that alters their emotional reactions to the problem (Bonanno & Burton, 2013; Carver et al., 1989; Folkman & Moskowitz, 2004; Vitaliano et al., 1985). That is, the individual directs their attention to their emotional experience of the threat, and seeks to alter their emotional experience, or in other words, alter the person in the person-environment relationship (Carver et al., 1989; Folkman & Moskowitz, 2004). Through reflexive thematic analysis of participants' experiences, it was identified that participants engaged in three unique emotion-focused strategies: denial, disengagement, and seeking social support for emotional reasons. As highlighted in Figure 45, there was evidence of commercial fishers using all three strategies in response to fisheries management, but only denial and disengagement in response to climate change.

Figure 45

Participants' emotion-focused coping strategies



10.1.2.1 Denial. Denial is an emotion-focused coping strategy in which the individual seeks to alter their emotional experience through conscious or non-conscious denial of the existence of the threatening event (general denial), or denial of the severity of a threatening

event (threat minimisation). As fisheries management was a participant-identified threat it was not possible for participants to completely deny the existence of this threat. However, there was evidence that commercial fishers may engage in denial through threat minimisation. Participants reported that other commercial fishers did not recognise the severity of the threat that fisheries management posed, for example, "…there's a lot of people in the industry that think things aren't gonna change, but they're… ignorant." (Edward) and "I have come to the realisation that there's an old Australian saying, 'It'll be right mate.' … all the old-time fishermen I've been speaking to lately said, that's what we've been saying for years. 'We'll be right mate.'" (Julie). Furthermore, the following participant reported that other commercial fishers are realising too late that they need to engage with the threat of fisheries management, "… they're realising now, they had to do [something], but it's how, how late is it? They're getting desperate. They're just shocked some of them…" (Susan). This finding does not provide evidence that the participants interviewed were engaging in denial but suggests that there may be others in the industry who do.

Many participants denied the existence of climate change and denied the severity of climate change. For example, when participants were asked whether they believe climate change posed a threat, some simply said, "No." (George & Peter). Participants' denial of climate change was further demonstrated in responses such as, "Absolutely not… Absolutely not. Well, it'd have to be an effect there for me to get up and say something." (Charles). Furthermore, the following responses demonstrated participant's lack of concern about the threat posed by climate change for commercial fishing, "I'm not concerned about climate change, and do not intend to change any practices I do significantly to make any major, concession towards it." (Michael), "…I can't see it being any sort of problem." (Peter) and "Climate change is not really a major issue fishing as far as I see it." (Daniel).

10.1.2.2 Disengagement. When disengaging from a threat, individuals seek to (consciously or non-consciously) alter their emotional experience by engaging in escapism and avoidance of the threat. Participants' responses demonstrated that they were disengaging from threats posed by both fisheries management and climate change. Participants' responses highlighted both behavioural disengagement (giving up or withdrawing from the community) and mental disengagement avoiding thinking or talking about the issue or threat). For example, participants reported feeling exhausted, a lack of motivation and the desire to give up, "…we have days where we do, 'Really is this worth it? Is what we're doing worth the energy?'" (Julie). Participants reported they felt like giving up and it was getting too hard for them to continue in the industry, "...I get to the stage now, it's starting to get too bloody

hard…" (Charles). Additionally, participants reported that other commercial fishers were exhausted and felt like giving up fighting for the industry. For example, participants said, "William has been stressed and he's just yeah, even he got to the stage, 'What's the point? We're not getting anywhere, there's nowhere else left to go.'" (Susan), "They're just, they're tired, and they just can't fight anymore." (Michelle) and "…all the old-time fishermen I've been speaking to lately said, '…We did our fighting, our fighting's over and done with, we're tired, we wanna sell up, we wanna finish. We've had enough.'" (Julie).

The following participant's responses highlights how they withdrew from their local community to protect themselves emotionally, "What I've found out, I'm better off knowing nothing because you're gonna get what you get anyway. Waste of time fighting and the less you know the less stress you've got." (Victor) and:

> And it's just like, in a tiny town… we've had to close our doors, leave our really good friends around us, and we don't go out and do anything anymore. We don't to big social gatherings or to the cricket days at the local primary school or anything anymore because it's just too hard. Just, it's too hard emotionally, it's too hard mentally, you know to have to justify living. (Julie)

Furthermore, the following response demonstrates how this participant avoiding taking about their struggles, "…I sorta just keep a lot of things bottled up to me-self…" (Harry) or thinking about issues, "… I basically stopped listening to it a whole ago…" (Larry). As the following response highlights, this participant also felt that others in the industry avoiding talking about their struggles, "And there's all struggles all back in those days too… a lot of people don't like talking about it mate, you know." (Harry).

Participants' responses also demonstrated they were disengaged from climate change by turning their attention to other problems, blaming others for climate change and by avoiding discussions of climate change during interviews. Participants' responses demonstrate that participants preferred to direct their attention away from climate change by focusing on other issues they perceived to be more important or imminent. For example, it was reported, "In terms of direct and immediate impacts to the industry, personally, I think there are bigger things at play than climate change." (Michael), and:

> I think it's the last of our worries at the moment [laughs]. I think climate, it's the one thing that we're like, oh yeah well you know, I think there's that many other thorns in our side that climate change is just yeah. (Michelle)

Additionally, participants tended to focus on what others were doing to cause climate change, or what others weren't doing to address climate change. For example, the following responses highlight how participants focused their discussion of climate change on how those who they perceive to cause climate change aren't adequately addressing the issue:

> And yet they let these industrial countries like China and India and all that they just fumes, you know they're just fumes you know their big factories are just carbon, carbon dioxide into the atmosphere like ridiculous amounts so if it was really a problem, why aren't they doing something about that? … I mean, why waste money coming down to Australia, why waste millions of dollars and hundreds of millions of dollars coming down to tell Australia to look after it's reef when they should be doing something about these factories that are pushing this shit into our atmosphere. (Patricia)

Participants' disengagement from climate change was further demonstrated by their responses to how they answered the interview question about climate change. Typically, participants in one-on-one interviews would spend approximately 35 minutes, and participants in focus groups would spend approximately 83 minutes discussing fisheries management and the related impacts. In contrast, participants (in both one-on-one interviews and focus groups) would typically spend approximately 5 minutes discussing climate change. Additionally, during interviews it was noted that there was a distinct change in their body language and tone of voice when asked about their thoughts on climate change. For example, participants' tone of voice indicated that they felt frustration or annoyance about being asked about climate change.

10.1.2.3 Social support. Individuals may approach their social networks for emotional support in an effort to alter their emotional experience. Participants' responses highlighted that they sought emotional support through their existing social networks and through networks which were established to facilitate giving and receiving social support. For example, the following participant reported that at times, he did speak to his friends about challenges he was facing:

> … I don't really um, yeah talk about much you know what I mean, I sorta don't really talk to other people about other stuff. You know I might talk to a couple of mates and stuff but, they're in the same industry that I'm in you know, they're the same, they just wonder where, what, what's gonna end up happening you know? (Harry)

Additionally, the following participant reported that they contributed to establishing a group where commercial fishers can go to, to give and receive support from others, "… we talk a lot to other fishermen up and down the coast and in New South Wales and, and get a lot of um, well we all kind of help each other…" (Michelle). Participants' responses highlighted that it was important to them that people providing emotional support truly understood what it meant to be a commercial fisher, and that those who didn't couldn't meet their need for emotional support. This belief was demonstrated in the following response:

> And but it's not just that it's like um one of our friends her mother has had some issues and you know, so it's that support network of you know. You know sometimes, you know same stuff going on in your life and you've got the same group of friends and they, you can sort of see it on their face that they don't wanna hear about it. You know to have people outside that who understand the stressors of the fishing business and then your personal stressors on top of that… (Julie)

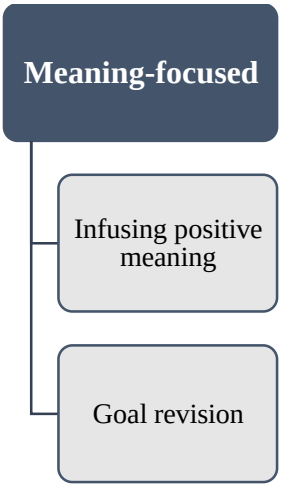
10.1.3 Meaning-focused strategies

As defined in Chapter 3, meaning-focused strategies typically involves altering the person rather than the environment in the person-environment relationship (Folkman, 2010a). In contrast however, while individuals engaging in emotion-focused coping turn their attention towards altering their emotional experiences, when an individual engages in meaning-focused coping the attention is turned to personal beliefs, values, and motivations (Folkman, 2010a). That is, in meaning-focused coping, cognitive strategies are employed to alter the meaning of the situation (Folkman & Moskowitz, 2004). Through reflexive thematic analysis of participants' experiences, it was identified that few participants engaged in meaning-focused strategies however two meaning-focused coping strategies were identified within participants' responses to fisheries management: infusing positive meaning and goal revision (see

Figure 46).

Figure 46

Meaning-focused coping strategies



10.1.3.1 Infusing positive meaning. Participants remained hopeful or positive despite the challenges they were facing using optimism and humour. They were able to find positives in their situation and look to the future with hope which was demonstrated in responses such as, “We’re happy for what we’ve got, we’ve got three healthy kids…” (William), “Make the best of what you’ve got” (Susan), and “No, you were dedicated, the glass is half full.” (Susan). Additionally, participants maintained their sense of humour despite their situation. For example, when discussing how they did not perceive that tourism was a viable business alternative, a participant jokingly said, and “Charter boat? What charter boat?!” (Julie). This phrase is a well-known reference from a popular advertisement[20] for Royal Automobile Club of Queensland (RACQ) Insurance where a man explains how he crashed his boat, while a woman mocks his failure to see the charter boat by draping clothes over her head, stumbling around saying “Charter boat? What charter boat?”

The following participant responses demonstrate the value that optimism and humour brought to their life, and that they felt that optimism and humour was missing from others’ lives:

> … we have to laugh. We sit and we cry, and we stress, and we do everything like that, but we’ve gotta find things to laugh about and I think the problem being is that a lot of these fishermen aren’t finding things to smile at anymore. (Julie)

[20] The advertisement can be viewed by following this link: https://www.youtube.com/watch?v=UadHCpSjyew

And:

> … you can't look at the negative you have to look at the positive… Crew quite frequently on the boat say to me… 'Win the lotto next week, I won't have to work.' And I'm, my statement to them is, 'You've already won the lotto. You've won the lottery of life. You were born in Australia. It is how you deal with that that now matters.' For the same as a financial lottery like Gold Lotto. People win millions of dollars in lotto and are not happy and they lose it all within the space of a few years. (Michael)

10.1.3.2 Goal revision. To overcome the challenges posed by fisheries management, participants reported that they were considering leaving the commercial fishing industry. Considering leaving the commercial fishing industry reflects a reordering of priorities to make space for new goals. For example, the following responses demonstrate participants' contemplation of leaving the industry, "I don't have to be here another 10 years. I'd like to be able to sell up and get out." (Richard), and "You know, what do I say to him to say, 'Well, let's sell the fishing business.'" (Julie). While some participants had no specific plans beyond leaving the commercial fishing industry, others had general thoughts about earning their income through an alternate livelihood. For example, participants reported, "Yeah oh well, if the fishing gets crook or we're not making anything you just go and do something else don't ya?" (Daniel) and "I mean if I don't make enough… might as well go driving a truck or something aye." (Larry).

10.2 Discussion

The aim of this chapter was to understand how commercial fishers respond to threats to their livelihoods and the commercial fishing industry. It was found that in the context of fisheries management, as expected individuals engaged in a range of problem-focused, emotion-focused, and meaning-focused coping strategies. In contrast, in the context of climate change individuals tended to engage in emotion-focused coping only.

10.2.1 Problem-focused coping

Problem-focused strategies are those in which the individual responds to the problem (fisheries management, climate change and the associated perceived consequences of each) in an effort to minimise its impact and the associated negative emotional experience (Bonanno & Burton, 2013; Carver et al., 1989; Folkman & Moskowitz, 2000b, 2004; Vitaliano et al., 1985). Participants demonstrated they had engaged in problem-focused strategies in response to fisheries management including active coping, cooperative coping, confrontational coping

and planful coping. Additionally, the results demonstrated that commercial fishers in this study had engaged in cooperative coping strategies in the context of climate change.

Active coping is the most obvious form of a problem-focused strategy in that it involves the individual seeking resources available to them and directing them towards resolving the threat (Aldwin & Revenson, 1987; Carver et al., 1989; Zeidner & Endler, 1996). The results demonstrated that commercial fishers engaged in a range of active coping strategies to minimise or reduce the impact of fisheries management and its associated perceived consequences while continuing their livelihood. Morgan (2016) similarly described a range of response strategies that allowed commercial fishers to continue fishing.

For example, fishers invested more time, money, and effort into their business to overcome the threat of fisheries management. Similarly, Morgan (2016) reported that commercial fishers in the English Channel responded to industry challenges by increasing fishing effort through increasing the number of days they fished or worked longer days. Other fishers downsized their commercial fishing business or cut costs to overcome the threat of fisheries management. Correspondingly, researchers have found that fishers have cut costs by employing fewer or no crew, introducing technological innovations or withdrawing less efficient vessels (Coulthard & Britton, 2015; Morgan, 2016).

Commercial fishers in this study also engaged in adaptable business practices such as being flexible in their fishing practices and diversifying their income streams to overcome the impact of fisheries management. Similarly, researchers report that commercial fishers modify their fishing practices by fishing different grounds (Coulthard & Britton, 2015; Morgan, 2016) and diversifying fishing methods (Morgan, 2016). Morgan (2016) argues that fishers will typically attempt to alter their fishing practices before they diversify their income streams and may resist diversification. Despite this potential resistance, researchers have shown that fishers diversify their income streams using strategies including fishing multiple fisheries (Holland et al., 2017; Morgan, 2016) or working alternate livelihoods to supplement their income (Campbell, 2015; Forster et al., 2014; Marshall & Marshall, 2007)

It was also found that commercial fishers engaged in **cooperative** strategies in which they worked with other commercial fishers or members of out-groups. When engaging in cooperative strategies with other in-group members, commercial fishers cooperated to achieve collective action or to seek or provide instrumental support to facilitate individual action. Similarly, researchers report fishers engaging in cooperative activities to facilitate individual action such as the transfer of information as well as sharing of resources such as food, fuel, and medicine (Himes-Cornell & Hoelting, 2015; Lavoie & Himes-Cornell, 2019).

Additionally, commercial fishers engaged fisheries managers formally (for example through consultation processes) and informally to influence fisheries management decisions and increase the transparency of their fishing activities, and with the general public to increase understanding of the industry via planned events and media (including social media and traditional media).

Commercial fishers in this study also demonstrated the use of **confrontational** strategies when responding to fisheries management. Confrontational strategies tend to be very similar to active coping strategies however they are more aggressive in nature and may involve aggression, hostility or risk-taking (Folkman & Lazarus, 1988a, 1988b, 1988c). Specifically, the confrontational strategies employed by participants included lobbying to regulatory authorities and policy makers and seeking the punishment of others (such as people who are not commercial fishers selling produce illegally).

Finally, the results demonstrated commercial fishers' use of **planful** strategies which included seeking education and training to better equip themselves to respond to or cope with the challenges presented by fisheries management and its associated perceived consequences. This finding demonstrates the use of planful strategies as it required individuals to contemplate how they are going to respond to a threat and identify or undertake steps, such as education and training, they perceive are required to respond effectively (Carver et al., 1989; Folkman & Lazarus, 1988a, 1988b, 1988c; Lazarus, 1998).

10.2.2 Emotion-focused coping

Emotion-focused strategies are those in which the individual responds to manage their personal reactions to the threat (Bonanno & Burton, 2013; Carver et al., 1989; Folkman & Moskowitz, 2004; Vitaliano et al., 1985). Participants demonstrated they had engaged in emotion-focused strategies in response to both fisheries management and climate change. The current findings extend what is known about how commercial fishers respond to fisheries management and climate change by exploring and identifying the use of emotion-focused strategies. Few studies other than Nursey-Bray et al. (2012; see page 36 for an summary of findings) have explored what emotion-focused coping responses commercial fishers engage in, in response to fisheries management and climate change.

This study found evidence that commercial fishers engaged in **denial** when responding to the threat of climate change and provided limited evidence to suggest other fishers may engage in denial when responding to the threat of fisheries management. When engaging in denial, individuals tend not to perceive the threatening event to exist, they behave as though the threat is not real, or they perceive the threat to be less severe than what it is

(Carver et al., 1989). Unlike many other coping strategies, denial often occurs without conscious awareness, making it difficult to assess (Cramer, 1998). Furthermore, the results demonstrated that commercial fishers engaged in denial in the context of climate change. This finding may explain some previously reported unexpected findings, including the finding that commercial fishers engaged in efficacy evaluations in the context of climate change (see page 10.3.1 Alignment with cognitive-emotional theories of decision making 204 for a discussion).

Very few studies have explored commercial fishers' perceptions of climate change. However, Nursey-Bray et al. (2012) found that 17 of the 22 commercial fishers they interviewed explicitly denied the threat of climate change or were unconvinced that climate change was a threat. In contrast, CSIRO reported that in a study of Australian's climate change attitudes (n = 5163), only 22% of respondents reported that they believed climate change did not exist. Although the current findings and findings reported by Nursey-Bray et al. (2012) are not representative of the Australian commercial fishing industry, the overwhelming presence of climate change denial in commercial fishers' responses provides reason to believe that the presence of denial may be greater in commercial fishers than in the general population. Potential explanations for climate change denial have been identified including, distrust in climate change communicators (pages 234 and 262); the adaptive value of not perceiving climate change to be a threat (page237); the role of competing threats (page 239); and the role of threat proximity (page 243).

Commercial fishers demonstrated **disengagement** from both fisheries management and climate change. In the context of fisheries management, this manifested as withdrawing from the community and avoidance of thinking or talking about fisheries management. Similarly, commercial fishers disengaged from the threat of climate change by avoiding discussions of climate change, turning their attention to other problems, and by blaming others for climate change. Avoidance behaviours such as these are common disengagement strategies used to escape from negative emotional experiences (Aldwin & Revenson, 1987; Folkman et al., 1986; Zuckerman & Gagne, 2003). There is also likely to be a link between beliefs about the proximity of the threat of climate change and disengagement. Researchers have demonstrated that individuals in the general public (Lorenzoni et al., 2007) and specifically commercial fishers (Nursey-Bray et al., 2012) turn their attention to competition priorities because unlike climate change, such priorities present immediate personal difficulties. Therefore, commercial fishers' orientation away from climate change and towards other threats may be driven by beliefs about threat proximity. That is, those who

perceive climate change to be a distant threat (temporally or spatially) turn their attention towards threats that they see as being more immediate.

Finally, commercial fishers sought out **social support** from other commercial fishers to obtain emotional support that helped them to cope with the threat of fisheries management. This emotional support provided them with moral support, sympathy and in particular, understanding (Carver et al., 1989). Research in the commercial fishing industry has shown that it is common for commercial fishing communities to establish networks for the purpose of providing instrumental support (for example, Himes-Cornell & Hoelting, 2015; Lavoie & Himes-Cornell, 2019; Ramirez-Sanchez & Pinkerton, 2009). However, these findings demonstrate that commercial fisher networks are also used to facilitate emotional support. Given that commercial fishers did not perceive climate change to be a threat, it is not surprising that commercial fishers did not seek social support in response to climate change. Unlike other emotion-focused coping strategies such as denial and disengagement, seeking social support relies on the individual perceiving a threat to exist prior to engaging in the response. In contrast, responses such as denial and disengagement are associated with a lack of perceived threat, resulting from the effective use of those responses (Carver et al., 1989).

10.2.3 Meaning-focused coping

There is also evidence that a few commercial fishers in this study engaged in meaning-focused strategies to cope with the threat of fisheries management. Meaning-focused coping typically involves alteration of personal beliefs, values, and motivations (Folkman, 2010b; Folkman & Moskowitz, 2004). In particular, a few participants demonstrated they had made time for positive events and meanings in their life (Folkman & Moskowitz, 2000b) using optimism and humor to **infuse positive meaning** in their experiences. For participants, this strategy allowed them to maintain a positive mindset in a challenging situation. Very few studies have identified the use of this strategy however, T. R. Johnson et al. (2014) reported that optimism was an indicator of resilience in the Maine fishing community. The infusion of positive meaning is argued to contribute positively to feelings of self-esteem and provide an opportunity to be distracted from the stressor (Folkman, 1997).

Commercial fishers in this study also contemplated leaving the commercial fishing industry as a consequence of the challenges posed by fisheries management. The intention to leave the industry demonstrates commercial fishers' engaging in **goal revision** to reorder priorities in their life. Coulthard and Britton (2015) similarly reported that commercial fishers contemplated exiting the fishing industry to cope with industry change but noted that this was

often a difficult decision for fishers particularly because it is a difficult decision to reverse once it has been made.

10.3 Conclusion

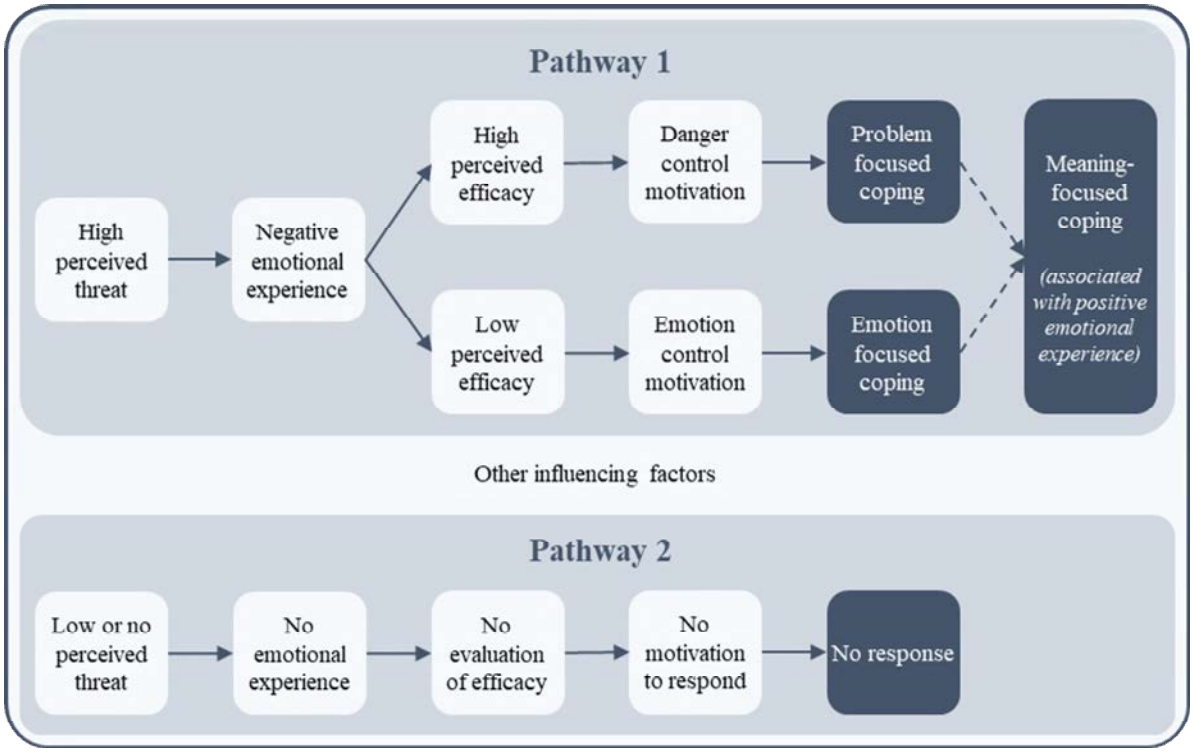
Consistent with predictions made about previously reported findings, commercial fishers engaged in problem-focused, emotion-focused, and meaning-focused strategies in response to fisheries management. Furthermore, findings supported the expectation that commercial fishers engaged in emotion-focused strategies. It was also predicted that commercial fishers may not perform any response in response to climate change. Given that not all commercial fishers reported evidence of engaging in emotion-focused strategies, it is possible that they did not perform any response to climate change.

