UNDERSTANDING THE DECISION-MAKING PROCESS OF INDIVIDUALS INVOLVED IN A WHITEWATER CRITICAL INCIDENT OR ACCIDENT: A GROUNDED THEORY STUDY

by

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(Under the Direction of Corey W. Johnson)

ABSTRACT

This grounded theory study examined the decision-making process of individuals involved in a whitewater critical incident or accident. The decision-making literature in the outdoor adventure education texts is incomplete and under-theorized. It is assumed that the texts include pertinent information that will ultimately guide students' professional practice. Theories, models and related discussion need to mirror how people make decisions in practice and serve as a tangible resource for aspiring outdoor leaders. Participants in this study were purposefully sampled with nine individuals ultimately participating in the study. These participants engaged in in-depth conversations regarding their critical incident or accident experiences in whitewater boating. Eight cases involved recreational whitewater kayaking with once case involving commercial rafting. Grounded theory coding and analysis yielded three conclusions: (a) decision-making in whitewater critical incidents and accidents is a process that involves six distinct steps – anticipating and assessing, awareness of problem(s), active information gathering, option weighing, decision, and evaluation; (b) personal and contextual factors including training and

education, intuiting and instincts, time, group dynamics, ethics, mentorship and responsibility, inform and influence all six stages of the process of decision-making in whitewater critical incidents and accidents; (c) challenges and inconsistencies in the decision-making process imply that whitewater training and educational programs need to be amended. Theoretically, this research builds upon existing decision-making theories and advances the knowledge and literature base of the outdoor adventure education field. Practically, this research provides recommendations for improving whitewater training and education programs. Pedagogically, this research informs how I will proceed in discussing and teaching decision-making with my students.

INDEX WORDS: decision-making, whitewater, outdoor education, adventure education, grounded theory, critical incident, accident

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DEDICATION

I dedicate this work to all of those who have lost their lives adventuring on whitewater rivers, and to the families and friends they leave behind.

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First and foremost I would like to thank my wife Anna for tolerating, supporting and loving me during this most demanding process. I say thank you to my children, Gus and Tillie for waiting for me to get home. Thanks Mom and Dad for your emotional and financial support. Thank you G.W. Frazier for waking me up and to Sister Madeline Sophie Weber for believing in me. Thank you to all of my professors at The University of Georgia who pushed me and supported me in my education, namely my Committee Chair – Corey Johnson and the other members of my Committee – Kathleen deMarrais, and Doug Kleiber. I greatly appreciate the nine individuals who participated in this study. You gave your stories so freely and authentically. I hope that this study has appropriately honored your experience. Many thanks to Young Harris College for providing me with tuition assistance and scheduling flexibility in support of my pursuit of the doctorate. A big thank you to Brian Kumm – your humor and counsel were invaluable at the writing retreat. Thanks to Mike Elrod of the Young Harris College Library for helping me create the visual model of the theory in Photoshop. Thank you to the members of the Grateful Dead – Jerry Garcia, Mickey Hart, Bill Kreutzmann, Phil Lesh, Ron McKernan, and Bob Weir for writing and preforming "Dark Star" February 13th and 14th, 1970 at the Filmore East, New York – the music saw me through so many times on my way to and from Athens. Thanks to the Owl on top of the AT sign at Dicks Creek Gap that cold and snowy night – I was not alone. To my dear friend Joseph Pate – what more needs to be said – I wouldn't have made it without you. Thank you all. And lastly, to *The River* – Roll On!

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CHAPTER 1

INTRODUCTION

I remember attending the 2004 International Conference of Outdoor Recreation and Education in Burns, Tennessee. One particular conference presentation was related to risk management and decision-making models. As with most experiential education conferences, many of the sessions involved active discussion, requiring audience members to be an integral part of the experience, juxtaposed to passive recipients of a lecture based format and approach. We were asked to break into small groups and participate in a decision-making activity found in a Wilderness Education Association text. The fictitious story portrayed three backpackers of varying ability who had planned and participated in a backpacking experience. The group had made a number of poor decisions along the way and with the advent of deteriorating conditions, nightfall, goal conflict, lack of experience and so on, the group was faced with making some tough decisions. Their struggles were commonplace and intuitive. The text turned the struggle back to the reader "what should they do?" Some interesting discussions followed within the small groups and the larger group. A few points were made that I had not previously considered but most of the discussion was easily discernable and anticipated. I must say that although productive, the discussion felt a little anti-climatic as some of us had already used the text and activity in our classes – we were going through the motions.

It did make me consider how we teach and talk about accidents, risk, judgment and decision making- not just with our students, but with other professionals as well.

Should the discussions I have at a professional conference be appreciably different, more scholarly, more focused than the classroom discussions I have with my students? In spirit, I feel that as a profession we should transmit relevant knowledge about our field of study, as it exists, regardless of context. Pedagogical preferences, orientations and delivery will surely vary, but the core knowledge and values need to be there – classroom, conference or field.

I suppose I expected a discussion that would move me beyond the current discussion I was having with my students. We were all operating with relatively the same body of literature and how we processed and delivered that information, regardless of setting, appeared to be very similar in a number of ways, most notably that it was incomplete.

After the presenters heard from the audience about the range of possible decisions and outcomes for our three desperate hikers, one presenter picked up a seminal adventure education text, opened it to a five page linear decision making diagram, with an impressive spider-web array of arrows, lines, bubbles and routes, and asked the audience – "How many of you do this when confronted with a difficult decision? Is this representative of the process you used to arrive at the decisions in this exercise or in other areas of your professional life?" The presenters took direct issue with this particular model and framework and how it was largely removed from what any of us may actually encounter, experience, do - in our professional endeavors.

One member of the audience commented that the purpose of this particular model, and decision making theories and frameworks in general, was to provide us with ways to discuss and consider possible modes of decision-making and not necessarily to

be utilized as a "how to" manual. Point taken, but I remembered thinking about how it feels as a student, and as a teacher, to discuss and theorize about decision-making, all the while not really feeling assured that I will be prepared when the time comes for me to make critical decisions. In fact, through personal experience, I can say that there has been a marketed disconnect between the decision-making models in the outdoor adventure education texts and what I have encountered and felt through lived experience. What is the responsibility and utility of the texts of our field? At what point do they mirror, or prepare us for what we experience in professional practice? What is missing? Why are diagrams, contrived vignettes, and determined outcomes and action privileged over lived experience and story? Where to from here? I remember at that moment not feeling so alone in my indecision.

Many outdoor participants and professionals turn to the words and wisdom of Paul Petzoldt, founder of the National Outdoor Leadership School, to bring a real world clarity to the tasks, duties, and spirit of outdoor leadership. It was Petzoldt who claimed that "rules are for fools" as he continually pushed for outdoor leaders to let the truth of personal experience and reflection provide the basis for their judgment and decisions (as cited in Gookin, 2012, p. 69). Petzoldt (1984) further clarifies and simplifies the responsibilities and goals of outdoor leadership, into three distinct categories- safety, environmental preservation, and enhancement of participant experience and enjoyment (p. 34). These goals would appear to be intuitive and clear even to someone who is not involved in the field of outdoor leadership. As the beginning narrative indicates, these simple processes and ideas can become cloudy, constraining, and contentious as educators and researchers try to define dynamic and complex processes.

None will argue with Petzoldt that leaders need to provide safe experiences and enhance the enjoyment of the participants. Yet, there can be inconsistencies between what is communicated in the adventure education textbooks and what is experienced in practice. In examining the adventure education literature and keying in on the prescribed risk management and decision making responsibilities for outdoor leaders, coupled with the charge for outdoor leaders to provide human growth and development opportunities, a discernable disconnect between theory, expectation, and actual practice becomes increasingly apparent. First, it is necessary to review the philosophical and practical foundations of adventure education upon which the practice of outdoor leadership is grounded.

Adventure education is a branch of outdoor education that is concerned primarily with the interpersonal and intrapersonal relationships of groups and individuals in outdoor adventure settings (Miles & Priest, 1999). Participants must learn to cooperate, communicate, trust, listen and problem solve in order to function effectively in a context that involves risk and uncertainty. Adventure programs are experiential, intentional and occur in novel outdoor settings. The most common outdoor pursuits that are utilized in adventure education programs are rock climbing, whitewater kayaking or canoeing, back packing and challenge course activities. Reflection is a key component in adventure programs and can assist participants in making sense of their experiences while helping them to achieve a greater understanding of themselves and their fellow group members (Sugerman, Doherty, Garvey, & Gass, 2000). Reflection can take place in a variety of forms, most notably journaling, debriefing, and solo experiences. Experiences are processed with the goal of internalization and transfer of learning wherein participants are

able to see the relevance of their adventure experience in a variety of other life contexts (Warren, Mitten, & Loeffler, 2008).

Central to adventure, adventure education, and outdoor leadership, is the element of risk. The recognition of risk as an effective educational tool can be traced back to the philosophies and teachings of Plato, Aristotle and Socrates (Priest & Gass, 2005). In order to develop courage, wisdom, bravery and leadership, young people, according to these great philosophers, need to be intentionally put into difficult situations that test their character and provide real opportunities to practice and develop virtuous behavior. Risk captures the attention of the participant, and the leader, in a way that is very real and relevant. The decisions that have to be made in adventure situations have very direct, immediate and self-evident consequences. Adventure programs try to utilize the perceived risk of the participant as a vehicle to produce the setting and context such that growth and learning may be maximized. The actual risk in the programs is minimized as much as possible through a variety of risk management practices and procedures – all of which is informed by leadership training, development and policy (Ajango, 2000).

The specified goals and outcomes for adventure experiences vary depending on client needs, program mission, and the stated objectives of the specific program and agency. However, a common goal orientation that is evident in most adventure and experiential programs is that of human growth and development. Affective gains within adventure programs include social and emotional development in which the learner develops a greater understanding of themselves and others (Priest and Gass, 2005). Specifically, adventure programs strive to provide experiences that foster interpersonal and intrapersonal development yielding gains such as increased confidence, self-concept,

positive risk taking, trust, communication, problems solving, enhanced leadership. In addition to the setting, activities and facilitation, the learner needs to be motivated, engaged and personally invested in what they are doing for optimal learning to occur (Kraft, 1990).

Experiential methodologies and philosophical tenets suggest that learners need to be emotionally invested in the learning engagement for real growth and change to occur. Chapman, McPhee, and Proudman (1992), indicate that "the (learning) process needs to engage the learner to a point where what is being learned and experienced strikes a crucial, central chord, within the learner" (as cited in Warren, Mitten, & Loeffler, 2008, p. 13). This emotional investment on the learner's part assumes that the learner is engaged on multiple levels, is challenged by the activity, setting and particular problems to be solved, and that they feel safe enough and supported enough to completely immerse in the task at hand. Chapman et al. (1992), also indicate that absence of teacher judgment and appropriate support are critical for optimal learning stating that in such instances, "Learner's motivations to continue are no longer based on what they have to do because someone or something else tells them they must. Rather, they are fully immersed and engaged in *their* learning experience" (p. 13). Such ownership of learning, and the immersive nature of the experience, indicates a balance of risk, challenge, emotional investment, support, and life relevance that are central to optimal learning and experience. It is the charge of the outdoor leader to cultivate a rapport, with participants in adventure environments and activities. Decision-making is at the fore of the outdoor leader's actions as they decide how they might contribute to an optimal learning environment, mitigate risks, and in some instances, respond to a critical incident.

An essential skill of any outdoor leader is the ability to exercise sound judgment and make good decisions. Experience based judgment is a term that is often used to describe how extensive experience can help to provide a foundation from which critical leadership decisions are made. Classic analytical decision making models are most readily used in adventure education to provide leaders with a basis to guide their decision making process. These models incorporate an analytical, linear and logical process in arriving at optimal decisions. Current literature in the field highlights natural decision and creative decision- making models as additional means to inform critical leadership decisions (Martin, Cashel, Wagstaff, & Breunig, 2006, p. 76). According to Kosseff (2003), these models are non-linear and suggest that leadership decisions involve "systematic thinking, common sense, intuition and experienced-based judgment" (as cited in Martin et al., 2006, p. 77). There is little research in the field concerning how outdoor leaders make critical decisions and which type of decision-making processes and models are most accurate in portraying the actual practice.

The emergence of decision-making models that address the complexity of critical decisions suggests that leaders must assess situational variables in a dynamic way and draw from varied sources of information to inform their decisions. These sources of information can include content that is not easily explained or diagramed and transcends purely cognitive and analytical thinking and reasoning.

Outdoor leadership is directly and critically linked to experience and the ability to make sound decisions, and to limit risk, yet there appears to be little research that guides this critical practice. As adventure education continues to strengthen its viability as an effective educational practice, and in light of the emphasis placed on risk as an

educational tool, and the purposeful and intentional management of risk by adventure programmers, it appears paramount that the field understands more fully the critical decision-making process.

Problem Statement

There are several problems that exist in the field of adventure education in regards to the critical decision making processes of outdoor leaders. Primarily, the majority of the decision making models that are forwarded in the field of adventure education are more logical and analytical in nature and are not representative of more non-linear, creative and natural decision making processes. Secondly, there is little research in the field that specifically examines the decision-making processes of outdoor leaders in practice. By examining outdoor leaders who were involved in a critical decision making process, the stories may illustrate the complexity of the process and highlight the variety of informational sources that contribute to the leader's judgment, process and decisions.

Research Purpose

The purpose of this study was to understand the decision-making process of individuals involved in a whitewater critical incident or accident. The following research questions guided this study:

1. What is the process by which individuals make decisions in whitewater critical incidents and accidents?
2. What personal and contextual factors inform the decisions that individuals make in whitewater critical incidents and accidents?
3. How do individuals describe decision-making in whitewater critical incidents and accidents?

Significance of the Study

This study yielded a substantive theory and conceptual framework that offers another valuable perspective on decision-making which can potentially inform discussions, training and practice in the fields of adventure education and outdoor leadership. It is paramount that decision-making processes, grounded in the lived experiences of those making critical decisions, are considered and represented in the adventure education literature. Specifically, the focus of this study related to decision-making within whitewater accidents. This novel, dynamic environment, and the fascinating individuals who seek adventure in whitewater, formed the setting and actors in the study.

It is important to understand the key structures of the study, how they are linked together, and how the research question, purpose and design of the study contributed to its significance.

Thematically:

- The philosophy of adventure education substantiates the value and use of risk as the vehicle for change ⇒
- The goals of adventure programs clarify the potential human growth and developmental gains of adventure programs ⇒
- The responsibilities of outdoor leaders center upon the management of risk such that the goals of adventure programs may be realized ⇒
- Decision making is the central expression of risk management efforts ⇒
- Adventure education texts portray decision making theories and models that inform professional practice and the education of aspiring outdoor leaders ⇒

- Critical assumptions related to risk are embedded within the adventure education literature and the subsequent decision making theories are incomplete ⇒
- A crisis of professional confidence is experienced by an outdoor leader when their training and education is incomplete and does not adequately prepare them or mirror what they are encountering in their professional experiences ⇒

Leading to:

- A study on the decision making processes of individuals involved in whitewater critical incidents and accidents ⇒

Because:

- Whitewater critical incidents and accidents provide a rich platform to investigate accident mitigation and critical decisions. The decisions are time sensitive, can occur in remote, wilderness environments, and place a premium on communication. The outcome of certain decisions can in some instances relate directly to the life or death of an individual or group of individuals. Boating on whitewater rivers is exhibitive of an activity that involves negotiating risks, communicating and making decisions related to group and individual success and safety. Whitewater boating is an activity that many outdoor leaders pursue either as solo recreationists, informal leaders on recreational outings, or as appointed leaders with specified program goals, outcomes, and risk management protocols. An accident scenario in whitewater can elicit the vitality of a moment in many regards and certainly in relation to decision-making ⇒

Such that:

- The lived experiences of the participants in this study lead to the generation of a theory and a conceptual description and framework that may contribute to the

discussion of decision making in the adventure education literature and the practice of outdoor leadership.

Definitions

Accident – an undesirable, unplanned or unforeseen event or circumstance that results in a loss and the realization of risk.

Adventure – a recreational, leisure activity that involves risk and uncertain outcome.

Belay – to hold a rope, that is attached to another individual, securely for their protection.

Boof – a maneuver where a kayaker or canoeist launches or jumps their boat over a rock that is slightly protruding out of the river.

Broach – when a boat becomes stuck, or wrapped sideways around a rock by the force of the water moving downstream.

Class I – moving water with small riffles and waves with minimal obstructions present.

Class II – fast moving water with defined rapids including waves, holes, eddies, and some obstructions. Passage through the rapids is fairly straightforward. Boats can be overturned or swamped. Self-rescue is possible.

Class III – very fast moving water, with irregular waves, strong holes and the presence of obstructions being more pronounced. Passage through the rapids involves specific maneuvers and self-rescue becomes increasingly difficult but possible.

Class IV – very powerful water that involves specific, technical moves to navigate. Self-rescue may not be possible and the consequences for not executing the necessary maneuvers could be very high. The presences of strong holes, waves and other obstructions abound.

Class V – Extremely violent, long and obstructed rapids involving expert precision and "must moves" on the part of the boater. Self-rescue may not be possible and swims are very dangerous. Rescues are complex and may not be possible even by trained professionals.

Class VI – the limits of navigability involving the extreme and exploratory rapids that have never been run before.

Competence – an individual's collective attributes related to proficiency in an adventure activity including technical skill, disposition, attitude, and experience. Can be real or perceived.

Critical decision - a decision that is made in terms of a limited time frame wherein an emergency scenario is in effect and may be magnified without an effective leadership response. Common examples of emergency situations involving critical decisions would be situations in which the mental and physical well being of the participants and leaders is greatly compromised such as a medical emergency, rescue scenario and evacuation.

Critical Incident – a distinct event or occurrence that may, or may not have, contributed to a larger accident scenario.

Downstream – the direction the water is traveling.

Eddy – an area of calm water in the river that is usually found behind a rock or other object, which is blocking and redirecting the main current.

Eddy Line – the transition point between the main current and the slack water of an eddy.

Eddy Out – to move out of the main current and into an eddy. This maneuver is often referred to as "catching and eddy" as well.

Eddy Peel Out – to move out of an eddy and into the main current.

Ferry – a maneuver where a boater moves across the main current of the river with out drifting down stream.

Hole or Hydraulic – a river feature formed by water pouring over a small ledge or rock creating a recirculation of water which moves back upstream into the hole or hydraulic. These features can be used for freestyle maneuvers. However, some holes or hydraulics can be very powerful and in some instances, terminal or deadly.

Horizon Line – a horizon line on a river usually signifies a distinct drop in the river and the presence of a hole or hydraulic or a waterfall.

Inherent Risk - Certain risks are classified as inherent to an activity, where the potential for their occurrence and realization are ever present. An example of an inherent risk associated with whitewater pursuits would be drowning.

Live Bait Rescue – refers to a rescue where one rescuer has a rope attached to his or her rescue PFD while the other rescuer holds the belay.

Near-miss, mishap, close call, misadventure – terms that reference an incident in which an accident was nearly avoided. Some risks and loss maybe realized.

PFD – Personal Floatation Device, i.e. life jacket

Perceived competence – an individual's perception, or misperception, of their ability in an adventure activity.

Perceived risk – the perception, or misperception, of an individual related to the presence and severity of risk in an activity.

Pin – when a boat and potentially a boater become lodged or pushed against rocks in the river. Pins can be vertical, where the bow or stern of a boat becomes stuck in a vertical direction; pinched, where the bow and stern become pinched or stuck between two rocks;

flat pinned, where water pours downward on the boat pinning it against the floor of the river.

Real Competence – the actual collective attributes and proficiency and individual possesses in an adventure activity.

Real risk - Real risk relates to the awareness and understanding of inherent risks, by and for, an individual in an adventure activity.

River Right – looking downstream, river right is the right side of a river. This orientation stays the same even when looking upstream.

River Left – looking downstream, river left is the left side of a river. This orientation stays the same even when looking upstream.

Risk – the potential for loss in an activity.

Scree Field – broken rocks at the base of a cliff that are difficult and dangerous to climb upon.

Set Safety – to position boaters throughout the course of a rapid to mitigate critical incidents or accidents, and to facilitate rescue if necessary.

Sieve or Syphon – a hole or crack in a rock in the riverbed that allows water to pass through, but in many instances are not big enough for a boat or boater to pass through.

Strainer – a fallen tree or bush in the river that creates an obstruction that will allow water to pass through it but not a boat or boater.

Whitewater – fast, turbulent, aerated water formed and defined by speed, gradient, riverbed formations, and volume.

Whitewater Classification- relates to a standard rating of a rapid or section of a river. The classifications are known as the international scale of river difficulty. There are regional

and individual interpretations and variations contributing to misunderstanding. Ratings range from Class I – VI, with Class I being the easiest and class VI representing the limits of navigability.

Wilderness context – in regards to wilderness medicine and emergencies, this is a natural setting that limits the rescue party and victim access to definitive care to two hours or more.

Researcher Role in Interview Process

Roulston (2010) posits that "qualitative researchers and interviewers are inevitably part of the studies they conduct, whether or not they make explicit the connections between their subject positions and the ways in which these impact the outcomes of their studies in their reports" (p. 115). Self-awareness of researcher position and subjectivity is paramount when endeavoring to understand the complexity of a human phenomenon. In reviewing one's subjectivities the researcher is able to appreciate their connection to the research and more fully understand how their life story and narrative has led them to engage in a particular research problem. This critical practice reveals researcher assumptions, privilege and theoretical perspectives. Preissle (2008) exclaims that the examination of researcher subjectivity is not entirely an introspective or autobiographical process because the process inherently "focuses on the relationships and interactions between the researcher and participants" (as cited in Roulston, 2010, p. 120).

Subjectivities Statement

The purpose of this statement is to clarify how my beliefs and my professional, educational and personal experiences informed and influenced my research engagement. My research topic focused on the decision-making processes of individuals involved in

white water accidents. Reflexively examining my topic and interests, it is evident that my motivations and scholarly pursuits do not exist in isolation from my life story as a whole. I have been actively involved in exploring, searching, adventuring, and engaging with and in the outdoors since I was a youth. Natural environments set the stage for many formative moments in my life. Nature, and particularly wilderness, has provided a space for me to experience myself, to make connections and to sort out my life.

I adopt an experiential philosophy of learning. I believe that authentic learning engagements need to be student centered, accessible, pragmatic, personally relevant and emotive. I am in concert with William James' Pragmatic Maxim in that anything touted as a learning experience is directly related to action and consequence and must be evaluated in terms of the question "what difference does it make?" (James, 1991, p. 25). I struggled through my early academic career to find many sincere engagements and opportunities to learn in ways that were relevant and personally meaningful in my life. Most of my significant life questions, self discovery and profound learning have occurred, and are represented in wilderness experiences, and most notably with other adventurers on whitewater rivers.

My professional teaching experience includes two years at a non-profit alternative high school for learning disabled high school students, one year at an Expeditionary Learning Outward Bound high school for students recovering from substance abuse, and nine years as an outdoor leadership faculty member at a small private liberal arts college located in rural north Georgia. I have extensively examined decision-making theories, models and "best practices" of adventure education in my graduate studies, formal teaching experience, and professional development. The various models and frameworks

that are seen as seminal in the adventure education field do not readily explain my lived experience and how I have employed judgment and critical decisions. I do not believe that the complexity of white water accidents scenarios and decision-making processes are accurately captured and portrayed in the linear, deterministic models that are portrayed in the literature. Theory and practice are disconnected and misrepresented. Moreover, this type of research is sparse in adventure education literature, yet the field is readily offering models and frameworks to guide practice.

CHAPTER 2

LITERATURE REVIEW

The purpose of this study was to understand the decision-making process of individuals involved in a whitewater critical incident or accident. The research questions guiding this study were:

1. What is the process by which individuals make decisions in whitewater critical incidents and accidents?
2. What personal and contextual factors inform the decisions that individuals make in whitewater critical incidents and accidents?
3. How do individuals describe decision-making in whitewater critical incidents and accidents?

In this chapter I examined the literature as it relates to adventure education, outdoor leadership, and decision-making. With a specific focus on optimal experiences, decision-making in the adventure education texts, adventure as a profession, decision-making research in adventure education, and decision-making research in the field of nursing. The nursing literature is instructive in this context for several reasons. Grounded theory is a prevalent research methodology for nursing research based on the methodology's viability in understanding social processes and interactions. Many of these studies explore how nurses make decisions in time critical, crisis situations as well.

Optimal Experience

In their research, Csikszentmihalyi and Csikszentmihalyi (1999) found many people who were immersed in adventure experiences reported a similar state of optimal experience that they eventually described as a flow experience (as cited in Martin & Priest, 1999, p. 153). Csikszentmihalyi (1991) defines flow as " a state of experience that is outside the parameters of worry and boredom" (as cited in Priest & Gass, 2005, p. 150). Flow in an adventure context describes an experience where there is a balance and harmony between risk, challenge, and skill that that totally captures the psychic energy, emotion and focus of the individual. Many of us know this state as "being in the zone". Too much challenge or loss of control puts the individual in more of an anxious state, considering the consequences of risk either real or perceived. Too little challenge is more likely to result in boredom for the individual.

There are six central characteristics of flow experiences outlined by Csikszentmihalyi and Csikszentmihalyi (1999) including: immediate feedback, the merging of action and awareness, limited stimulus field, self-forgetfulness, a feeling of control, and an autotelic nature of the experience (p. 154). To elaborate on the characteristics of flow, individuals in a flow experience understand what is asked of them and they are immediately aware of the efficacy of their actions. "A person in flow has no dualistic perspective: there is awareness of actions but not of the awareness itself" (p. 154). The individual in a flow state entertains relevant information and action only. All competing and irrelevant input is disregarded. The individual is so immersed in the activity that they are momentarily unaware of themselves. "What is lost in flow is not the awareness of one's body or of one's functions, but only the self-*construct*, the "I" as the

actor or intermediary that a person learns to interpose between stimulus and response" (p. 155). Individuals in flow feel that they have the capacity to act and control their actions and environments to positive ends. "Risk-takers often claim that their enjoyment comes not from the danger itself, but from their ability to minimize it from their feeling that they are able to control potential dangerous forces" (p. 155). Lastly, the autotelic nature of an experience means that it is so engrossing and rewarding that individuals who have experienced flow seek them out again and again. Moreover, individuals who experience and seek flow producing experiences and engagement have personality characteristics that may be referred to as autotelic in nature as well.

The autotelic personality is one that is not only active and goal oriented, but in essence is a personality type that is less concerned with the self and more concerned with doing things out of general interest, curiosity and in appreciation for the value of that activity. The word autotelic is derived from two Greek words: auto, or the self and telic which means goal. Autotelic individuals are focused, intentional and goal oriented individuals who are more inclined to feel that what they do is valuable and engaging outside of external demand or reward (Csikszentmihalyi, 1997, p. 118). Autotelic individuals experience flow often and are less concerned with the self and more interested in the value of engaging and learning in life. Csikszentmihalyi (1997) commented that in essence "one's attention needs to be free of personal goals to some extent to in order to greater apprehend reality" and further "that without disinterested life interest, life in uninteresting" (p. 126)

The emotional investment and experience of an individual in flow can be expressed in terms of positivity. When we experience positive emotions, a state of

psychic negentropy exits wherein we can choose to allocate our psychic energy into areas that we freely choose. Thus, when what we are doing elicits positive energy, we have more of an ability to invest our attention towards activities that may continue to affect us positively and in a potentially greater capacity. Csikszentmihalyi (1997) stated, "It is through the patterned investment of psychic energy provided by goals that one creates order in experience. This order, which manifests itself in predictable actions, emotions, and choices, in time becomes recognizable as a more or less unique self" (p. 23).

When we are able to order our psychic energy and provide focus and consciousness to our thoughts, emotions, and goals we increase our positivity. However, there are many instances in our daily affairs that require our intense concentration, yet they are extrinsically motivated and not in concert with our personal desires and intentions. Conversely, the flow state is a state of experience that captures the individual's capacity to act and an appropriately challenging situation that provides the optimal opportunity to act. Csikszentmihalyi (1997) described flow as an experience when "goals are clear, feedback relevant, and challenges and skills are in balance, [and] attention becomes ordered and fully invested" (p. 32). When one is in a flow state, there is a loss of self-consciousness in addition to a loss of time. The happiness that may follow a flow state is based on one's reflection of the experience, construction of meaning, and can lead to growth in consciousness.

Another process that can illuminate the potential positivity of an adventure experience, is savoring. Bryant and Veroff (2007) described savoring as "a major process by which people bring about, appreciate, and enhance these positive experiences" and further, "as going beyond the experience of pleasure to encompass a higher order

awareness or reflective discernment on the part of the individual" (pp. 2-3). A key component of savoring is the reflective aspect, which denotes an active and intentional cognitive process that differentiates it from a sensational experience in and of itself. Utilizing reflection in adventure programs is congruent with the philosophy of experiential education. Through savoring adventure experiences, participants can learn about how the enjoyment came about through the experience - What is it about the process of enjoyment that is so telling of the experience?

There are some connections between savoring and flow. As Bryant and Veroff (2007) clarified, "one can savor a flow experience if one can focus one's attention on the experience as it is happening or just after it has happened" (p. 23). The key differentiation is the focus of attention and awareness of the individual during and immediately following an experience.

The autotelic personality may also be expressed as one who is vitally engaged with sustained relationships and activities of importance. Nakamura (2001) defined vital engagement as "an absorbing and meaningful relationship to the world" (p. 10). Vital engagement also includes elements of flow, or experiences of absorption, but a unique aspect of vital engagement relates to an awareness of significance and meaning. A self-forgetfulness exists in a flow state, yet in vital engagement there is a felt significance that happens during the experience. Nakamura (2001) clarified that "absorption is one aspect of the subjective phenomenology of engagement; the other is *felt* significance" (p. 10). Therefore an adventurous activity may encourage one's participation, but to be vitally engaged in the adventure involves a felt understanding that what one is experiencing has distinct meaning and importance.

Vital engagement also has the characteristic of being sustained over time. The importance and meaning of the activity to the individual is relevant beyond a single experience. The characteristics of flow speak to specific instances that involve one's ability to act and one's capacity to act. For flow states to endure, an increasing level of challenge must be present to accommodate an individual's growing capabilities. Flow is not immediately accessible each time one engages with adventure. There may be repeated attempts to access flow experiences on the part of the adventurer that do not yield such a state of experience. This concept can be demonstrated through optimal arousal theory of play. Ellis (1973) posited that human beings desire and need stimulus and challenge (p. 4). According to Ellis, arousal is a physiological need however, we can be subsequently under or over aroused. Optimal arousal is indicative of the right balance of challenge and competence that is representative of a flow state. Vital engagement can be sustained outside of the parameters of optimal arousal.

Nakamuara (2001) suggested that "because both a lived past and desired future richly inform present experience and because any complex object represents a beckoning sphere of possibility, vital engagement can survive these periods when things do not go so well" (p. 11). The sustainability of vital engagement is representative of group processing efforts by adventure leaders to promote the transference of learning in adventure programs. Priest and Gass (2005) commented, "when learners master problems through adventure experiences and these associated processes, their lives are often reorganized in meaning and direction in positive ways" (p. 21).

Flow, savoring, and vital engagement are states of optimal experience that lend themselves to the human growth and development goals that are sought after through

adventure programming. The possibility of the emotional and social development of a participant within an adventure experience assumes that the experience provides a significant opportunity for one to meet personally relevant challenges that are intrinsically motivating. The external influences and facilitation efforts on the part of the leader assume that the leader understands the physical and emotional needs of the participant and that they can deliver experiences that achieve the desired outcomes of the program and participant.

In addition, the leader is charged with managing the risks of an activity to create a learning environment and state of experience for an individual that realizes these affective gains. Priest and Gass (2005), suggested that an adventure leader has the ability to provide and control adventure experiences for participants such that learning, growth and development can be realized:

> We can use facilitated adventure experiences to enhance learning. By manipulating perceived values of risk and competence while keeping real values at acceptable levels, facilitated adventure experiences are possible. Depending on the objectives and precise control of a facilitated experience, misperceiving novices will slowly recognize relative levels of risk and competence through reflection on the experience. Since the levels of risk and competence are structured by the outdoor adventure leader, the importance of effective leadership becomes both obvious and paramount. (p. 19)

Critique of Adventure Education Texts

Adventure education is a newer field of study that is grounded in both theoretical and practical foundations. There is a growing body of research and literature to support

this field of study that is disseminated through professional organizations and journals. In addition, there are a handful of textbooks that are utilized in educational settings to forward the current foundational models and frameworks of the field. These texts provide an academic platform for students to engage intellectually with outdoor adventure learning and moreover, they inform training programs and policy development in professional practice. In accord with the experiential philosophy of learning, intentional reflexive activity is paramount to the formation of a deeper understanding and meaning of human experience. In addition, critical analysis and reflection in scholarship are integral to elevating a body of research and literature that can ultimately influence practice. It is time for the field of adventure education to critique the texts, models and frameworks that have, to this point, been largely unchallenged.

Through critically examining the adventure education literature, unquestioned assumptions can be made visible. These assumptions can reveal biases that ultimately shape and influence the "best" practices of the field. This section of the literature review will critically examine the decision-making literature that is forwarded through several prominent textbooks that are readily used in the study of adventure education. In critiquing these models and texts, one key assumption surfaces that highlights the current construction of knowledge and the development of theory regarding the decision-making processes of outdoor leaders: the assumption that risk can be managed. Risk management efforts are comprised of leadership decisions. Thusly, the areas of concern for this critique are the decision-making chapters within the adventure education texts. This critical process calls into question what is not being represented and discussed and the potential ramifications and consequences of unchecked assumptions and processes.

Research happens within a social context and it is within this context that the complexities of a human process, such as decision-making, can be represented in ways that add to or limit our understanding of the phenomena.

Textbooks are the first encounter that adventure education students have with the models, theories and frameworks of the field. These texts provide the initial context for students to understand the core competencies that are requisite for adventure leaders. There is a strong emphasis in adventure education for theory to inform practice. Effective experiential education provides structured opportunities for students to engage with material on multiple levels. These learning engagements will in essence help students identify and understand the relationship between the theoretical and practical.

A highly desired outcome for a student of adventure education is the ability to synthesize cognitive and behavioral learning engagements through reflective practice, thusly informing the learner's decisions, processes, and future experience in the most positive way. Students expect to be more informed about who they are and what they are doing through their educational process. Students trust that the current texts, and teachers who utilize them in their classes, are representing the information that will be necessary for success in their professional lives'. In addition, the texts are seen to hold the most current and pertinent information of a field of study. However, textbooks can be problematic.

Textbooks, as highlighted by Kuhn (1996), "are the pedagogical vehicles for the perpetuation of normal science" (p. 137). Normal science is comprised of the achievements of a particular scientific community. Kuhn refers to these achievements as "paradigms" (p. 10) and highlights that a prerequisite for normal science involves

researchers committing to the same rules and standards for scientific practice within shared paradigms (p. 11). In order for students to become part of a scientific community, they must study these paradigms and be mentored by the researchers who practice normal or paradigm based research. Moreover, textbooks can conceal the processes that have contributed to the current knowledge base.

Students, and perhaps many instructors, are unaware of the historical context of the current construction of knowledge and how scientific revolutions and paradigm shifts have influenced the foundations of the field of study. How did we arrive at the decision-making models and processes that are forwarded in the adventure education textbooks? How are these models historically and contextually situated and what has influenced their development? How does all of this inform the education of students and practices in the field? What is not being represented, and what is misrepresented, in the current literature on decision-making? It is assumed that what is being forwarded is accurate and relevant regardless of, and in isolation from, any developmental process or historical foundation.

The overarching assumption that is prevalent in the adventure education textbooks of concern in this critique is the assumption that risk can actually be managed. True adventure is not possible without risk. Risk involves the unknown and the potential for loss. Priest and Gass (2005) clarify that "moment to moment, no one can be fully sure that a loss will actually occur, hence the uncertainty that creates adventure in a leisure experience" (p. 18). Attempts to manage the inherent risks in an activity are aimed at the creation of a learning environment wherein the risks are educational and not detrimental. Leaders seek to maximize the perceived risks of the participants while limiting the actual physical and emotional risks of the activity. The management of risk does not imply the

removal of risk. To successfully remove the risks from an activity would be to alter the program's form such that it would no longer be adventurous and capable of the potential merits of an adventure program.

Management of risk, however, does imply that the leader understands what the physical and emotional risks of an activity are in addition to having the technical, relational and group management abilities necessary to negotiate, mitigate and optimize the risks. Moreover, the leader is assumed to have an understanding of what the participants' physical, emotional, psychological and spiritual needs are and what types of risk, or perception of risk, needs to be in place for this person to have an experience that meets the goals of the program and participant. Furthermore, the leader must communicate the potential risks of the activity to the participants, as this is an ethical responsibility of the leader, in addition to a management strategy to reduce the risk of legal liability. Is the management of risk possible? The current texts are operating on assumptions that clearly indicate that risk management is possible.

The first text of concern is *Adventure Education Theory and Applications* (Prouty, Panicuci, & Collinson, 2007). The text addresses judgment, decision-making and risk management in a number of different chapters. The text is a product of Project Adventure, which is "an innovative teaching organization that provides leadership in the expansion of adventure-based experiential programming" (Prouty et al., 2007). The intended audience for the text includes college level students studying outdoor adventure education and recreation. No particular decision making models or frameworks are forwarded in the text, however there are two specific chapters that demonstrate how the assumption that risk can be managed is prevalent in the literature.

The first example is Chapter Four, Risk and Safety in Adventure Programming, authored by Charles Gregg who is an attorney specializing in legal liability in outdoor education and recreation programs. Gregg (as cited in Prouty, et al., 2007) outlines five distinct chapter concepts, two of which specifically state that risk can be managed:

> Personal growth and development are enhanced by risk if the risk is reasonably managed. A responsible adventure program manager will offer only activities that serve the program's mission and that have physical and emotional risks that staff and participants can reasonably manage. (p. 50)

Reasonably managing a risk denotes an ethic of care that is central to outdoor programming and outdoor leadership. It is intuitive for one to do what one can to mitigate risks while understanding that not all of the risks in an activity can be reasonably removed. Nonetheless, the assumption that risk can be managed is still prevalent and denotes the perpetuation of a line of logic and reasoning that is unsound. To reasonably manage an adventure experience implies that a leader has the faculties and skills necessary to assess the inherent physical and emotional risks involved in an activity. In addition it appears that the participant must also understand what the risks are for themselves.

Gregg states, "Participants cannot be considered to have assumed a risk they did not understand" (as cited Prouty, et al., p. 55). How is one to understand what the risks of an activity are prior to actual experience and without reflection post-experience? This logic may apply for the most intuitive of physical risks, but what of the emotional? Can a participant really understand what the personal emotional risks of an activity are especially if the appraisal of the risk is coming from a leader whom the participants may

have known for no more than one half hour? Moreover, this also implies that the leader has, or could even possibly understand, what the emotional risks of an activity for an individual may be – beyond the most generalized understanding. What of gender, race and ethnic differences? Are we to assume that we can really understand what an individual's needs are despite a myriad of differences, complexities and issues? Yet, this is the charge for aspiring outdoor leaders.