10.3.1 Alignment with cognitive-emotional theories of decision making

As highlighted in Figure 47, according to cognitive-emotional decision-making theories, the cognitive, emotional and motivational experiences of individual determine the types of responses they perform. In the case of fisheries management, it was proposed that any response (other than no response) is likely manifest, given the evidence that both components of *Pathway 1* had been engaged. Consistent with this prediction, the results demonstrate that commercial fishers engaged in a range of problem-focused, emotion-focused, and meaning-focused coping strategies in response to fisheries management.

Figure 47

Responses resulting from decision making process



For the majority of participants, it appeared that both problem-focused and emotion-focused coping had failed to alter the person-environment relationship successfully. That is, when engaging in problem-focused coping, individuals respond directly to the problem (Bonanno & Burton, 2013; Carver et al., 1989; Folkman & Lazarus, 1988a, 1988b; Folkman & Moskowitz, 2000b, 2004; Vitaliano et al., 1985). When successful, such strategies minimise or eliminate the source of the threat and subsequently, minimise or eliminate any negative emotional experiences associated with the threat. The persistence of both the perceived threat and the negative emotional state despite the performance of problem-focused responses provides evidence that these problem-focused coping strategies were not adaptive in this context.

Furthermore, when engaging in emotion-focused coping individuals respond in a way that they manage their personal reactions to the threat and subsequently minimise or eliminate their negative emotional experience associated with the threat (Bonanno & Burton, 2013; Carver et al., 1989; Folkman & Moskowitz, 2004; Vitaliano et al., 1985). Again, the persistence of the negative emotional state despite the performance of emotion-focused responses suggests that these emotion-focused strategies have not been adaptive in this context. The use of such strategies long term can however lead to negative consequences (Folkman & Lazarus, 1988b). For example, denial can impede on further coping as acknowledgement of the threat is needed for problem-focused coping to occur (Carver et al., 1989). Additionally, disengagement has been likened to phenomena such as learned helplessness, which is proposed to occur when an individual who is repeatedly exposed to inescapable negative consequences, fails to respond to the threatening event in future (Seligman, 1972).

Folkman (1997) proposed that individuals would engage in meaning-focused coping when problem-focused or emotion-focused responding resulted in an unfavourable resolution or no resolution. Given the findings of this research, it appears that participants may have been stuck in a loop of unsuccessful problem-focused or emotion-focused responses, and few had progressed to engaging in meaning-focused coping. Potential explanations for this finding will be explored while examining the role of other influencing factors (see discussion from page 207). For those who had engaged in meaning-focused coping, while it did not diminish the source of the threat, the presence of positive emotional experiences demonstrates that their net emotional experience was somewhat improved. This finding is consistent with research conducted by Folkman (2008) which found that meaning-focused coping is important in maintaining well-being when facing enduring threatening events,

particularly in the absence of effective problem-focused responses or in the face of uncontrollable events (Carver et al., 1989; Folkman, 2010b; Zuckerman & Gagne, 2003).

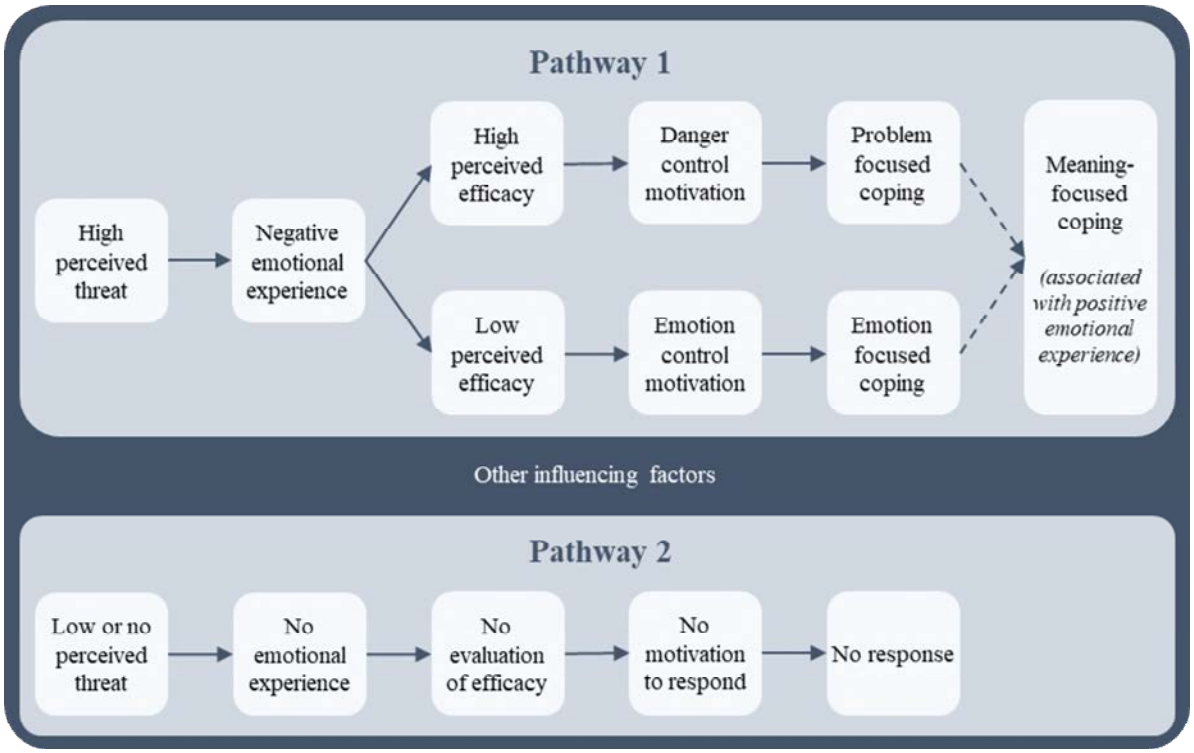
For climate change it was previously proposed that it was likely that if individuals were to respond at all, it was likely they would engage in emotion-focused coping strategies. Consistent with this prediction, the results demonstrate that commercial fishers engaged in some emotion-focused coping strategies. For the majority of participants, it appeared that emotion-focused coping had been successful in altering the person-environment relationship. That is, it may be that in this case that the absence of threat perception and associated negative emotions is a result of effective engagement in emotion-focused coping. If emotion-focused coping had been effective, it would be expected that individuals would experience lower or no negative emotional experience associated with the threat as was found. Additionally, the specific strategies used (denial and disengagement) mean that the individual is unlikely to perceive the threatening event to exist due to processes outside the individual's conscious awareness or as a result of deliberative disengagement from the threat (Aldwin & Revenson, 1987; Carver, 1997; Cramer, 1998; Folkman et al., 1986; Zuckerman & Gagne, 2003). Participants' engagement in emotion-focused coping may therefore explain the unexpected finding that individuals performed an efficacy evaluation in the absence of a high perceived threat and the associated negative emotions.

11 Results and Discussion: Influencing Factors

The purpose of this chapter is to identify other factors which may influence commercial fishers' decision making about and responses to threats to their livelihood or the commercial fishing industry to answer the question, *are there other factors that contribute to commercial fishers' decision making and responding, and what are they* (research question 6, Figure 48)?

Figure 48

Guiding theoretical framework and constructs of interest for RQ6

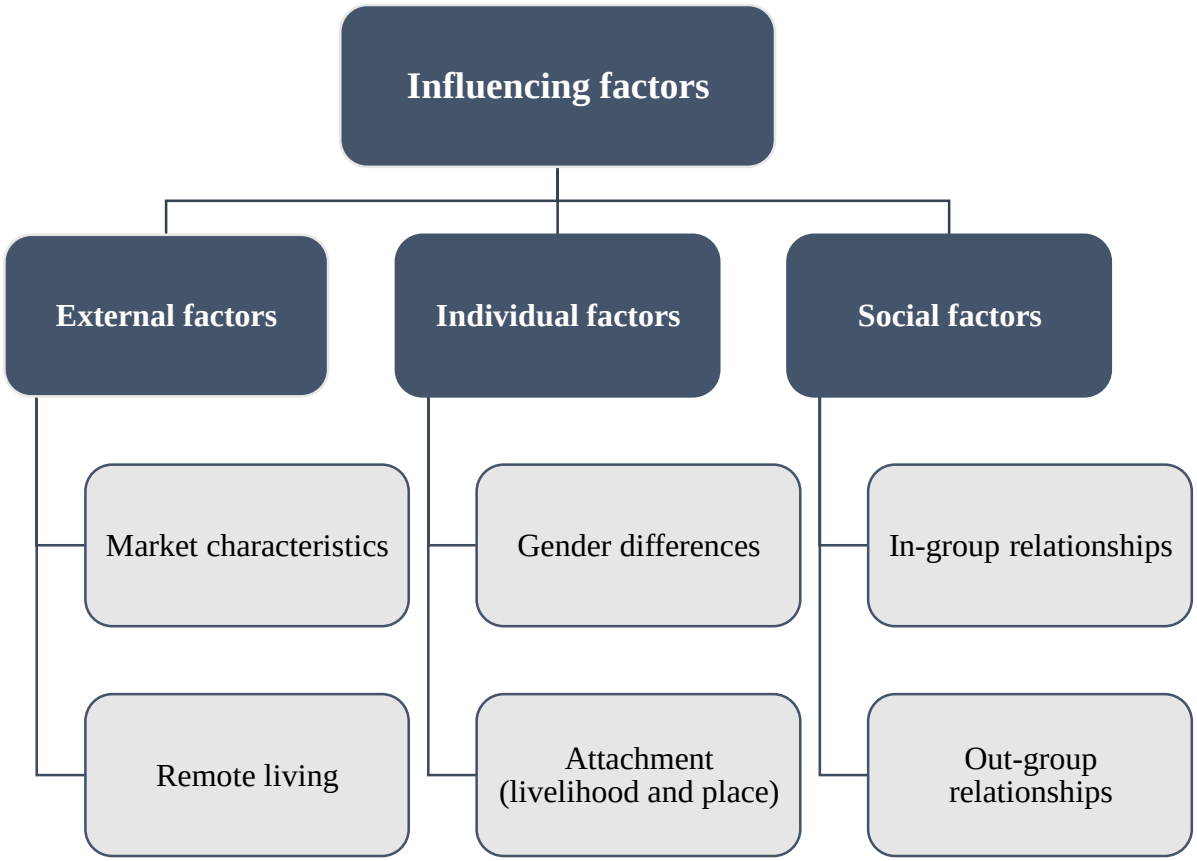


As discussed in Chapter 2 the cognitive-emotional decision-making process and subsequent responses are proposed to be influenced by additional factors such as external stimuli and individual differences (Witte, 1992). It was argued that such factors are important factors to consider when applying cognitive-emotional decision-making theory to a novel context, as is the case in the current study. Using reflexive thematic analysis, several additional factors were identified as potential influences on decision making and subsequent responding. Influencing factors identified in the literature and those unique to this data are reported. Consistent with the past literature, external factors (or external stimuli) and individual factors (or individual differences) were identified as influencing factors in the current study. Additionally, participants' perceptions of their relationships with others (referred to as social factors) was identified as a further key influencing factor. Figure 49 highlights the range of external, individual, and social factors which were identified in the

current research. In the current chapter, the results, discussion and potential interactions with previously reported findings are presented first for the external factors (page 208 - 209), then the individual factors (page 209 - 216) and finally, the social factors (page 216 - 235).

Figure 49

Summary of potential influencing factors



11.1 External factors

External factors are stimuli, events or cues in the environment which influence how individuals perceive and respond to threats (Witte, 1992). As reported in Chapter 1, fisheries management and climate change were both identified as pressures on the commercial fishing industry and subsequently commercial fishers. Evidence from the literature therefore supports the notion that there would be stimuli present in participants' environment that signal the presence of the threat of fisheries management and climate change. Specifically, participants' responses highlighted two industry characteristics that were perceived to impact their experiences of industry threats such as fisheries management. These included market characteristics and remote living. Participants perceived that certain market characteristics resulted in increased competition with international fishers, illegal fishers, and aquaculture. Furthermore, participants reported that living in a remote or isolated location had impacts on

their access to human capital and their business viability. The findings suggest that these external factors were perceived to exacerbate some of the perceived consequences of industry management and commercial fishing however, these factors did not appear to play a significant role in commercial fishers' decision-making process. Therefore, detailed results, discussion, and examination of potential interactions with other factors in the decision-making process and associated responses are presented in Appendix G (p. 320).

11.2 Individual factors

Individual factors (or individual differences) are the characteristics of individuals that have developed based on their prior experiences and culture that are subsequently proposed to influence cognitive-emotional decision making and responding (Witte, 1992). However, no consistent effects of individual factors have been identified (Witte & Allen, 2000) and it was argued previously that the role of individual factors is context specific. During reflexive thematic analysis, gender differences and participants' attachment (to being a commercial fisher and to the commercial fishing industry) were identified as key individual factors in the cognitive-emotional decision-making process and subsequent responses.

In the current section, the results, discussion and potential interactions with previously reported findings are presented first for gender differences (page 209 - 212), and then for attachment (page 212 - 216).

11.2.1 Gender differences

11.2.1.1 Results. Through inductive reflexive thematic analysis, the role of gender was explored. Participants discussed the importance of women and their role in the fishing industry as "fishermen's wives." For example, participants reported, "…they say fishermen's wives are unique. They're completely unique. It's a special woman that becomes a fisherman's wife." (Julie). Through a comparison of male and female participants' responses, the primary difference between male and female participants was how they received and provided social support to others.

11.2.1.1.1 Gender differences in perceived roles. Through comparison of female and male participant responses, it was identified that male participants primarily viewed their role as doing work directly related to fishing such as catching fish. In contrast female participants reported performing a background role and business support such as "doing the books," finding crew and selling produce. For example, Susan said, "…the part I take care of is predominantly the book work."

11.2.1.1.2 Gender differences in receiving social support. Comparison of responses by female and male participants highlighted that males tended to report seeking social

support for instrumental support, whereas females tended to report seeking social support for emotional support. For example, male participants reported instances in which they received instrumental support that helped the success of their fishing business such as sharing of fishing gear and assistance putting together fishing boats. In contrast, female participants tended to report instances in which they sought out or received emotional support. For example, one participant reported they had connected with other women in the industry which gave them a sense that they were not on their own and part of a supportive community.

11.2.1.1.3 Gender differences in providing social support. Through thematic comparison of participant responses, it was identified that female participants tended to report providing support to others in the industry whereas male participants did not typically report providing emotional support to others. For example, female participants reported establishing a network amongst commercial fishers. Participants reported that this social network provided the opportunity for commercial fishers to both give emotional and instrumental support to and receive emotional and instrumental support from other commercial fishers.

However, female participants were mostly focused on the emotional support that they provided for others in the industry. Compared to the men, women were more likely to discuss their concern for others mental health and how they could provide support to those suffering. Additionally, women tended to discuss concerns specifically for men in the commercial fishing industry. For example, participants said, “I know how stressed and upset he gets.” (Susan), “And he’s the one we’re worried about. We actually haven’t heard from him in quite some time.” (Michelle), and:

> And as I said [fisher] just he said to me the at the pub the other day, he said, ‘Don’t talk to me anymore [Participant A].’ He said, ‘I can’t handle it.’… He said, ‘This is my life, going under.’ (Julie)

As the following response highlights, women were seriously concerned about how they could provide emotional support to help to men in the industry:

> If someone can come up with some advice on how we talk to these men, because they really are, see we can talk to one another, women are very good at talking and venting and, doing that, but these men, I don’t think they want to voice the same things we can voice and I don’t know how so, if someone can come up with some advice on how we as partners and friends can talk to them and get them to start opening up before we start having to go to funerals, and I, and I’m not exaggerating on that, I know quite a few who really are despondent, they have no idea what to do. (Julie)

11.2.1.2 Discussion. Commercial fishing is often described as a male dominated industry (Mobsby, 2018) however, research demonstrates that female fishers have a unique role in the industry (Calhoun et al., 2016). Consistent with previous research, the current study found that male fishers are typically responsible for doing the fishing, whilst female fishers tended to be responsible for supporting the business (Morgan, 2016; Yodanis, 2000). Often women provide support by performing unpaid business work such as managing business finances, organising, and employing crew, keeping up to date with legislation, and active involvement in decision-making processes for management and policy (Britton, 2012; Calhoun et al., 2016; Coulthard & Britton, 2015; Kilpatrick, King, & Willis, 2015; Lambeth et al., 2002; Marshall et al., 2007; Pickworth et al., 2006; S. Smith et al., 2003; Zvonkovic et al., 2005). Arguably, the performance of such unpaid work is critical to the success of commercial fishing businesses, as this work is what makes the paid work possible (Aslin, Webb, & Fisher, 2000).

Furthermore, in this study the results suggest gender differences in how male and female commercial fishers sought and provided social support. The gender differences in seeking social support appear to reflect typical gender differences in coping styles. Consistent with previous research, males tended to seek social support for instrumental reasons, whereas females tended to seek social support for emotional reasons (Matud, 2004). Additionally, this study found that women focused on providing emotional support to others in the industry. Britton (2012) argues that the burden of coping typically falls to the women in the industry. Such differences in roles reflect traditional gender roles in the general population. For example, Matud (2004) reported that men tend to focus on responding to stressors such as work and finances, whereas women tend to focus on responding to stressful events experienced by others.

11.2.1.3 Potential interactions with other factors. This study provides clear evidence to suggest that male and female commercial fishers differ in how they seek and provide social support. It is likely that traditional gender roles in the industry have led to male fishers being primarily concerned with seeking and providing instrumental support pertaining to the activity of fishing, and to female fishers being concerned with providing both instrumental and emotional support that facilitates fishing but may not directly support others to carry out fishing activities.

11.2.2 Attachment

11.2.2.1 Results. Commercial fishers' responses demonstrate two forms of attachment: Attachment to their livelihood, and attachment to the places in which they fish.

11.2.2.1.1 Livelihood attachment. Fishers demonstrated that they held a strong attachment to their livelihood. For example, participant responses highlighted a shared belief that fishing was a "way of life" (Daniel) or a "lifestyle" (Edward). For example, participants said, "It's our life, it's our livelihood… It's our lifestyle." (Edward) and "the lifestyle is perfect, it's the way we want to live." (Julie). Furthermore, participant responses highlighted a common belief that "some people are born fishermen" (Michael) or that being a fisher was innate. For example, commercial fishing was described by one participant as, "not just a job, it's in their blood." (Michelle).

Responses highlight that the attachment of fishers to commercial fishing has been developed over generations of involvement in the industry. For example, one participant spoke of his concerns for his son and grandson who were also working in the fishing industry, "But it's these young fellas that you know have it carrying on… he might be able to get working in a job but… it's me son he's getting to an age he knows nothing much else to do." (Peter). As the following response highlights, the strength of a fishers' attachment to their livelihood is enhanced because of the intergenerational nature of their involvement in fishing:

> And she just says [Name Removed] doesn't know how to do anything else. This is what he's done all of his life, his father and his grandfather did it. And a lot of fishermen, it's in their blood, it's not just, a job, it's in their blood. (Michelle)

This attachment to commercial fishing was further highlighted when one participant said, "So we're fishermen. And I wouldn't give it up…. I wouldn't give it up for the world" (Julie). As one participant said, "You can take the fisherman out of fishing, but you can't take the fishing out of the fisherman." (Victor).

11.2.2.1.2 Place attachment. Responses also demonstrated that participants were attached to the places in which they fished. They described themselves as "farmers of the ocean" (William) and reported that fishers share a common "love for the water" and "love for outdoors" (Julie). Participants demonstrated that they were attached to the places that they fished. For example, one participant said, "You're out in a great location. Still not the world's best money… but… it's a good way to earn a living." (Larry). For one participant in

particular, it was the particular type of fishing location which was important, "…some reef is pretty and some to me, I'd sooner be on a creek any day." (Charles).

Furthermore, having established their lives in the communities that they fish from, participants demonstrated a connection with the places they lived. For example, one participant reported, "We've got, we've had mates, who got full on houses built in their fishing areas." (Julie). One participant raised their concerns about another fisher who demonstrated a strong attachment to where they fished and lived. This response highlights how the intergenerational nature of fishing can bond fishers not only with their livelihood, but also to the places they live and fish:

> He's an, he's an eighth-generation fisherman of [town]. And he's the one we're worried about. We actually haven't heard from him in quite some time. But he and well his eight generations of fishing in that [area], and you know all the family lives up there and yeah. He, he's one of the one's that we worry about a lot. And he's adamant as well, I'm not gonna go and fish anywhere else. This is where my father fished, my grandfather fished, my great grandfather, his father, his great grandfather! He said, we're not, I'm not going somewhere else. (Michelle).

11.2.2.2 Discussion. Commercial fishers in this study demonstrated a strong attachment to their livelihood and the places in which they fish. This finding has been replicated repeatedly in studies concerning commercial fishers. For example, studies report that commercial fishers are so attached to their livelihood that it is not just seen as a way to earn an income, it is a way of life that they are deeply committed to (Holland et al., 2019; Marshall et al., 2016; Marshall et al., 2017; Marshall et al., 2007; Marshall et al., 2009; Marshall et al., 2010; Marshall, Tobin, et al., 2013; Momtaz & Gladstone, 2008; Morgan, 2016; Pollnac & Poggie, 2008; Ross, 2013; Seara et al., 2016; Shaw et al., 2011; Worster & Abrams, 2005). This strong attachment to their livelihood is further evidenced through findings that many commercial fishers could not imagine working as anything other than a commercial fisher and there is nothing they would rather do (Marshall et al., 2016; Marshall et al., 2009; Marshall et al., 2010; Marshall, Tobin, et al., 2013). Research has also repeatedly demonstrated that fishers tend to feel a strong attachment to their local community and the places they fished (Marshall, Adger, et al., 2019; Marshall et al., 2017; Marshall, Tobin, et al., 2013; Pickworth et al., 2006; Worster & Abrams, 2005).

Attachment (livelihood and place) may develop in several ways however, the current study highlighted that the intergenerational nature of commercial fishing businesses may play

a role in the development of commercial fishers' attachment to their livelihood and the places they fish. Garavito-Bermúdez and Lundholm (2017) argue that family involvement in fishing, including the passing down of the fishing business from generation to generation, may facilitate fishers' attachment to their livelihood. In Australia, it is common for fishers to have familial ties to commercial fishing that extends across generations (Pickworth et al., 2006). Furthermore, researchers argue that the familial and intergenerational nature of commercial fishing facilitates commercial fishers' attachment to their livelihood and the communities within which they fish (Momtaz & Gladstone, 2008; Voyer et al., 2014).

Furthermore, the way that commercial fishers acquire the skills and knowledge necessary to perform their livelihood may also facilitate attachment (to livelihood and place). Fishers in this study tended to learn on-the job, from a young age and often from members of their family, much like many other commercial fishers (Morgan, 2016; Pickworth et al., 2006; Schirmer & Pickworth, 2005a). Garavito-Bermúdez and Lundholm (2017) argue that this style of learning, where knowledge is accumulated, transferred, and adjusted through work practices, facilitates attachment and bonds fishers to their livelihood.

11.2.2.3 Potential interactions with other factors. The strong attachment commercial fishers have to their livelihood and the places in which they fish may further contribute to understanding the cognitive-emotional decision making and responding demonstrated by commercial fishers in this study. Here it is proposed that commercial fishers' attachment (to livelihood and place) may interact with their (1) emotional experiences and mental health impacts; (2) motivation to remain in the industry and (3) responses to threats to their livelihoods.

First, commercial fishers' attachment to their livelihood may explain the severity of the mental health impacts posed by a potential loss of their livelihood. For commercial fishers, having a strong attachment to their livelihood and the places in which they fish can be a positive source of mental health and well-being however, when threatened, it can be a great source of distress. For example, Marshall et al. (2007) reported that it appeared the more strongly attached a commercial fisher was to their livelihood, the greater the distress they experienced due to the potential loss of their livelihood. Furthermore, Pollnac, Seara, and Colburn (2015) argue that fishers stand to lose the livelihood they are attached to without leaving the industry. That is, fisheries management approaches which require commercial fishers to carry out their business differently can result in such significant changes to the livelihood that it no longer resembles the livelihood that they were attached to originally. This change in the characteristics of the livelihood may therefore threaten their attachment to

their livelihood and has been found to negatively impact the well-being of commercial fishers (Pollnac et al., 2015). The distress or mental health impacts highlighted in this study may therefore be at least partially attributed to the findings that commercial fishers felt that the livelihood they were strongly attached to was under threat or had in fact, already been lost due to changes they had to make to remain in the industry.

Second, it was previously argued that the unexpected presence of danger control motivations in response to the threat of fisheries management (given the mixed perceptions of efficacy), suggests that there are other factors influencing commercial fishers' motivations. Commercial fishers' attachment to their livelihood may explain the unexpected high level of motivation to avoid losing their livelihood. It may be that although commercial fishers lacked confidence in their ability to perform a response that would be effective in avoiding a loss of their livelihood, they remained motivated to avoid this loss because they were so strongly attached to their livelihood. This would suggest that attachment (to livelihood) moderates the relationship between perceived efficacy and motivation so that even when efficacy is low, ambivalent, or mixed, individuals are still motivated to control the danger given the personal importance of what is under threat.

Finally, commercial fishers' attachment to their livelihood may explain the types of responses they perform in response to a threat to their livelihood. Marshall, Tobin, et al. (2013) reported that depending on the intensity of commercial fishers' attachment to their livelihood and the responses required, such attachment may facilitate or act as a barrier to responses to perceived threats such as fisheries management. As suggested by Kelty and Kelty (2011), livelihood attachment may facilitate responses that allow the individual to maintain or enhance their attachment to their livelihood. The greater the attachment, the more committed an individual will be to maintaining that attachment (Stryker, 1981). For example, it could be expected that commercial fishers may be able to maintain or enhance their attachment to their livelihood by investing more into their commercial fishing business and lobbying to fisheries management.

In contrast, the same motivation to avoid a loss of their livelihood may also be a barrier to responses that threaten their livelihood either by changing how they carry out their livelihood, or through an actual loss of their livelihood. Morgan (2016) suggests that fishermen may be resistant to responses that threaten their attachment to their livelihood or places in which they fish. For example, it could be expected that commercial fishers may feel that their livelihood would be threatened if they were to engage in adaptable business practices or ultimately, exit the commercial fishing industry. Researchers have demonstrated

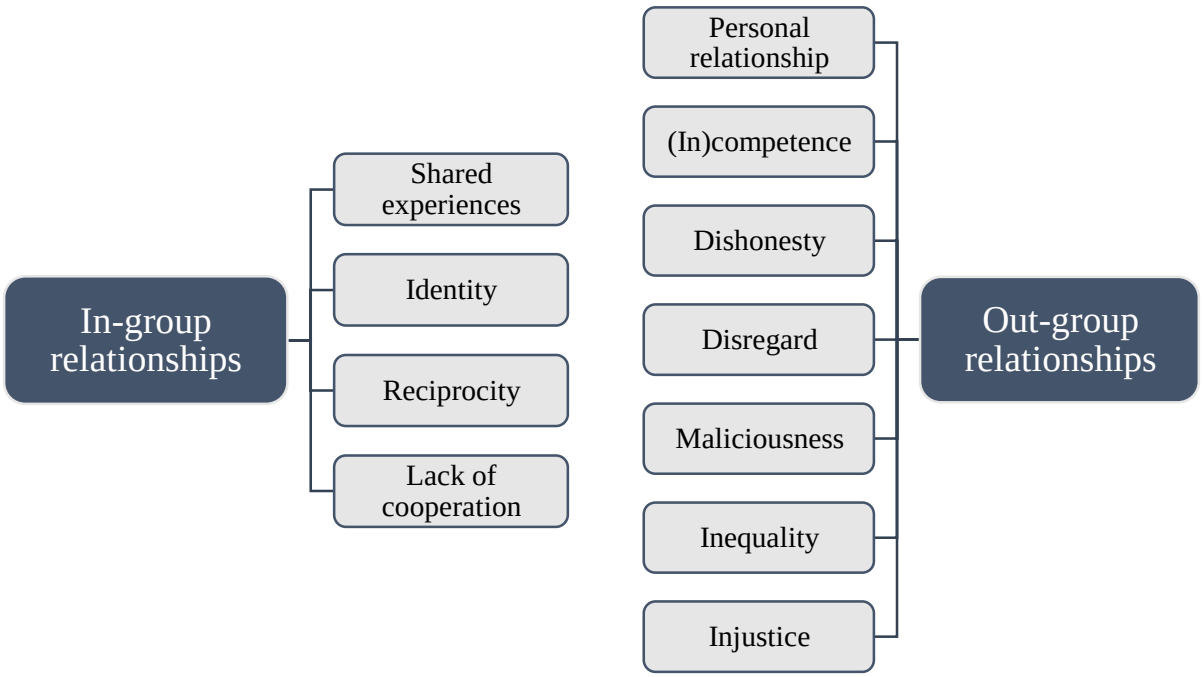
that attachment can hinder commercial fishers' ability to respond adaptively (Forster et al., 2014; Marshall et al., 2007; Sutton & Tobin, 2012) and act as a barrier to commercial fishers exiting the industry despite insurmountable challenges (Himes-Cornell & Hoelting, 2015; Marshall et al., 2007; McGoodwin, 2001). This means that fishers with a strong attachment to their livelihood may be unable or unwilling to engage in meaning-focused coping strategies such as goal revision as this directly threatens the attachment to their livelihood. Consequently, attachment (to livelihood and place) strengthens commercial fishers' ability to cope with and adapt to stressors and increases their vulnerability to change at the same time.

11.3 Social factors

Participants' perceptions of their relationships with others (referred to as social factors) was identified as a further key influencing factor. Social factors have not previously been identified as an influencing factor in cognitive-emotional models such as the EPPM (Witte, 1992) however the current study found that both relationships within the in-group and relationships between the in-group and the out-group were important factors in the decision-making process. During reflexive thematic analysis, a series of relational factors underpinning commercial fishers' relationships with other commercial fishers (in-group members), and members of out-groups such as fisheries managers, recreational fishers and the general public were identified (summarised in Figure 50). The following section reports the results, discussion and potential interactions with previously reported findings first for in-group relationships (pages 217 - 227), and then for out-group relationships (pages 227 - 235).

Figure 50

Summary of factors underpinning in-group and out-group relationships



The following section reports the nature of participants' relationships and the characteristics driving those relationships by exploring their relationships with in-group members first, and then their relationships with out-group members.

11.3.1 In-group relationships

11.3.1.1 Results. When exploring the nature of participants' relationships with other commercial fishers, characteristics that contributed to and detracted from such relationships were identified. Relationships appeared to be facilitated by shared experiences, collective identity, and reciprocity. In contrast, in-group competition appeared to detract from in-group relationships.

11.3.1.1.1 Shared experiences. Responses highlighted that participants felt the threats they faced as a fisher were threats faced by many or all fishers and this belief appeared to facilitate feelings connectedness to other in-group members. Participants reported that they considered the threats they were facing were threats that also affected the greater commercial fishing industry. For instance, when asked to consider what the threats facing the industry were participants said, "Umm, well you can just ditto what I just said about all the other stuff for a start…" (John) and:

> I think they're predominantly the same… But only because you're talking to us right now. And right now, our challenges are the same as the whole industry because that's what we're involved in. We're involved in trying to fight for the whole industry… So, they're for us individually, they're our issues, the industry as a whole, I do think. (Julie)

Participants' responses indicated that the experience of a shared threat fostered a sense of connection. For example, the following participant's response demonstrate how participants felt connected to others who are facing similar experiences in the commercial fishing industry:

> Michelle's in the same position because Michelle knows that they're already attacking line fishing. They're already attacking reef fishing. But watching what's happening in the estuary, they know it's going to push over and start affecting the rest of the trawlers… The whole lot, and I mean our alliance, it's over 600 members, and they're all saying the same thing, it doesn't matter what state they're coming from, they're all saying the same thing and they don't know what to do. (Julie)

11.3.1.1.2 Collective identity. A common theme in participants' experiences was how their self-concept or identity was tied to their in-group membership or their role as a commercial fisher. In the words of the participants, "…I'm a fisherman. It's what I do." (Anthony). This response highlights that there was little or no distinction between the individual and fishing. Participants' responses highlight a set of qualities and characteristics which contributed to a shared definition of the group or, the collective identity of the group. For example, participants reported feeling that it takes a "unique individual" (Julie) to be a commercial fisher. To participants, commercial fishers were unique because, "not just anyone can go out and do it" (Charles). The following response further highlights how this perceived uniqueness of commercial fishers contributes to the strong collective identity of commercial fishers:

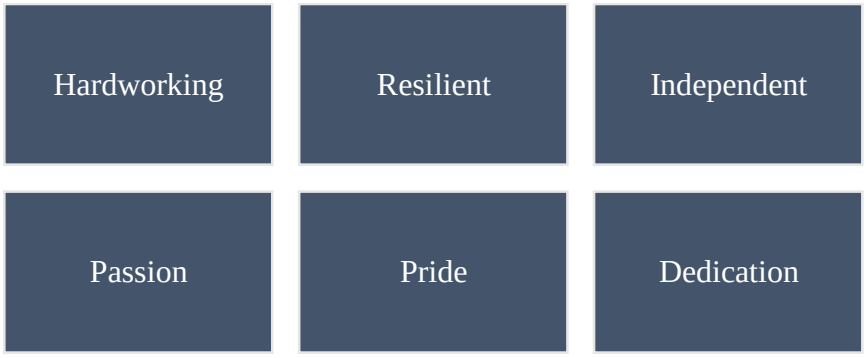
> …you know it doesn't matter what part of the industry they're in, they've all got some same traits that are identical to one another…. They can be completely different in outgoing personality, and some are really quiet and reserved… but there are some things that is inherent to a fisherman (Julie).

The themes of collective identity provide insight into the qualities that form the shared definition of what it means to be a commercial fisher. As pictured in Figure 51,

participants' responses demonstrated that the shared qualities and characteristics of commercial fishers included being hardworking, resilient, independent, having a passion for fishing, taking pride in fishing, and being dedicated to fishing.

Figure 51

Collective identity characteristics of commercial fishers



Participants' responses demonstrated that participants perceived that one quality of commercial fishers was that they were **hardworking**. For example, it was reported that "the ones that are in [the commercial fishing industry] work hard" (Susan). Although participants reported that fishing was hard work, this participant also said working in the industry, "It makes you feel strong… [people] know it's hard work…" (Timothy). This particular response highlights that being hardworking positively contributed to this participants' understanding of themselves as a commercial fisher. Furthermore, participants reported that commercial fishers worked particularly hard given how much they earnt. This was highlighted by responses such as, "…it's very hard-earned dollars. Extremely hard earnt dollars." (Charles), "…we work very hard for what we brought in this year…" (Julie), and "…the money that we're earning, most people, or a lot of people anyway, I'm getting back bugger all compared to what other people get and they just turn [up] at work with a lunch box." (Larry).

Resilience was also perceived to be an important quality of commercial fishers. Responses highlight the belief that to be resilient, one must persist despite the mental and physical challenges of being a commercial fisher. While not all fishers were able to explicitly report that resilience was a characteristic of commercial fishers, resilience can be seen in the behaviour of participants. This was exemplified when participants reported instances in which they persisted as a commercial fisher despite feeling overwhelmed by the challenges facing them. For example, participants said the following when talking about the challenges of working in the commercial fishing industry, "So we try something else. Off we go. Where

do we go? Somewhere else. We try again. And never an angry word. Well, we just try again. And we keep doing it, keep doing it." (Charles) and "…we'll just keep working with it, we'll just have to keep working with it you know, and we'd get depressed, and we'd work through it and that." (Patricia). For those who were able to explicitly recognise the importance of being resilient, resilience was perceived to be a characteristic critical to being a commercial fisher. For example, "You fight through things, and you keep going. Resilience is an important thing that you need to have when you're in the fishing industry. And if you don't have resilience, you won't make it." (Michael).

"**Independence**, not having to work with anyone." (Julie) was another important quality of commercial fishers identified by participants. For one participant, their commercial fishing business was "mainly self-managed" and "a total one man show" (Timothy). Responses highlighted that participants often felt they had had little help from others and have worked independently to build their fishing business. This belief is highlighted in responses such as "…not a lot of people have been interested helping me… so I've had to do the whole lot of it basically myself" (Anthony) and "I haven't really looked for any government assistance or anything like that" (Larry). Furthermore, one participant reported:

> I employ over 25 crew. I have four vessels operating permanently. Um, and I have office staff and everything. I started…with nothing. Absolutely nothing…. I started with nothing. I had zero dollars in my bank account effectively when I started. And as I said, given nothing from anybody. (Michael)

Participant responses also highlighted a common belief that commercial fishers are **passionate about fishing**. For example, one participant showed his passion for the industry when he said, "…I love being at sea and a lot of the fishers I have on the boats, it's a passionate thing." (Michael). The following response demonstrates that having a passion for fishing is a positive characteristic that is shared by fishers, "…it was [a] very humbling experience to see somebody who basically loves and cares for this fishery as much as I do." (Anthony).

Participants' responses demonstrate that fishers take great **pride** in their fishing business and in their produce. Furthermore, as the following response highlights, participants recognised that this was a shared quality of commercial fishers, "… a lot of fishermen… [fishing is] something that they take pride in." (Michelle). Participants showed that they took pride in running their business well and to a high standard. For example, participants said, "I just really, really like to, people to know there is a very professional side of our industry and

what we do, and we really care about." (Anthony) and "You want people to walk in and say this is the best I've ever seen…" (Daniel). Participants also demonstrated the pride they had in their business and their produce during interactions with the researcher. For example, participants often asked the researcher to travel to their home port for a face-to-face interview, so they could invite the researcher to see where they work. Additionally, during one interview, participants of a focus group invited the researcher to sample some of the participants' produce for lunch. This participant said to the researcher, "Would you like a bit of lunch? … I can thaw some fish out; it'll be the best you've ever eaten. Want some?" (Victor).

Participants' responses highlighted a belief that to be a successful commercial fisher, one needed to be **dedicated** to developing and refining their skills and knowledge. The perceived importance of skill and knowledge development was highlighted during a focus group when one participant said, "…everyone thinks they're a good fisherman. And they're not. You know, being a good fisherman is a very skilled thing…" (Victor) and the second focus group member agreed, "You can't just put a net in the water and think you're gonna catch fish. [Victor has] learnt over time over many years, when and where to go." (Patricia).

11.3.1.1.3 Reciprocity. Participants' experiences of reciprocity appeared to be an important characteristic that contributed to relationships between fishers. Participant responses demonstrated reciprocity between in-group members as participants recounted experiences which were mutually beneficial for themselves and the other in-group member, as well as experiences in which one party would not directly benefit from co-operation but did so anyway. For example, the following responses demonstrate mutually beneficial experiences of participants, "…there's sort of a group, a circle of friends that I'm in, all with other small boats you know, we do help each other quite a bit." (Larry) and "… we've created an alliance… we talk a lot to other fishermen up and down the coast… well we all kind of help each other…" (Michelle). Participants also reported experiences in which they provided support to in-group members which did not result in mutual benefits, for example:

> I've, I've still got 40 pages of my short cut review that I'm then sending out to [fisher] and [fisher] and that so they can, 'cause they don't have the time! To sit and read 900 pages of stuff, so I've done all the reading and put it all into note form so they can sit there go okay well bang, bang, bang, bang, bang, this is you know the page number so they can flick straight to that page and read it more in depth themselves. (Julie)

Additionally, participants' responses demonstrated they shared knowledge with other in-group members in a reciprocal manner, and that they highly valued this in-group knowledge. For example, the following participant referred to in-group knowledge as secrets: "Well the thing is they know all the secrets. They know all the spots to fish..." (Julie) and another participant reported, "…the information's incredible. I could sit there for hours and listen to him." (Charles). Participants' responses also indicated that in-group knowledge, or "generational fishing information" (Anthony) was transferred from experienced fishers to new fishers or from generation to generation. For example, "…unless you have one of these old timers that's got you under their wing and they're showing these new ones coming through…" (Julie).

However, participants also recounted experiences in which reciprocity was violated. For example, the following participant recounted an experience where their support was perceived to be not appreciated or reciprocated by other commercial fishers:

> But even before that, there'd be times where my boat'd be tied up and there'd be like a good pay, and I wouldn't be going to work because I was at a meeting… representing these blokes… yet they wouldn't get off their arse and turn up to a meeting and that's the most frustrating part. (William)

Furthermore, responses also highlight a belief that knowledge sharing can result in poor outcomes such as increased competition for resource access:

> And that's been the whole problem with the industry from day one. Is that you know the mobile phone is one of the worst things that come along in the trawl industry. Which you know, you could get a real sneaky run… [but all of a sudden, a mobile one will] ring you up and everybody owes someone a favour. And somebody has done someone else a favour and every mate's got a mate. And with, once mobile phones end up, and he started catching prawns and he just sees the boats coming on the horizon (Scott).

11.3.1.1.4 Cooperation. Responses demonstrate participants' perception of in-group division, or a lack of cooperation between in-group members. For example, these responses demonstrate perceptions of division within the in-group: "We've been there, maybe not collectively and united all the way." (William) and "The old saying is divided we stand, divided we fall and that is I would say, the motto for the commercial fishing industry in Queensland." (Michael). Furthermore, this participant's response highlights how a lack of

cooperation between in-group members has come about because of distrust between in-group members, “There’s a few of them that won’t talk to me because [laughs], you know. There’s still a lot of issues between fishermen.” (Julie). Additionally, this participant reported not trusting the motives of other in-group members:

> So, government, ah, fishermen that are kinda [making] their own [mess] by saying [yes] to the fisheries, anything that they ask them to do, and they’re, they’re [digging] themselves into representative positions. So, they can say yes to everything, no matter what happens to the rest of us…. So, it’s a bit to do with government, it’s a bit to do with the guys that are kinda stabbing us in the back and um, um, and, mainly for me, I mean… why would I trust anybody else? (Timothy)

Furthermore, participants reported that the high levels of competition between commercial fishers drives the lack of cooperation and in turn, the lack of trust between commercial fishers:

> We, we can’t really change the way it is, unless we do it through social media or something that, and then, the problem with the fishing industry, we’re all competitors…. Because we’re competitors, we’re not united. Have a look at the cane farmers. They’re on the TV every day of the week, whinging about it’s too hot, it’s too cold, it’s too wet, it’s too dry, the price is up, the price is down, the costs of fertiliser, electricity and they’re a collective group…. But because we’re competitors, um, we’re, we don’t, we’re not very united and that’s our problem. (Richard)

Participants tended to speak negatively about a minority of deviant in-group members as they perceived that actions of one in-group member can harm the reputation of the in-group. For example, participants reported, “…one bad fisherman can label the whole lot bad…” (Peter) “…all of a sudden when you get somebody moving into an area and doing something wrong, that contradicts everything that you’ve done.” (Scott), and:

> …there a whole lot of guys in our industry who don’t treat it the way that it should be treated. There’s a lot of cowboys, a lot of people that do the wrong thing. You know, there’s always that fifth idiot fisherman somewhere or that cranky one or whatever. (Anthony)

11.3.1.2 Discussion. The results suggest that commercial fishers’ relationships with other commercial fishers were characterised by their shared experiences, collective identity, reciprocity and in some instances a lack of cooperation. This study demonstrated that

commercial fishers perceived that their experience of fisheries management was a **shared experience** with other commercial fishers. Bastian, Jetten, Thai, and Steffens (2018) suggested that shared experiences with a strong affective component can facilitate the development of social bonds (Bastian et al., 2018; Whitehouse et al., 2017). In this case, commercial fishers' experiences of fisheries management were found to evoke strong negative emotional responses, and they perceived their experiences of fisheries management to be shared with other commercial fishers. Therefore, the shared experience of the threat of fisheries management may have facilitated bonds between commercial fishers. Consequently, it is suggested that this type of bonding can lead to increased trust and cooperation between in-group members (Bastian, Jetten, & Ferris, 2014; Gump & Kulik, 1997; Von Dawans, Fischbacher, Kirschbaum, Fehr, & Heinrichs, 2012)

It was found that individuals' **identity** was tied to their in-group membership or their role as a commercial fisher. It is common for people to derive important aspects of their identity from their occupation (Hogg & Terry, 2000), particularly for commercial fishers (Marshall et al., 2016; Marshall et al., 2017; Marshall et al., 2007; Marshall et al., 2010; Marshall, Tobin, et al., 2013; Worster & Abrams, 2005). Consistent with previous research, it was found that commercial fishers perceived that the typical commercial fisher was hardworking (Marshall et al., 2007; Pickworth et al., 2006; Worster & Abrams, 2005), resilient, independent (Garavito-Bermúdez & Lundholm, 2017; Marshall et al., 2007; Morgan, 2016; Pickworth et al., 2006; Salas & Gaertner, 2004; Worster & Abrams, 2005), was passionate about fishing (Garavito-Bermúdez & Lundholm, 2017), took pride in their fishing business and in their produce (Garavito-Bermúdez & Lundholm, 2017) and were dedicated to refining their skills and knowledge in commercial fishing (Morgan, 2016).These qualities demonstrate that these fishers valued characteristics which demonstrate a high level of commitment to being a commercial fisher. For example, this commitment can be demonstrated through: the effort put into the industry through hard work (hardworking) and through dedication to learning in the industry (dedication); by persisting in the industry despite mental and physical challenges (resilience); by not relying on others to succeed in the industry (independence); and through an emotional commitment which is seen in the passion (passion for fishing) and pride (pride in fishing) that commercial fishers have for fishing. Identity theorists argue that identifying as being part of a group represents a sense of belongingness, and social cohesiveness or bonding with others in the in-group (Bagguley & Hussain, 2016; Stets & Burke, 2000; Tajfel et al., 1971; J. C. Turner, 1982). Therefore, individuals' identification as a commercial fisher demonstrates they see themselves as being

part of this social group and facilitates their bonds and relationships with other group members.

Fishers reported experiences of **reciprocity** in their interactions with other commercial fishers. That reciprocity manifested as mutually beneficial social exchanges (Grafton, 2005) or in some cases, providing support or help with no immediate personal benefits and no expectation of the favour being returned (Putnam, Leonardi, & Nanetti, 1994). While commercial fishing can be a competitive activity, evidence of reciprocity has been demonstrated in other fishing communities. For example, Ross (2013) reported that interactions in the Fraserburgh (Scotland) commercial fishing community were characterised by providing instrumental support to others, without the expectation the favour would be returned. Furthermore, the current research demonstrated that in-group knowledge was a highly valued commodity that fishers shared with other in-group members in a reciprocal manner. Researchers have repeatedly shown that social networks in fishing communities provide a mechanism through which fishers share information (for example, Himes-Cornell & Hoelting, 2015; Lavoie & Himes-Cornell, 2019; Ramirez-Sanchez & Pinkerton, 2009). Acts of reciprocity such as the provision of instrumental support or sharing knowledge, are argued to be critical to the success of commercial fishers' businesses as fishers may gain access to resources that support them to adapt to changes (Grafton, 2005; Himes-Cornell & Hoelting, 2015; Lavoie & Himes-Cornell, 2019; Ramirez-Sanchez & Pinkerton, 2009; Ross, 2013). Reciprocity and cooperation are commonly cited as a characteristic of social cohesion within a community (for example, Daly et al., 2008; Fonseca, Lukosch, & Brazier, 2019; Jeannotte, 2003; Kawachi & Berkman, 2000; Lott & Lott, 1961; N. A. Peterson & Hughey, 2004; D. Stanley, 2003) that is based on trustworthy interpersonal relationships (Ramirez-Sanchez & Pinkerton, 2009; R. A. Turner, Polunin, & Stead, 2014). Commercial fishers in this study appear to have established enough trust and social cohesion to perform acts of reciprocity but not enough to facilitate collective action.

Commercial fishers reported that there was a **lack of cooperation** between in-group members. This lack of cooperation appeared to manifest as deviant behaviour of individuals and as a lack of collective action. Mazur and Curtis (2019) report that deviant behaviour of individual fishers risks the social acceptability and reputation of commercial fishers more broadly. Indeed, commercial fishers in this study judged deviant behaviours of commercial fishers on the basis of the perceived potential for harm to the reputation of the whole group. Eidelman and Biernat (2003) suggest that this judgement and subsequent exclusion of deviant individuals from the in-group is a protective behaviour. Such judgement is proposed to be

motivated by a desire to protect the reputation of the group, or to avoid being judged as being deviant by association with the deviant in-group member.