Mitten and Clement purport that "leaders have the responsibility to foresee, understand and assess the potential risks for themselves in each of the five personal domains -physical, emotional, social, behavioral and spiritual" (as cited in Prouty et al., 2007, p. 84). It may be argued that to fall short in managing and assessing the risks in these domains is an inherent risk in the leadership of any outdoor activity and that the leader's responsibilities reside in the realm of "reasonable care". However, if the field of adventure education is claiming that the outcomes of adventure experiences, such as personal and group development, trust, communication, leadership and judgment and decision-making skills, are possible for clients of these programs, then the following implication is that the risks can be managed to that end. Furthermore, management in this regard implies control. Management suggests that best efforts are made to reach a goal, yet the literature insinuates that goal attainment is readily available through the processes that are outlined in the texts.

It is interesting to note that most of the risk management models and frameworks in the adventure education texts are written from a physical risk or accident response perspective. Perhaps these risks, and corresponding risk management processes, are more evident than the emotional, social and behavioral risks and domains that are discussed in

Adventure Education Theory and Applications (Prouty et. al, 2007). Concerning emotional risks, Gregg cautions that "adventure experiences of a certain type can bring forth emotional reactions of the most painful kind" and suggests that " prudent practitioners should not open doors they cannot close" (as cited in Prouty, et al., p. 55). Gregg further suggests that risk management practices should include proper training for the staff to manage the risks and remarks that a "program manager must create an environment that allows a participant to choose not to participate or that can tolerate a new sequencing of the participant into the intimidating activity" (p. 55).

A participant opting out of an activity because it holds too high of an emotional risk assumes, again, that the participant understands what the emotional risks of an activity are. This is counter to the philosophy of adventure education and experiential education, which claims that people make sense of an experience through direct experience and through reflection. Verbally informing a participant of the potential emotional risks prior to actual experience is partial at best. Moreover, there can be risks associated with choosing not to participate.

A participant could experience extreme embarrassment, and isolation if not agreeing to participate in a group activity wherein the desired goal is the accomplishment of a task by the entire group – which is central to so many adventure programs. Gregg declares that "risking loss, physical harm or embarrassment before ones' peers, is valuable in itself, regardless of the outcome of the adventure" (as cited in Prouty, et al., p. 51). What if embarrassment through participation, or non-participation, elicits emotional reactions of "the most painful kind" (p. 55) within the participant? Is this still desirable, and more poignantly, can this risk actually be managed, or controlled, to a positive end?

Outdoor Leadership Theory and Practice (Martin, Cashel, Wagstaff, & Breunig, 2006) is another popular textbook that is utilized in the study of adventure education within undergraduate and graduate level courses. Part II of the text addresses outdoor leadership theory and contains a chapter on judgment and decision-making. The chapter begins with the assertion that decision-making is a "critical component of outdoor leadership education" and that although decision-making may appear to be a clearly understandable process, it is actually difficult because "there is no such thing as a perfect decision" (Martin, et al., 2006, p. 73). The text continues with discussion regarding the development of judgment, experience, awareness and pattern recognition. The stated goal of the chapter is for the reader to use the presented theoretical knowledge "to develop judgment and decision-making abilities that [one] can apply to [one's] own outdoor leadership experiences" (p. 73).

The text continues with a presentation of analytical, natural, and creative decision making models, decision-making methods and leadership styles. Each section includes an outdoor leadership scenario that provides a context to apply a model, method or leadership style. All of the scenarios that are provided are situated within the context of physical risk, ethical dilemmas, or subjective factors including a leader forgetting a piece of necessary equipment for an outing. There is a sharp contrast between this text and the previously discussed text in regards to decision-making.

Martin et al. (2006) do not discuss risk assessment or management by outdoor leaders directly nor do the authors address the emotional risks involved in adventure activities. The text uses a less prescriptive and directive approach to judgment and decision-making and assuages the leader to utilize the theories to augment their personal

leadership development. They also provide critiques of several of the models, most notably the analytical models that are so predominant in the adventure education literature. One such critique is that the analytical models are time consuming to apply in real life scenarios and they operate on the assumption that all relevant information needed to make a decision will be available when necessary. Martin et al. (2006) appear to favor the natural and creative models in part because the decisions that outdoor leaders face are generally complex in nature and can involve the use of intuition and past experience to account for incomplete information within a dynamic wilderness environment (p. 77).

Martin et al. (2006) forward a model that combines analytical, natural, and creative models into one cohesive model. The analytical model is used at the outset of the process and includes the identification of the problem that subsequently leads to the identification of the variables: "For Whom? What? When? Where? How?" (p. 80). The model then arrives at either a simple decision or a complex decision based on the assessment of the variables including: experience of group members and leaders, predictability of outcomes, number of variables and potential negative outcomes (p. 80). If the assessment leads to a decision that will be complex in nature, the leader should then employ a natural, creative or analytical decision model.

It is interesting to note that the authors critique analytical models for their constrictiveness in complex decision-making scenarios yet offer the model as a component in such a situation. More troubling is the existence of the key assumption that risk can be managed throughout all of the models, independently or combined. The models assume that the leader has the ability to accurately assess the risks at the point the problem is identified. Moreover, Martin et al. (2006) assume that the leader will have the

ability to assess and identify the risks in the stated domains- "for whom, what, when, where and how?" (p. 80). Can leaders really know what the risks are for participants and thus manage the risks? The model is also situated as a reactive or emergency response framework as opposed to taking a proactive or preventative perspective. To apply the model in a proactive way would still imply that risk could be assessed and managed at the outset, prior to a possible emergency situation. Although the chapter begins with the assertion that there is no such thing as a perfect decision, and even though the authors adopt a more open, suggestive position regarding the models they present, there is no discussion as to why perfect decisions are unattainable. A perfect decision assumes that risk can be managed and that the leader has the ability to make a best decision. By forwarding a model that puts the leader in a role of assessing and identifying risks, without discussing the inherent limitations of this process, is to further problematic assumptions and logic.

The seminal adventure education textbook, *Effective Leadership in Adventure Programming* (Priest & Gass, 2005), moves beyond the aforementioned texts in its presentation and assumptions of judgment and decision-making. It is within this text that nested assumptions within the central assumption emerge. These assumptions are: that there is a best decision to be made in an adventure education context, that the leader is capable of making the best decision, and finally that outdoor leaders have the ability to arrive at the optimal decision through the employment of the model and process forwarded in the text.

Priest and Gass (2005) begin Chapter 22, by remarking that decision-making is a process that "involves diverging, or building a range of several options, and then

converging, or narrowing that range to select the best option" (p. 280). The authors then discuss the various methods that can be utilized to narrow the field of options stating that the process is a difficult one because the leader "must discriminate the best option from many options" (p. 281). It is evident from the beginning that the authors believe that there is a best decision to be made in adventure leadership scenarios.

The methods of convergence- gathering, weeding out, organizing, weighting, and choosing (Priest & Gass, 2005), are discussed and supported through their application to an avalanche vignette at the beginning of the chapter. The avalanche vignette encompasses an outdoor leader who is faced with a situation where one of his students has become trapped under the snow. The leader is faced with critical decisions that directly relate to the potential survival of the student and "speed and accuracy" (Priest & Gass, 2005, p. 280), in regards to the leader's judgment and subsequent decisions, are listed as having prime importance. It is intuitive that these areas of importance are essential to survival, yet the implication that follows is that the ability for the leader to be accurate is attainable through a systematic, linear analysis and process.

When applying the methods of convergence to the avalanche scenario, Priest and Gass (2005) present a quantifiable approach concerning the probability of the survival of the victim. The authors forward a model to guide the process of convergence that is referred to as the decision making tree, which is adapted from an earlier model forwarded by Priest (1988).

This model is a complex linear grid that presents a prescriptive, finite set of decisions, each with an accompanying time of execution and probability of survival based on the time to employ the decision. Priest and Gass (2005) suggest that the preferred option, or

choice, provided by the model "is the one with the best overall probability of success" and that determining the overall probability is found by "multiplying the probability of finding the student by the probability of a live find" (p. 284). The authors then provide a series of mathematical computations that illuminate the best choice in terms of probability.

What can be said of the myriad of other factors that may be present at the time of the accident? Are we to assume that the process for making the best decision is a standardized process with no variance? Priest and Gass (2005) suggest that leaders should "weed out options that seem clearly inappropriate" (p. 284), yet what if all of the options appear to be equally appropriate? Moreover, the model assumes that all relevant information is readily available at the time a decision is being formed – "gathering involves collecting all pertinent information that supports or refutes the merit of a particular option" (p. 287). Is this even possible? In addition, it is assumed that the leader has the ability, particularly the mathematical prowess, to work through the decision making tree, with utmost efficiency – "organizing involves ordering the 3 or 4 remaining options and arranging them into a decision tree for the quantitative approach or into a comparative table for the qualitative approach" (p. 287). The leader would need to have immediate and adequate recall of the model despite the existing stress and emotion within the leader and the group. It is also interesting that the model does not include the time needed to recall and process the model as part of the computations involved in executing the model. The authors assume that the execution of the model is immediate on the part of the leader.

Priest and Gass (2005), appear to provide a caveat for the possible limitations of the model in stating that a leader "can't break every decision down into quantifiable probabilities" and further that a leader "will be able to deal with the majority of decisions by effectively considering the qualities of the information [she] gather[s] for any option" (p. 284). The authors then forward a qualitative modification to the decision making tree that includes a scenario that involves choosing the best route for a bicycle trip. Priest and Gass (2005) state that the problem for the leader is understanding, "how to best balance the existing risks with biking pleasure" (p. 284). The contrast between the scenarios is stark with the decisions regarding human life necessitating the quantifiable approach and the less consequential decisions of bicycle routes involving qualitative methods and adaptations. Nonetheless, the qualitative modifications are presented in a comparative table that is a systematic and linear process and is representative of the quantitative approach. Both approaches to either scenario suggest a prescriptive process to inform leadership decisions and that the best possible decision is attainable through the implementation of the models.

It is possible that such prescriptive and formulaic approaches to leadership decisions are actually counterproductive in that they require the leader to adhere to a rigid process in the midst of a stressful and dynamic situation. It is assumed that the systematic approach provides a platform of clarity in the midst of a crisis. However, such an approach to decision-making excludes any other sources of information and ways of knowing by the leader that are not detailed in the model. These models could contribute to leader stress and inefficiency if the leader was not able to recall precisely what was

asked for in the model or if the current crisis was not congruent with the portrayal of the model and its relative applications.

The models discussed above portray both the leader and the decision-making process to be active. Choosing not to decide can be an effective choice in its own right. The author's rendition of the leader and the leadership process encompasses a western perspective of leadership wherein the leader is a proactive, visible agent of productivity and problem solving. Eastern philosophies of leadership afford examples of leadership engagements wherein the leader is "hardly known" (Simpson, 2004), suggesting an approach to leadership that is less verbal and visible yet involving more awareness on the part of the leader.

The leadership stance assumed by Priest and Gass (2005) asserts that the leaders need to "determine who should be included in the decision-making process and clearly communicate that determination using the appropriate leadership style" (p. 287). The choice of leadership style assumes that the leader understands what style is appropriate for the situation and that the leader understands whom within the group has the resources or ability to assist in the process of making the best decision. This approach to leadership style disregards multiple levels of knowing and dynamic information processing and forwards a point a to point b, perspective to leadership decisions and style. Again, the assumptions that guide this leadership perspective are directly related to the ability of the leader to fully understand and manage risk.

Decision-making is central to risk management efforts. Students of adventure education study the models, frameworks and theories in the texts of the field to inform their leadership development and process. The information presented in the texts

ultimately informs the best practices of the field. It is vital that the adventure education texts undergo critical analysis as the information presented in the texts has implications for a professional practice that involves sincere risks for the participant and practitioner. There is little research to support the actual decision-making processes of outdoor leaders and the current texts do not provide a historical context for the student to understand how decision-making models, frameworks and processes have evolved into what is currently being presented. The current literature has been largely unchallenged.

Upon closer inspection it is evident that the texts are forwarding literature that is operating under the assumption that risk can actually be managed. The implications contained in these chapters operate on the premise that outdoor leaders understand what the physical, emotional, social and spiritual risks are for the participants and that they have the ability to assess, communicate and manipulate these risks for the benefit of the participant. Such assumptions on the part of the authors of the texts, and the field of adventure education in general, have far reaching consequences and implications. To assume that we can fully understand what the risks for participants in adventure programs are, and to proceed with efforts and programming to that end, is to actually nullify the essence of true adventure. We assume that we know what the adventure, and thusly the unknown is, which by definition is not possible. In actuality, by operating under the current assumptions, adventure educators are perhaps promoting an environment of misadventure.

Adventure Education as a Profession

Adventure education has defining elements that qualify it as a developing profession. Martin, Cashel, Wagstaff, Breunig (2006), delineate these elements clarifying

that a profession has a guiding body of knowledge that includes scientific bases, values and applied skills; organizations and institutions that transmit the professional knowledge; public sanction; a code of ethics or standard of conduct; and a commitment to professional ideas (p. 25). As a newer profession, some of these defining elements are more developed and pronounced than others. Outdoor leaders are expected to adhere to ethical standards that are expressed by their individual employers and agencies, but there is not a universal code of ethics that informs the profession of outdoor leadership as a whole. The Association of Experiential Education has developed ethical guidelines that inform the professional practice of outdoor leadership and many of these guidelines are representative of providing safe and enjoyable experiences for clients.

Professions are committed to a professional set of ideas, commitments and responsibilities. One's capacity, contribution and expectations within a profession may vary depending on the specifics of their professional engagement. Yet, the duties of professionals are clear regardless of the uniqueness of their position within a profession – "Whether outdoor leaders are volunteers or professionals, their actions must be those of prudent professionals who take steps to protect the people they serve" (p. 27). Protecting those we serve is intuitive. However, given the prevalent assumptions that exist concerning risk management, the potential and optimal qualities of adventure experiences, and the social and developmental gains that adventure programs and programmers seek, it appears that there is a divide between theory and professional practice.

Schon (1983) takes issue with the problems that exist when professional practice is bound to technical rationality and a positivistic epistemology of practice. Technical

rationality as expressed by Miller and Pedlar (2006), "offers us one way to think and act – it is based on positivism and sees every problem as solvable through the systematic and rigorous application of a scientific method" (p. 35). Given the complexity of risk and the inherent uncertainty that defines it, to suggest that risk can be controlled and manipulated to particular ends is problematic. Furthermore, systematic approaches to manage risk, such as the decision-making models that are forwarded in the adventure education textbooks, can create a crisis of confidence in professional practice. Miller and Pedlar (2006) comment, "the unique, and unstable, the uncertainty of the world, make it difficult to come up with one perfect, technical, scientific solution," or decision as the case may be (p. 35).

The crisis of professional confidence Schon details refers to the tensions and problems that exist for professionals when their training and education fail to inform or mirror what they are encountering in their professional endeavors and challenges. Furthermore, practitioners who adopt a narrow technical view of their responsibilities as professionals, and who adhere to the idea that rigorous professional practice is exhibited by a singular, defined way of knowing and acting, find themselves in a quandary. Schon (1983) suggests, "In the varied topography of professional practice, there is a high, hard ground where practitioners can make effective use of research based theory and technique, and there is a swampy lowland where situations are confusing "messes" incapable of technical solution" (p. 42). Risk management efforts in essence are attempts on the part of outdoor professionals to eliminate or mitigate the "swampy lowlands" that are representative of unknown and unforeseen realms and circumstances and perhaps the consequence of poor professional preparation.

Schon (1983) offers the concept of the reflective practitioner as a means to address the crisis of confidence in professional practice. According to Schon, individuals have tacit ways of knowing that are difficult to express and may even be invisible to us if there are not intentional attempts by professionals to define how they think and know in the moment. I would suggest that those who are vitally engaged or are savoring a flow experience are attempting to consciously understand and express the significance of a moment as it occurs real time or soon thereafter. Being vitally engaged in our professional endeavors and understandings is an idea that I feel speaks to deeper significance and perhaps more informed practice. Schon (1983) exclaims, "our knowing is ordinarily tacit, implicit in our patterns of action and in our feel for the stuff with which we are dealing. It seems right to say that our knowing is *in* our action" (p. 49).

The perspective of knowing in action is relevant and critical to the professional practice of outdoor leadership. The philosophical tenet of risk and its centrality to adventure education – is embedded in the theoretical and practical expressions of outdoor leadership. The very nature of the unknown that we base the value, educational and developmental aims of our existence upon, must be carefully considered and acknowledged by this defining feature. Miller and Pedlar (2006) remark, "reflective practice recognizes that there is simply no one-size-fits-all solution, especially in those disciplines where we are constantly dealing with the unknown, the uncertain, and the unstable" (p. 35). Adventure education is surely one of these disciplines.

Critically examining the adventure education literature and tending to the assumptions concerning risk management and program outcomes is of paramount importance to the actual practice of outdoor leadership. It is necessary to broaden the

discussion of professional practice and consider the elements of our experience that, while difficult to define, predict, and know, are more in concert with, and representative of, our particular challenges and opportunities. In closing, Schon (1998) aptly encourages:

> Let us then reconsider the question of professional knowledge; let us stand the question on it's head. If the model of technical rationality is incomplete in that it fails to account for practical competence in "divergent" situations, so much the worse for the model. Let us search, instead, for an epistemology of practice in the implicit in the artistic, intuitive processes, which some practitioners do bring to situations of uncertainty, instability, uniqueness and value conflict. (p. 49)

Adventure Education Research on Decision-Making

Although judgment and decision-making processes are a primary competency for outdoor leaders, there is a significant absence of research that addresses this area of inquiry. One notable study focused on the relationship of experience and decision-making among outdoor leaders as they pertain to medical decisions within a naturalistic environment and context. Galloway (2007) studied outdoor leaders utilizing a multidimensional scale to determine their level of experience and decision vignettes that sought to measure complex social judgments. Decisions were in relation to a wilderness medicine context and whether to evacuate the injured participant or not. The study was grounded in social judgment theory and utilized a factorial survey methodology. The research questions were (a) Do outdoor leaders of varied experience levels differ in their perception of factors in the decision-making environment? ; and (b) Do outdoor leaders with different experience levels vary significantly in their judgments?

Galloway found that leaders with significant field experience differed from the less experienced leaders in their decisions to evacuate a victim or not in relation to the degree of isolation, level of student injury and group cohesion. This study utilized a quantitative methodology and the use of instruments that included multi-dimensional scales and decision vignettes.

Shooter and Galloway (2010) examined the use of factorial surveys in leisure research. The researchers posit that factorial surveys are not widely used in leisure research and make a case for the value of the quasi-experimental design in addressing judgment and decision-making research problems. The researchers suggest "factorial surveys capture real life decision by providing opportunities for people to express their values, beliefs, attitudes, and opinions as they evaluate and judge specific sets of circumstances" (Rossi & Anderson, 1982; Taylor, 2006, as cited in Shooter & Galloway, 2010, p. 642). The researchers address the potential limitations of factorial surveys namely that "vignettes offer a simulation or an approximation of the real life situation under study and respond only to the information provided therein" (Karren & Barringer, 2002, as cited in Shooter and Galloway, 2010, p. 650).

Schumann, Furman and Shooter (2009) studied the effects of heuristics on decision-making in hazardous outdoor terrain in addition to risk taking propensity. Participants responded to vignettes that included avalanche forecasts and heuristic factors and rated the likelihood that they would ski given the various scenarios. The study utilized a Factorial Survey Approach including self-report measures and the Simulating Risk Inventory. Results indicate that five of the six decision-making factors identified by McCammon (2004), familiarity, acceptance consistency, the expert halo, scarcity and

social facilitation “contributed to a skier’s decision to ski a slope” (p. 282). The researchers suggest that the findings support McCammon’s model and thusly experiential education programs may consider incorporating the findings of the study in their judgment and decision-making curriculum (p. 283).

The aforementioned research studies did incorporate qualitative methods to assist in the creation of decision vignettes that would be reflective of the actual decision making environments experienced by outdoor leaders. Qualitative methodologies can capture the richness and complexities of human experience and phenomenon. Qualitative research methodologies and research that addresses the actual lived experiences of outdoor leaders who were confronted with critical decisions are needed in the adventure education literature.

Grube, Phipps and Grube (2002) studied the practice of leadership and decision-making utilizing a systematic journal technique. Students kept daily decision journals during an eight-day wilderness outing. The journals were reviewed by the instructors to assess the student’s understanding of Situational Leadership theory in addition to the student’s ability to apply the concepts of the theory in the field. Instructors also consulted with students regarding their journal entries. Students completed the Expedition Learning Styles Inventory, the Group Dynamics Questionnaire. Data were collected using the Experiential Leadership Education method. Results provide support for Situational Leadership theory and indicate that systematic journaling technique helps to facilitate student understanding and application of theory in the field.

Nursing Research Related to Decision-Making

Multiple studies within the nursing field that studied decision-making among nurses with a specific focus on tacit knowledge and intuition were located. Nursing research includes many grounded theory studies that focus on decision-making. Nurses often have to make time critical decisions in crisis. The nursing literature is informative in regards to this research study. Ruth-Sahd and Tisdell (2007) studied the meaning and use of intuition in novice nurses. The study addressed novice nurses who reported their use of intuition in their professional practice. This design reflects the researcher's desire to study intuition with novice practitioners because much of the research and literature about intuition suggests that intuition is not readily available to novices because it is based on experience that accrues over time (p. 117). This phenomenology revealed three dominant themes that highlighted the influence of experience on intuition, the importance of connection in making meaning through intuition, and the significance of time, space and touch in facilitating intuition (p. 115).

Welsh and Lyons (2001) studied intuition and tacit knowledge in clinical assessment and decision-making in the mental health nursing practice. This case study examined how a nurse might use formal knowledge in addition to other sources of knowledge to conduct a holistic assessment and development of an individual health care plan. Three themes emerged in the study that included research evidence, tacit knowledge and advanced practitioner skills - all of which related to the gathering of information and decision-making (p. 302). The authors' findings suggest that tacit knowledge is based on formal knowledge and informs intuition. Intuition then can not only be seen as a means to

bypass tacit and formal knowledge, but that intuition can be validated by formal means as well (p. 305).

Chapter Summary

In conclusion, this review examined the literature pertaining to optimal experiences, the adventure education texts, adventure education as a profession, adventure education research, and notable decision-making research from the nursing field. The literature clearly indicates and supports the rationale for adventure programs and the pursuit of optimal experiences by adventure programmers and solo recreationists alike. The adventure texts clarify that leaders can facilitate adventure experiences that can afford optimal experiences. The current texts are operating under the assumption that risk can be managed. This assumption is readily located in the decision-making chapters of the texts. These assumptions can contribute to a crisis of professional confidence when there is a distinct disconnect between theory and practice. Decision-making research within outdoor education is limited. There is limited presence of qualitative research focusing upon lived experience in this literature base. The nursing field has produced interesting research that suggests that tacit knowing and intuition may inform a critical decision-making process. The significance of this study was supported through the literature review, and provided an opportunity to contribute to a limited literature base with significant gaps.

CHAPTER 3

METHODOLOGY

The purpose of this study was to understand the decision making process of individuals involved in a whitewater critical incident or accident. This chapter outlines the methodology that was used to explore the following research questions:

1. What is the process by which individuals make decisions in whitewater critical incidents and accidents?
2. What personal and contextual factors inform the decisions that individuals make in whitewater critical incidents and accidents?
3. How do individuals describe decision-making in whitewater critical incidents and accidents?

Grounded Theory – Historical Developments and Clarifications

The grounded theory methodology is a viable choice for researchers who are interested in understanding the meaning of a process or phenomenon that is shared by a large number of individuals. The intent of a grounded theory study is, in addition to providing a phenomenological description of an experience, to develop a theory that "might help explain practice or provide a framework for further research" (Cresswell, 2007, p. 63). Although the intent and aim of the methodology may be widely accepted amongst qualitative researchers in and outside of the social sciences, there are a variety of methods employed today that utilize the name grounded theory, and their differences are significant.

Charmaz (2006) clarifies that, "numerous researchers have invoked grounded theory as a methodological rationale to justify conducting qualitative research rather than adopt its guidelines to inform their studies" (p. 106). These guidelines can vary depending on the form of the grounded theory methodology that the researcher chooses to adopt. These differences are clarified by examining the historical developments of the methodology and the epistemological and ontological significance of the changes. There are numerous amalgamations of grounded theory but the main methodological choices and differences begin with Glaser and Strauss, Strauss and Corbin, and Charmaz.

Barney Glaser and Anselm Strauss developed grounded theory in the 1960's as a qualitative methodology that countered the emphasis of research as a means to verify theory as opposed to the generation of theory. They critique the logico-deductive nature of the prevailing research culture claiming that "logically deduced theories based on ungrounded assumptions…can lead their followers far astray in trying to advance sociology" (Glaser and Strauss, 1967, p. 4.). The positivistic emphasis on theory verification influenced researchers to support and add to the sociological grand theories with small gains. In contrast, Glaser and Strauss developed grounded theory to build theory out of qualitative data assuming the position that "the adequacy of a theory for sociology today cannot be divorced from the process by which it is generated" (p. 5). In essence, Glaser and Strauss responded to the positivistic research culture and the criticism that qualitative methods lacked methodological clarity and rigor by developing "practical guidelines for action" (Charmaz, 2006, p. 6).

At the heart of classic grounded theory is the constant comparative analysis and theoretical sampling (Cooney, 2010, p. 20). The iterative, theoretical sampling process

for research participants and research design are guided by the desire and ability of the researcher to compare new research to existing research with the emphasis and goal being theory emergence and development. Initially, data are compared with data, culminating into interpretive comparisons of codes, categories and further data (Mills, Bonner & Francis, 2006, p. 3). Emergent themes from lived experiences develop and manifest themselves guiding theory development. Constantly comparing data to data, centers or grounds the theoretical development and conceptual frameworks in the participants' lived experiences. The ending goal and product of grounded theory for Glaser and Strauss is a theory that "explains the studied process in new theoretical terms, explicates the properties of the theoretical categories, and often demonstrates the causes and conditions under which the process emerges and varies, and delineates its consequences" (Charmaz, 2006, p. 7).

Strauss and Corbin further developed grounded theory with their explication of specific steps in data analysis. In contrast to the classic approach, the guidelines were more rigid and highly specified. It is interesting to note that a more stated emphasis on theory verification, as opposed to theory generation, is apparent in Strauss and Corbin's grounded theory. It is also apparent that there is less of an emphasis on comparative strategies evident in classic grounded theory in favor the more technical aspects seen in the developed model (p. 8).

In Strauss and Corbin's work, the constant comparative method of data analysis involves stages of analysis including open, axial, and selective coding. In open coding, the data about the particular experience or process is reduced and segmented into categories and subcategories. In axial coding, the researcher identifies the central open

code category or phenomena. Lastly, in selective coding the researcher interrelates the categories through propositions or hypotheses that can be represented in a variety of forms. Cresswell (2007) reports that some researchers choose to develop a conditional matrix that helps them "make connections between the macro and micro conditions influencing the phenomenon" but suggests that most researchers end grounded theory research with a "substantive, low level theory" (p. 65). The research may end at this point if the stated goals of the study have been met. In addition, the theory can be further tested and verified to see if it can be generalized to a sample and other populations (p.67).

The differences between the "classic grounded theory" of Glaser and Strauss and "evolved grounded theory" of Strauss and Corbin can be traced to several key areas: data analysis, verification of theory and the epistemological and ontological orientation of the methodology (Mills et al., 2006, Cooney, 2010, Charmaz 2006). With the specificity of the handling of the data in evolved grounded theory, comes the critique that it is too rigid and inflexible and ultimately forces the data (Cooney, 2010). Glaser maintained his position that data should emerge from the data and criticized the Strauss and Corbin's version as being overly formulaic and forcing the central codes and themes through the rigidity and systemization of the open, axial and selective analytical codes. Glaser maintained that themes should and do emerge from the data though substantive and theoretical coding processes and that the emphasis of research should be upon the generation of the theory and inductive reasoning (Cooney, 2010).

Classic grounded theory is an inductive process. Phenomena are observed, patterns are observed and coded, moving into tentative and working hypothesis development and ultimately arriving at a conceptual framework and a substantive theory

that is grounded in, and has emerged from, the data. With more emphasis on theory verification and deduction, Strauss and Corbin depart from the solely inductive logic espoused by Glaser (p. 20).

A central critique of classic and evolved grounded theory is the existence of positivistic underpinnings and influences in the original methodological framework. During the development of classic grounded theory, the emphasis on the systemization of data collection and analysis can be seen as a direct response to the charge by positivists that qualitative research lacked methodological rigour and was unscientific (Smith & Biley, 1997, p. 17). Furthermore, is the conception of the researcher as a neutral observer. The researcher claims objectivity in the research process while "discovering" theories that emerge from the data independently of their presence. Charmaz (2006) claims that positivist methods assumed an "unbiased and passive observer who collected facts but did not participate in creating them, the separation of facts from values, the existence of an external world separate from scientific observers and their methods, and the accumulation of generalizable knowledge about this world" (p. 5).

The constructivist approach to grounded theory emerged in Strauss and Corbin's work as denoted in their "relativist position and demonstrated in their belief that the researcher constructs theory as an outcome of their interpretation of the participants' stories" (Mills et al., 2006, p. 7). Charmaz's constructivist grounded theory is more flexible than the systematic methods of Straus and Corbin. The social constructivist perspective that is advanced by Charmaz "emphasiz[es]ing diverse local worlds, multiple realities and the complexities of particular worlds, views and actions (Creswell, 2007, p. 65). Although Charmaz does adopt some of the more systematic approaches of data

collection, coding and sampling, she suggests that the focus of the research should lie more heavily on the individual as opposed to the research methodology.

Charmaz (2006) claims that she "assumes that neither data nor theories are discovered. Rather we are part of the world we study and the data we collect" (p. 10). Charmaz suggests that more systematic, complex approaches limit the effectiveness of the grounded theory methodology. She suggests that the researcher is not necessarily limited by some of the structured procedures of grounded theory. The researcher is actively involved in the process wherein he/she "makes decisions about the categories throughout the process, brings questions to the data, and advances personal values, experiences and priorities" (Creswell, 2007, p. 66).

Regardless of the particulars of the three different approaches presented, researchers need to consider whether grounded theory is the best methodology to use when examining their research problem. The methodology carries with it a particular purpose, inherent strengths, and range of questions. Furthermore, the choices researchers make within grounded theory are inextricably linked to epistemological and ontological orientations. Mills, et al. (2006), creates the metaphor of a methodological spiral that represents the evolution of grounded theory from the positivistic underpinnings associated with Glaser and Strauss, through a more relativist ontological orientation with Strauss and Corbin and Charmaz's constructivist grounded theory (p. 1). The type of grounded theory methodology the researcher chooses will position the researcher along the continuum based on their epistemological and ontological orientation.

The most prevalent critique of grounded theory relates to the purported lack of clarity concerning the epistemological assumptions and ontological orientation of the

methodology. McCann and Clark (2003) suggest that in grounded theory "the researcher is assumed to be simultaneously objective and subjective" (p. 2). This critique can be directly traced to the shift in inductive, deductive and abductive logic and reasoning between Glaser and Strauss. Embedded in this critique is the confusion of the technical terminology and perceived meaning of common terms by Glaser and Strauss and researchers who utilize grounded theory, particularly those who are unfamiliar with the methodology and its developments and differences (p. 3). These are 21st century critiques that point to the maturation and development of the methodology and the various changes that have occurred since its conception by Glaser and Strauss in the early 1960's. Moreover, these critiques are indicative of the evolutionary struggles and developments of qualitative research as well (Mills, et al., 2006).

Many of the ontological and epistemological issues inherent in the critiques of grounded theory can be mitigated if the researcher clarifies at the outset of the research engagement whether they are using the grounded theory methods and techniques espoused by Glaser and Strauss, Strauss and Corbin, Charmaz, or a combination of approaches (Cooney 2010, Smith & Biley, 1997). With this initial understanding and clarification stated at the outset, the researcher inserts him or herself within a particular point along the continuum, or "methodological spiral" (Mills, et al., 2006) of grounded theory that signifies a distinct ontological and epistemological orientation.

The very name of constructivist grounded theory clarifies at the outset where it resides on this continuum. The critique that grounded theory is ontologically ambivalent (Seaman, 2008) is not as relevant within this foundational distinction. Mills, et al. (2006) clarifiy that "ontologically relativist and epistemologically subjectivist, constructivist

grounded theory reshapes the interaction between researcher and participants in the researcher process" (p. 6). Researchers are situated, as are the interviewees, and their co-constructions of reality are partial and contextual. The researcher's methodological decisions and data representations are not neutral. Warren and Karner (2005) suggest that qualitative methods are "constructions themselves" and "enable us to learn something about a group or a setting and tell us about the researcher and the process of studying that group or setting" (as cited in Ellingson, 2009).

Grounded theory is an appropriate methodology for understanding the decision making process of individuals involved in whitewater critical incidents and accidents. Upon close inspection of the historical developments of the methodology and in considering the epistemological and ontological implications of these developments, it is necessary for me to clarify the particular form of grounded theory I used in this study. In light of these considerations, constructivist grounded theory was the viable methodology for this researcher and this research engagement.

Epistemological and Theoretical Premise of Grounded Theory

A theoretical perspective is a way of looking at the world and it "embodies a certain understanding of what is entailed in knowing, that is how we know what we know" (Crotty, 2003, p. 8). Epistemological perspectives are perspectives on what knowledge and meaning are and whether they are discovered or constructed. Maynard (1994) further explains, "epistemology is concerned with providing a philosophical grounding for deciding what kinds of knowledge are possible and how we can ensure that they are both adequate and legitimate" (p. 10). While not directly linked to a

methodological framework, constructionism is an epistemological perspective that could be aligned most readily with grounded theory.

Crotty (1998) defines constructionism as the view that "all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and their world, and developed and transmitted within an essentially social context" (p. 42). Constructionist views can be further defined in terms of intentionality. Crotty clarifies that intentionality, as it relates to constructionism, is not concerned with "purpose or deliberation" but more specifically with "referentiality, relatedness, directedness, 'aboutness'" (p. 44). The notion of intentionality seeks to highlight the relationship that exists between the conscious subject and the object of the subject's consciousness. This is an active and intimate relationship wherein "no object can be adequately described in isolation from the conscious being experiencing it, nor can any experience be adequately described in isolation from its object" (p. 45). The constructionist view of meaning making then, seeks to clarify meaning as the essence of the relationship between the conscious subject and the object of the subject's consciousness.

The theoretical perspective of symbolic interactionism is embedded in the grounded theory methodology. Symbolic interactionism stems from interpretivism and a constructionist epistemology wherein meaning and one's sense of self is constructed through the interaction with and within social dimensions. The symbolism or "symbols" in symbolic interactionism relate to the interpretation of the interactions or experiences of individuals and the meaning they ascribe to their actions and the actions of others. Blumer (1969) highlights three basic assumptions of symbolic interactionism:

- that human beings act toward things on the basis of the meanings that these things have for them;
- that the meaning of such things is derived from, and arises out of, the social interaction that one has with one's fellows';
- that these meanings are handled in, and modified through, an interpretive process used by the person in dealing with the things he encounters (as cited in Crotty, 1998, p.72).

It is through the theoretical lens of symbolic interactionism that the participants and processes in grounded theory are studied. The theory that is generated or discovered by the researcher emerges from the "actions, interactions and processes of people" (p. 63). Schwandt (2007) comments that symbolic interactionism (and ethnomethodology) "emphasize the actor's definition of the situation; that seek to understand how social actors recognize, produce and reproduce social actions and how they come to share an intersubjective understanding of specific life circumstances" (p. 39).

Charmaz (2002) adopts a symbolic interactionist theoretical perspective with constructivist methods and makes the following assumptions "(a) Multiple realities exist, (b) data reflect the researcher's and the research participants' mutual constructions, and (c) the researcher, however incompletely, enters and is affected by participants' worlds" (p. 678). The crux to these assumptions is that the researcher adopts an interpretive lens and offers a unique perspective of the social construction of knowledge in juxtaposition to an exact account of it. Charmaz (2002) clarifies that "a constructivist approach to grounded theory compliments symbolic interactionism because both emphasize the study of how knowledge and meaning are constructed" (p. 678). The theoretical orientation,

perspective and related assumptions espoused by Charmaz are congruent with my epistemological and theoretical assumptions.

Conception of the Qualitative Interview

deMarrais (2004) describes the interview as "a unique form of discourse between two people where one is an informed learner who is there to learn more about another's experiences or series of experiences, views, or perspectives, or reactions to a particular phenomenon or event" (p. 55). The interview is a specific type of engagement or "speech event" (p. 55) wherein two or more people are constructing meaning in a social context. An important distinction of the qualitative interview structure and process is the focus on the construction of meaning as it is related to the interview itself. It is within the social context of the interview that qualitative researchers "treat the unfolding social context's of the interview as data, not as something that, under ideal conditions can be eliminated from the interview process (Warren, 2002, p. 91). The very social context of the interview involves two meaning makers who bring with them to the interview a set of experiences, beliefs, worldview and subjectivities. It is necessary to consider various conceptions of qualitative interviews and how my perspectives and assumptions as a researcher form my interview approach and practice.

Within the neo-positivist conception of the interview, Roultson (2010) outlines, "the 'skillful' interviewer asks 'good' questions, minimizes 'bias' and 'researcher influences' through taking a 'neutral' role, [and] generates 'quality' data, [that] produce 'valid' findings" (p. 52). It is also mentioned that data are commonly coded and categorized using grounded theory methods. Some key struggles I experienced in the pilot study interviews are related to what I believe my duties as an interviewer are and

who I feel I actually am in this world and how I go about talking with, listening to, and learning from others. I felt, for some reason that how I was supposed to carry myself in the interview was similar to the neo-positivist conception of the interview. The idea that I had to be neutral and objectively report what was told, being an unbiased question asker and recorder and reporter, is far removed from co-constructing knowledge and being an integral part of the social construction that an interview is.

I believe that the angst I was experiencing can be traced to my formal education from grade school until I entered into my doctoral studies. Anything that I had learned in relation to research prior to learning about qualitative inquiry and research design, had urged me to be objectively removed and that I was a contaminant in the research process. I suppose I am recovering from growing up and learning in ways that were largely influenced by positivism. In revisiting my theoretical perspective and related assumptions reflexively after these interviews, I am able to reaffirm who I am as a researcher and allow myself to feel a part of the interview in ways that are not integral to the positivist research tradition.

deMarrais (2004) states "researchers will want to be clear on the theoretical position they are assuming in their interview studies to set out how these beliefs and assumptions inform their work" (p. 59). I feel that my theoretical and epistemological assumptions are most readily aligned with a constructivist grounded theorist approach to the interview. This approach to research situates the researcher as one who is exploring a phenomenon and co-constructing meaning with the interviewee juxtaposed to an interviewer who interrogates and forces questions and responses. Charmaz (2002) clarifies, "constructivist grounded theorists see an interview as starting with the central

problem but proceeding from how interviewer and subject co-construct the interview. Their constructions are taken as the grist of the study, but constructivists frame much of the material as "views," rather than hard facts" (p. 678).