11.3.1.3 Potential interactions with other factors. This study identified characteristics of relationships between commercial fishers that contributed to and detracted from the quality of the in-group relationships. Here it is proposed that the nature and characteristics of commercial fishers' in-group relationships may interact with (1) experiences of mental health and well-being, and (2) their motivation and subsequently how they respond to threats to their livelihood. Firstly, there is a well-established relationship between group membership and metal health and wellbeing. It is argued that group membership can promote mental health and protect individuals from developing depression (Cruwys et al., 2013; Saeri et al., 2018). Therefore, individuals' identification as a commercial fisher may positively contribute to their mental health and wellbeing in a protective manner. Furthermore, it has been demonstrated that specific identity characteristics associated with being a commercial fisher have positive implications for commercial fishers (T. R. Johnson et al., 2014; Marshall, Tobin, et al., 2013; Voyer et al., 2014)

However, commercial fishers at risk of losing their livelihood are also at risk of losing their group membership to the commercial fishing community and their identity as a commercial fisher. This poses a threat to the mental health of commercial fishers as not only is group membership and social connectedness protective, but the loss of valued relationships is also often followed by depression (Cruwys et al., 2013). Furthermore, research in commercial fishing communities have found that if fishers were to no longer be able to be a fisher, they would lose a central component of their identity, and that such a loss would be traumatic for fishers (Marshall et al., 2007; S. Smith et al., 2003; Voyer et al., 2014).

Additionally, how commercial fishers respond to threats to their livelihood may be influenced by the nature and characteristics of their in-group relationships. Research demonstrates that when there is social cohesion, individuals are more likely to perform cooperative behaviours, such as providing emotional and instrumental support, than when it is absent (Barnett & Eakin, 2015; Salas & Gaertner, 2004). For example, Barnett and Eakin (2015) identified a lack of social cohesion as a barrier to cooperative responses in fishers. Additionally, commercial fishers in this study identified as being independent, which Salas and Gaertner (2004) argue limits the performance of cooperative behaviours. Therefore, the social cohesion of the in-group and identification with commercial fisher characteristics such as independence may influence the performance of cooperative behaviours between commercial fishers.

Furthermore, identification as a commercial fisher may also influence the motivations and types of responses performed by commercial fishers. Commercial fishers' identity may influence their motivation and subsequent responding in a similar fashion to their attachment to their livelihood. That is, identity may also moderate the relationship between perceived efficacy and motivation so that even when efficacy is low, ambivalent, or mixed, individuals are still motivated to control the danger to avoid losing a key component of their identity. Research demonstrates that individuals tend to act in a way that maintains or aligns with their identity (Ellemers et al., 2002; Moser, 2016). Indeed, researchers have demonstrated that commercial fishers are often resistant to working in roles other than commercial fishing and performing other responses that conflict with their identity (Marshall et al., 2007; Morgan, 2016). Therefore, much like livelihood and place attachment, collective identity may facilitate responses that allow the individual to maintain their identity, but act as a barrier to responses that result in a loss of identity.

11.3.2 Out-group relationships

11.3.2.1 Results. Participant responses highlighted relational factors that contributed to the nature of their relationships with members of out-groups. Participants discussed their relationships with a range of out-groups including fisheries managers, the general public, recreational fishers, environmental groups, representative bodies, scientists, media representatives and politicians. However it was commercial fishers' relationships with fisheries managers which appeared to have the most significant role in their decision making and responding. Therefore the current section includes the results for commercial fishers' relationships with fisheries managers in full, with a brief summary of the factors that contributed to participants' relationships with the remaining out-groups in Table 11. The findings relating to the general public, recreational fishers, environmental groups, representative bodies, scientists, media representatives and politicians are presented in full in Appendix G (p. 320).

Table 11

Factors underpinning relationships with out-groups

	Personal relationship	(In)competence	Dishonesty	Disregard	Inequality	Injustice	Maliciousness
Fisheries Managers	✓	✓	✓	✓	✓	✓	✓
General Public				✓			
Recreational fishers	✓						✓
Environmental groups			✓				✓
Representative bodies		✓	✓				
Scientists	✓	✓	✓				✓
Media			✓	✓	✓		
Politicians		✓	✓	✓			

Of all out-groups participants spoke of, fisheries managers were the out-group participants were most concerned with. Responses highlight that the personal nature of their relationship and perceptions of competence positively contributed to their relationship. However, more often participants provided unfavourable accounts of their relationships with fisheries managers which were characterised by perceptions of incompetence, dishonesty, disregard, inequality, injustice, and maliciousness.

For example, the following participant's response highlights how the **personal nature of their relationship** with fisheries managers contributed positively to their relationship, "We've got a really good working relationship." with "Queensland fisheries" (William). Additionally, the following participant recounted an experience in which he provided his crew members with the opportunity to develop a working relationship with fisheries managers:

> We have a big crew get together at the start of every season, so a crew workshop that lasts for two days and we involve all fisheries managers… we bring in all the different organisations…. And they … talk to them in an informal manner and understand that, these people aren't ogres threatening them. They're actually people trying to improve, the workplace that they're in. (Michael)

Participants held mixed views of the competence of fisheries managers. Few participants indicated they perceived fisheries managers to be **competent**. For example, the following participants reported that management changes contributed to the sustainability of the marine environment, “But, you know, we, we brought all these closures in to protect the dugong and that and, the net fishing is, is a pretty sustainable industry at the moment so.” (Victor) and “…the Marine Park is managed and managed very responsibly, it’s got multiple use light blue areas, it’s got high protection green areas, pink, orange, purple whatever…” (William).

However, more often participants indicated they perceived fisheries managers to be **incompetent**. For example, when discussing fisheries managers, participants said, “Those guys are doing a terrible job.” (Richard) and “…the problem is, is we haven’t got good fisheries management at the moment…” (William). Participants were concerned that management and fisheries managers did not understand the commercial fishing industry due to a lack of hands-on experience that they perceived was a requirement to understand the industry. For example:

> … everyone else is making the decisions about our fisheries, most of them haven’t even got a boat. You know, I’ve had people tell me about, dugongs and tell me about fisheries and tell me about seasons and it’s going, based on what, what’s you, what’s your assessment based on? I mean, experience? Out of a book? I mean I don’t know. No one talks to fishermen, no one goes out in the boats with fishermen, that’s frustrating. (Edward)

Participants also tended to perceive fisheries managers to be **dishonest**. For example, one participant said, “Where do you put your trust? They’re all liars.” (Patricia). Participants believed that while fisheries managers claimed they were acting to protect and improve sustainability; they were actually concealing their true motivations. For example, this participant reported that sustainability was not the true motivation behind regulatory changes, “…every regulation made, was for some reason and… there was an agenda behind, and it wasn’t about sustainability.” (Charles).

Participants’ perception that the fisheries managers showed **disregard** towards the commercial fishing industry was expressed through their beliefs that the commercial fishing industry undervalued by the fisheries managers, especially during consultation and compensation processes. For example, participants reported, “…we’re not being listened to.” (William) and "… no one seems to want to listen to you…” (John). Participants reported a

lack of genuine opportunities for them to participate in consultation processes but when given the opportunity to share their perspectives with fisheries managers, participants felt that what they said was not genuinely listened to, “They did consult with commercial fishermen, but, but they didn’t listen to us. They didn’t engage…” (Edward). Participants reported that consultation was done to “tick the boxes” (Susan) and only occurred as it was a procedural requirement rather than a genuine interest in consulting with fishers, “… these consultation processes that they offer us at times, are really only a façade.” (Patricia).

Furthermore, participant responses highlighted that participants felt they were undervalued during processes in which fisheries managers offered financial compensation for commercial fishers’ licences. For those who were eligible for compensation, the compensation value offered to participants was reported to be unfair, as it was perceived by participants that it did not compensate them for the value they were losing. For example, participants reported, “I’ve got a hundred thousand dollars’ worth of gear out there, that will be no good to me. I’ve got a licence; it was worth 200,000. But they’ll wanna give me 60,000 for.” (Victor). Such inconsistencies between value and compensation were perceived to be “a slap in the face” (Patricia).

Participants’ responses demonstrate that participants were concerned that there was **inequality** in how fisheries managed various stakeholder groups. Participants’ responses highlighted that they felt that fisheries managers unfairly granted better resource access to other resource users, “Now if you go and close, whatever 15% of the coast off, and you don’t provide any other access to other people other than recreational, how is that, how is that sharing the resource…” (Edward), and, “I fail to understand why it would be so illogical to say that every other stakeholder has to be commit to be part of that pie… But there’s no cap put on it for other stakeholders.” (William). Additionally, participants were concerned that the management authorities’ governance of competing resource users and seafood suppliers was inequitable. For example, the perceived lack of accountability of recreational fishers was highlighted in the following participant’s response, “Well the recreational sector, there’s there is absolutely no accountability for them whatsoever.” (Michelle).

Participants’ responses demonstrate they felt that there was **injustice** in the way that the commercial fishing industry was treated by fisheries managers. For example, participants were concerned that their rights to resource access were unjustly being taken away from them by fisheries managers and one participant described this perceived injustice as being “criminal” (Edward). Participants recounted experiences where they perceive their resource access was taken away unjustly as it was done with little or no notice, “…all of a sudden, I

came back from the reef one day and I no longer owned a reef licence, it was gone. The… government had shut them down." (Charles). Participants also felt there was injustice because governing bodies were constantly amending and changing regulations which made it difficult for commercial fishers to remain viable in the industry or keep up to date and comply with changes, "…the goal post just never stays still. The, the current government, state government at the moment, um, introducing these three proposed net free zones, is just absolutely ridiculous it crucifies us…" (Edward), and:

> Oh well a lot of times they change the rules on different things and you don't realised you've committed a small offence or you've done some misdemeanour and when they come through, they book you for it and they fine you for it and they all say oh we understand it's genuine mistake, it's a simple thing, it's this and that but by the time they get you in court you're a criminal. (Scott)

Participant responses also highlighted perceptions that they were treated **maliciously** by fisheries managers who purposefully pushed fishers out of the industry. Participants reported, "… they're systematically driving people out of the industry by making changes and they know it's [going to] wipe people out." (Edward), "…they're already attacking line fishing. They're already attacking reef fishing…" (Julie) and "they're trying to put fishermen down all the time." (Richard). Participant responses highlighted beliefs that industry regulations were implemented with the intention of making it more difficult for commercial fishers, or the make commercial fishers leave the industry. For example, participants said, "…they're always [looking] for some reason in every bit of legislation that was a hidden criteria, to shut us down and make it harder." (Charles), "…when they see an area that's fruitful for commercial fishermen, it's closed." (Edward), "…for small boat operators it just seems to be another way they're just trying to rule us out." (Larry), and "In the Labor government, they seem hell bent on a path of complete and utter destruction of the commercial fishing industry." (Michelle). The perception that commercial fishers were targeted by management authorities is further highlighted by the following response, "They wanna get rid of us… I know they want to get rid of net fishermen all together… You know, you know we're just being, we're just being bloody pushed out, it's as simple as that." (Peter).

11.3.2.2 Discussion. The results demonstrate that generally, individuals had poor relationships with out-groups including the general public, recreational fishers, environmental groups, representative bodies, scientists, media, politicians and above all, fishery managers. It

was found that relationships between commercial fishers and out-groups was driven by the *personal nature of their relationships*, and perceptions of *competence or incompetence*, *dishonesty*, *disregard*, *maliciousness*, *inequality*, and *injustice*. Here it is proposed that, except for the personal nature of relationships, these relational characteristics violate three critical dimensions of trust: benevolence, competence, and integrity (Mayer, Davis, & Schoorman, 1995). Research demonstrates that trust is likely when others are seen to be benevolent, competent and to act with integrity (Butler Jr & Cantrell, 1984; Dietz & Den Hartog, 2006; Lui & Ngo, 2004; Mayer & Davis, 1999; Mayer et al., 1995; Sitkin & Roth, 1993; Xie & Peng, 2009).

For an individual or group to be seen as **benevolent**, they must be seen to have benign motives, be kind to others, act in a way that does not bring about harm and have a genuine concern for others (Dietz & Den Hartog, 2006; Mayer & Davis, 1999; Mayer et al., 1995; Xie & Peng, 2009). However, commercial fishers in this study reported feeling disregarded, being treated maliciously and unjustly, all of which violate benevolence-based trust. Previous research has similarly found that commercial fishers perceived out-groups, particularly fisheries managers, not to be benevolent. For example, research suggest that generally, commercial fishers feel that they are targeted by others who intend to cause them harm, for example through the exclusion of commercial fishers from their livelihood (Mazur & Curtis, 2019; Noble et al., 2019; Voyer, 2014). Additionally, researchers have similarly reported that commercial fishers perceive fisheries management to be unfair as a result of reduced resource access and unfairly restrictive regulations. For example, Shaw et al. (2011) reported that commercial fishers perceived fisheries management to be unfair as they were being "over-regulated and over-controlled" (p. 69). Furthermore, commercial fishers' perceived experience of maliciousness at the hands of recreational fishers does not appear to be isolated to this study. For example, King and O'Meara (2019) similarly reported recreational fishers in Port Phillip Bay (Victoria, Australia) formed networks which intentionally seek to reduce commercial fishers' opportunities to perform their livelihood and attacked the motivations and personal qualities of commercial fishers to achieve their goals. It also appears common for recreational fishers to stage campaigns to ban commercial fishing from particular areas (for example, King & O'Meara, 2019; Voyer et al., 2017).

For an individual or group to be perceived as **competent**, they must be seen to have the technical and interpersonal skills required to perform a role (Butler Jr & Cantrell, 1984; Dietz & Den Hartog, 2006; Lui & Ngo, 2004; Xie & Peng, 2009). However, commercial fishers in this study reported that fisheries managers lacked the requisite knowledge and skills

to perform their role. There is limited exploration in previous research of how commercial fishers judge the competence of out-group members however this study provides evidence that commercial fishers place great value on practical knowledge gained through hands-on experiences. Furthermore, this study demonstrates that when commercial fishers perceive others to be lacking practical knowledge of the industry, they tend to judge their ability to perform their role as poor. For example, if a fisheries manager is judged to lack practical knowledge of the industry, they are also judged to not be competent in managing the fishing industry and subsequently commercial fishers are likely to lack trust in such outgroups.

Finally, for an individual or group to be seen as having **integrity**, they must be perceived to act consistently with what are perceived to be acceptable principles and to treat others fairly (Dietz & Den Hartog, 2006; Mayer & Davis, 1999; Sitkin & Roth, 1993; Xie & Peng, 2009). However, the current study suggests multiple violations of integrity-based trust. For example, commercial fishers perceived that many outgroups had dishonest motivations. Researchers have similarly found that commercial fishers perceive dishonest motivations in fisheries managers (Voyer, 2014) and politicians (King & O'Meara, 2019). Additionally, commercial fishers felt that there was inequitable treatment of commercial fishers, especially compared to recreational fishers. Similarly, researchers such as Voyer (2014) have found that commercial fishers felt that there was inequality between the treatment of the commercial fishing industry and the recreational fishing sector, and that treatment tended to favour recreational fishers.

11.3.2.3 Potential interactions with other factors. This study identified characteristics of relationships that commercial fishers shared with out-groups that contributed to and detracted from the quality of their relationships with out-groups. Arguably, the nature and characteristics of commercial fishers' out-group relationships may interact with (1) experiences of mental health and wellbeing, (2) how commercial fishers perceive threats or challenges including fisheries management, climate change and competition; and (3) how commercial fishers respond to perceived threats. Additionally, it was previously suggested that commercial fishers' motivation to improve relationships with outgroups was a result of a lack of relatedness with such outgroups (see page 178 for a discussion). The findings here provide evidence that relatedness between commercial fishers and outgroups was lacking and therefore provides further support for this proposition.

Research demonstrates that humans thrive when we have positive social experiences (D. G. Myers & Diener, 2018). Deci and Ryan (1991) argue that relatedness is a basic psychological need, and it is proposed that wellbeing is compromised when individuals are

deprived of relatedness (Reis et al., 2018). Subjective experiences of relatedness include feeling understood and appreciated (Reis et al., 2018). The current results suggest that commercial fishers' experience deprivation of relatedness, particularly in relation to feeling understood and appreciated. Given the connection between feelings of relatedness and wellbeing, it is likely that commercial fishers' feelings of a lack of relatedness is a further contributor to poor wellbeing in the commercial fishing community.

Results from the current study suggest that commercial fishers' relationships with outgroups tended to be characterised by distrust. Research demonstrates that distrust affects how people process information and interact with others. For example, distrust may lead people to judge information shared by those they distrust as being false or inaccurate, and it may sensitise individuals so that they are searching for evidence to confirm their distrust (Schul, Mayo, & Burnstein, 2008). Given that fisheries managers were perceived to be the drivers of fisheries management and that commercial fishers tended to register a high perception of threat for fisheries management, commercial fishers' distrust of fisheries management may drive their perceptions of threat. That is, it may be that due to the distrust commercial fishers have in fisheries managers, they are sensitised to recognise cues in their environment that confirm this distrust and subsequently are sensitised to perceive fisheries management to be a threat. Additionally, commercial fishers' lack of concern about climate change may be partly a result of their distrust communicators of climate change (such as fisheries managers, scientists, politicians, and the media). That is, perhaps commercial fishers' discounted evidence about climate change as they did not trust the sources of that information. The nature of commercial fishers' relationships with scientists is further explored in Chapter 11 (see page 228) and in Appendix G (p. 320).

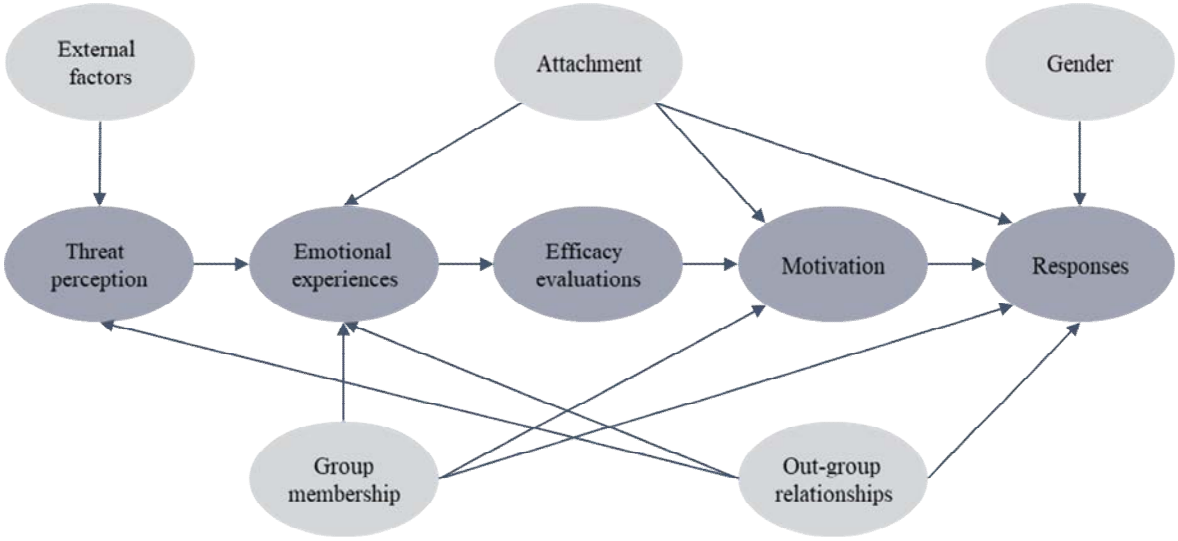
Finally, commercial fishers' relationships with outgroups may provide further understanding of the responses commercial fishers engaged in. It is well established that trust is a key determinant of cooperation, particularly when groups have significant conflicts of interest (Balliet & Van Lange, 2013). Given that, generally, commercial fishers were distrusting of outgroups, their relationships with outgroups may be a factor hindering the performance of responses that require cooperation. Furthermore, if trust facilitates the performance of cooperative responses, distrust may facilitate the performance of aggressive or confrontational strategies such as lobbying. Therefore, it may be that commercial fishers' relationships with outgroups act as a barrier to cooperation and drive confrontation between commercial fishers and such outgroups.

11.4 Summary and conclusion

At the outset of this research, five key components of decision making and responding were identified: threat perception, emotional experiences, efficacy evaluations, motivation, and responses. The current chapter explored a range of factors which are subsequently proposed to interact with how commercial fishers perceive and respond to threats. Figure 52 summarises the proposed interactions between these additional factors on components of decision making and responding.

Figure 52

Proposed interactions with decision making and responding



As highlighted throughout this chapter, these additional factors may have impacts which are consistent with how people are theorised to make decisions and respond in the face of threats. However, the findings also suggest that certain factors may alter the theorised decision-making process. Most significantly, commercial fishers' attachment to their livelihood and group membership to commercial fishing appear to alter motivation. That is, it appears that when commercial fishers are highly attached to their livelihood, or if they identify as being part of a collective of commercial fishers (group membership), commercial fishers' hold a high motivation to reduce or eliminate threats to their livelihood or the industry. This appears to be true, even in cases where the individuals demonstrate a pattern of threat perception, emotional experiences, and efficacy evaluations consistent with the absence of such motivations.

12 Implications, limitations and conclusions

The aim of this research was to use cognitive-emotional theories of threat perception and responding to explore the nature of challenges faced by, and experiences of commercial fishers in the Northern Queensland east coast fishing industry. By doing so, the current research produced findings that have both theoretical and practical implications. This final chapter examines the implications of the study, identifies limitations of the research, and provides recommendations for research and practice.

12.1 Theoretical implications

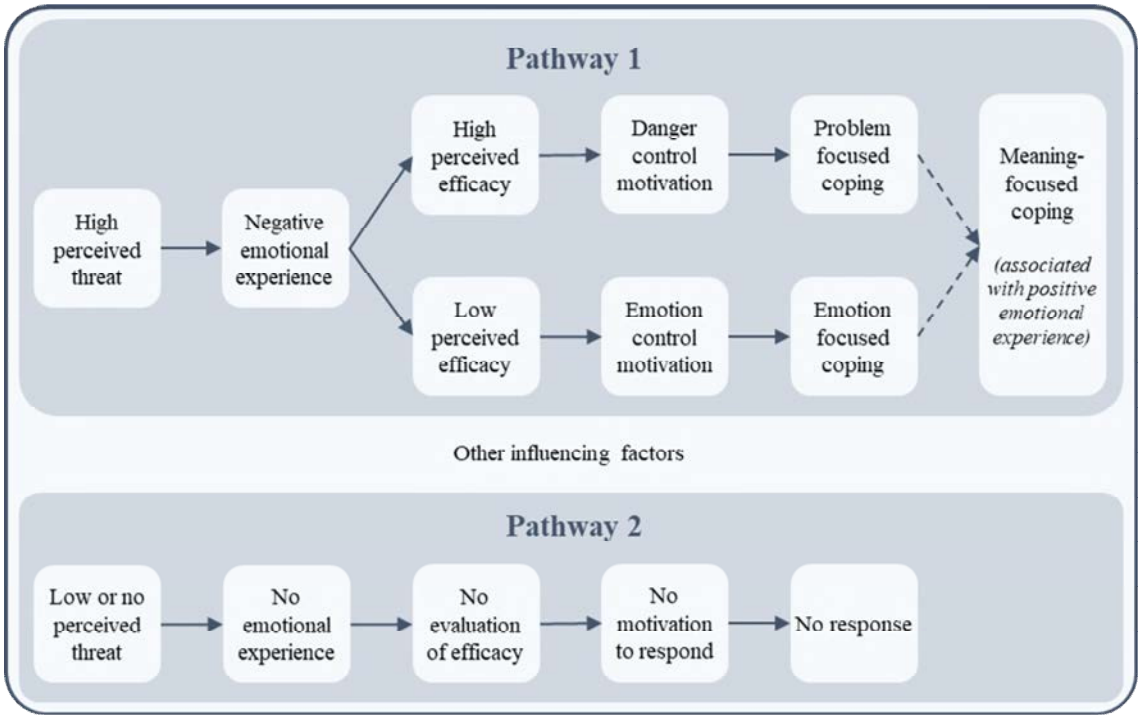
This research has produced findings which have numerous implications for furthering contemporary theories of cognitive-emotional decision making. First, this research established a more holistic theoretical framework (pictured in Figure 53 over the page) that built on the strengths of contemporary theories of cognitive-emotional decision-making theory. This was achieved by integrating theories that focused on the cognitive-emotional elements of decision making and responding such as the PMT (Rogers, 1975) and EPPM (Witte, 1992) with theories that focused on how people cope or respond to threatening situations such as the TTS (for example, Lazarus & Folkman, 1987). The integration of these theories resulted in a modified version of the EPPM with three primary differences:

1. Fear was broadened to encompass all negative emotional experiences.
2. Response outcomes were more accurately defined as problem-focused and emotion-focused responding rather than adaptive and maladaptive responding respectively; and
3. The inclusion of meaning-focused coping accompanied with positive emotions.