Ethical Considerations – Interviews Involving Sensitive Topics

Studying whitewater accidents can be a sensitive topic certainly if the accident under investigation involved sincere loss. Individuals may feel that the decisions they did or did not make somehow contributed to the realization of the loss. The three key areas that I considered in this study were (1) my responsibilities as a researcher to interviewees involved in the emotionally sensitive nature of my research, (2) my plan for attending to interviewees who may have become emotionally distressed during the course of an interview (4) a sensitivity to gender issues in interviewing.

deMarrais and Tisdale (2002) state, "qualitative research methods have the potential to elicit rich descriptions of emotional experiences, particularly if the research is about a topic that is important to the participants in the study" (p. 115). The Institutional Review Board outlines many of the responsibilities of protecting respondents in emotionally sensitive research. Researchers are held to professional ethical codes. Most notably, researchers are required to obtain informed consent from research subjects. Warren (2002) states that "from an IRB perspective, human subjects research seeks to protect respondents from such things as invasion of privacy, breaches of confidentiality or anonymity, and distress caused by topics raised in the interview process itself" (p. 89).

As a responsible and ethical researcher, I obtained IRB approval for my research and adhered to the guidelines that they explicitly expressed. At the outset of the interviews I informed the interviewees of the potential risks involved in the study.

Interviewees were required to sign an informed consent form acknowledging that they were aware of the risks involved and they agreed to move forward with the study. I also indicated that it was their right to stop the interview at any time they didn't feel comfortable proceeding. In addition I let them know of the confidentiality of the research and that I would be using pseudonyms and changing the names of rivers in the study.

In my experience leading outdoor adventure trips, I find that the process of talking about risks and signing informed consent forms needs to occur in an open conversational style or rapport and trust can be impaired. It is important to note that some interviewees will not be comforted or feel protected by informed consent (Warren, 2002). Ultimately it is their right to proceed or not proceed in the study.

While tending to the logistical, legal and liability aspects of emotionally sensitive research, there are many things that needed to happen on an interpersonal level to create the safest environment possible. I let the participant ask questions about the specifics and intent of the research, which facilitated developing rapport and trust in the interviews. Furthermore, I let the participants know that I was interested in their story and valued what they had to say. I used good eye contact, active listening, and was patient in letting the participants formulate their responses, which contributed to a positive interview context.

It seems that being a good listener, being supportive and fully present are intuitive. Yet, as emotions arise, it is easy for me to want to assist the participant beyond what I am really capable of doing and beyond the stated goals of the interview. As deMarrais and Tisdale (2002) expound, "the researcher listens intensely and provides a space for the participants to tell their stories but does not interpret the stories with the

goal of ameliorating distress and, thus, is not there to provide therapy for the participants" (p. 121). I paid close attention to the participants to see if the interview had become difficult for the participant.

It was important for me to consider that I might experience intense emotions during the course of the interview and post-interview as well. It was necessary for me to have self-awareness of my own limitations, and I developed a realistic plan to cope with the emotional intensity of the research. Part of this required me to be aware of the emotional stake in what is being studied and I acknowledged my subjectivities, personal history and values as they related to what was being studied. Some emotional challenges in sensitive research could have arisen if I had a different value base around a shared or similar experience. I needed to know when to step back from the research and process my own experiences and difficult emotions in relation to the research and the participants.

Issues of Power and Gender in Interviews

deMarrais (2004) posits, "power issues, whether or not those involved in the study recognize them, are central to relationships between the researcher and the researched" (p. 65). As I reflected and moved forward in this research, I considered ways in which gender related to power and sensitivity in the interviewer / interviewee relationship. In the pilot-study, I interviewed three men with whom I had professional relationships. Buddy and Shane worked with me at the same college. I interacted with Jason on a professional basis, but we did not work together. I had friendships with all three men outside of work.

In relation to interviewing men, Schwalbe and Wolkomir (2002) emphasize that, "good technique – as might befit the imaginary interview subject – does not adequately

equip us to recognize and respond to problems that arise specifically from how men 'do gender' in an interview" (p. 203). The authors are not generalizing or assuming that every man behaves in the same way, yet they indicate that men can feel compelled to abide by a certain "cultural prescription for self presentation" (p. 203) that can presents certain challenges in the interview.

An interview for men can become a place of threat to a man's masculine self or an opportunity to express this self as the case may be. The interview can be perceived by male interviewees to be an opportunity to signify masculinity "in as much as men are allowed to portray themselves as in control, autonomous, rational, and so on" (p. 203). Conversely, the male interviewee can feel threatened by an interviewer who assumes control by posing certain questions and creating an interview structure and tone, which limits the ability of the interviewee to display masculinity.

Schwalbe and Wolkomir (2002) qualify threats to masculinity into two distinct categories, baseline threats and surplus threats (p. 206). A baseline threat is a situation "in which a stranger sets the agenda, asks the questions, controls the flow of talk and probes for information about internal or backstage realities" (p. 206). The propensity for the interviewee to feel that they need to justify their decisions because of potential power dynamics in the interview is heightened.

Surplus threats originate from two sources: questions that may "expose the masculine self as illusory" and questions which perhaps doubt the interviewee's "control, autonomy, or rationality" (p. 206). I was aware of surplus threats and decided not to include participants who reported to me directly. The very nature of the investigation appears to have the potential to put respondents on the defense. The men and women

whom I interviewed are professionals in the field of outdoor leadership, and I assumed that they place a premium on their ability to use sound judgment and make decisions that ultimately promote the physical and emotional well-being of their participants. These individuals could certainly have felt threatened in having to discuss an accident scenario where they might have believed they were personally responsible for what happened. Evidently, these feelings can be magnified in interviews with male respondents. Based on my experiences in the pilot study, I chose not to interview anyone I worked with beyond the pilot study because of potential power dynamics and the propensity for issues to arise.

Schwalbe and Wolkomir (2002) offer specific suggestions and strategies for tending to the issues of power when interviewing males: allow for symbolic expression of control, let the subject ask the first question, and challenge the subject to take charge as an *expert* (p. 208). A symbolic expression of control can occur by allowing the subject to choose the time and location of the interview, given the parameters of a quality interview site and atmosphere. I encouraged all of my participants to choose the time and location for the interview stressing that it needed to be a place that was free of distractions and where they felt comfortable.

I considered letting the subject ask the first question. The subject may have been curious and had trepidation or uncertainty about the nature of the study. Schwalbe and Wolkomir (2002) offer the following example as a way of relinquishing control- " I appreciate your willingness to help me with my research. Before I ask any questions, I wonder if you'd like to know what it is I'm interested in" (p. 208). This proved especially effective in developing rapport and creating an open atmosphere, especially with subjects that I had not met before.

By challenging the subject to take charge as an expert it allowed me to set a tone that honored their personal experience and emphasized the value of their story and my desire to learn as much from them as I could. This positionality on my part affirmed the phenomenological approach to the interview where I "assume the role of learner in that the participant is the one who has had the experience, is considered the expert on his or her experience, and can share it with the researcher" (deMarrais, 2004). I think this strategy helped me to remember my subjectivities and to set my experiences, feeling and beliefs aside insomuch as they limited me from listening, being fully present for the subject, and trying to learn as much as I could about their experience.

Schwalbe and Wolkomir (2002) also include suggestions for probing sensitive topics suggesting the question, "since you brought it up, I was wondering if you could tell me more about _____" (p. 208). This strategy potentially helped alleviate some possible issues with the interviewee not feeling that I understood them or that their responses were not valuable to me. The sensitive nature of the interview can encompass the incident of discussion but also how one perceives their abilities as an interviewee and the value of their responses. Schwalbe and Wolkomir (2002) suggest that utilizing the probes such as the example provided, "allows the subject to feel more in control of the flow of talk and also invokes the conversational norm that obligates the subject to say more about a topic he has brought up" (p. 208).

As I learned more about interviewing women, I became much more aware of how social location, power issues and subjectivity, affect the interviewee and interviewer relationship. Reinharz and Chase (2002) state, "although on the face of it [the interview] is not a remarkable activity, it may turn out to be an extraordinary experience for some

women interviewees. This is so because some women still feel powerless without much to say" (p. 225).

Feminist scholars have sought to unearth the invisibility of women's presence and agency in society and to give power to their voice and silence (Wearing, 1998). The interview itself is a complex event that is influenced by historical oppression and gendered roles. Many women's voices are silenced by a variety of social locations including culture, religion, community, family or work. When a woman is approached by an interviewer who expresses genuine interest in hearing her story "the interviewer may be creating a new social situation for that woman" (p. 225).

Women outdoor leaders participate in a male dominated field and experience the subsequent cultural pressures to be stronger, more technically proficient, more assertive, more confident and definitive in their judgments and decisions than men do. In many instances women outdoor leaders have to try harder to gain the respect of their students, and in many cases the male students. How might these women feel if they are being interviewed (by a male) about the decisions that they have made around an accident that they feel personally responsible for?

Reinharz and Chase (2002) said that a woman, who is sought out by an interviewer earnestly interested in hearing and honoring her story, "may discover her thoughts, learn who she is, and 'find her voice.' At the same time, researchers need to be aware that women who have never had an opportunity to express themselves may not know what to do given that opportunity" (p. 225). I contended with periods of uncomfortable silence in the interviews. When a period of awkward silence arose, I allowed the women in this study to have their own process. Reinharz and Chase (2002)

exclaim that self-disclosure assumes on the part of the researcher that his experience is similar to the respondent's experience yet "when researchers interview women whose perspectives are clearly different from their own, they may find a tight-lipped approach to be essential" (p. 228).

I acknowledged and limited the dynamics of power that existed in my interviews with women by remembering and addressing several salient points. I acknowledged and was sensitive to the fact that both my interpretation, and the stories that women shared with me, were socially situated and involved complex social structures (p. 234). I allowed female participants to choose the time and location of the interview and created rapport and trust by expressing my genuine interest in wanting to hear what they had to say. I created space in the interview for women to ask questions of me and the nature of my research and my intentions. I was comfortable with silence in the interview and let the interviewees search for thier own words and voice in their own time and be accepting that their experience may be very different from my own. deMarrais (2002) states, "the researcher attempts to establish equality between researcher and participant by privileging the knowledge shared by the participant, sharing researcher interpretations, asking for responses to the interpretations, and sharing the final manuscript" (p. 58). I was as humble, respectful, and reflexive as I was able to be.

Reflexivity

Schwandt (2007) remarks "reflexivity in a methodological sense can also signal more than inspection of potential sources of bias and their control. It can point to the fact that the inquirer is part of the setting, context, and social phenomenon he or she seeks to understand" (p. 260). I incorporated reflexivity in this study, as it was integral to ensuring

quality in qualitative research. In addition it just so happens that reflexivity is representative of who and how I am in this world. It is an active acknowledgement that I am participating in a co-construction of a meaning-making act. As such I have points of awareness, vulnerability and contribution to the study – of which I acknowledged openly and humbly throughout the study.

Sample Selection

Qualitative researchers generally utilize criterion based sampling procedures in order to "specify characteristics and attributes of the population to be studied" (Roulston, 2010, p. 81). In grounded theory participants are purposefully sampled and selected based on their experience with the phenomenon of interest with the focus upon social processes and theoretical concepts of interest. Participants in this study needed to meet all of the following criteria:

- be at least 18 years old;
- live within a two-hour drive of Young Harris, Georgia;
- have personally experienced a whitewater critical incident or accident;
- be willing to participate in a face to face interview of no more than 120 minutes in length;
- be willing to participate in a follow up interview either face to face or by phone, lasting no more than 30 minutes.

I required participants in the study to be 18 years or older because the participants needed to possess a maturity of communication and experience that afforded "full and rich verbal accounts" (Gerrish & Lacey, 2010, p.185). The participants needed to live within a two- hour drive from Young Harris so that I could access them for the initial and

follow up interviews. Young Harris resides in one of the premiere locations in the country for whitewater pursuits. This radius of travel easily provided access to suitable participants for the study.

Participant selection criteria for this study were based on individuals who had been involved in a whitewater critical incident or accident. I recruited individuals who were involved in a whitewater critical incident or accident scenario that involved kayaking, canoeing or rafting, or a combination of these craft. Not all individuals recruited had been in a formal leadership role, but their involvement in the incident or accident scenario did include a critical decision making context and process.

The 120 minute face to face interview was congruent with the time frame I used in the pilot study. This time frame proved sufficient for gathering the data necessary for the study. Follow up interviews were intended for the purposes of member checking, confirming ideas, and gathering material to further elaborate my categories (Charmaz, 2006, p. 111).

The face-to-face interviews for this qualitative study ranged from an hour and fifteen minutes to an hour and a half. The interviews took place over a five-week period beginning November 12, 2013 and ending on February 21, 2014. I traveled to the participants' homes or places of work to conduct the interviews. The follow up interviews occurred over email as opposed to face-to- face, as I had originally planned. It became extremely difficult to make contact with people over the phone and thus I decided a follow up interview via email would provide participants a better opportunity to respond in a way that fit their schedule. It was also easier to capture the follow up interview transcript in an email as opposed to recording notes during a phone conversation. In an

effort to develop rapport, participants' chose the time and place of the interview provided the location was free of distractions and presented an opportunity to have a meaningful conversation.

I transcribed five interviews and used a transcription service for the remaining four interviews. I made the decision to utilize a transcription service due to time constraints. I was able to verify the accuracy of the transcripts during the coding process where I simultaneously listened to the audio file and read the transcripts in entirety. As the analysis continued and themes and categories began to emerge, I contacted the participants via email for a follow up interview. These interviews were used for member checking purposes – to check the accuracy of my report with their intended meaning and understanding of the critical incident or accident. Furthermore, the follow-up interviews were a means to explore potential hunches or newly emerging categories and direction.

Participants were selected using a purposeful sampling technique. Within this strategy the researcher "selects individuals and sites for study because they can purposefully inform an understanding of the research problem and central phenomenon of the study" (Creswell, p. 125). Having worked in the outdoor leadership field for fifteen years, I had an extensive network of friends and professional contacts who had considerable whitewater experience – either as formal instructors, program managers, or solo recreationists. Some of these individuals are professional instructors, programs coordinators, river-rescue personnel, serve on boards that develop and determine policy for whitewater pursuits and training. All of these individuals are whitewater enthusiasts in their personal time. I employed a pre-screening of the participants either in person or over the phone to determine that they met the criteria for participation in the study.

Purposeful sampling formed the initial stages of this study with theoretical sampling becoming centerpiece as the categories began to emerge. Charmaz (2006) clarifies, " the purpose of theoretical sampling is to obtain data to help you explicate your categories. When your categories are full, they reflect qualities of your respondents' experiences and provide a useful handle for understanding them" (p. 100). The function and purpose of sampling and related data sets in grounded theory are to generate new theory as it pertains to the data within a specific study not for the purposes of generalizability which is indicative of probabilistic sampling and quantitative research.

Sample Size

Sampling techniques and sizes for grounded theory studies need to capture a rich diversity of individuals who can enliven the complexities and multi-faceted elements of an experience and its related social processes. It is difficult to predict the necessary sample size at the outset of a grounded theory project that will be needed to saturate the categories. Many times adequate sample sizes will only be know later as categories inform future theoretical sampling. The initial sample size for this study included eight to fifteen participants, with the final sample totaling nine participants.

Theoretical Saturation

Sample sizes in grounded theory are directly related to theoretical saturation, which is defined as "the point at which gathering more data about a theoretical category reveals no new properties nor yields any further theoretical insights about the emerging grounded theory" (Charmaz, 2006, p. 189). Baker, Weust, and Stern (1992), explain that in grounded theory, "the selection of participants and other data sources is, therefore, a

function of emerging hypotheses and the sample size, a function of theoretical completeness" (p. 1358).

Understanding when theoretical saturation is achieved has inherent challenges. Initially, the research question needs to be sound enough to illicit in depth exploration. Simplistic questions may be saturated early yet with unsubstantial findings. Furthermore, the size of a sample needs to be able to support the claims that are being made in the research study. Sandelowski (1995) suggests, "a common misconception about sampling in qualitative research is that numbers are unimportant in ensuring the adequacy of a sampling strategy. Yet, sample sizes may be too small to support claims of having achieved either informational redundancy or theoretical saturation, or too large to permit the deep, case-oriented analysis that is the raison-d'etre of qualitative inquiry" (p. 179).

It may be that the term saturation is, in and of itself, insufficient or misplaced in describing such a process. Dey (1999), offers that idea of saturation, and the certainty of it, is more prescriptive and perhaps indicative of formulaic recipes with exact amounts as opposed to general guidelines with openness to the uniqueness of the individual researcher and research project (p. 257). Qualitative researchers may be well served in allowing themselves more room to explore the possibilities within their data - which formulaic saturation implications may limit. Charmaz (2006) encourages researchers to "be open to what is happening in the field and be willing to grapple with it. Use grounded theory guidelines to give *you* a handle on the material, not a machine that does the work for you" (p. 115).

Data Collection

I used semi-structured interviews as the primary means of data collection for this study. Schwandt (2007) comments, "the typical in-depth, semi-structured, or unstructured interview aims to elicit stories of experience" (p. 163). The stories of lived experience in relation to decision-making in whitewater accidents were the centerpiece of the investigation. I incorporated an open-ended, conversational style that promoted an atmosphere conducive to the telling of rich stories. This style also assisted in developing rapport, trust and collaboration. deMarrais (2004) clarifies that "researchers using terms like *open-ended, unstructured* (Lofland, 1971), and *conversational* are characterizing the informal, conversational style of the interview process, which enables the participants to engage in the process more freely without merely responding to researcher-generated questions" (as cited in deMarrais & Lapan, 2004, p. 53).

Semi-structured interviews within a grounded theory study afford an in-depth exploration of a phenomenon and its related processes. Charmaz (2002) suggests, "in-depth qualitative interviewing fits grounded theory methods particularly well" and "provides an open-ended, in-depth exploration of an aspect of life about which the interviewee has substantial experience, often combined with considerable insight" (as cited in Gubrium & Holstein, 2004, p. 676). The questions included in the interview protocol for this study were intentionally open-ended, broad, and non-judgmental. The design and nature of the questions "encourage unanticipated statements and stories to emerge" (Charmaz, 2006, p. 26.).

As previously discussed in this chapter, I used the constuctivist form of grounded theory for this study. This form of grounded theory is linked to a specific epistemological

and theoretical orientation. In turn, data collection and data analysis within this approach "places priority on the phenomena of study and sees both data and analysis as created from the shared experiences of researcher and participants and the researcher's relationships with participants" (Charmaz, 2004, as cited in Gubrium & Holstein, 2004, p. 677).

Data Analysis

The data analysis process for this study incorporated the constant comparative method of analysis with particular attention given to initial, focused and theoretical coding. In initial coding, the data were reduced and segmented into categories and subcategories. Charmaz (2006) suggests, "speed and spontaneity help in initial coding. Working quickly can spark your thinking and spawn a fresh view of the data" (p. 48). Initial coding required me to stay close to the data while exploring theoretical possibilities. Using gerunds in the initial coding phase, helped me keep the data alive and active. *In vivo* coding is another strategy that was helpful in initial coding. Using the participants' words and phrases helped to keep the codes centered upon the participants' expressions and experience. Initial coding helped inform my decisions about the formation of the core conceptual categories later in the coding process (p. 47).

Focused coding comprised the second stage of data analysis. Charmaz (2006) defines focused coding as "using the most significant and/or frequent earlier codes to sift through large amounts of data. Focused coding requires decisions about which initial codes make the most analytical sense to categorize your data incisively and completely" (p. 57). The emergent nature of the grounded theory coding process required me to stay open to the unique ideas evident in the data. Constant comparative methods were relative

to all stages of the coding process. In relation to the focused coding phase, and the emergence of new ideas and direction that may have been counter to my prior perspectives, Charmaz (2004) suggested researchers look for how participants "understand their situation before they judge their attitudes and actions through their own assumptions" (p. 54).

Axial coding defines the next stage of the coding process particularly for those who are following the grounded theory methods as espoused by Strauss and Corbin. Charmaz (2006) clarifies, "axial coding relates categories to subcategories, specifies the properties and dimensions of a category, and reassembles the data you have fractured during initial coding to give coherence to the emerging analysis" (p. 60). The structure of the axial coding phase has been critiqued for its rigidity and that it forces and fractures the data (Mills et al., 2006). It is also seen as a welcome process for researchers who prefer a predetermined structure.

I did not utilize axial coding, rather I followed the coding processes espoused by Charmaz's constructivist grounded theory. She mentions that she has not directly employed axial coding but has "developed subcategories of a category and showed the links between them as [she] learned about the experiences the categories represent[ed]" (p. 61). I initially developed subcategories of the core categories, yet I was unable to express precisely what the data indicated to me. In consultation with my Committee Chair, it became apparent that there were essentially two sets of distinct core processes that were interrelated and interdependent. However the categories' relationships to one another are not best expressed in terms of one being a category and another being a

subcategory. At this juncture the representation of the data was aptly conceived as *process categories* and *personal and contextual categories*.

Theoretical coding comprised the last phase of the coding process. Charmaz (2004), suggests, "theoretical codes specify possible relationships between categories you have developed in your focused coding" and henceforth "these codes not only conceptualize how your substantive codes are related, but also move your analytic story in a theoretical direction" (p. 63). Constantly comparing data with data allowed me to interrelate the categories through propositions or hypotheses that were represented in a variety of forms. My theoretical codes were informed by my previous substantive analysis and ultimately the codes "earned their way" into my grounded theory (Glaser, 1997, as cited in Charmaz, 2004, p. 64).

Memo-writing

I utilized memo-writing in this study and it was very helpful. I found after listening to and coding an interview, I needed a space to sort things out. Memos helped me to write more informally and spontaneously as I reflected on my analytical progress, or regress as the case may be. I was able to be less concerned with accuracy and allow myself to wander, follow hunches or vent frustrations. Charmaz (2006) exclaims, "memo-writing frees you to explore your ideas about your categories. Treat memos as partial, preliminary, and provisional. They are imminently correctable" (p. 84). Memo-writing helped to alleviate the stresses associated with analyzing significant amounts of data. In these free spaces I was also able to play with data and make deeper connections that I might otherwise have missed out on. Lastly, my memos served as a journal. I was able to read about earlier struggles and see how my thinking and analytical process

evolved over the course of the study. The following is an example of a memo that helped me begin to conceptualize and understand the relationship between the process categories and the personal and contextual categories. The memo also helped me enliven the categories and use metaphor to understand certain categories more fully.

December 20, 2013

Tributaries

It appears that my main issue is with analytical models and so I should not try and attempt to forward one. Furthermore, my theory is not meant to be generalizable – this is a study of decision-making in a specific context and relative to folks in that context. Therefore, perhaps the categories should not be judged by their utility or generality based on decision-making in breadth, but rather enliven, represent and inform decision-making specifically in whitewater critical incidents and accidents. I think the theory should be dynamic, alive, fluid, complex in nature yet simply defined as such - and real – just as the river and its actors are. The theory shall be like a river and capture the qualities that shape and influence the stream bed – tributaries, confluence, rain fall and levels, shifting currents, light and time, eddies of reflection, streams and currents of consciousness. Undercurrents are powerful influences that can't be seen but are definitely present and alive. They can be felt and one can be moved by them…Intuition.

Figure 1. Memo on Tributaries

Trustworthiness

As a qualitative and naturalistic methodology, grounded theory has core foundations in relation to the trustworthiness of the design and findings. Lincoln and Guba (1985) state, "the basic issue in relation to trustworthiness is simple: how can an inquirer persuade his or her audiences (including self) that the findings of an inquiry are worth paying attention to, worth taking account of?" (p. 290). Traditional research design and

convention relies on internal and external validity, reliability and objectivity as the cornerstones for experimental soundness and trustworthiness. The difference in Lincoln and Guba's emphasis is stark.

Trustworthiness and validity in qualitative research are based upon credibility, transferability, dependability and confirmability. Credibility in qualitative research denotes the study's ability to provide an accurate or credible analysis and interpretation based on data collected from the participant (Lincoln & Guba, 1985, p. 296). Transferability expresses the ability of the findings to be relevant beyond the immediate scope of the particular research study. Dependability relates to the integrity of the research design including data collection, data analysis, and theory generation (p. 297). Finally, confirmability relates to the ability of the data to support the findings.

Grounded theory is subject to the same standards of quality in qualitative research and the structures of trustworthiness as espoused by Lincoln and Guba. Trustworthiness in grounded theory is directly related to the utility of the generated theory. Charmaz, (2006) builds upon the four benchmarks of trustworthiness including credibility, originality, resonance and usefulness as cornerstones of quality (p. 182). Credibility is concerned with the data being sufficient to merit your claims (p. 182). Originality relates to the study's fresh perspective and contribution to the literature. Resonance portrays the fullness of the categories and that the grounded theory is accessible to the participants and offers them fuller insight into the process of the phenomenon. Lastly, usefulness signifies the grounded theory's accessibility, and potential to inform practice and future research.

Specifically, to maintain the credibility and trustworthiness of this study, I incorporated multiple perspectives through purposefully sampling the most diverse range of participants who were eligible for the study. The sample size of the study allowed me to compare data and perspectives across nine participants. I utilized member checking to determine the accuracy of the categories and analysis and to assist in the development of emerging categories. Although participation in the follow up email exchange was limited, the three participants that did respond indicated that the whitewater critical incident and accident decision-making theory and model was congruent with what they had expressed to me in the interviews. I incorporated peer examinations of my research, drawing on the perspectives of colleagues who had the ability to provide informed, critical insight concerning the credibility of my descriptions and process. I also provided a subjectivity statement that clearly explicated my biases and assumptions. I reflexively examined my process in an effort to establish the validity of the accounts of the social phenomena of this study. I used reflexivity as a means to critically inspect my entire research process including "critical self-reflections on [my] biases, theoretical predispositions, preferences, and so forth" (Schwandt, 2007, p. 260).

By actively seeking and employing credibility, rigor and trustworthiness in this study, I believe the results are original and useful. Decision-making is under-theorized in the outdoor adventure education literature. I believe this study to be theoretically and socially significant and will contribute to the adventure education literature and the training of outdoor leaders.

Limitations

Charmaz (2006) suggests that credibility, originality, resonance, and usefulness "account for the empirical study and the development of the theory" yet they say "little about how the researcher writes the narrative or what makes it compelling" (p. 83). The writing process and the final written report contain some of the central limitations for grounded theory studies. Gerrish and Lacey (2010) outline three distinct limitations of the phenomenological method, which I feel are distinctly representative of the limitations for grounded theory studies as well:

1. The use of observation is problematic in phenomenological research
2. Descriptions of life worlds depend on full and rich verbal accounts by people who are articulate
3. It can be elitist in that there is an artistic-literary capability required of the researcher when writing. The 'method' does not guarantee the quality of the narrative coherence achieved in the writing of the final stages of the research project (p. 185)

My external observations, in an attempt to understand an internal phenomenon or process, were problematic to a degree. There was the inherent assumption that an internally lived experience and social processes could be observed and understood externally by a researcher. Furthermore, I assumed that I obtained the fullest, richest description of the phenomenon and its related processes, and that the respondent had the verbal command to detail the life world such that it adequately expressed the significance of a social process. Lastly, there are inherent limitations in my ability to express the essence of a phenomenon and complex processes in the writing of the final report. These

limitations are acknowledged in the epistemological assumptions related to the co-construction of knowledge in qualitative research.

In addition to these limitations, grounded theory is subject to the limitation of not yielding a substantive theory at the conclusion of the project. Gerrish and Lacey (2010) remark, “many novice researchers end up with a conceptual description rather than a theory. There is nothing wrong with dense, conceptual description, but this alone cannot be called grounded theory” (p. 162). In such a case, it may be that there were problems in the research design that ultimately limited the generation of a theory. This could be a function of inexperience on the part of the researcher, as Gerrish and Lacey suggest. However, to ‘force’ theory generation by any researcher would be egregious. It could be that the conceptual description is what authentically materialized from a thorough investigation - outside of researcher experience and the design of the study. In the end, this study did lead to a substantive theory and model of decision-making in whitewater critical incidents and accidents.

CHAPTER 4

FINDINGS

"The water changed to vapor and rose, became rain and came down again, became spring, brook and river, changed anew, flowed anew" (Hesse, 1951, p. 135).

The purpose of this study was to understand the decision making process of individuals who were involved in a whitewater critical incident or accident. There were three central questions that guided this research:

1. What is the process by which individuals make decisions in whitewater critical incidents and accidents?
2. What personal and contextual factors inform the decisions that individuals make in whitewater critical incidents and accidents?
3. How do individuals describe decision-making in whitewater critical incidents and accidents?

The interviews yielded two sets of categories that have informed a theory of decision-making in whitewater critical incidents and accidents. The two distinct sets of categories relevant to the data are *process categories* and *personal and contextual categories*. The process categories highlight the decision-making process that was communicated by the participants. The process categories are:

1. Anticipating and assessing,
2. Awareness of problem(s)
3. Active information gathering

4. Option weighing
5. Decision
6. Evaluation

The personal and contextual categories represent the multiple sources of information that informed the decision-making process. These categories also depict the lived experience of the participants as they made decisions in whitewater critical incidents and accidents. The personal and contextual categories are:

1. Training and education
2. Intuiting and instincts
3. Time
4. Ethics, mentorship and responsibility
5. Group dynamics

The participants in the study used a variety of terms that may be confusing for those who are not familiar with whitewater boating. For your reference, these terms are listed and defined on pages eleven through fifteen in Chapter One. Furthermore, the stories you are about to read are tragic and in some instances involve the loss of life. There is the potential for the reader to become consumed in the stories and question why people would even consider whitewater kayaking, canoeing or rafting. Hence it is important to briefly revisit the motivations of these adventurers.

Csikszentmihalyi and Csikszentmihalyi (1999), detailed a state of optimal experience known as flow, which is very influential in the behavior and motivation of whitewater boaters. A flow state requires a distinct balance of risk and skill. It is the merging of an opportunity to act and a capacity to act. The experience totally captures the

psychic energy, emotion and focus of the boater. The individual finds the flow experience to be so engrossing and rewarding that she continually seeks it out and, in many instances, patterns her life around the activities that produce flow. A rationale for adventure and risk taking and the philosophy of adventure learning are discussed on pages four through eight in Chapter One. Optimal experiences including flow, savoring and vital engagement are discussed on pages nineteen through twenty four in Chapter Two and provide further insight into the motivations of whitewater adventurers.

At this juncture I will provide the reader with a roadmap for Chapter Four in an effort to maintain the cohesion of the information and process.

- Introduction to the participants in the study
    - Demographic information
    - Overview of participants' stories
- Presentation of the model of decision-making in whitewater critical incidents and accidents
- Overview of the *process categories*
- Overview of the *personal and contextual categories*
- Chapter summary

The Participants

The participants in this study included six men and three women, all of who live in the southeastern United States. The ages of the participants ranged from 26 to 43 years of age. All participants are White**.** Six participants have earned undergraduate degrees, three of which are degrees in outdoor leadership or a related field. Three of the nine participants have earned a graduate degree. All participants have received formal

instruction in whitewater boating and swift water rescue (SWR). Notably, these trainings were in American Canoe Association (ACA) programs and included specific including kayaking (K-1) and open canoe (OC-1). Two participants have training or certification in Wilderness First Aid (WFA), six in Wilderness First Responder (WFR), and 1 as a Wilderness Emergency Medical Technician (WEMT). Currently, five participants are in outdoor leadership professional roles or other industries related to outdoor recreation or whitewater sports in particular.

Table 1

Participants' Demographic Information

Name	**Age**	**Race**	**Sex**	**Highest Degree**	**Training**
Jason	42	White	M	Master's	WEMT, ACA K-1, SWR
Shane	38	White	M	Doctorate	WFR, ACA K-1, SWR
Karen	27	White	F	High School	WAFA, ACA K-1, CPR
Jane	27	White	F	Bachelor's	WFR, ACA K-1, OC-1, SWR
Guy	43	White	M	Bachelor's	WEMT, ACA K-1, SWR
Wyatt	38	White	M	Master's	WEMT, ACA K-1, SWR
Russell	42	White	M	Bachelor's	WEMT, ACA K-1
Susan	41	White	F	High School	WEMT, ACA K-1, SWR
Larry	26	White	M	Bachelor's	WFR, SWR, ACA K-1

Jason.

Jason is a 42-year-old male who has 26 years of whitewater experience and approximately 15 years of experience as a paramedic. In addition to being a paramedic, he is involved in teaching and training outdoor professionals in a variety of technical competencies and foci including: wilderness medicine, swift water rescue, whitewater kayaking. He is an American Canoe Association instructor trainer in whitewater kayaking and swift water rescue. Jason is a Wilderness Emergency Medical Technician and a Wilderness Medicine Institute Instructor. He holds Bachelor of Science degrees in Sociology and in Parks and Recreation Management and a Master of Science degree in Human Resource Development. Jason was 34 years old at the time of the accident and possessed the same technical trainings and certifications that he currently possesses.

In 2008, Jason and his friend Phil, who was 45 years old at the time, were kayaking a Class IV technical steep creek. The creek resided in a wilderness setting where access to EMS and outside rescue assistance was from limited to non-existent. Jason and Phil had paddled together extensively on difficult whitewater and were "very clear and competent in [their] boating skills, and very complimentary in [their] boating skills, very attentive to each other on rivers."

Jason and Phil encountered another boater in the parking lot who they had paddled with previously. She asked them if she could paddle with them that day. They indicated that they did not think it would be a good idea and communicated this to her. She insisted that she be able to join them and they acquiesced. Jason stated that he and Phil believed she possessed the technical skills to be on the creek, yet she did not have any rescue training and she was paddling a kayak that they felt was not appropriate for

the demands of the run and the water level that day. Jason comments, “We knew she didn’t have river rescue skills and felt that she was somewhat of a liability to us…we discouraged her to go paddling with us based on the water level and her boat type.”

All three boaters were able to scout each rapid as they hiked along the river towards the put in. At a non-descript rapid in the middle of the run, Sarah paddled over a drop and she was vertically pinned. The front of her kayak had become stuck in a hole or pocket of rocks with the stern of her kayak pointed skywards. The main risk of concern with a heads up vertical pin is that the kayak will fold under the pressure of the oncoming water, trapping the boater in the boat and potentially pushing her head underwater. Sarah was unsure of what to do and became highly distressed and called to Jason and Phil to rescue her. Jason and Phil positioned themselves on the bank of the creek such that they could communicate with her and encouraged her to attempt self-rescue. Sarah became frantic and insisted that they come out to her and get her out of her kayak. Jason communicated to Phil that he was going to attempt a contact rescue wherein a rope would be attached to his life jacket and he would swim out to Sarah while Phil held the other end of the rope. Jason remembers Phil’s response, “He was reluctant to get in the water to help her he was like ‘she caused this and now we are putting ourselves in jeopardy for her.’”

This decision by Jason caused some concern in Phil and they debated the merit of the decision for what was estimated to be 5 minutes. Jason commented that his prior training and sense of responsibility to the victim influenced his decision to take risks on his own part in an attempt to rescue Sarah. Phil did not have any formal training but had extensive experience on whitewater and in rescue. It appears Phil was less concerned

with the employment of skills and more concerned with his safety and Jason's safety. These discussions and decisions were identified by Jason as pivotal points in the experience and certainly present an interesting intersection between formal training and the "school of hard knocks" as Jason describes it. Moreover, Jason and Phil's struggles to make decisions and facilitate a rescue are informative in a number of ways, most notably the difficulty of negotiating decisions in this context.

Jason and Phil eventually utilized a contact rescue and were able to successfully get Sarah out of her boat and back to the shore safely. At this juncture, Sarah's boat was still pinned in the rocks and Sarah was directing Jason to retrieve her boat as well. Jason was ready to get back in the water on a contact rescue to get the boat, yet this time Phil was adamant that they were not going to risk personal injury in an attempt to retrieve equipment. Sarah was very stressed. Arguing ensued between Phil and Sarah about the decision to retrieve the kayak or not, and ended with Sarah's kayak being left in the water and her walking alone back to the parking lot. Jason purported, "she was a relatively competent boater but her decision-making process wasn't similar to ours, and I think that was partly because of some of my rescue training." Both parties agreed that they would never kayak together again.

Shane.

Shane is a 38-year-old male with 12 years of whitewater kayaking experience on Class III and IV rivers. He has four years experience as an American Canoe Association (ACA) Kayaking Instructor. Shane also received formal training and education in wilderness medicine and leadership through the National Outdoor Leadership School. He has river rescue training from the ACA. Shane's formal educational background includes

a Bachelor of Arts in History, a Master of Arts in Education, and a Ph.D. in Education. His professional experience is in college student affairs administration and he currently serves as the Dean of Students at a small, private, liberal arts university. At the time of the critical incident Shane was 33 years old and he had seven years of whitewater kayaking experience and ACA Instructor training in whitewater kayaking and rescue.

In 2003, Shane and his girlfriend, Amy, were paddling a section of the Free River. This particular section was large and wide and was rated Class II –III given the current water level. Amy was 35 years old at the time and was a newer paddler who was a competent Class II – III boater, based on Shane's assessment. The two had been paddling together for two years on whitewater that had a similar rating as the Free River. Shane remarked, "Amy is a Class II-III boater and so I didn't have many qualms putting her on the river that particular day."

The two paddlers had a successful run up to the second to last rapid. They had taken the time to get out of their boats and scout each rapid and talk through the risks, hazards, and necessary moves that needed to be executed. The rapid contained large waves and swift current that channelized and convened in the center of the river. There was a large undercut rock that extended into the middle of the rapid from the river left bank. Shane estimated the rapid to be roughly 100 yards in length and was rated Class III. The moves necessary for a successful run included catching an eddy on river left above the undercut rock and then ferrying upstream across the current towards river right, obtaining the middle of the rapid and then turning the boat downstream and avoiding the undercut rock. Shane reflected, "It escaped me how edgy that move was and how

dramatic, how crisp you really had paddle [out of] the eddy in order to avoid the undercut rock."

Shane had previously run this section of river, and this particular rapid, four to five times and remarked that he felt he had a thorough understanding of the river and his partner's abilities for them to successfully run the entire section of river. Shane had decided not to scout this rapid. He attributes this decision to the previous success the two had earlier that day, his familiarity with the rapid, the difficulty in scouting this particular rapid. Shane had described the rapid, moves and hazards to Amy as they approached Big Rapid while moving down the current in their boats. Shane caught the eddy on river left above the undercut rock, made his ferry to the center of the rapid, moved past the undercut rock and caught an eddy below the undercut rock on river left. He remarked that he had forgotten the level of difficulty that particular move involved and the boat control needed to be successful. When he looked back upstream, he saw that Amy was in the center of the current heading towards the undercut with the incorrect position to obtain the eddy above the undercut. Amy went straight into the undercut and disappeared and Shane lost sight of her from his current position in the river.

Shane then saw her boat float around the back of the undercut rock and she was not in it. He became distressed but soon saw Amy float around to the backside of the undercut. She was in the main current of the rapid floating downstream, but she was heads up, alert, and visibly distressed. Shane remarked, "clearly from her face I didn't need to be attending to a boat or a paddle… she needed me to say 'hey you are ok now'…it was pretty clear she had been through something traumatic." Shane noticed a raft that was in the immediate area and asked for assistance. The rafting crew was able to

pull Amy from the river and bring her to the riverbank where she was reunited with Shane. Shane was able to retrieve her kayak and paddle with assistance from the rafting crew. The two discussed the event and, with encouragement from Shane, they decided to run the last smaller rapid to the take-out. Amy was highly distressed but had not sustained any physical injuries.