This theoretical framework was used to guide the current investigation and demonstrated value in understanding the cognitive-emotional decision-making process and resulting responses of individuals in a novel context. The models that informed this guiding theoretical framework were predominantly generated within a health context, and often to explain the impact of threat messages. However, this exploration of commercial fishers' experiences highlighted that this theoretical framework contains broad psychological factors which can effectively be applied across a range of contexts to understand human decision making and behaviour. This study provides continued evidence to support the use of cognitive-emotional decision-making theories in contexts beyond which they were originally intended.

Figure 53

Guiding theoretical framework



Furthermore, the current research produced findings that provide support for the integration of these theories. Commercial fishers' emotional experiences were much broader than fear, and it was found they experienced other negative emotions such as despair, depression, frustration, and anxiety. This finding provides support to modify the EPPM by broadening fear to encompass negative emotional experiences more generally.

These results demonstrated that not all problem-focused responses were adaptive, and not all emotion-focused responses were maladaptive. Within the theoretical framework of the EPPM, problem-focused coping strategies are described as adaptive responses and emotion-focused coping strategies are described as maladaptive (Witte, 1992; Witte & Allen, 2000). However, the results of this study support the argument that the functional value (or adaptiveness) of a response is dependent on contextual factors and that problem-focused strategies are not inherently adaptive nor are emotion-focused strategies inherently maladaptive (Bonanno & Burton, 2013; Lazarus et al., 1985; Lazarus & Folkman, 1987). This conclusion has been drawn based on evidence that in the case of fisheries management, it appears both problem-focused coping and emotion-focused coping failed to be adaptive overall. Additionally, in the case of climate change, the findings suggest that emotion-focused coping had been adaptive in terms of eliminating the perception of threat. While this may have benefits to the individual, engaging in denial or disengaging from climate change is

not adaptive at a population level. Therefore, this finding provides additional support to name response outcomes as problem-focused and emotion-focused rather than adaptive and maladaptive, respectively.

Furthermore, this research demonstrated the presence of positive emotions such as hope and meaning-focused responses such as infusing positive meaning, and goal revision. These findings support the integration of meaning-focused coping and accompanying positive emotions into theories of cognitive-emotional decision making and responding. While the findings of the current study support the inclusion of meaning-focused coping, further investigation of meaning-focused coping is warranted. Such research would be of significant practical value particularly in the context of uncontrollable threats. In such cases, the most effective response would likely be to engage in meaning-focused coping as (a) problem-focused coping strategies would be ineffective in reducing the threat, and (b) emotion-focused strategies are only effective strategies in the short term. If we had a better understanding of how to trigger meaning-focused coping strategies, we could encourage those facing uncontrollable threats to do so. For example, in the case of commercial fishers, meaning-focused coping may involve shifting or adapting their attachment (to livelihood and place) and identity to decrease the perceived importance of commercial fishing and increasing their willingness and perceived ability to seek an alternate livelihood.

However, this research also uncovered some limitations to the explanatory power of this framework, particularly in the context of the role of emotions. The results demonstrated great diversity in the range of emotions experienced by commercial fishers in response to perceived threats. Theories of emotion demonstrate that certain emotions and forms of motivation can have differing impacts on decision making and responding. For example, anger tends to result in aggressive behaviours, fear tends to result in avoidance behaviours, and sadness tends to result in inaction or support seeking behaviours. However, the theoretical framework guiding this research lacks detail about the influence of emotions on decision making and responding. Given the evidence that emotions are linked to certain responses, the explanatory power of the model may be further enhanced by detailing the differential influence of emotions on decision making and responding. Doing so may enhance the model's ability to predict certain types of responding within categories of problem-focused, emotion-focused, and meaning-focused coping. Additionally, by integrating the differing influences of emotion on responses, this model could be applied to emotional appeals framed by other emotions such as guilt, anger, and sadness to more accurately predict the types of responses performed, and to craft messages using the negative emotion most

likely to motivate the target response. Future research should therefore consider expanding the role of specific negative emotions within this theoretical framework to better integrate what is known about how certain emotions are triggered and what behaviours arise as a result of specific emotions.

Applying this theoretical framework in a novel context using exploratory methods has generated insights into other factors influencing cognitive-emotional decision making and responding. Specifically, this research identified three broad categories of factors that have been proposed to influence commercial fishers' decision making and responding: external factors, individual factors, and social factors. In constructing the EPPM, Witte (1992) proposed that decision making was influenced by 'other' factors such as external stimuli and individual factors. The current research findings provide support for the influence of external stimuli and individual factors but extends the EPPM by identifying social factors as a further influencing factor.

Within these three broad categories, the current research has identified factors that range from being highly context specific through to broad psychological constructs. Those factors that are highly context specific may have implications only in a commercial fishing context (or similar contexts), whereas the broad psychological constructs identified in this research may have implications for decision-making theory more generally. For example, external stimuli including fisheries management, market characteristics, remote living and climate change were identified in this research. Fisheries management and market characteristics are likely to be relevant when exploring decision making in the context of commercial fishing, and other regulated industries (for example the farming, quarry, and mining industries), and for other stakeholders in the seafood supply chain (for example retailers). Remote living is likely to have implications more broadly than just the commercial fishing community, for example in other industries that are geographically dispersed, such as farming and agriculture, or in regional and remote communities generally. In contrast, climate change is a global threat with broad impacts. There are certain populations likely to be disproportionately affected by climate change, such as industries dependent on natural resources, or regions vulnerable to climate change where climate change may be more relevant.

Despite the variation from highly context specific, to global factors, there is insufficient reason or evidence to warrant the inclusion of these factors in a general theory of decision making and behaviour. However, what this research does highlight is that threat happens in context. Often, research focuses on a target threat in a vacuum, without

considering other threats that are competing for an individual's attention and energy. For example, in the current study, it could be that commercial fishers did not register a high level of threat perception towards climate change given that the perceived threat of fisheries management consumed a significant proportion of their attention and energy. The presence of a threat which is perceived to pose a significant threat may act as a barrier to individuals perceiving and responding to other threats in their environment. Therefore, future research should consider whether there are other perceived threats present in the context under investigation that may act as a barrier to threat perception of the target threat. Furthermore, research in the commercial fishing industry specifically, should consider the role of all four external stimuli identified.

Similarly, a range of individual factors were identified which varied in specificity. These included attachment (to livelihood and place), gender, climate change beliefs and general self-efficacy. The findings of this study reinforce that attachment is an important psycho-social construct when studying commercial fishing with consideration to both livelihood and place. Furthermore, the findings of this study suggested that livelihood and place attachment have a significant role in commercial fishers' decision making and responding. Based on this research, and other research exploring commercial fishers' attachment to their livelihood and the places they fish, it appears critical that future research regarding commercial fishers' behaviour consider the role of attachment. However, considerable gaps in understanding of commercial fishers' attachment to livelihood and place remain. Cheshire et al. (2013) proposed a model of farmers' attachment which considered both attachment to farming (the act of practising their livelihood) and attachment to the places in which they farm. Research in the commercial fishing industry often conflates these two different forms of attachment or makes broad reference to attachment without exploring what it is commercial fishers are attached to and why. Further research is required to better understand and define the nature of commercial fishers' attachment and to examine the mechanisms through which their attachment develops.

To better understand the nature of the impact of attachment on decision making and responses in high attachment contexts (such as commercial fishing and farming), future research should explore whether the suggested interactions between attachment and other elements of decision making and responding hold true. While attachment may prove a valuable line of inquiry in certain situations (for example, when it is expected that attachment is high), it does not appear to be a broad psychological factor that is engaged in typical

decision-making processes and therefore, should not be integrated into general models of decision making.

When exploring the role of individual factors, it is common for researchers to explore the role of gender in decision making and responding. However, there is a lack of evidence finding that gender has a systematic influence on decision making and responding (Witte & Allen, 2000). Given what is known about the effect of gender on decision making and responding, it is sensible not to incorporate gender into theories of decision making and responding. However, as the current findings show, this does not mean that gender is not important. Rather, in cases such as this research, gender may be an important factor to consider. Gender may have been an important factor in this context as a result of commercial fishing being a highly gendered livelihood. Gender therefore may be important to consider in contexts in which individuals perform highly gendered roles.

These findings highlight that perceptions of climate change in commercial fishers and members of the general public are similarly influenced by personal experiences. While it is not possible to draw conclusions about the proportion of commercial fishers' who do, or do not perceive climate change to be a threat, the findings of this study and other studies with commercial fishers indicate that participants tended to not perceive climate change to be a threat. In contrast, amongst the general public, it appears that those who do not perceive climate change to be a threat (either because they are disengaged, doubtful or dismissive), are in the minority (Neumann, et al., 2022). If it is that commercial fishers are more likely to not perceive climate change to be a threat than a member of the general public, this may in part be explained by their frequent interactions with nature and subconscious motivations. That is, given the high levels of interaction with nature, fishers may be more likely to be exposed to personal experiences which influence their judgements about climate change and may be subconsciously motivated to engage in denialist beliefs as a means to reduce cognitive dissonance.

This research also identified that general self-efficacy had a role in commercial fishers' decision-making processes and may have implications for decision making in other contexts. Specifically, general self-efficacy may be important when investigating behaviours that are new to those performing them. When there is a lack of previous experience performing a response, general self-efficacy may determine whether an individual performs the response so that those with high general self-efficacy would be more likely to perform a novel response than those who register low general self-efficacy. Additionally, general self-efficacy is proposed to underpin specific self-efficacy. Therefore, measuring general self-

efficacy in addition to specific self-efficacy may be useful in determining whether levels of specific self-efficacy are as a result of perceptions of general self-efficacy, or if they are specific to that response. This may have implications practically as interventions may attempt to increase general self-efficacy rather than specific self-efficacy to be more effective in bringing about behaviour change. Therefore, it may be beneficial to include measurements of both general and specific self-efficacy broadly however, based on these findings it is recommended that when investigating novel behaviours, consideration is given to the role of general self-efficacy in addition to specific self-efficacy.

As mentioned previously, the current research highlighted that in addition to external stimuli and individual factors, social factors had a role in individuals' decision making and responding. The findings of this study support arguments that social factors are important for decision making and responding (for example, Hart & Feldman, 2014; Roberto, Goodall, & Witte, 2009; Stenhouse, 2015). This is particulary relevant for threats which require collective action or cooperation between groups (for example climate change), or perhaps when a group identity is under threat (for example, job loss of any kind, but particularly when livelihood attachment is high).

The current research highlights a range of factors for consideration in future investigations of cognitive-emotional decision making and responding. Given the evidence above, the inclusion of factors such as general self-efficacy, and social factors may enhance general theories of decision making and responding. More importantly however, this research highlights the importance of contextually specific factors and subsequently the importance of understanding the context in which decision making and behaviour occurs. When applying models such as the EPPM, researchers are often dismissive of contextually specific-factors and instead focus only on the model constructs. Witte and Allen's (2000) conclusion that individual differences have limited influence on decision making and behaviour (in the context of fear appeals) may lead others to believe that such factors are unimportant. The current research clearly demonstrates that this is not the case and that in certain situations, individual differences may alter the typical decision-making process. Therefore, based on the current findings, it is recommended that researchers consider contextually specific factors which may influence decision making, particularly when applying such models to a novel context.

This research also brought to light some considerations for measuring constructs of cognitive-emotional decision-making models. Specifically, the findings of this research highlight a need to consider measurements of attitudes to capture mixed and ambivalent

attitudes. It was found that at times, participants held ambivalent or mixed attitudes about climate change and self-efficacy for example. For example, in the case of climate change, some participants were explicitly ambivalent or unsure about the threat of climate change, and others expressed opposing or mixed perceptions about climate change (they expressed high perceptions of threat and low perceptions of threat). While there is a qualitative difference between ambivalent attitudes and mixed attitudes, there is a risk that measurements made using bipolar scales may not differentiate between the two.

The current research also highlighted that the role of perceived threat proximity is underrepresented in measures of perceived threat susceptibility. Perceived threat susceptibility is defined as an individual's beliefs about their relationship with a threat. Typically, this is assessed by measuring individual's perceptions of the likelihood of a threat occurring, or the likelihood of a threat impacting an individual. In the current study, participants' responses emphasised the perceived proximity of threats. Similarly, climate change research demonstrates that perceived threat proximity contributes to individuals' perceptions of threat. Therefore, threat proximity may be a facet that makes up perceived susceptibility and should therefore form part of measures of perceptions of susceptibility. Measurement of threat proximity would be particularly important in the context of long-term threats such as climate change as overall, individuals may not hold high levels of threat perception. More precise measurements of threat perception would allow researchers and practitioners to more accurately craft interventions designed to raise or lower perceptions of threat to achieve the desired cognitive, emotional, psychological, and behavioural responses.

12.2 Practical implications

This research has produced findings which have a range of practical implications and the most important of these have been detailed here. Overall, these implications relate to the need to build and maintain commercial fishers' ability to cope with and adapt to stressors, providing insights into how this may be achieved; and what these findings mean for how fisheries are managed. Implications for a range of stakeholders are reported, but most notably, for commercial fishers and fisheries managers. Importantly, there are actions that can (and should) be taken by all stakeholders to address key issues identified in this research.

12.2.1 Coping with and adapting to change

The current research produced findings which clearly demonstrate a need to build and maintain commercial fishers' ability to cope with and adapt to stressors to support them in maintaining their livelihood. Most importantly, this research demonstrated a great need for mental health interventions given the impact that fisheries management was found to have on

commercial fisher mental health and wellbeing. The need to build commercial fishers' self-efficacy, and in-group networks is also discussed.

12.2.1.1 Mental health interventions. The current project and previous research in commercial fishing communities clearly demonstrates that the mental health status of commercial fishers is highly concerning (for example, King et al., 2019; McNeill et al., 2018; Momtaz & Gladstone, 2008; Pickworth et al., 2006; Schirmer & Pickworth, 2005a, 2005b; S. Smith et al., 2003; Voyer et al., 2014; Woodhead et al., 2018). These findings and repeated calls for mental health support in the commercial fishing industry (for example, Kilpatrick, Willis, Peek, & Johns, 2013; King et al., 2019; Shaw et al., 2011) demonstrate the need for interventions aimed at increasing the coping capacity and help-seeking behaviour in commercial fishing communities, particularly for those who intend to remain in the industry. Furthermore, given the acute nature of mental health in commercial fishing communities, suggestions for both immediate and long-term interventions are outlined below.

To increase commercial fishing communities' access to immediate mental health support, it is recommended that members of the fishing community and others who regularly interact with the commercial fishing community undergo mental health first aid (MHFA) training. MHFA is a training program which seeks to address mental health problems and suicide by improving trainees' health literacy, reducing their stigma towards mental health, and building their ability to provide help to someone in distress or is suicidal (Hadlaczky, Hökby, Mkrtchian, Carli, & Wasserman, 2014; Kitchener & Jorm, 2002, 2006). Hadlaczky et al. (2014) conclude that MHFA is a promising intervention given the findings of their meta-analysis which demonstrated that MHFA does indeed lead to increased mental health literacy, decreased stigma, and increased help-providing behaviours. Furthermore, Hadlaczky et al. (2014) reported that MHFA training resulted in additional benefits for trainees including the improved insight into their own (and others) wellbeing which was expected to facilitate improved coping.

Here the recommendation made by King et al. (2019) is echoed; it should be a priority for those who regularly engage with members of the fishing community (for example, family members, industry associations, key members of the commercial fishing community), to undergo MHFA training as a first step. Furthermore, given findings reported by Hadlaczky et al. (2014), members of the commercial fishing community themselves would directly benefit from undergoing MHFA training. Women in the commercial fishing community provide an entry point to the commercial fishing community for this type of intervention. In the current study, female commercial fishers expressed their need to be better equipped to provide

mental health support to others in the community. Furthermore, Kilpatrick et al. (2015) argue that mental health interventions should engage women in the commercial fishing community because they have the credibility and networks within commercial fishing communities required to facilitate broad uptake of such interventions. Therefore, it is also recommended that it should be a priority of females within the fishing community to undergo MHFA training.

Support for training should be provided by industry bodies and fisheries managers to enable the uptake of the training by relevant stakeholders. This could be achieved through organising localised training sessions in consultation with commercial fishers, and by funding attendance at training sessions. If not supported by industry bodies and fisheries managers, there is a risk that there will be insufficient resourcing or funding required to deliver the training.

It is recommended that Queensland fisheries managers implement programs designed for commercial fishing communities to address poor mental health and increase individuals' capacity to cope with stressors. Programs which have recently been trialled in the commercial fishing community may provide a foundation for future interventions. For example, King et al. (2019) recently reported on the successful trial of the Sustainable Fishing Families (SFF) program, an adaptation of the Sustainable Farming Families program with Victorian and South Australian fishing families. The Sustainable Farming Families program was developed to enhance the health, wellbeing, and safety of farming families (National Centre for Farmer Health, 2018). The SFF program was tailored to the commercial fishing industry by integrating evidence from the literature and through consultation with a diverse stakeholder group, including representatives from the commercial fishing industry, the Sustainable Farm Families program, and health professionals (King et al., 2019). The SFF program takes a holistic approach to health promotion and teaches fishers the link between their health (including mental health) and the productivity of their business through a series of face-to-face workshops (King et al., 2019). Should such an intervention be implemented however, it would be important to assess the impacts on mental health in addition to physical health, to drive continuous improvement of program delivery. It is important to note however, the ability to evaluate the benefits of the program may be limited to ensure the confidentiality of program participants. A strength of this program is that it takes a holistic approach to health by targeting mental and physical health, tailored to the needs of commercial fishers. As will be discussed in the subsequent section, this program may be an effective way to enhance commercial fishers' physical health and in turn, build their perceptions of efficacy.

Fisheries managers must exercise caution when enabling the delivery of such programs. While fisheries managers can enable such programs, it is important that their role is just that of an enabler, for example by providing funding. Given high levels of distrust in fisheries managers, commercial fishers are unlikely to participate if they perceive there to be involvement from fisheries managers in the delivery these programs, particularly in the on-ground delivery of programs.

12.2.1.2 Building perceived efficacy. The findings of this study demonstrate that commercial fishers often perceived they had poor efficacy (both self-efficacy and response efficacy), and it was suggested that this low perceived efficacy should have contributed to the performance of emotion-focused rather than problem-focused coping responses. While emotion-focused strategies may be effective in relieving negative emotions in the short term, research suggests that generally, problem-focused strategies are more effective in the long term. Therefore, for commercial fishers to perform problem-focused responses that minimise threats to their livelihood (for example, fisheries management) it is critical that they have the psychological resources such as a strong sense of efficacy, to perform these responses. Importantly, building perceived efficacy will only support commercial fishers in adapting if there are problem-focused responses that they can perform, and which will be effective. For instance, commercial fishers in this study claimed they were encouraged to diversify their business to include eco-tourism, but that there were insufficient tourism numbers to make an eco-tourism business viable. Therefore, efforts to build commercial fishers' perceptions of efficacy should be directed to responses which are likely to be adaptive.

Not only would building efficacy of commercial fishers benefit commercial fishers, but it would also benefit fisheries managers as these psychological resources are necessary for commercial fishers to adapt to change, including changes to fisheries management. Building perceptions of efficacy (particularly self-efficacy) in the commercial fishing community is also important for mental health, as low perceived efficacy is associated with feelings of depression, anxiety, helplessness, and pessimism (Bandura, 1982; Maddux & Kleiman, 2018; Scholz et al., 2002). By bolstering commercial fishers' perceptions of efficacy of responses that are adaptive, there are likely to be positive flows to their mental health and wellbeing.

Bandura (1982) proposed a range of sources of self-efficacy which are often cited as mechanisms for enhancing both specific and general self-efficacy: performance experiences, vicarious experiences, verbal persuasion, and physiological and emotional states. That is, individuals' sense of efficacy may be enhanced through: the successful performance of

behavioural strategies; observation of others or imagination of themselves successfully performing behavioural strategies; persuasion and encouragement from others; and reductions in physiological and emotional arousal (Maddux & Kleiman, 2018).

Of these four strategies, building self-efficacy through vicarious experiences may be the most achievable and practical to apply to the context of commercial fishing. For instance, vicarious experiences could take the form of testimonials from individuals that commercial fishers trust and identify with (likely, other commercial fishers in their community). Such testimonials may focus on the experiences of those who have been successful in performing a certain response that others find challenging, such as working new fishing grounds, applying new fishing techniques or technology or diversifying fishing activities. A key feature of these testimonials is that others too can successfully accomplish the response of focus (Maddux & Kleiman, 2018). By demonstrating positive outcomes from performing these responses, testimonials may also be a mechanism to increase perceptions of response efficacy. There are various forms that testimonials can take and a variety of methods of sharing these testimonials amongst the fishing community by various stakeholder groups. Table 12 summarises some suggestions for how testimonials may be used in practice and by who. There are also existing initiatives in the commercial fishing industry, such as workshops or training days hosted by commercial fishers, for commercial fishers. Fisheries managers, policy makers and peak industry bodies should look to ways they can *support existing grassroots initiatives rather than imposing new initiatives* on the industry. Furthermore, commercial fishing industry stakeholders can look to other industries, such as agriculture as a model for future initiatives. For example, in agriculture, industry representatives organise field trips to farms which have been successful in adopting new technologies or techniques. Industry stakeholders can attend these ‘farm tours’ to obtain information about the technique or technology and observe a demonstration on how it was implemented. Overall, it is recommended that stakeholders who interact with the fishing community, particularly fisheries managers, policy makers, peak industry bodies and the commercial fishing community itself use testimonials to build perceived efficacy in commercial fishers to adapt to change.

Table 12

Potential approaches for using testimonials to increase self-efficacy

Stakeholder group	Potential approaches for using testimonials
Fisheries managers and policy makers	Support commercial fishers through management and policy changes using written and video testimonies as part of communication and engagement strategies.
Peak industry bodies	Facilitate workshops for commercial fishers in which they can share successes with peers.
Commercial fishing community	Share stories of success with other commercial fishers informally through existing community networks (for example, online networks) or during interpersonal interactions.

Additionally, this research identified particular sources of self-efficacy in commercial fishers: (a) industry-specific knowledge and experience, and perceptions of control which appeared to contribute to *specific* self-efficacy; and (b) general knowledge and experience (knowledge and experience beyond commercial fishing) and personal experience which appeared to contribute to *general* self-efficacy. Commercial fishers' self-efficacy may also be enhanced by focusing interventions on these four factors. While some argue that specific self-efficacy is most crucial, commercial fishers would benefit from interventions targeting general self-efficacy also (Azizli, Atkinson, Baughman, & Giammarco, 2015). General self-efficacy is positively correlated with specific self-efficacy, therefore increases in general self-efficacy are likely to also lead to increases in specific self-efficacy. Additionally, general self-efficacy is argued to be an important determinant of behaviour when behaviours are novel to the individual (Scholz et al., 2002). Given commercial fishers' suggestions that changes in the nature of commercial fishing are calling on them to do things they have never done before (novel behaviours), general self-efficacy may be particularly important in this case.

Commercial fishers' knowledge and experience (both industry and non-industry specific knowledge) could be enhanced through targeted training. The results of this study do not identify the specific training needs of commercial fishers and therefore, it is recommended that fisheries managers, peak industry bodies, and training providers (ideally collaboratively) undertake a skills needs assessment to inform training strategies in the commercial fishing industry. This study does however provide some implications for

delivering training and education services in the commercial fishing industry. Firstly, the results suggest that fishers see a greater deficit in their generalist skills rather than fishing skills and therefore, service providers should consider targeting the development of more general skills, and how commercial fishing skills may be transferrable to different contexts. Additionally, commercial fishers demonstrated a preference for training that occurred in situ and had a practical focus. Therefore, training providers should consider using methods that align with commercial fishers' preferences to enhance uptake of training services. Finally, commercial fishers demonstrated a lack of trust in those without industry-specific knowledge and therefore, it may be important to engage facilitators and educators with industry experience.

Commercial fishers reported that personal qualities such as their physical health limited their ability to adapt. While this study cannot speak to the health status of commercial fishers, evidence demonstrates that fishers tend to have limited access to health care services (R. A. Turner et al., 2018) and their work exposes them to a range of health risks including physical injuries, musculoskeletal problems, skin cancer, infectious and parasitic disease, cardiovascular disease, hearing-related problems, and most concerning, work-related deaths (Brooks, 2011; Kucera et al., 2010; McGuinness et al., 2013; Power, 2008; Rezaee et al., 2016; R. A. Turner et al., 2019; Windle et al., 2008; Woodhead et al., 2018). The Sustainable Fishing Families program previously discussed was founded on concerns about the health of commercial fishers and the argument that "an industry is only as healthy and sustainable as its members" (King et al., 2019, p. 1). As previously mentioned, there is strong evidence in support of the physical health benefits of this program and evaluations demonstrate that both fishers (King et al., 2019) and farmers (Brumby, Martin, & Willder, 2013; Storey, 2009; Storey & Sison, 2011) benefited from participation in the programmes through improved health outcomes. King et al. (2019) reported improvements in physical health measures such as body mass index, waist circumference, blood glucose level, cholesterol level and systolic blood pressure.

Finally, a major source of commercial fishers' low perceived self-efficacy was a perceived lack of control, particularly over fisheries management and its perceived consequences. Later in this chapter, recommendations are made for how fisheries managers engage commercial fishers in fisheries management decision making in response to the lack of trust commercial fishers appear to have in fisheries managers. An additional benefit of taking a more collaborative approach to fisheries management decision making is that

commercial fishers may have a greater sense of control which could be expected to result in improved self-efficacy.

12.2.1.3 Building in-group networks. The results of this study provide insights into how relationships between commercial fishers could be enhanced. Strong networks in the commercial fishing community are important for the community itself, and for effective fisheries management. For commercial fishing communities, strong networks facilitate information sharing, the provision of emotional and instrumental support, mobilising collective action, reducing competition, and increasing cooperation (Grafton, 2005; Himes-Cornell & Hoelting, 2015; Lavoie & Himes-Cornell, 2019; Lin, 1999; R. A. Turner et al., 2014). Additional benefits for fisheries managers flow from strong social networks characterised by trust and cooperation which Grafton (2005) argues is necessary for a well-managed fishery. When commercial fishers cooperate with one another, the cost to fisheries managers is lower as there is a reduced need for management interventions (Grafton, 2000; R. A. Turner et al., 2014).

It was found that commercial fishers had established and were seeking to build a network of commercial fishers so that commercial fishers could provide and receive instrumental and emotional support. Interactions appeared to happen both in-person and via social media. Given the geographically dispersed nature of the industry and that commercial fishers work at sea, often days at a time, it is likely that it would be difficult for commercial fishers to build networks that rely solely or primarily on face-to-face interactions. Connecting via social media provides commercial fishers with opportunities to access a larger social network as it can cross geographical barriers and allows commercial fishers to connect with others at times that suit them. Therefore, commercial fishers seeking to connect with others are encouraged to seek out existing networks or establish their own networks via social media in addition to connecting with those within their local geographic community of commercial fishers. Those commercial fishers who have already established or are part of online communities, should continue to engage with other members of their online commercial fishing community. Additionally, to strengthen existing networks, those already part of an online community could do so by encouraging others to connect online, and welcoming new members into the online community.

It is important that networks built through grassroots efforts (as is the case for some participants in this study) continue to be community led. If out-groups such as peak industry bodies and fisheries managers become involved in these networks, without invitation from the community members, the ability for commercial fishers to build in-group networks may

be compromised. However, out-groups can still provide support to commercial fisher networks that enables them to establish, build and maintain these networks. This support may take the form of making available learning opportunities for those unfamiliar with using social media to enable them to access and engage in online networks; learning opportunities for community members to develop skills in community leadership which enhance their ability to establish, build and maintain these networks; and funding opportunities for communities to lead initiatives which enhance their networks.

12.2.2 Implications for fisheries management

The current project has several implications for how fisheries are managed. Such implications have been driven by the insights gained through the perspectives of commercial fishers. This is not to say that these are issues or concerns that fisheries managers are unaware of or are yet to attempt to address. What these insights do highlight is that in the eyes of those that they regulate, fishers perceive that fisheries management unfairly places a great burden on commercial fishers and that they lack trust in fisheries management. Additionally, this research generated insights which may equip fisheries managers to enhance fisheries management through improved compliance, the transition of commercial fishers out of the industry and through motivating commercial fishers to take climate action. In all cases, implementation of these implications would best be achieved by considering the perspectives of all stakeholders involved, particularly fisheries managers. **12.2.2.1 Reducing the burden of fisheries management.** Sustainable fisheries management is underpinned by three objectives: environmental protection, economic growth, and social development (Asche et al., 2018). The current research clearly demonstrates that fisheries management is having serious social impacts, particularly on commercial fishers. Researchers have similarly argued that fisheries managers focus primarily on ecological outcomes at the cost of socioeconomic experiences of stakeholders (R. Kelly et al., 2017; Voyer et al., 2014). Commercial fishers' ability to cope with and adapt to stressors can be built through focussed mental health interventions however, more must be done to reduce the social impacts of fisheries management on commercial fishers. Increasing commercial fishers' ability to cope with the burden of fisheries management should not be the primary strategy of fisheries management. Instead, fisheries management should focus on reducing the burden on commercial fishers and then be complemented with strategies to increase fishers' capacity to cope, given that it is unlikely that challenges associated with fisheries management will be eliminated for fishers. It would be wise to consider whether there are management tools and strategies that contribute the least to achieving the goals of fisheries management but place a high burden on

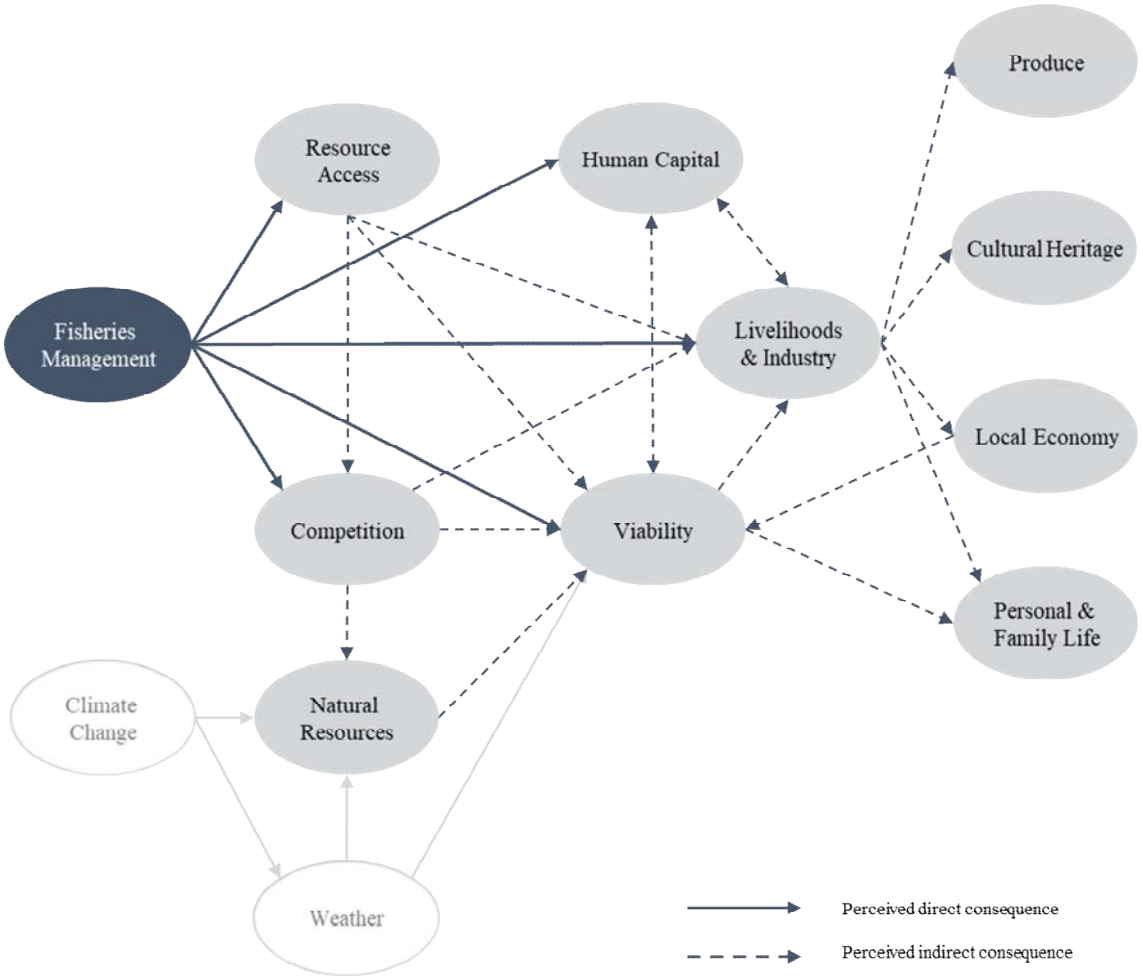
commercial fishers when seeking to reduce regulatory burden. Fortunately, the current research provides insights into a range of methods in which fisheries management can reduce the burden of fisheries management on commercial fishers.

As a first step, it is recommended that fisheries managers undertake social impact assessments to better identify and respond to impacts on commercial fishers. Currently the Queensland Government 'acknowledges' that changes to regulation will have social and economic impacts on commercial fishers (DAF, 2019a), however they do little more than acknowledge the situation to alleviate commercial fishers' concerns or the actual impacts on commercial fishers. It is not enough to acknowledge that fisheries management changes will have social and economic impacts. Social impact assessments should be used not only to identify impacts, but also identify ways to reduce impacts. King et al. (2019) also call for comprehensive social impact assessments prior to changes in the commercial fishing industry to address the impacts that fisheries management is currently having on commercial fishers' mental health and wellbeing. The effective implementation of social impact assessments would assist fisheries managers in addressing criticisms that they focus on environmental outcomes at the cost of social and economic outcomes (R. Kelly et al., 2017; Ross, 2013; Urquhart & Acott, 2014; Voyer et al., 2014).

The current research provides an assessment of key impacts of how the industry is currently managed which provides fisheries managers a foundation on which to reduce the burden of fisheries management on commercial fishers. The thematic map of commercial fishers' perceptions of the direct and indirect impacts of fisheries management (see Figure 54) highlights factors and pathways for alleviating pressure on commercial fishers. For instance, commercial fishers perceive that their viability and the sustainability of their livelihood and the industry was impacted by fisheries management via resource access, human capital, and competition. Therefore, the burden of fisheries management could be reduced by ensuring that changes do not further compromise commercial fishers' access to necessary resources (for example, fishing grounds), industry human capital and competition between resource users and seafood producers. Additionally, by enhancing resource access and human capital, and reducing competition between resource users and seafood producers, fisheries managers could buffer the impact of future changes to how the industry is managed. It is recommended that fisheries managers and policy makers investigate mechanisms to reduce the burden of fisheries management through consequences of fisheries management such as resource access, human capital, and competition.

Figure 54

Perceptions of the impact of fisheries management



This project also identified external pressures that appeared to worsen the impacts of fisheries management or be worsened by fisheries management. Specifically, the research demonstrated that commercial fishers perceived their viability and the sustainability of their livelihood, and the industry was compromised by poor public perception, living, and operating in remote areas and market changes. Previous research also identified additional pressures on commercial fishing such as climate change. Fisheries managers must also consider how these external pressures interact with fisheries management to have a holistic understanding of the pressures facing commercial fishers. It is therefore recommended that fisheries managers consider external pressures such as public perception, remoteness, market changes and climate change when undertaking social impact assessments. Additionally, by addressing these pressures, fisheries managers may be able to buffer against the impacts of fisheries management on commercial fishers. Therefore, it is also recommended that fisheries managers and policy makers investigate potential mechanisms to reduce the burden of

external pressures such as public perception, remoteness, market changes and climate change to build a buffer for the impacts of fisheries management.

12.2.2.2 Building trust in fisheries management. The findings of this study clearly demonstrate commercial fishers' lack of trust in fisheries managers. Specifically, the findings suggest that three critical features of trust have been violated. It appears that competence-based trust has been violated given the common perception of fisheries' managers incompetence; benevolence-based trust appears to be violated given common perceptions of being treated by fisheries managers with disregard, maliciousness, and injustice; and it appears integrity-based trust appears to be violated given perceptions of dishonesty, inequitable treatment, disregard and injustice. Combined with similar findings in other commercial fishing communities (for example, King et al., 2019; Momtaz & Gladstone, 2008; Shaw et al., 2011; Voyer, 2014), these results are concerning for fisheries managers. In regulatory contexts such as this, the trust, or lack of trust, that members of the regulated community (commercial fishers) have in regulators (fisheries managers) have serious implications for regulatory and management effectiveness. For example, when trust between the regulated and regulators is high, knowledge and information is more freely shared, (Grafton, 2005; Pomeroy & Berkes, 1997), there is greater cooperation for example in co-management arrangements (Grafton, 2005), and regulated communities are likely to demonstrate greater acceptance of and compliance with regulations (Grafton, 2005).

While the state of trust should be of great concern, these findings provide a foundation for fisheries managers to build trust. Fisheries managers can build commercial fishers' trust by taking an approach to fisheries management that is underpinned by principles of competence, benevolence, and integrity, and addressing the specific characteristics of each identified by commercial fishers in this study. For example, fisheries managers can embed the principles of trust within one-on-one interpersonal interactions, through to the way that fisheries managers engage commercial fishers in fisheries decision making.

Queensland Boating and Fisheries Patrol (QBFP) are the frontline staff who represent fisheries managers and engage with commercial fishers to enforce fisheries laws and educate commercial fishers about their obligations (State of Queensland, 2015). These enforcement and education activities occur through interpersonal interactions between QBFP personnel and commercial fishers, which present fisheries managers with opportunities to influence how they as a group, are perceived by commercial fishers. For example, in a policing context, Mazerolle, Antrobus, Bennett, and Tyler (2013) used a procedural justice framework to inform officers' interactions with citizens during random breath testing. Officers'

interpersonal communication was underpinned by principles such as treating citizens with dignity and respect, and demonstrating neutrality in their decision making (Mazerolle et al., 2013). Consequently, Mazerolle et al. (2013) demonstrates that citizens' generalised perceptions of the police, and their perceptions of individual officers, could be positively influenced through interpersonal interactions. While this study was conducted in a different context, and was informed by a different theoretical framework, the research demonstrates that how authorities interact with others influences how the authority is perceived. Consequently, by changing how authorities interact with others, they can improve how they as representatives of the authority, and the authority generally, are perceived. Therefore, it is recommended that fisheries managers seek opportunities to underpin interpersonal interactions with elements of trust to enhance fishers' perceptions of and trust in fisheries managers. Studies such as Mazerolle and colleagues' (2013), provide a blueprint for fisheries managers to adapt and apply in a commercial fishing context.

This recommendation also aligns with findings from the current study that suggest that personal interactions with members of out-groups such as fisheries managers can foster positive relationships. Furthermore, according to the contact hypothesis, interpersonal contact between members of different groups can mutually enhance perceptions of outgroups (Allport, 1954; Branscombe, Ellemers, Spears, & Doosje, 1999; Pettigrew & Tropp, 2008). Pettigrew and Tropp (2008) suggest that interpersonal contact works to reduce negative perceptions by increasing understanding of the outgroup, increasing empathy for the outgroup, and by reducing stress about interacting with the outgroup. Therefore, it is also recommended that fisheries managers seek out opportunities (for example, through attendance at industry workshops or forums) to increase interpersonal contact that support both fisheries managers and commercial fishers to increase their understanding of and empathy towards one another (Pettigrew & Tropp, 2008). Furthermore, fishery managers could use such interactions to demonstrate their competence to perform their role by highlighting their practical knowledge of the industry, which commercial fishers in the current study perceived to be a key aspect of the competence of fishery managers.

The current study highlighted that the manner in which fisheries managers engaged commercial fishers in fisheries management decisions presented a great source of distrust for commercial fishers. Therefore, how fishers are engaged in fisheries management decisions may present fisheries managers with opportunities to address a lack of trust and build trust between commercial fishers and fisheries managers. In the current study, commercial fishers felt that they had little or no impact on fisheries management decisions as they felt that

fisheries managers did not provide genuine opportunities for commercial fishers to participate in and contribute to making decisions. It appears that consultation with Queensland commercial fishers focuses on public meetings, written submissions, and feedback on discussion papers via phone, letters, survey, and email (for example, DAF, 2018, 2019b; MRAG Asia Pacific, 2014). While such methods allow for commercial fishers to provide feedback for consideration by fisheries managers when making decisions, such strategies limit commercial fishers' ability to influence decisions, which was often reported by commercial fishers in this study as a source of their distrust. Strategies that are based in two-way communication and collaboration (for example workshops, committees, and participatory decision-making processes) would provide fishers with a greater ability to influence the fisheries management decisions (International Association for Public Participation, 2018) and therefore, may increase their trust in fisheries managers and the process of making decisions. Furthermore, Reed (2008) argues that this ability for stakeholders to influence decisions is a key component of best practice stakeholder participation. The genuine ability to influence a decision must be coupled with transparency in the decision-making process. Unless commercial fishers can see how their and others' contributions have influenced decisions, it is likely that they will continue to perceive that their input had little or no impact on decisions about fisheries management.

It is therefore recommended that fisheries managers consider how commercial fishers can be more effectively engaged in fisheries management decisions by using contemporary and evidence-based approaches to public participation as a mechanism for addressing the lack of trust commercial fishers have in fisheries managers and how decisions about the industry are made. Mazur and Curtis (2019) and Voyer, Gollan, Barclay, and Gladstone (2015) similarly suggest that fisheries management should move from traditional consultation towards more contemporary and collaborative approaches like public participation to realise the potential benefits of engagement.

Benefits of effective public participation (in addition to increased trust; Peña-López, 2001; Richards, Carter, & Sherlock, 2004) have been demonstrated both within and beyond the commercial fishing industry. Firstly, public participation facilitates knowledge sharing between stakeholders such as commercial fishers and authorities such as fisheries managers which is mutually beneficial (Beierle, 2010; Habron, 2003; Irvin & Stansbury, 2004). For instance, fisheries managers can explain why and how decisions have been made, giving commercial fishers increased insight into and understanding of decisions (Irvin & Stansbury, 2004). Conversely, it provides commercial fishers with an opportunity to share knowledge

developed over years, about how things work in practice, exposing fisheries managers to valuable knowledge they may typically have limited access to.

The exchange of information through public participation can also have positive flows to the effectiveness of fisheries management. For example, effective public participation has been demonstrated to result in decisions of a higher quality and subsequently better outcomes from those decisions (Beierle, 2010; Habron, 2003; Irvin & Stansbury, 2004). This includes better environmental outcomes such as the efficacy of management interventions (Yates & Schoeman, 2014) and an increased likelihood of successful implementation of change (Grafton, 2000; Irvin & Stansbury, 2004; Nielsen, 2003). Grafton (2000) also reports that having a high level of commercial fisher involvement in fisheries decisions is a common characteristic of sustainably managed fisheries. Furthermore, effective public participation is argued to result in better social outcomes such as acceptance of change (Junker, Buchecker, & Müller-Böker, 2007; Reed, 2008) and the ability to minimise the negative impacts on stakeholders such as commercial fishers while achieving environmental goals (Yates & Schoeman, 2014).

Increased cooperation is another commonly cited benefit of effective public engagement (Irvin & Stansbury, 2004). Such cooperation may take the form of reduced conflict between stakeholder groups (for example between commercial fishers and recreational fishers) and conflict with authorities (for example fisheries managers; Stepanova, 2015; Voyer et al., 2017). Importantly for fisheries managers, public participation has been demonstrated to improve cooperation with management decisions, or commercial fishers' compliance with regulations (Nielsen, 2003). For commercial fishers, genuine engagement in public participation processes also has psychological benefits. As a result of public participation, there have been demonstrated positive impacts on commercial fishers' capacity to adapt to change (Deason et al., 2014); their sense of control (Barnett & Eakin, 2015; Irvin & Stansbury, 2004); perceptions of fairness and trust in fisheries management (Barnett & Eakin, 2015; Nielsen, 2003); and ultimately their mental health and wellbeing (King et al., 2019).

Despite the wide range of benefits associated with public participation processes, if delivered poorly, there are great risks to both commercial fishers and fisheries managers. Public participation can be timely and costly to both stakeholders and government, and may backfire to produce undesirable decisions, may lead to increased stakeholder frustration, and may stimulate increased conflict between stakeholder groups and between stakeholder groups and government if not delivered effectively (Irvin & Stansbury, 2004; Korfmacher, 2001;

Lawrence & Deagen, 2001; Luyet, Schlaepfer, Parlange, & Buttler, 2012; Mostert, 2003; Reed, 2008; Vroom, 2000). Therefore, caution must be taken when engaging in new approaches to public participation to mitigate such risks and ensure that the benefits of public participation can be realised.

Additionally, this project and previous literature highlight issues and challenges which should be considered by fisheries managers when engaging commercial fishers in decision making processes. For example, commercial fishers' unique work structure which requires them to be at sea for extended periods where they may be uncontactable. Therefore, fisheries managers should consult commercial fishers on how to ensure that those who wish to be involved in fisheries management decisions can do so. Given the education profile of commercial fishers, (that many have no completed formal or tertiary education; Marshall et al., 2017; Momtaz & Gladstone, 2008; Pickworth et al., 2006; Schirmer & Pickworth, 2005a; Sutton & Tobin, 2012) long and complex reports, such as discussion papers often circulated for feedback, are unlikely to be an appropriate method. In both considering the method of commercial fishers' engagement, and the sharing of information, fisheries managers must ensure that their approach is tailored to the needs of commercial fishers, to ensure genuine engagement. It is also important to consider the nature of commercial fishers' relationships with each other. These public participation processes rely on a level of social cohesion to be successful, which further highlights to fisheries managers, why it is vital that they support commercial fishers to establish, build and maintain commercial fisher networks.

12.2.2.3 Motivating compliance and beyond. Commercial fishers in this study were motivated by a broad range of factors. For instance, commercial fishers were motivated to avoid regulatory impacts and loss of their livelihoods or the industry, and to achieve financial security, improved relationships with out-groups and improved industry sustainability. To motivate compliance, it appears that the strategy of fisheries managers in Queensland relies heavily on deterrence, which taps into commercial fishers' motivation to avoid regulatory impacts. Given that punishments for non-compliance typically involve financial penalties, this strategy is also likely to tap into commercial fishers' motivation to achieve financial security. Queensland fisheries managers complement their deterrence-based regulatory approach with communication and education programs; however, these too appear to align mostly with commercial fishers' motivation to avoid regulatory impacts. For instance, these programs seek to educate commercial fishers of their regulatory obligations and highlight the consequences of non-compliance (Australian Government, 2017, 2018; State of Queensland, 2015).

Overall, it appears that Queensland fisheries managers' strategies tap into commercial fishers more extrinsic motivators and neglect the more intrinsic motivators (such as motivations to avoid the loss of livelihoods, to improve relationships with out-groups and to improve industry sustainability). To enhance commercial fishers' motivation to comply with regulations, Queensland fisheries managers could consider implementing strategies that align with commercial fishers' intrinsic sources of motivation (Kennedy, 2010) and use reinforcement rather than punitive strategies to achieve this. Based on the findings of this study, it was suggested that commercial fishers' attachment (to their livelihood and the places they fish) and identity underpinned their more intrinsic forms of motivation. Therefore, to facilitate commercial fishers' intrinsic motivation, fisheries managers can use strategies that draw on, or reinforce aspects of commercial fishers' identity or attachment (to livelihood and place). For example, commercial fishers in this study reported that being hardworking and dedicated were part of the commercial fisher identity. Fisheries managers could support commercial fishers' intrinsic motivation by praising and recognising the hard work and dedication of a commercial fisher, which resulted in a mutually beneficial outcome (such as the uptake of a more sustainable fishing technique). Additionally, regulations are intended to set the minimum standards for members of the regulated community. To motivate fishers to move beyond compliance, fisheries managers cannot rely on regulations alone and in such cases, other motivators become more important.