Karen.

Karen is a 27-year-old female who has eight years of whitewater kayaking experience and five years of experience boating Class V whitewater. Karen has four years of experience teaching water pursuits including training raft guides and kayak instruction at a girl's camp. She has training and certification in Wilderness Advanced First Aid and CPR. Karen is currently pursuing an undergraduate degree in Environmental Engineering. At the time of the accident, Karen was 26 years old.

In 2012, Karen, her husband Buddy, and four other friends were kayaking a Class IV-V gorge. All of the paddlers had experience in the gorge and had paddled with each other before. The most significant rapid in the gorge was a technical Class V waterfall that required three key moves prior to the main drop in order to run it successfully. Three members of the group had opted not to run the drop and began to portage around the rapid. Buddy and another member of the group, Bill, had run the rapid without incident and were waiting at the base of the rapid, setting ropes and safety for Karen. Karen successfully executed the first two moves but missed the third move, causing her to go over the main drop, roughly 12-13 feet, backwards. While she was falling over the drop, her boat came over the top of her and she landed on her shoulder when she reached the bottom of the shallow flume.

She came out of her boat and grabbed hold of a rope that had been thrown to her by Buddy. She was in immense pain and knew that she had sustained a significant injury to her shoulder. Karen exclaimed, “I knew something was really wrong with my shoulder because I was just screaming in pain as I was holding onto the rope.”

Buddy and Bill began to assess her injury. She had not separated her shoulder, but it was cut, bruised, swollen and she had a very limited range of motion. The gorge that the group was paddling in was very steep and required a long hike and the use of both hands to climb over rocks. The group discussed options for evacuating the gorge. Karen remarked, “we started to discuss how I was going to get out of the gorge and my options were to paddle out with an injured arm or to hike out.” Karen did not want to hike out by herself and expressed this to the group. If someone was to help her climb out, that person would probably have to leave their boat and gear in the gorge and retrieve it the next day – which was not desirable.

Bill was very concerned about getting to the take out to meet his wife and the group’s shuttle car at the previously agreed upon time. He began to openly question the severity of Karen’s injury and prompted her to try to paddle to the take out under her own power. Karen was in a lot of pain and was very frustrated with Bill’s remarks and interactions with her. Karen “gave into the peer pressure” and said she would attempt to paddle out but that if she flipped on the remaining rapids, she had no ability to roll her kayak and self-rescue. The group decided to try paddling out with Karen. Karen was able to walk around several rapids and then used a rudder stroke to navigate the remaining rapids arriving at the takeout without further incident. Karen clarifies, “Bill pressured me into paddling out and I should have hiked out with somebody.”

Jane.

Jane is a 27-year-old female who has ten years of experience kayaking and rafting Class IV – V whitewater. She is certified as a Wilderness First Responder, Leave No Trace Master Educator, and an American Canoe Association whitewater kayak and canoe instructor. She has participated in Swift Water Rescue training with the ACA. She has four years of experience working as a commercial raft guide and has received subsequent white water rescue, wilderness medicine, and guide training through the outfitter she works for. She has six years of experience formally teaching water pursuits activities. Jane holds a Bachelor of Arts, majoring in an outdoor leadership based program. Jane was 21 years old at the time of the critical incident. She had three years of guiding experience and possessed all of the aforementioned certifications.

In 2007, Jane was working as a commercial raft guide. She was the trip leader that day and the river was running at a significantly higher level than normal. There were nine boats total in their trip. The water was very loud and turbulent at the put in and Jane and the guides were excited but highly alert and cautious. Jane recollects, “so that day the tension was high and I was in charge and I felt powerful.” Jane spent time assessing the participants and guides and organizing the paddling crews to insure that each boat would have the right crew and guide in place in order to be as safe as possible on the river. She also communicated in what order the boats would launch, including the lead and sweep boats.

The first major rapid on the run was a large hydraulic, or hole, that required each raft to be straight upon entry. The rafts would also need to generate sufficient speed to punch through the hole without being sucked back into the recirculating water. As a

precautionary measure, Jane's raft would catch an eddy on river left next to the hole and the second raft would catch an eddy on river right next to the hole as well. The positioning of these rafts would allow them access to a raft should they become stuck in the hole.

Several of the rafts were able to move through the hole without incident. However, one of the rafts had poor position and speed and was stopped by the hole. The jolting stop of the raft caused five of the passengers to be ejected into the river. Jane reported that she and the down stream rafts were able to count the number of swimmers in the river. Jane clarifies, "and that happened pretty fast…with just holding up fingers I knew how many guests had been caught at that point." They communicated using hand signals and discerned that all of the swimmers were accounted for and that all of them had flushed free of the hole. Of note, several rafting customers and private boaters have died in this particular hydraulic during high water releases before and since this incident.

The raft was recirculating up right in the hole and spinning back and forth in circles. It was evident that the guide would not be able to get the raft and the remaining two customers out of the hole. Jane quickly hopped out of her raft, which she had beached on a rock so that it would not drift downstream. She was able to make eye contact with the guide and they knew that she needed to throw a rope to him. She was positioned roughly fifteen feet from the raft that needed to be rescued. The communication was difficult given the roar of the river yet Jane commented that they knew what they needed to do.

She pulled her rope out and threw it to the guide. Unfortunately the rope had not been carefully packed into its bag and there was a tangle in the rope. The jerk of the

tangled rope caused it to be pulled out of her hand. The entire rope and bag fell into the river leaving her with no means to access the victims. Jane commented, “it was a tangled mess, and I wasn’t expecting the jerk of it being a tangled mess – I lost the rope.” The guide realized that he would need to then throw his rope to Jane in order to be rescued. He was able to spin his raft in the hole so that he was facing Jane. He then made a successful throw to Jane and she was able to pull his raft out of the hole.

Jane and the other rescue raft then proceeded down stream to a very large eddy, where the remaining rafts and rafters were located. Jane made sure that all of the guides and guests were present. Once she determined that everyone was present, she began to assess injuries. She noted that several swimmers had sustained bruises, cuts and scrapes although the injuries were minor. She then assessed the guests’ willingness to continue on the trip. She determined that the group wanted to proceed. Jane clarifies, “I went to their boat and had a discussion on how they feel and if they want to finish this trip and what that means.” Although the trip was now behind schedule to reach the take out at the prescribed time, which is an important part of her rafting company’s protocol, she made the decision to stop periodically during the remainder of the run to assess the guests and ascertain their emotional state and their willingness to continue.

Guy.

Guy is a 43 year-old male who has 21 years of whitewater paddling experience. Guy likes to refer to himself as a “recovering Class V boater” who mainly paddles Class IV these days and the occasional Class V run. Guy is currently certified as a Wilderness EMT, Level Four ACA Whitewater Kayaking Instructor and an ACA Level Five Swift Water Rescue Instructor. He also serves as a lead instructor for the National Outdoor

Leadership School Wilderness Medicine Institute. Guy has been teaching whitewater kayaking since 1999, including roles as an instructor trainer and head instructor at a nationally recognized padding school. He has led numerous international paddling expeditions for approximately ten years. Guy holds a Bachelor's Degree in Music and currently serves as a senior instructor for an outdoor skills company and a paddling school and teaches whitewater kayaking and rescue, wilderness medicine, and Leave No Trace ethics. At the time of the accident Guy had been paddling aggressively for three years averaging 150+ days a year and had been running technical Class V runs for around one and half years.

In the summer of 2000, Guy and six other paddlers were kayaking a technical, Class IV – V gorge. The group had a wide range of whitewater experience. Members of this group had anywhere from "2-150" descents of the gorge. However, there was one individual in the group who was attempting the gorge for the first time. Guy had been paddling with the new paddler, James, pretty extensively the year before and it appeared he was ready to attempt the gorge. The other paddlers in the group had paddled with James as well. Considering the favorable weather, water level, and the crew of experienced boaters in the group, it appeared it would be a good day on the river.

James flipped several times in some awkward, non-significant sections of the gorge, which caught some of the groups' attention. However, he rolled up immediately and one of the members called out, "when somebody [messes up] and they recover quick, he's gonna be great, you know?" James then ran a significant rapid with success. James was in the zone and having a great run. Guy mentioned that perhaps at this point he and

the other members felt that James would be absolutely fine for the remainder of the run and maybe the group lost a certain level of focus on James.

James was one of the last paddlers to attempt the next significant rapid – with the majority of the group waiting in the eddy below the rapid for James and another member of the group to come down. The successful line was to run to the right side of the drop and then cut back left, landing in the eddy where Guy and some of the other paddlers were located. As James began to paddle aggressively out of the eddy and into the rapid, it was apparent that he had a poor line. Guy reflects, "he was approaching it from the completely wrong angle…which is a terrible place to be." He was paddling towards the left side of the drop, with the incorrect angle. James came over the drop and disappeared in the water and never resurfaced. The group did see the top of James' hand just below the surface of the water and at that point they knew that he was vertically pinned under the water in his kayak.

Several members, including Guy, paddled out to where James was and began many unsuccessful attempts to make physical contact with him. Guy then got out of his Kayak and began to swim into the area where James was pinned and submerged. Guy recollects, "I swam out of my boat, trying to swim into the rapid to reach him and got washed out…before I heard Brad on river left yelling at me to get out of the river." Brad, one of the group's most experienced members, saw what was happening and told Guy and the others to cease what they were doing. Guy realized that they were just upstream from the most dangerous and technical rapid in the gorge and that they could have easily been swept downstream into the rapid.

The group then positioned themselves on river right and secured a rope around one of the members. No one in the group had a rescue vest or formal rescue training, which greatly limited their ability to set up a contact rescue. This rescuer swam out to James and was able to make contact with him but was unable to sustain his contact with James. After several more attempts the group decided to try to get a stabilization rope across the river to see if they could elevate James' head above the water. The group was able to set the stabilization line across the river, but had sincere difficulty sinking the line below the surface where they could snag James with it and attempt to pull his body upstream so that his head would surface. The group tried attaching their water bottles to the stabilization line and filling the bottles with rocks so that they could sink the line. Guy exclaimed, "I felt like I was playing a video game of snag the body, you know? And I think that was my distraction…from knowing we were dealing with a death." Alas, the rescue attempts proved unsuccessful.

Guy commented that it was very difficult to comprehend time and ascertain the time frame of events. Nonetheless, he said it was at this point in the experience that he and the group realized they were dealing with body recovery efforts as opposed to rescue efforts. The group continued to make decisions and stayed active in their efforts although more conservatively. The group was exhausted, but staying active in recovery efforts was comforting and helped them maintain hope and feel empowered.

One member of the group had paddled to the take out by himself to seek help. By the time he returned with authorities and a rescue squad, the release of water had been turned off and the river was dropping. James's body was more visible. There was some significant tension between the authorities and Guy's group about how the recovery

would proceed. Several other kayakers not associated with Guy's group were able to talk to the authorities and suggest that they may be able to work more effectively together and that the boaters had an intimate familiarity with the current situation. Guy remarked, "the rescue squad commander was belligerent initially…he was in an uncomfortable and unfamiliar environment." Finally the two groups began to coordinate. A boater who was not part of Guy's group was able to swim out to James, now that the water was quickly residing, and create a mechanical advantage system tied to James' boat. They were then able to pull the boat out of the crack and recover James' body. James had broken both of his femurs when his kayaked had pinned and he drowned.

Wyatt.

Wyatt is a 38-year-old male who had five years of experience paddling Class IV – V whitewater at the time of the accident in 2001. He has only paddled 10 times since the accident, mainly on Class III-IV water. Wyatt holds the following trainings and certifications: ACA Swift Water Rescue (SWR), Wilderness Emergency Medical Technician (WEMT), Wilderness First Responder, ACA Kayaking Instructor, and a semester experience with the National Outdoor Leadership School. At the time of the accident, Wyatt had SWR training and his WEMT certification had expired the year before in 2000. Wyatt earned a Bachelor of Science in Psychology in 1988 and a Master's of Physical Therapy in 2007. He currently works as a physical therapist.

In the winter of 2001, Wyatt and his two friends Cal and Thurmond were paddling a Class IV – V section of river that is a very continuous, technical run and is more similar to a creek run, including lots of jagged rocks and hydraulics. The setting is fairly remote in it's character and feel although one can access a major road through a

hike out of the gorge. Wyatt had paddled this section three to four times at similar water levels and felt very comfortable with the lines suggesting, “I had been on it two or three times…I didn’t know everything but I knew the lines that I knew.” Cal and Thurmond were both accomplished Class IV – V boaters. The three had experience paddling together on different rivers and were familiar with each other’s abilities. Cal had been on this specific run one or two times, and one of these times he was with Wyatt. This would be Thurmond’s first time on this run.

Wyatt remarked that he was the “weakest link” of the three in terms of paddling skills so seeing that he had the skills to make the run, he had no concern with Cal and Thurmond’s abilities that day. Wyatt felt very comfortable on the run and was confident leading the crew. The three paddlers had the necessary equipment for the colder temperatures, and had started early enough where they felt there would not be any time related issues. Wyatt suggested, “we were not stressed to hurry, we weren’t thinking it was going to get dark…we were probably on [the river] like ten or eleven.” They were prepared, not in a hurry, and feeling confident. There was a normal release that day and Cal and Wyatt were familiar with the lines.

Wyatt reported that the three paddlers were having a great run, making continuous moves, having fun and on point. They approached a horizon line that signified the beginning of another rapid. A large pillar shaped rock framed the right side of the horizon line. The water fell two to three feet over the horizon line and formed a powerful hydraulic. Downstream from the hydraulic, the water became very fast and turbulent as it continued onward. The water above the horizon line was very calm and slow moving and the river was wide at this point.

The three boaters moved into a large eddy on river left above the horizon line and prepared to run the rapid. They discussed the correct line, which was straightforward – move to the left or right of the pillar rock, boof the drop, and land in the calm pool of water behind the hole. Thurmond decided to run it first and as he exited the eddy into the slow moving, calm water above the drop, he unexpectedly flipped upside down. He attempted to roll his kayak two times but was unsuccessful. Wyatt and Cal were surprised that Thurmond would flip in such a calm stretch of water and were further surprised that he was unable to roll his kayak. Wyatt likened the water above the drop to a swimming pool.

Thurmond went over the drop upside down. Wyatt recalls, "Cal and I just looked at each other and panicked and started to paddle towards where we needed to be to at least see what [had happened]." Wyatt saw Thurmond out of his boat, being re-circulated in the hole. He remarked that it was obvious Thurmond was unconscious. His body was limp and there was no sign of struggle or attempt to self-rescue. He remarked Thurmond's skin was "ghost white." Wyatt realized that he needed to boof the hole, land to the right of Thurmond, get in the eddy on river right, get out of his boat and climb on top of the pillar rock on the right side of the rapid so that he would have the best access to Thurmond. Wyatt had difficulty remembering whether Cal ended up on river right with him or on river left.

Wyatt obtained the pillar rock and threw a rope to Thurmond, commenting, "it felt like an eternity to get to him but it was probably like two minutes." He remarked that he knew it would not work, as Thurmond was unconscious, yet tried it anyway in case there was a remote chance that he was conscious and could grab the rope. At this

juncture, the boaters decided that they needed to swim out to Thurmond. They could see that the hydraulic was much more powerful than they had initially thought it to be. The rescuer would need to be tethered on a rope to proceed safely. Wyatt had a rescue vest, but Cal did not. They attached a carabiner to the rope and attached the rope to Wyatt's rescue vest. As this was happening, Thurmond's boat flushed free of the hydraulic and began moving downstream, and a moment later Thurmond's body did the same.

Before Wyatt and Cal could develop a plan or react to the situation, a kayaker from another group ran up to the edge of the river, jumped in and grabbed Thurmond's body as it moved into the fast, turbulent water below the hole. Jay was able to swim Thurmond's body over to the river right bank and pull him out of the water. Wyatt and Cal ran downstream towards Jay. Wyatt pointed out, "Jay pretty much took control of the scene…I learned right then that he was CPR trained and also SWR trained if not maybe even a SWR instructor." Jay began CPR. Cal was highly distressed as Thurmond was his best friend. He was unable to offer much assistance. Wyatt decided to run for help.

He scrambled up a scree field to access a major road above the river. He was running around frantically trying to waive a car down. A tractor-trailer driver pulled over and told him to get in. Wyatt got in the truck and the driver began to move down the road to avoid being hit from behind. The driver was able to use his cb radio to alert authorities. Moments later, Wyatt saw a state trooper and an ambulance driving on the other side of the road towards the river.

Wyatt was able to get into another tractor-trailer on the other side of the road, heading back towards the accident site. An estimated 20 – 30 minutes later, he arrived at the point above the river and climbed back down to the accident site. EMS was still

attempting CPR. Shortly thereafter the group transported to the nearest hospital where Wyatt said a pastor was waiting for them. Thurmond had been pronounced dead due to drowning. Wyatt remembers having to make the phone call to Thurmond's wife and the look on her face when she arrived at the hospital. Wyatt recollects, "I probably replayed that day in my head hundreds of times and there was never anything that was like 'oh if we would have done this…it would have been different.'"

Russell.

Russell is a 42-year-old male with 20 years of experience kayaking Class V+ whitewater. He does not possess any current certifications, but at the time of the accident he was an EMT, WEMT and an ACA Kayaking Instructor. He has 25 years of teaching whitewater kayaking. He earned a Bachelor of Science in Kinesiology and Outdoor Education in 1995. In this academic program he received formal outdoor skills training and education including the EMT and WEMT certifications. Currently, Russell is an electrician and a building superintendent for a paddle sports company. The accident occurred in 1999. Russell was 27 years old at the time with five years of experience kayaking Class V whitewater.

In the summer of 1999, Russell and two friends, Jackson and Kelley, were kayaking a technical, Class V+, wilderness gorge that had only been run a handful of times. This would best be considered expedition style kayaking. The three paddlers had extensive experience boating together and kayaking very difficult whitewater. The rapids were very complex and dangerous and resided in a steep wilderness gorge that was impossible to climb out of in many different sections. In areas where one could evacuate,

it would require extensive climbing of steep, moss covered rocks, and involve considerable energy and time.

The paddlers were having a successful run and enjoying the splendid scenery, camaraderie, and whitewater. They approached one of the largest rapids, a 30-foot water fall. According to Russell, this waterfall had only been run a total of three times ever. It was about 8-10 feet wide at the top and was not clean – meaning there were numerous shallow and protruding rocks in the veil of the waterfall and at the base, which required the kayaker to have her or his boat in precise position or expose her or himself to serious injury or death. Russell, Jackson, and Kelley got out of their boats and walked to the edge of the drop to assess the possible lines and determine each boaters' interest, willingness and readiness to run the rapid. Russell commented, "I'm not saying you have to lift 300 pounds to go on this river trip, I'm saying you need to have the mental fortitude...and put your soul into it because that's what it takes." After scouting the waterfall and possible lines, Russell and Kelley decided not to run the waterfall, but Jackson wanted to try.

Russell positioned himself on a large, tall rock below the waterfall on river right. He set safety and also held a video camera to record footage of the run. He was able to see Jackson in the eddy above the drop. Kelley set safety further downstream of Russell on river right. Jackson approached the drop and moved left a little too early in Russell's estimation. Jackson's kayak back loaded, which is to say that the stern of the boat sunk lower in the water, thus raising the bow slightly out of the water, and limiting the steering ability of the kayaker. As the boat came over the drop it caught a rock shelf causing the boat to kick out into the air at a 45-degree angle clear of the waterfall. This was problematic as Russell noted, "When you run waterfalls, you generally want to stay with

the water because that's where the cushion is." Jackson was able to land in the green water and avoid any rocks, yet his boat landed flat on the water.