Fisheries managers can amplify commercial fishers' intrinsic motivation by recognising situations in which commercial fishers are compliant or go beyond the minimum standards and drawing connections to commercial fishers' livelihood and place attachment, and identity. There are a range of methods fisheries managers could employ to achieve this. For example, just as QBFP staff may use interpersonal interactions with commercial fishers to build trust (see page 254 for further discussion about building trust), these interactions can also serve as an opportunity to facilitate commercial fishers' intrinsic motivation. In a situation where QBFP staff observe compliant behaviour, they could draw on commercial fishers' intrinsic motivation by recognising and praising the commercial fishers' compliance and drawing connection to aspects of commercial fishers' identity such as their dedication, passion, and hard work. Additionally, fisheries managers could promote success stories of commercial fishers complying with or going beyond the minimum standard and similarly emphasise aspects of identity, and livelihood and place attachment. By promoting success stories amongst commercial fishers, fisheries managers can also tap into the influence of social norms. Social norm interventions are based on the premise that individuals often align

their behaviour with what others do (Burchell, Rettie, & Patel, 2013). By raising the visibility of and normalising desirable behaviours (such as compliance), the promotion of success stories can influence the broader commercial fishing community to reduce non-compliance and encourage commercial fishers to operate above the minimum standard.

12.2.2.4 Transitioning commercial fishers out of the industry. To meet targets for environmental protection, it is likely that fisheries managers may seek to transition commercial fishers out of the industry. In the past, fisheries managers have incentivised commercial fishers to leave the industry by offering financial compensation (Gunn, Fraser, & Kimball, 2010; Minnegal & Dwyer, 2008). While financial incentives may address the loss of income fishers would experience by exiting the industry, there are additional barriers that need to be addressed to effectively transition commercial fishers out of the industry. This research identified barriers to exiting commercial fishing such as a perceived or actual lack of skills for alternate livelihoods and a lack of interest in seeking alternate livelihoods, likely given their strong identification with and attachment to commercial fishing. Therefore, to effectively transition commercial fishers out of the commercial fishing industry, government needs to do more than offer financial incentives.

One of the greatest challenges fisheries managers and policy makers must overcome when transitioning commercial fishers out of the industry, is commercial fishers' strong attachment to and identification with their livelihood. The psychological importance of commercial fishing cannot be offset by financial compensations; however, the question remains as to how this psychological barrier can be overcome. The theoretical framework applied to this study may provide fisheries managers and policy makers with a pathway to transition commercial fishers out of the industry using meaning-focused coping. Specifically, one strategy employed under meaning-focused coping is *goal revision* in which individuals seek new and positive meaning in their life by finding and setting new goals (Folkman, 1997, 2008; Zuckerman & Gagne, 2003). If commercial fishers revise their goals so that they no longer prioritise being a commercial fisher, then it is possible that they may re-engage in problem-focused coping and as a result, seek out an alternate livelihood. For commercial fishers to see this as an option however, it is critical that they see themselves as capable of transitioning out of the industry (they perceive their self-efficacy as being high) and that there are suitable options for them to transition to (they perceive response efficacy to be high).

Previous research and the current study also highlight low response efficacy as a barrier to transitioning out of the industry. This research highlighted a range of barriers to change, including financial costs, time and effort, negative personal consequences, negative

impacts on others and a lack of opportunity. It was specifically reported that the costs associated with transitioning to an alternate livelihood was a barrier for commercial fishers. Additionally, it is likely that transitioning to an alternate livelihood would result in other barriers such as time and effort required to transition and a lack of opportunity to transition. While financial incentives may address barriers such as financial costs, they are unlikely to address the time and effort involved in transitioning, or the lack of opportunity for fishers to transition. For instance, commercial fishers may not perceive there to be attractive and viable options for alternate livelihoods and given that commercial fishers often operate in remote locations, there may not be suitable options for commercial fishers to transition to, hence a lack of opportunity to do so. Therefore, it is critical to identify attractive and viable alternate livelihoods for commercial fishers to transition to (Cinner, Daw, & McClanahan, 2009) and investigate ways to minimise the effort required for commercial fishers to transition out of the industry. To enhance commercial fishers' perceptions of response efficacy for transitioning out of the industry, it is recommended that fisheries managers and policy makers investigate the structural barriers making it difficult for commercial fishers to transition out of the industry and implement strategies to address such barriers.

The findings of this study suggest that commercial fishers lacked confidence in their ability to transition out of the industry. Specifically, the findings and previous research highlight an actual and perceived lack of skills required to secure and maintain an alternate livelihood. Training programs could be used to build commercial fishers' skills and knowledge which enable them to secure and maintain alternate livelihoods. Such programs could also build commercial fishers' capacity to apply skills they have developed in the commercial fishing industry to alternate livelihoods. Fisheries managers and policy makers can support commercial fishers transitioning out of the commercial fishing industry by facilitating access to such training opportunities for example, by funding the development and delivery of such programs.

Additionally, such training should be complemented with strategies to build commercial fishers' perception that they have the ability to transition out of the industry (to enhance perceptions of efficacy). As previously discussed, testimonies can be used to enhance perceptions of efficacy (Maddux & Kleiman, 2018). Testimonies focusing on successful transitions from the commercial fishing industry into alternate livelihoods can serve to enhance commercial fishers' perception that they too can transition to an alternate livelihood. In addition to building commercial fishers' perceptions of self-efficacy, seeing others effectively transition to alternate livelihoods is likely to also enhance their perceptions

of response efficacy. For further details of how fisheries managers, policy makers, and the commercial fishing community can use testimonies in practice, refer to Table 12 (page 248). It is therefore recommended that fisheries managers and policy makers invest in training and education to enhance commercial fishers' ability to secure and maintain alternate livelihoods. Additionally, efforts to upskill commercial fishers should be complemented by strategies such as testimonials facilitated by fisheries managers, policy makers, peak industry bodies and the commercial fishing community, which enhance commercial fishers' perceptions of their ability to secure and maintain alternate livelihoods.

If commercial fishers (a) perceive that they are capable of transitioning out of the industry, (b) perceive that there are suitable options for transition to and (c) revise their goals so that being a commercial fisher is no longer their primary priority, it could be expected that they would seek out alternate livelihoods. However, the challenge remains as to how to facilitate such goal revision, and whether it is ethical to do so. The conditions under which meaning-focused coping is triggered require further understanding before more concrete recommendations for fisheries managers and policy makers can be made. It is therefore recommended that further research is undertaken to better understand how meaning-focused coping, and specifically goal revision can be triggered via an intervention, particularly in the context of commercial fishing. In the interim, fishery managers may wish to consider approaches in which important elements of being a commercial fisher (the aspects that contribute positive meaning for the individual) are identified and maintained while transitioning fishers out of the industry. Furthermore, it is recommended that the ethics of using meaning-focused coping interventions to encourage individuals to shift their priorities away from something they strongly identify with or are attached to. Regardless of the need for further research, it is still recommended that fisheries managers and policy makers seek to enhance commercial fishers' perceptions of efficacy to facilitate transitions to alternate livelihoods.

12.2.2.5 Adapting to climate change. The findings of the current project highlight a range of explanations as to why commercial fishers may not be adapting to climate change. These primarily relate to why commercial fishers tend not to perceive climate change to be a threat, and as per the theoretical framework guiding this research, threat perception is a necessary precondition for action in direct response to a threat (Lazarus & Folkman, 1987; Rogers, 1975; Witte, 1992). Based on the findings of this study, it is proposed that commercial fishers register a low perception of threat given their lack of trust in climate science and climate change communicators and their perceived lack of urgency in needing to

respond (in the context of the time course of climate change, and the more immediate need to respond to other threats). Therefore, to increase perceptions of threat, it could be recommended that fisheries managers and policy makers invest in building trust in climate science and climate change communicators and use persuasive communications to highlight the urgent need to respond to climate change. However, the findings of this study also suggest that commercial fishers disengage simply when exposed to the terms 'climate change'[21]. Therefore, efforts to increase commercial fishers' perceptions of threat may not be worthwhile. Additionally, although denial of anthropogenic climate change can be a barrier to action, Bain, Hornsey, Bongiorno and Jeffries (2012) suggest that converting deniers to believe in climate change is unlikely to be an effective strategy generally.

Instead, climate change communicators may find more success in encouraging adaptive action by framing behaviour in line with psychological characteristics and motivations of commercial fishers and avoiding references to climate change. Instead of promoting how a change in fishing practices supports climate change adaptation or mitigation, policy makers and fisheries managers should focus on aspects that are important to commercial fishers such as the economic benefits of practice change. The current research highlights a range of factors that climate change communicators can use to motivate behaviours which benefit fishers and climate action. For example, commercial fishers in this study were motivated to achieve financial security and perceived there to be a relationship between the health of natural resources and the viability of their commercial fishing business. To draw on fishers' motivation to achieve financial security, climate change communicators could highlight the financial benefits of adopting new practices or technology. Or, climate change communicators may highlight how a certain behaviour protects the natural resources which commercial fishers rely on, and subsequently how it supports the viability of their commercial fishing business to motivate action. Furthermore, this research demonstrates that identity and attachment (to livelihood and place) were important influences on commercial fishers' behaviour. By demonstrating to commercial fishers how certain actions align with features of their identity, and their attachment to commercial fishing and in particular, their attachment to the places in which they fish, climate change communicators may be more likely to motivate action.

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[21] This outcome also has implications for conducting climate change research with commercial fishers. Researchers should be cautious as explicit discussions of climate change may impede data collection.

It is also important to acknowledge the extent to which commercial fishers are already performing behaviours that are adaptive in the context of climate change. What this research has highlighted is that commercial fishers are not changing their behaviour as a response to perceiving climate change to be a threat. However, this does not mean that they are not already performing behaviours that are adaptive to climate change, just that perceiving climate change to be a threat is not the driver of this behaviour.

Additionally, the findings of this project identify issues and challenges which should be considered by climate change communicators when attempting to motivate climate action. For example, the findings of this study demonstrate commercial fishers have high levels of distrust of out-groups. A lack of trust in the individual or group communicating messages designed to motivate climate action is likely to have unintended negative consequences (Lorenzoni et al., 2007; Lorenzoni & Pidgeon, 2006). Therefore, communicators must invest time and effort either identifying trusted sources of information, building trust in the chosen communicator, or both. Additionally, unless commercial fishers perceive they are capable of carrying out a response (perceived self-efficacy) and that the response will be effective (perceived response efficacy), it is unlikely that commercial fishers will perform the desired response (Rogers, 1975; Witte, 1992). Therefore, efforts which build commercial fishers' perceptions of efficacy are more likely to be effective. Given these issues and challenges, commercial fisher testimonies may again be an effective strategy for promoting behaviours in the context of climate change. However, it is highly likely that instrumental support may be required to ensure that commercial fishers have the skills, knowledge and resources required to carry out the desired response.

12.3 Limitations

While conducting this study, the researcher encountered some limitations, most notably, the small sample size of the study. It is acknowledged that the participants in this sample are not representative of the broader Queensland, Australian or international commercial fishing community. Additionally, the researcher encountered difficulties in recruiting participants for this study. This is not uncommon in research conducted in the commercial fishing context and it is possible that low participation rates may be due to research fatigue, general distrust of out-groups, or both. As a result, those who participated in this study may represent a subset of the population who were highly motivated to participate, despite a lack of trust, or research fatigue. Challenges recruiting participants and the time required to do so limited the research design of this project. While qualitative methods were best suited to the aims of this project, if this project had not been limited by such challenges,

the researcher may have been able to undertake additional studies to triangulate the findings of this project and strengthen the validity and reliability of the findings. Furthermore, quantitative methods would be required to confirm the proposed theoretical model and as such, further research should be undertaken to achieve this.

As this project relied on self-report data, it is possible that some psychological experiences were not captured which may have been intentionally or unintentionally hidden by participants. For instance, self-report data is unlikely to have accurately captured participants' use of non-conscious decision-making processes or psychological responses, such as the use of denial as an emotion-focused coping strategy. Participants may not have been consciously aware that they had been using such a strategy to cope with a threatening event. Despite this, the researcher was able to capture evidence which points to the use of denial as an emotion-focused coping strategy in the context of climate change. Additionally, participants may have concealed information from the research in an attempt to present a favourable image of themselves (social desirability bias) or because they did not trust the researcher sufficiently to divulge such information. However, the purpose of this research was not to report on the rates of certain behaviours, but rather, identify the range of strategies that commercial fishers engage in to respond to perceived threats and discussion of sensitive topics such as suicide demonstrate a level of trust was gained by the researcher during interviews.

12.4 Conclusion

The current research project examined how commercial fishers are impacted by, cope with and respond to the mix of pressures they face and the processes by which commercial fishers make decisions in the face of threats. Of all pressures facing commercial fishers, they were most concerned about the impacts of fisheries management, and reported that other pressures they were concerned about, were directly or indirectly caused, or exacerbated by fisheries management. In contrast, commercial fishers showed little concern about the threat of climate change either in the form of a perceived threat or an emotional response to the threat. The theoretical framework which was used to guide the current research demonstrated value in understanding the decision-making process and resulting responses of individuals in a novel context. The findings support the notion this framework contains broad psychological factors which can effectively be applied across a range of contexts, but also emphasises the importance of the context in which the theory is applied. For instance, the current research suggests that contextual factors such as identity, attachment (place and livelihood), and out-group relationships play an important role in how commercial fishers process and respond to

threats to their livelihoods and that such factors may alter the typical decision-making process. The findings of this study have further theoretical implications for contemporary theories of cognitive-emotional decision making and practical implications for building the ability of commercial fishers to adapt to and cope with stressors and enhancing fisheries management.

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Appendix A: Selected topics and suggested readings

Gender and feminism in the commercial fishing industry

Calhoun, S., Conway, F., & Russell, S. (2016). Acknowledging the voice of women: implications for fisheries management and policy. Marine Policy, 74, 292-299.

Dowling, J (2011). Fisherman's Wife: A Post Structural Feminist Exposé of Australian Commercial Fishing Women's Contributions and Knowledge, 'Sustainability' and 'Crisis'. Cambridge Scholars Publishing.

Kilpatrick, S., King, T. J., & Willis, K. (2015). Not just a fisherman's wife: Women's contribution to health and wellbeing in commercial fishing. Australian Journal of Rural Health, 23(2), 62-66.

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Risk propensity of commercial fishers

Brick, K., Visser, M., & Burns, J. (2012). Risk aversion: Experimental evidence from South African fishing communities. American Journal of Agricultural Economics, 94(1), 133-152.

Davis, M. (2012). Perceptions of occupational risk by US commercial fishermen. Marine Policy, 36(1), 28-33.

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Pickett, J. & Hoffmans, J. (2019). Stressors, coping mechanisms, and uplifts of commercial fishing in Alaska: A qualitative approach to factors affecting human performance in extreme environments. Journal of Human Performance in Extreme Environments, 15(1), 8.

Smith, M. D., & Wilem, J. E. (2005). Heterogenous and correlated risk preferences in commercial fishermen: The Perfect Storm Dilemma. The Journal of Risk and *Uncertainty, 31*(1), 53-71.

Consumer preferences and willingness to pay for seafood

Brayden, W. C., Noblet, C. L., Evans, K. S., & Rickard, L. (2018). Consumer preferences for seafood attributes of wild-harvested and farm-raised products. Aquaculture Economics & Management, 22(3), 362-382.

Davidson, K., Pan, M., Hu, W., & Poerwanto, D. (2012). Consumers' willingness to pay for aquaculture fish products vs. wild-caught seafood: A Case study in Hawaii. *Aquaculture Economics & Management, 16*(2), 136-154.

Rickertsen, K., Alfnes, F., Combris, P., Enderli, G., Issanchou, S., & Shogren, J. F. (2017). French consumers' attitudes and preferences toward wild and farmed fish. Marine Resource Economics, 32(1), 59-81.

Zander, K., & Feucht, Y. (2018). Consumers' willingness to pay for sustainable seafood made in Europe. Journal of international food & agribusiness marketing, 30(3), 251-275.

Perceived and actual familial connections in the commercial fishing industry

Minnegal M., King, T. J., Just, R. & Dwyer, P. D. (2003). Deep identity, shallow time: Sustaining a future in Victorian fishing communities. The Australian Journal of Anthropology, 14(1), 53-71.

Identity formation through the performance of tasks in place

Van de Noort, R. (2011). Fish: Exploring the sea as a taskscape. In North Sea Archaeologies. Oxford University Press.

Laliberte-Rudman (2002). Linking occupation and identity: Lessons learned through qualitative exploration. Journal of Occupational Science, 9(1), 12-19.

Common property/pool resource theory

Agrawal, A. (2001). Common property institutions and sustainable governance of resources. *World Development, 29*(1), 1649-1662.

Berge, E. & van Laerhoven, F. (2011). Governing the Commons for two decades: A complex story. International Journal of the Commons, 5(2), 160-187.

Hardin, G. (1968). The tragedy of the commons. Science, 162(3859), 1243-1248.

Ostrom, E. (1990). Governing the commons: The evolution of institutions for collective action. Cambridge University Press.

Social licence theory

Cullen-Knox, C., Haward, M., Jabour, J., Ogier, E., & Tracey, S. R. (2017). The social licence to operate and its role in marine governance: insights from Australia. Marine Policy, 79, 70-77.

Leith, P., Ogier, E., & Haward, M. (2014). Science and social license: defining environmental sustainability of Atlantic salmon aquaculture in south-eastern Tasmania, Australia. Social Epistemology, 28(3-4), 277-296.

Moffat, K., Lacey, J., Zhang, A., & Leipold, S. (2016). The social licence to operate: a critical review. Forestry: An International Journal of Forest Research, 89(5), 477-488.

Perceptions of commercial and recreational fishing

Aslin, H. J., & Byron, I. G. (2003). Community perceptions of fishing: Implications for industry image, marketing and sustainability (Project No. 2001/309). Fisheries Research and Development Corporation.

Appendix B: Information Sheet

Investigating commercial fishers' attitudes and perceptions of industry sustainability

You are invited to take part in a research project about your attitudes and perceptions towards industry sustainability. We are interested in the attitudes and perceptions of current commercial fishers in North Queensland. This aim of this project to increase the understanding of the challenges that commercial fishers and the commercial fishing industry face to increase the sustainability of the commercial fishing industry and to protect the livelihoods of those who work in the commercial fishing industry. The study is being conducted by Ms Rebekah Boynton as part of her PhD project at James Cook University.

If you agree to be involved in the study, you will be invited to participate in either a focus group or a one-on-one interview. The focus group/interview with your consent (and others in the focus group) will be audio-taped and should take approximately 1 hour of your time. The focus groups and interviews will take place at times and locations arranged by the researcher and focus groups will include up to six participants. The time and date of focus groups and interviews will be flexible to suit participants. Should you wish to participate in a focus group, please contact Ms Rebekah Boynton through the contact details listed below for information on current focus group times and locations or to arrange an interview time. The audio-taped interviews and focus groups will be transcribed by the researcher and you may review the transcript should you wish to do so. Participants will receive a $50 VISA gift card to thank them for their time.

Taking part in this study is completely voluntary which means that you can stop taking part at any time without any explanation or consequences. At the beginning of the focus group the researcher will ask participants to respect the confidentiality of the group, however the maintenance of confidence by other group members cannot be guaranteed. The data from the study will be used in research publications but you will not be identified in any way in these publications. While direct quotations may be used in research outputs all participants will be given another code name so that they cannot be identified.

If you know of other people who might be interested in this study, can you please pass on this information sheet to them so they may contact the researchers to volunteer.

If you have any questions about this study, please contact either the Principal Investigator Rebekah Boynton, Primary Supervisor Dr Anne Swinbourne or Co-Supervisor Dr Connar McShane

Principal Investigator
Ms Rebekah Boynton
Department of Psychology
James Cook University
p. 07 4781 6022
e. rebekah.boynton@my.jcu.edu.au

Primary Supervisor
Dr Anne Swinbourne
Department of Psychology
James Cook University
p. 07 4781 4809
e. anne.swinbourne@jcu.edu.au

Co-Supervisor
Dr Connar McShane
Department of Psychology
James Cook University
p. 07 4781 6879
e. connar.mcshane@jcu.edu.au

If you have any concerns regarding the ethical conduct of the study, please contact: Human Ethics, Research Office. James Cook University, Townsville, Qld, 4811. Phone: (07) 4781 5011. (ethics@jcu.edu.au).

Appendix C: Informed Consent Form (Individual)

Principal Investigator: Rebekah Boynton
Project Title: Investigating commercial fisher's attitudes and perceptions of industry sustainability
Department/School: Department of Psychology/School of Arts & Social Sciences

For those under the age of 18 years and not currently employed full time in the commercial fishing industry the following form must be completed with a parent/ guardian.

I understand that the aim of this research is to explore and understand the attitudes and perceptions held by individuals who work within the North Queensland commercial fishing industry. I consent to participate in this project, the details of which have been explained to me, and I have been provided with a written information sheet to keep.

I understand that my participation will involve an interview which will be audio taped. I agree that the researcher may use the results as described on the information sheet.

I acknowledge that:

- taking part in this study is completely voluntary and I am aware that I can stop taking part in the study at any time without explanation or prejudice.
- any information that I provide will be kept strictly confidential and that my personal information will not be used to identify me in any way

(Please tick to indicate consent)

I consent to be interviewed		Yes		No
I consent for the interview to be audio taped		Yes		No

Participant Name:	Date: / / 2015
Participant Signature:	
Phone:	
Email:	

If the participant is under the age of 18 and not employed full time in the commercial fishing industry, please complete the following section:

Parent/ Guardian Name:	Date: / / 2015
Parent/ Guardian Signature:	
Phone:	
Email:	

Appendix D: Informed Consent Form (Group)

Principal Investigator: Rebekah Boynton
Project Title: Investigating commercial fisher's attitudes and perceptions of industry sustainability
Department/School: Department of Psychology/School of Arts & Social Sciences

For those under the age of 18 years and not currently employed full time in the commercial fishing industry the following form must be completed with a parent/ guardian.

I understand that the aim of this research is to explore and understand the attitudes and perceptions held by individuals who work within the North Queensland commercial fishing industry. I consent to participate in this project, the details of which have been explained to me, and I have been provided with a written information sheet to keep.

I understand that my participation will involve a focus group which will be audio taped. I agree that the researcher may use the results as described on the information sheet.

I acknowledge that:

- taking part in this study is completely voluntary and I am aware that I can stop taking part in the study at any time without explanation or prejudice.
- given the nature of focus groups the researcher cannot guarantee confidentiality of the focus group discussions or participation

(Please tick to indicate consent)

I consent to participate in a focus group	☐	Yes	☐	No
I consent for the focus group to be audio taped	☐	Yes	☐	No

Participant Name:	Date: / / 2015
Participant Signature:	
Phone:	
Email:	

If the participant is under the age of 18 and not employed full time in the commercial fishing industry, please complete the following section:

Parent/ Guardian Name:	Date: / / 2015
Parent/ Guardian Signature:	
Phone:	
Email:	

Appendix E: Demographic Questionnaire

Please provide an answer to each question below:

1. What is your gender?

☐ Male ☐ Female

2. What is your age?

_____ years

3. What percentage of your income comes from the commercial fishing industry?

_____ %

4. Which of the following fisheries do you work in? (Please tick all that apply)

☐	Inshore Net	☐	Otter Trawl	☐	Coral Harvest
☐	'Offshore' Net	☐	Beam Trawl	☐	Aquarium Fish
☐	Reef Line	☐	Spanish Mac	☐	Rock lobster
☐	Rocky Reef	☐	Spotty Mac	☐	Blue Swimmer Crab
☐	Mud crab	☐	Spanner Crab	☐	Other (please specify below)

_____

5. Which of the following best describes the type of work you do in the commercial fishing industry? (Please pick one only)

☐ Full-time ☐ Casual

☐ Part-time ☐ Seasonal

6. Where is your main home port?

☐ Townsville ☐ Other (please specify below)

_____

7. For how many years have you been working in the commercial fishing industry?

_____ years

8. Do you have any family members who have ever been a commercial fisher?

☐ Yes ☐ No

THANK YOU FOR COMPLETING THE DEMOGRAPHIC QUESTIONNAIRE

Appendix F: Supplementary Results and Discussion: External factors

Results

Participants' responses highlighted two industry characteristics that were perceived to impact their experiences of industry threats such as fisheries management.

Market characteristics. Participants perceived that certain market characteristics resulted in increased competition with international fishers, illegal fishers, and aquaculture. Participants' responses demonstrate a perception that the market favoured the produce of **international producers** over Australian commercial fishers. Participants perceived that international competitors produced a poor-quality and cheap product, that had high rates of consumption. For example, participants described imported seafood as a "lesser grade product" (Larry) and "filth" (Julie). These negative views towards imported seafood were further highlighted in responses such as. "…there'll be a big class action because all these people got sick or injured or hurt or killed because they're eating this shit from the Mekong River in Vietnam." (Edward) and:

> It's catfish that's farmed in pond…. Where people shit in the water, and it that water is sucked up into the pond that's come from their own effluent and then they got their chook pens shitting in it as well…. And then they, they, there's no hygiene process in there. (Patricia)

Participants reported that imported seafood was cheap and because of its low cost, sellers were more likely to favour imported seafood over local Australian seafood and would in turn affect their business viability. For example, participants said, "What about basa? Basa is so infiltrated into our country, the major supermarkets, Woolies and Coles sell it for 5.50 a kilo it's poisonous." (Patricia), and:

> …at the end of the day, you know, supermarket chains are part of the issue, they're pushing all the stuff that they can get cheap… so they're importing as much of that cheap stuff from overseas as they can get. (Larry)

The perceived severity of competition with international seafood suppliers as a result of selling to a shared market was further highlighted in participants' reports of the high rates of consumption of imported seafood. For example, participants said, "…we're an embarrassment really when you look at the statistics. I mean we're importing everything…. We've got one of the smallest populations and we're importing 80%." (Charles) and "…I don't believe people understand how much, seafood is consumed in Australia that is currently

being imported. I believe… between 75 and 77 per cent of our seafood, seafood consumed in Australia now is imported. That's disgusting. That's woeful." (Edward).

Responses highlight that participants perceived they were competing with **illegal Australian seafood producers** as they sold their produce to a shared market. Unlicensed fishers who sold seafood illegally were often referred to as "black market" fishers by participants. As the following response highlights, participants often held strong negative views against illegal fishers, "…as a fisherman… I'm dead against black market." (Peter). Participants believed that the selling of seafood on the black market took away opportunities for them to sell their produce. For example, it was reported:

> We see it all the time, we know people… they used to buy fish off us, and they'll say, 'No I get me crabs from this other bloke down the road now.' I said, 'Well you know can tell that other bloke down the road he's not allowed to sell crabs, you know, unless he's got a licence to catch and sell 'em. (Patricia)

The following response further highlights the financial consequences attributed to competition with illegal fishers:

> There's so much black market hey? Young blokes, all these crab when they're on. Crabs, bang! So, they catch them, run them in. Everyone in the street's got one. 'I'm paying 10 bucks.' 'Who'd you get it off?' 'So and so.' 'Oh, he's not a commercial fisherman?' 'Oh well, it helps pay his fuel and I couldn't go out, so.' I'm thinking well, if I came down and took your job off you and did the same then they'd understand but, in the meantime, they, they're not gonna stop doing it (Charles).

Some participants believed that the black market was driven by recreational fishers wanting a return on their costs to go fishing. For example, it was reported:

> Because they've spent that much, they think they need to have a return. A lot of recreational fishers that we've spoken to, they'll say, 'We only caught… like you know 20 fish, we never even covered our fuel.' Well if they're worried about covering their fuel, don't do it…. Because it's a recreation they choose to do. They can't afford their boat if they're worried about not being able to afford to go out there. It's a recreation, and they think they're an industry (Patricia).

As the following response highlights, others believed that ex-commercial fishers were turning to black marketing:

> …as I said before that's all based on a dollar, um, black marketing is a bit of an issue with the fishing industry. Um, you live in a town like [here], probably end up with half the male population of location has been a fisherman at some stage, they don't stop fishing… and they don't stop using commercial methods to do it… honestly, they know they can make a dollar doing it so, they keep making a dollar doing it… (Larry)

Participants reported experiencing competition with the **aquaculture industry** as a result of selling to a shared market. For example, participants reported, "Because every restaurant we book now it's always farmed salmon. And what a success story that's been down there." (Charles) and, "I'm trying to sell, a fresh barramundi fillet or whole barramundi and I'm putting it beside farmed barramundi." (Edward). The following response further demonstrates participants' dislike for or disapproval of aquaculture, "…now I get that farmed stuff and I will just about heave halfway through a feed of it because it's so oily and it's just not the same as the wild catch." (Charles).

Remote living. Participants reported that living in a remote or isolated location had impacts on their access to human capital and their viability. For example, impacts on human capital were perceived to manifest through difficulty finding and retaining crew, "…if you can't find crew locally, and we have crew from out of town, then they have problems coping in a small town as well." (Susan). Additionally, the impact on viability was considered to involve costs of time and money to access services and products, "The remoteness…. The major centre, two and a half hours that way… the support industries to run your business here are dwindling…. And to rely on getting things done in the bigger ports is expensive and time consuming, so that's, that's a big one." (William).

11.1.2 Discussion

External factors are stimuli, events or cues in the environment which influence how individuals perceive and respond to threats (Witte, 1992). As highlighted in Chapter 1 and in the results, there is evidence to support the notion that there are threat stimuli present in participants' environments that signal the presence of the threat of both fisheries management and climate change. The presence of such threat stimuli is proposed to influence perceptions of threat. Specifically, it is argued that for threat perception to arise, there must be cues in the individual's environment to trigger this threat perception (Witte, 1992; Witte & Allen, 2000). The finding that individuals perceived fisheries management to be a threat combined with evidence in the literature about the impact of fisheries management on commercial fishers and the commercial fishing industry supports this argument. In contrast, it was found that

individuals tended not to perceive climate change to be a threat despite the evidence of threat cues in their environment. This supports the argument made in the EPPM that the presence of threat cues does not guarantee that individuals will perceive there to be a threat (Witte, 1992; Witte & Allen, 2000). Previously, it was reported that the absence of threat perception in regard to climate change is likely the result of effective emotion-focused coping.

Additionally, the current research found that commercial fishers perceived additional external factors including market characteristics and remote living presented challenges that interacted with the perceived outcomes of fisheries management. For example, commercial fishers perceived that market characteristics such as fluctuations in market characteristics were linked to experiences of competition and changes in business viability. Research demonstrates that there are many factors that influence the price of seafood such as consumer preferences, price of alternative products on the market and the availability of target species to catch (H. C. Peterson & Fronc, 2007; Pinnegar et al., 2006). This finding reflects commercial fishers' perception that market characteristics impact their business viability directly and via competition with other seafood producers. Furthermore, commercial fishers perceived that living and operating in a remote community contributed to difficulties accessing human capital (specifically, attracting and retaining skilled crew) and that their business viability was impacted through increased costs (both financial costs and time costs). Much of the Queensland commercial fishing industry is distributed across towns and coastal communities (A. Moore et al., 2007) which are known to face challenges including access to services and infrastructure, and small economies (Regional Australia Institute, 2013; Regional Australia Institute et al., 2013). Evidence about the challenges of living and working in regional, rural, and remote communities reflects commercial fishers' perception that living and operating in a remote community presents challenges to participating in their livelihood.

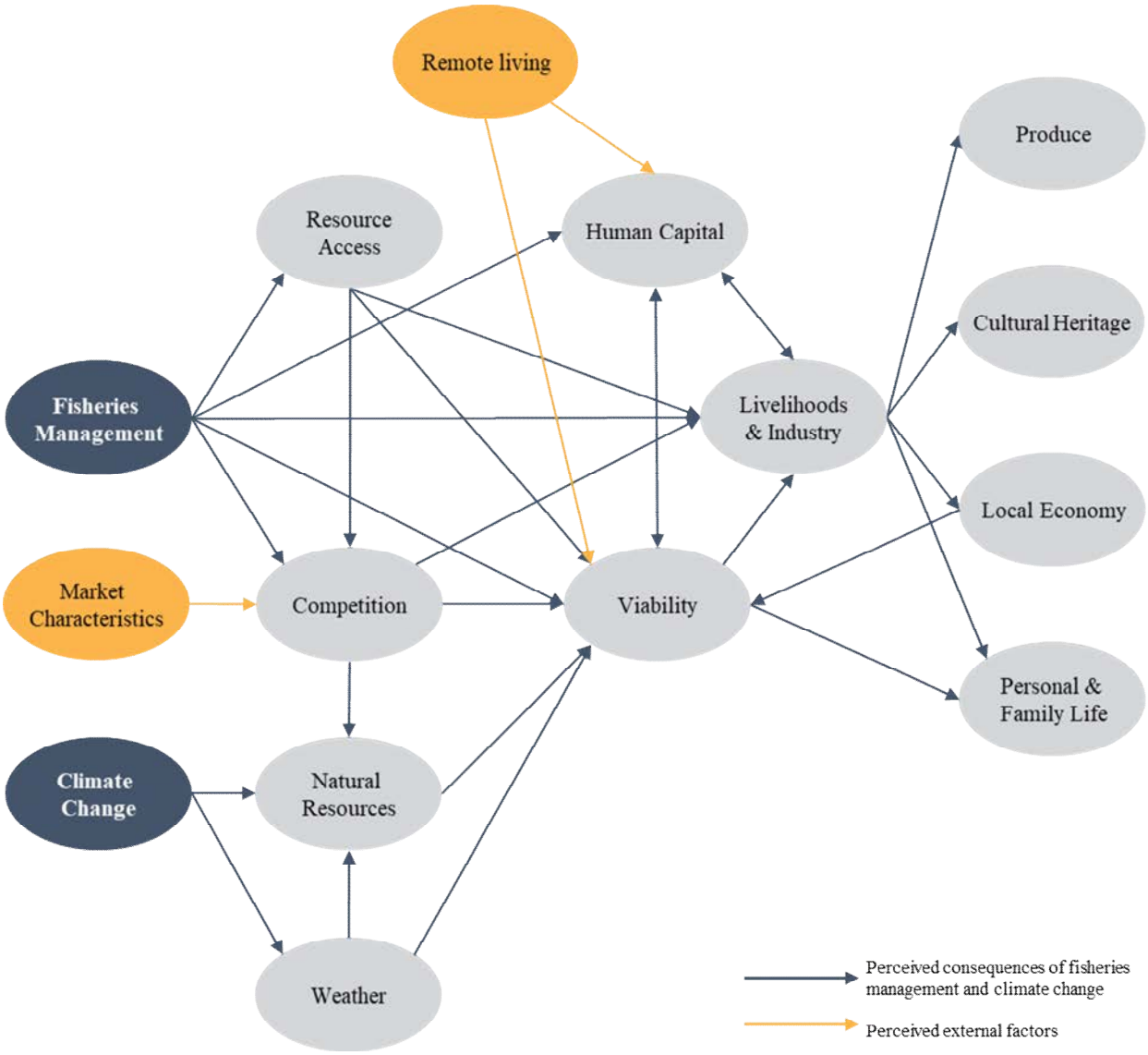
11.1.3 Potential interactions with other factors

Commercial fishers reported perceived interactions between remote living, market characteristics and other perceived consequences of fisheries management. Specifically, commercial fishers suggested that remote living had negative impacts on human capital and viability. Living in a remote community was perceived to make it more difficult to find and employ skilled staff (human capital) and to make it more difficult run a profitable business. Additionally, commercial fishers suggested that market characteristics such as the availability of produce from competitors (including imported, illegally caught or aquaculture produce).

Figure 55 highlights the perceived interactions between these additional external factors, and the perceived consequences of fisheries management.

Figure 55

Perceptions of threat and external factors



Appendix G: Supplementary Results: Out-group relationships

General public

Participants' accounts of their relationships with the general public were characterised by perceptions of **disregard**. Participants believed that the commercial fishing industry was misunderstood, disliked and undervalued by the general public. Participants reported that commercial fishing was not well understood by the general public. For example, participants reported, "I honestly don't think that people understand fishermen as a whole." (Timothy) and "…the average person doesn't understand the individual fisheries that are involved… the average person in the street has no concept of what goes on." (Michael). Additionally, participants shared the belief that the general public disliked or even hated commercial fishers. For example, participants reported, "…everybody hates you." (Daniel), "…we're treated like second class citizens, fishermen." (Peter), "…there's been this overall public sentiment against the commercial industry." (Michael) and "…we're a problem." (William). Furthermore, participants reported feeling undervalued by the general public. For example, participants reported that they perceived the production of seafood and economic benefits provided by the commercial fishing industry were not valued. Participants reported that fishing was "…the lifeblood of [town], the value of our industry it's, oh well it's been grossly undervalued, that's the problem." (William) and:

> But, people have turned their back on little industries like us and people have gotta remember that, that, when we had those 18 or 19 trawlers and those 20 or 30 line fishing boats, every one of those crew members, would unload their boat here, walk up the pub, spend there, they'd go to the laundromat, they'd go to the grocery store, they'd go to the engineering shop. Those people particularly the crew would get in say on a Friday with $2000 in their pocket and by Sunday they were broke. (William)

Recreational fishers

Participants' responses highlight that the **personal nature of their relationship** with recreational fishers contributed positively to their relationships. For example, the following responses highlight both the personal nature of participants relationships with recreational fishers and the trust they have in these recreational fishers specifically, "We have personal friends that are really keen recreational fishermen… We've got a really good relationship, because they know we're responsible people…" (William) and:

> We actually camp at a boat ramp for the majority, well for the whole of our fishing season. Um, and our interaction with the public, we've worked really hard with the

> regulars who are down there all the time, we don't have an issue with them anymore… (Julie)

However, more often participants report their relationships with recreational fishers as being characterised by perceptions of **maliciousness**. Participants' responses suggest that perceived maliciousness perpetrated by recreational fishers manifested in a variety of ways. For example, participants believed that recreational fishers were purposefully trying to drive commercial fishers out of the industry. Participants reported that recreational fishers intended to reduce commercial fishers' access to fishing grounds, "… they want these areas closed for their own purposes and it, and there's enough closed now." (Patricia) and to eliminate the commercial fishing industry entirely, "They just want the whole market for themselves, wipe us out…" (Michelle). Participants reported that to close access to commercial fishing grounds, recreational fishers organised petitions and campaigns, "…they're trying to get petition, to get people to sign a petition for the nets out…" (Patricia) and "… people are running the big campaign to block to get rid of us." (Michelle).

Furthermore, it was reported by participants that they had experienced verbal and physical abuse which they perceived to be because of their status as a commercial fisher. Participants reported incidents in which they experienced verbal abuse, for example, "…so many people are verbally attacking you." (Julie), "…I'd be sitting there fishing away and next minute someone'll pull up and bloody start abusing you for this or that, or whatever and they haven't got a bloody clue…" (Scott) and "…these two blokes come along, and they started abusing me…" (Victor). Participants discussed their experiences of physical abuse to equipment such as their boats, cars, trailers, and equipment. For example, participants reported, "Get tyres slashed or let down." (Victor), "…they'll let your tyres down, stick holes in your radiators, sabotage your equipment." (Charles), "…they damage our cars, they damage our trailers, they damage our fishing gear." (Julie) and "We're abused… we come back, and our tyres are slashed, our trailers have gone, ice boxes are taken, taken off the back of the car." (Patricia).

Environmental groups

Generally, participant responses indicated they had poor relationships with environmental groups due to perceptions of dishonesty and maliciousness. Participants appeared to perceive environmental groups to be **dishonest** because they were motivated to make money, rather than protect the environment. For example, it was reported, "…our environmental groups… it was all about money. Wasn't it? All about money." (Charles) and

"It's a big industry at the moment. The Greenies! Alright, it's a big industry." (George). Participants' responses highlighted that they perceived they were being treated **maliciously** by environmental groups who "target" (Charles) commercial fishers and were purposefully trying to drive commercial fishers out of the industry. For example, "All our environmental groups… they're knocking us down and we're the enemy and we're depicted, we're always killing something or destroying something." (Charles), and:

> Doesn't matter if it's a prawn or a crab and then, they perceive that as being a destructive method, the green groups have lobbied the government they lobby everybody. If you have a look at the campaign, the consultation period by the Great Barrier Reef Marine Park Authority in 2003, they had… all these high-profile sports stars one of the most words they used was overfishing. They do not use that word anymore now because they've created overfishing. And we've, for us to change that perception, how do we do that you know? (Richard)

Representative Bodies

Few people spoke about their perceptions of representative bodies however, when participants did discuss representative bodies, they tended to express beliefs about their incompetence and dishonesty. For example, participants' responses highlight a belief that representative bodies were **incompetent** as they did not adequately represent or support commercial fishers, "… my other big concern is, commercial, the commercial sectors hasn't got the, representation um, at a state level, people still look at the QSIA as, as the peak fishing body…" (Edward) and:

> Yeah, we have [peak body] and we have the [peak body], we have all these spinner groups everywhere. And, and the perception between fishermen is that, they do nothing for me so why should I pay my membership? … I think when you've got a compulsory membership, that could be better. But no one wants to pay their dues, do they? (Richard)

Participants believed that industry representative groups **dishonest** as they were motivated to "look after their own interests" (Michael) rather than represent their members. For example:

> …see there's a lot of, there's already industry groups out there but they, to me they all seem focused on their own little back yard then looking out for anyone else. I mean, I had to go looking to find out about a couple of industry groups, they're not publicly

> out there…. Um, which is why my perception is they're only looking after themselves…. their goals are very um, self-based. (Larry)

And:

> And my other big concern is, commercial, the commercial sectors hasn't got the, representation um, at a state level, people still look at the QSIA as, as the peak fishing body, and speaking of fishermen, they lost [them] a long time ago because, they had too many people that were corrupted…(Edward)

Scientists

Very few participants spoke about their perceptions of scientists however, participants spoke positively of the personal nature of their relationships with scientists, and in contrast, how they saw scientists as being incompetent, dishonest, and malicious. For example, one participant reflected positively on the Fisheries Research and Development Corporation, who they previously described having a **personal relationship** with "… Fisheries Research and Development Corporation, that's a big, that's been around for years, we subscribe to that magazine, and we read it and there's a lot of information that's given by the industry into that." (Patricia).

Participants also reported that as scientists were **incompetent** as they lacked relevant knowledge and understanding of the fishing industry. For example, it was reported, "And that was from all their expertise. And don't forget these people, the scientists that were talking about biodiversity before that, they had, um, experience in science but that just ruined our business." (Richard). Participant responses highlighted beliefs that scientists had **dishonest** motivations. For example, participants believed that scientists created problems to research in the fishing industry to make money:

> Look you know yourself, you got a mob of scientists, and the government says look I want you to, to check out this stuff here and see if there's a problem. There's a grand. So, you get a grand and they say, oh no there's no problem, righto, see you later. They're outta work. They got no money. But if they come up with a problem. Here there's some more. Money keeps coming. Same with cancer research. Now if I said to you, I've lost me wedding ring out in the back yard. I'll give you a $100 a day until you find it. How long will it take you to find it? 20 years? (Victor)

Furthermore, participants shared concerns that scientists, were profiting by saying that climate change exists:

> I'm not saying that it's not happening, but I'm saying that they've probably done the wrong thing by creating a scientific industry around it. Um, you know like, once you start paying scientists for info, they're gonna tell you what you wanna hear. The minute the money stops, they've gotta go looking for another job. (Larry)

Participants' responses also highlight that they perceive that they were being treated **maliciously** by scientists. For example:

> … we've found a lot of publicity comes from ah, like you guys. The things we've told youse, you've used against us… And ah, [all] these scientists are throwing ah kinda I don't know [inaudible] and ah, well, [and now] I've totally given up on giving any information to any scientist about my fishing because, they've used it against us… Not only that, they've used their qualifications against us. (Timothy)

As highlighted in this response, the participant considered the interviewer to be a member of this out-group. While only one participant discussed negative interactions with scientists, it is possible that others shared this view but did not disclose it during the interview, because of the interviewer's perceived membership in this out-group.

Media

Of the few participants who spoke about their perceptions of the media, participants' responses generally reflected a poor relationship with media representatives driven by perceptions of dishonesty, disregard, and inequality. Participants were concerned that the media's reporting was not truthful and therefore **dishonest**. For example:

> Kids get brainwashed from a young age these days and there's so many untruths in the media… I'm, so pissed off with the media that it's a [derelict of a duty]. They got a position of privilege to report our news. But they're using it now as a position of power. And that's wrong, I mean, I just think that the whole Australian media is out of control…. I mean I don't, I take very little credence in things that I see on A Current Affair… they're misleading people in the line of questioning and then people form on an opinion, based on the misleading information…. (Edward)

Participants also felt that media representatives treated them with **disregard** by not valuing their time and input. For example, it was reported:

> She got here at 8 o'clock in the morning. Straight to [the port]. Straight up to the wharf… did the PR thing. Stayed up there, came back had the big lunch. Met some businesses in the main street. 'Oh shit, we've got to um, tick all the boxes that we've

> got a good balanced story here. All the stakeholders, fishermen. We need to talk to a fisherman.' So, they'd already, she'd teed us up. She was supposed to be there at lunch time. Got the call at quarter past three. By this time, I'm just on simmer, almost boiling. I go down there with all my gear ready to you know…. And I said, 'Oh you know, how's your day been, where have you been?' And she said, 'Oh I've been here, done this, done that, done this and done that.' And I said, 'Do you know the pains that the fishing industry's had and the issues we've got [with local mining activity]?' 'Yep, yep. Yep, I'm here to talk to you about that.' And I said, 'How long have you got?' And she said, 'We've got 20 minutes.' And I just said, 'No. I can't do this.' … I just packed up all my shit and walked out the door. I was not even gonna give her the time of day. And she was not, she was just there to tick boxes. And that's the part that I find so frustrating…. It's just pathetic. We're not even a consideration. We're, we're a problem. (William)

Participants also reported that they felt media treated commercial fishers with **inequality** given the disparity between how the media portrayed commercial fishers and others such as recreational fishers. For example, this participant reported that non-compliance with regulations in commercial fishers receives more negative attention in the media than does non-compliance with regulations in recreational fishers:

> …and you see all these fines that they're getting, they're fining these recreational fishers doing illicit, once upon a time it used to be a little tiny article online about the fifth page of the paper if it was a recreational fisher found doing something wrong. And if it was a commercial fisher, it would be front-page news. (Patricia)

Politicians

Generally, participant responses reflected poor relationships with politicians which were driven by perceptions of incompetence, dishonesty, and inequality. Participants reported that politicians were **incompetent** due to a lack the relevant knowledge and understanding of the commercial fishing industry. For example, it was reported, "People have never been exposed. They don't understand. Like poor old [local politician], he just had no idea about fishing." (William). Furthermore, responses highlight that participants felt that politicians in particular do not understand regional and remote areas. For example, participants reported, "The people down in Canberra don't have a clue, do they?" (Richard) and "You know

somebody down in Brisbane wouldn't have an idea on what you know, like some of these areas here. Each area's different." (Peter).

Participants shared the view that decisions made by politicians were **dishonestly** motivated. Participants reported that politicians were motivated primarily to gain votes, "Well you don't want to upset too many voters, do you?" (Susan), and "She said if she was voted in, they would bring in these net free zones…" (Victor). Participants perceived that because industry decisions were politically motivated, they were not based on evidence. For example, it was reported, "… with a lot of the fisheries closed down is all political, it's not scientific… it's vote catches, it's not, it's not scientific… it's a political, it's political decisions." (Daniel).

Participants felt that politicians treated them with **disregard** as politicians would not acknowledge the perspective of commercial fishers. For example, participants reported that politicians would often "just brush you off." (Charles) or as this participant reported, not respond to communication such as letters sent by commercial fishers, "He won't even return calls or um emails. Pathetic." (William). Participants reported that politicians would sometimes refuse to communicate with the fishers, for example, "You got a letter back from the premier… it's none of her business, it's not her area." (Julie), "He refuses to meet with them. Where does that put us? That means, we're nothing, we're nothing to him." (Patricia) and:

> …the amount of letters that are being written to MPs [by commercial fishers] and um, well submissions that have been put into the government, but not one MP will, will come and particularly Bill Byrnes, the fisheries minister. He will not meet with any commercial fishers. He'll have a big focus group with his recreational fishers, and he'll respond to them, but whenever a commercial fisher writes, oh no, no… (Michelle)