Russell was excited for Jackson, but noticed that Jackson had paddled into an eddy, rolled over on his side, and moved out of his boat. Russell called out to Jackson and realized, "I'm communicating with him and he is not able to communicate effectively with me." Russell knew at that point that Jackson was hurt. He quickly assessed what was the quickest and safest route to get to Jackson, who was roughly 40 feet away on the other side of the river. He decided that he would jump 10 feet off of the rock he was on and swim across. He was considering his own risk in doing this. If he were to become injured as well, it would have made the situation direr than it already was.

Russell made it to Jackson first as Kelley was still trying to get across the river. Jackson was conscious and alert but in considerable pain. He complained of back spasms. Jackson was still partly lying in the water at this point. Russell kept him in his current position and employed his WEMT skills and began a thorough patient assessment exam that included a mechanism for spinal injury. Jackson was a Nurse and so he and Russell were able to communicate in clearly understood terms regarding the medical nature of the exam and the implications of the injury. Russell elaborates, "he had just finished his nursing degree and was also an EMT, so we are talking about somebody who had very similar medical qualities to me, and we could communicate." It was evident that Jackson had potentially broken his back. The exam revealed some information that suggested that perhaps he had not broken his back including no point tenderness. However, this was not enough to rule out the possibility of a broken back and the EMT protocol dictates that such a patient should not be moved at all.

Russell noted that his options at that point were to remain where they were and send for help or for the three of them to attempt to evacuate the gorge. Russell reflects, "if he stays in this position he's going to go into shock because we wont be able to keep him warm." However, his training informed him that he was not to move Jackson. He communicated this to Jackson and Jackson told him, "get me the fuck out of here now." Both Russell and Jackson understood the potential dangers of attempting to evacuate at that point. Russell and Kelley were able to stand Jackson up, positioning themselves under each of his shoulders. He was able to stand under his own power, but not move. He still had considerable cramping but experienced some relief from being supported in a standing position.

The three kayakers now had to crawl up the steep moss covered rocks for several hundred yards to get to a more level location. Russell and Kelley changed positions, pulling Jackson onward by his belt and clothing, or with his arms around their shoulders. After they made some headway, Jackson remarked that he could not go any further. Russell sent Kelley onward to get help and remained with Jackson to comfort him. Kelley was able to find a house on the rim of the gorge and borrowed a gentlemen's phone to call 911. The EMS was able to drive up a four-wheel drive road and get the ambulance within a quarter mile of Russell and Jackson.

When the paramedics arrived, Russell remembered, "they were awesome….but they are not in the greatest shape and they're carrying big boxes that aren't meant to be carried in the woods." The paramedics told Russell that they would take over the evacuation and transport Jackson to the ambulance. Russell insisted that he and Kelley help. They remarked that they were not allowed to receive external assistance in

evacuation. Russell was aware that the paramedic team did not have the physical abilities to carry Jackson back to the ambulance. The paramedics eventually accepted help and they were able to evacuate Jackson to the Hospital. He was diagnosed with a 60% L4 compression fracture and had indeed broken his back. Russell experienced sincere stress that perhaps his decision to move Jackson could result in a loss of mobility and quality of life for Jackson. Fortunately, Jackson was able to recover fully from his injury. Russell continues to reflect on his decisions to this day and wrestles with not following his training even though it appears it was the better decision.

Susan.

Susan is a 41-year-old female who has over 20 years of experience paddling Class IV+ whitewater as a solo recreationist and as an instructor. She was 30 years old at the time of the accident, which occurred in 2002. She currently holds certifications in WEMT-B, EMT-1, ACA Whitewater Kayaking Instructor Trainer Educator, ACA Swift Water Rescue Instructor, and SOLO Wilderness Medicine Instructor. Susan is a master instructor at a nationally recognized paddle sports outfitter. She teaches approximately 150 days a year. At the time of the accident she had seven years of instruction and experience paddling Class V+ whitewater, and held certifications as a WEMT, ACA Whitewater Kayak Instructor and Swift Water Rescue Instructor.

In 2002, Susan was leading a whitewater kayaking expedition in Brazil. There were seven guests with the group and one co-instructor. The run included continuous Class III whitewater on a river that Susan and her co-instructor had paddled one time previously. Susan posits, “depending on your memory, you have to run [a river] I would say at least 20 times [to know it].” Susan remarked that one of the distinct challenges

with adventure travel and kayaking was the limited experience the instructors had with the rivers they were paddling. In addition, the streambed and hydrodynamics relative to the rivers in Brazil make them susceptible to flooding and thus a shifting of the features and structure of the rapids. Hence, the rivers seemed to be a little different every season that they paddled them. Also interesting was Susan's comments that suggested the company she worked for had very stringent management practices and protocols for rivers that they paddled in the United States. However, they seemed to be paddling harder, more technical whitewater abroad that they most likely would not have attempted to paddle domestically. She mentions, "it's almost like we push the limits more when we are out of the country."

During their run, Susan was positioned in front of the group with the seven guests following her single file and her co-instructor was in the rear as the sweep boater. Susan paddled by a large hole and realized that it was going to be an issue for her group, as it appeared to be a steep and retentive hole that could stop a kayaker and recirculate her or him in its currents. As Susan looked back she noticed that two of the seven guests had become stuck in the hole yet several others were able to avoid the hole or had fortunately flushed out of it. Susan knew that the hole might also present a problem for her co-instructor. She realized she had two options for rescue- a boat-based rescue or a land-based rescue. Her concern with a boat-based rescue is that she too might become stuck in the hole if she attempted to paddle into it to rescue the victims. She knew she could stay in her boat down stream of the hole to assist paddlers who swam out of the hole. She commented, "Without even thinking much about it I had already started to eddy out on the right and grabbed my rope."

Susan was concerned with time and that she had lost sight of the victims as she was paddling her boat to shore. As she ran up the bank to the hole, she positioned herself on a rock and was prepared to throw her rope to the victims. At that moment she saw one of the victims swim free of the hole, and another guest was able to paddle though the hole. She was relieved as the water in the hole was so aerated that it was not only difficult for her to see the victims, beyond the top of their helmet, but it was also very difficult for the victims to get to the surface of the water to breathe.

Her co-instructor had slowed his pace as he had noticed the problems that were occurring in front of him. By the time he entered the hole he had little forward momentum and the hydraulic stopped his boat cold. Fortunately, the other boaters were able to move downstream, so the co-instructor was the only person in the hole at that point. He tried to paddle his boat out but the backwash was too powerful and the hole was too steep. He had no other option but to exit his kayak and attempt to swim out of the hole. He was pulled under the water several times and getting re-circulated. It was difficult for Susan to make contact with him, yet as his head surfaced at one point she was able to make verbal contact with him and throw him a rope. Susan was able to rescue him from the hole and he had not sustained any injuries of mention. Susan remarked that her co-instructor "had a sense before we got to this point that I was on the river right side" and positioned himself as best he could to receive a rescue from that side – and Susan was there. She attributed past experience and training as sources of information that informed her split second, instinctual decisions and what she termed as "pre-rescue decisions."

Larry.

Larry is a 26-year-old male who has 18 years of whitewater kayaking experience. At the time of the critical incident he was 24-years-old with roughly 16 years of experience in whitewater paddling with the preceding two years spent paddling at a Class V level. Larry currently possesses training in ACA Swift Water Rescue and holds an active certification as a Wilderness First Responder. He did not have these trainings or certifications at the time of the critical incident. Larry earned a Bachelor's Degree in Outdoor Leadership in 2012. He is a mountain biking instructor and is currently training to be a fire fighter and a paramedic.

In the summer of 2012 after a heavy period of rainfall, Larry received a phone call from his friend Alan asking him if he wanted to kayak a Class V+ creek. Larry had been paddling progressively harder and harder whitewater and felt that he was ready to try such a run. He did comment that although he was aware the run would be difficult, he did not take the time to gather information about the run beyond what Alan was telling him. Alan had previous experience with the run and told Larry that it would be very challenging. Larry reported that he began to feel nervous and was not sure that it was a good idea. Alas, he decided to press on.

Larry and Alan were aware that there were five other kayakers who would be attempting the run that day. The two groups were corresponding with each other via phone and text messages regarding the directions to the put in. Larry did not know any members from the other group. Alan knew some of the members, but on a casual basis. The directions led Larry and Alan astray, as they were not very detailed. Larry's concern and anxiety about attempting the run intensified. Eventually they found the area where

the put in was located. They had to hike deep into a gorge and at some points they were rock climbing to get to where they needed to be. Along the way they passed what was estimated to be a 100-foot water fall and another drop of 30 feet. The water was very high and Larry knew this would be the most difficult run he had attempted to date.

Larry and Alan eventually located the other paddlers. Larry remarked that the five other boaters were highly skilled and had considerable experience with this run. Several of them were professional, sponsored paddlers. The group geared up and launched into the creek. As the group approached one of the first rapids it was evident that they would not be able to run it at the current level and they needed to portage the rapid. Because of the steepness of the gorge, they were unable to walk around the rapid from where they stood. Larry mentioned that the paddlers with the most experience were commenting how high the creek was and it caused him concern as it was evident that the boaters who were supposed to be leading the group that day were being confronted with essentially a different and more challenging creek than they had anticipated. Larry exclaimed, “that was a big red flag, everybody’s attitude and emotions, you know there’s that thing in the air, the air was like, you know, scary.”

The group knew they had to portage the rapid yet, due to the steepness of the gorge, the only way around the rapid was to swim around the side of it. This was a very precarious situation to be in because there were siphons on either side of the bottom portion of the rapid in addition to a very large hydraulic positioned in the center. The group decided that they would employ a live bait swimmer which means that the swimmer would have a rope attached to his pfd and be held on belay by another paddler who would be standing on the shore. If the swimmer was in trouble, the belayer could

potentially pull him from the water. The swimmer was able to swim through the top part of the rapid and then attain an eddy below the group. The swimmer was able to tie the rope to a rock in the eddy. The group was then able to get into the water holding their boats and swim, while using the hand line, into the eddy below. The group was able to successfully portage the rapid.

Continuing downstream, Larry realized that his boat had cracked from hitting the rocks and he was now taking on water. He pulled over to empty the water out of his boat while another member of the group attempted the next waterfall. The paddler had a poor line and ended up stuck in a siphon at the bottom of the drop. His friend was highly distressed and began moving down to find his friend. Luckily, his friend was able to exit his kayak and swim out the other side of the siphon. In the process he lost his boat and his paddle and had dislocated his shoulder. As members of the group attended to his injury, yet another paddler had dislocated his shoulder. The group was eventually able to reduce both shoulder dislocations. Unable to continue the run, the injured paddlers began to hike out. At this point Larry estimated the time to be around 8:00 pm and the light was fading fast.

The paddlers continued quickly downstream and during the last Class V rapid, Larry ended up sideways in a hydraulic and was stuck. He tried to paddle free but eventually lost energy and had to swim free from his boat. He then proceeded to flush through the next rapid and ingested water and hit many rocks. Eventually he was able to swim to the side with his boat, yet he had lost his paddle. One of the individuals who was hiking out found Larry's paddle and brought it back to him. As Larry recollected himself and his gear, he and Alan began to discuss what their plan was to get off the river. It was

so dark at this point that they were not sure if they could make it. As they discussed their plans, the other paddlers assumed that Larry and Alan had continued downstream and they left without them. Despite limited visibility, the two paddlers knew that there were just few rapids remaining and that they were not of significant difficulty.

As they continued downstream, yelling back and forth to each other in order to stay in communication, it was not long before Larry ended up in another precarious situation. He swam out of his kayak and was able to get to the bank with his boat and paddle and at that juncture the two paddlers decided they would hike the rest of the way. They heard some yelling coming from downstream which turned out to be the other members of the group who were looking for Larry and Alan. They were relieved to find them as they had discovered a creek wide strainer downstream and were not sure if Larry and Alan had become entrapped in the hazard as they had lost contact with them altogether. The entire group was close enough to the take out at that point that they were able to walk back to their cars. They were thankful to be off of the creek.

In reflecting with Alan on the drive home Larry realized that the largest challenge of the day outside of the context of the physical setting, was the poor communication and group dynamics between Larry and Alan and the remainder of the group. He felt considerable anxiety in trying to keep up with the other paddlers, as they were the only ones who really had any familiarity with the run. His anxiety was further heightened by when he witnessed the struggles of the more experienced paddlers. Larry recollects, “I consider whitewater paddling a dance and when it becomes a fight then that’s when it’s bad to me and it was total struggle that day.”

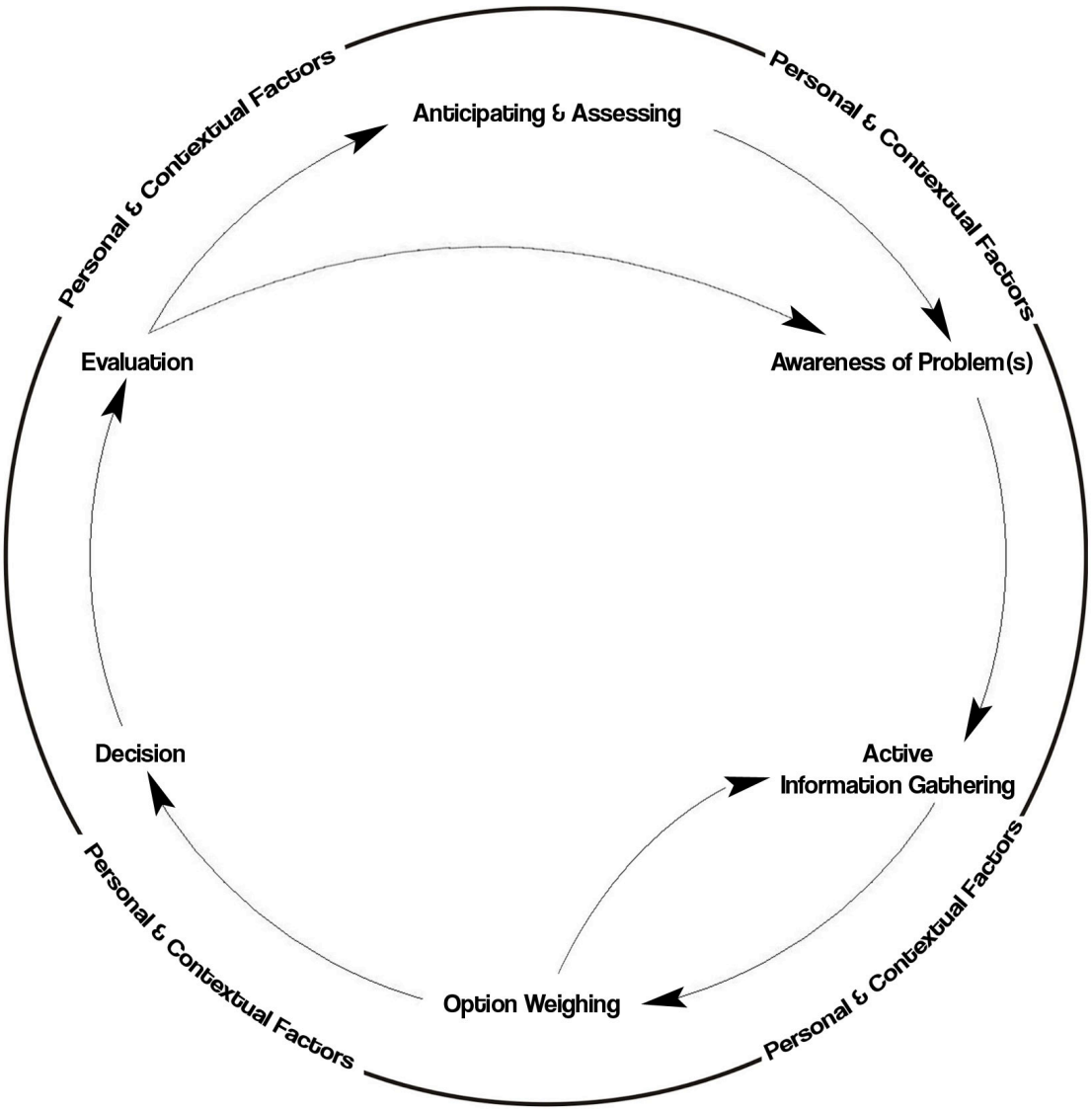

Figure 2: Whitewater Critical Incident and Accident Decision-Making Model

Overview of Process Categories

The purpose of this study was to understand the decision-making process of individuals involved in a whitewater critical incident or accident. Utilizing constructivist grounded theory analysis, a decision-making model emerged, and was generated from deep discussion regarding the critical incidents and accidents of investigation. The decision-making process of individuals involved in a whitewater critical incident or accident is succinctly expressed in six steps. The process is not linear but rather a cyclical process. These six steps are referred to collectively as the *process categories* that were yielded from the data. The six steps are: anticipating and assessing; awareness of the problem(s); active information gathering; option weighing; decision; evaluation.

Analysis revealed that participants were, first and foremost, in a state of anticipation and assessment in regards to the physical and social environment. They were assessing the water levels, personal and group abilities, equipment, past experiences and a number of other sources of information. Failing to anticipate problems and assess situational variables were contributing factors in past incidents or accidents that participants were involved in. In some instances, participants reported not anticipating or assessing enough in the scenarios that they shared in this study and attributed this as a contributing factor in the incident or accident of concern**.** Guy recollects, "If I had to do it over again, I would recognize that I did not ever paddle with him on anything that I could have appropriately evaluated his skills to be on a river like the James River."

Later in the process, participants became aware of a problem or multiple problems that were either anticipated or not. There may be other problems that became apparent, or more pressing during the scenario, however, this stage represents awareness of a problem

that is distinct in its recognition. Participants then began to actively gather information to determine the validity or severity of the problem(s) that they became aware of. Options are then considered as information comes to light. It may be that the participants struggled to define options and had to gather more information in order to generate new options. In some instances only one option was entertained and was employed as a decision in due course. After a decision was made the participants generally received immediate feedback that their decision was successful or not, or not successful enough. In some cases the feedback from the decision was vague which many times deemed the decision to be unsuccessful. If the decision achieved a positive result, the participants either moved back into an anticipation and assessment phase looking for future problems, or they became aware that problems still existed. The existence of continued problems could be related to the ineffectiveness of their decision and thus they began to actively gather more information, weigh options, make new decisions, evaluate them and so on.

It is important to note that although the process is sequential and delineated in study, the actual practice can appear as a fluid reaction. Sometimes the process took place in a fraction of a second and other times, as in the case of body recoveries and complex rescues, repeated over the course of several hours. Nonetheless, in probing and encouraging participants to recollect and consider their decision-making in whitewater critical incidents and accidents, it became apparent through analysis that participants were indicating these core themes and process.

The decision-making process in this context appears rather straightforward with little nuance. The first of the three research questions of this study addresses the process by which individuals make decisions in whitewater critical incidents or accidents. The

second and third research questions deal with descriptions and informants of the actual process. You can see that "Personal and Contextual Factors" inform and influence the decision-making process in the model. These factors represent elements that informed the process and the backstory of living through and experiencing the process. Each of the nine incidents and accidents were unique in many aspects but also shared thematic elements that earned their way into the theory of decision-making. The personal and contextual factors illuminate the process and provide depth and introspection to the process. Thus, the process categories represent just that – the process of decision-making, while the personal and contextual categories represent the lived experience, the soul of the process as it may be.

Anticipating and Assessing.

The first stage of the whitewater critical incident and accident decision-making model suggests that participants in the study entered into a phase or practice of anticipating and assessing. Participants appeared to be actively anticipating and assessing prior to running a river or a creek and during the actual run. Participants drew on multiple sources of information to assimilate predictions about the possible success they would have on the river that day. It is important to note that all participants in the study had considerable whitewater experience and seven of the nine incidents or accidents occurred on Class V sections of rivers or creeks. The other two incidents occurred on large Class III – IV rivers. Many of these participants entered into a stage of heightened awareness as they began to assess the risk variables for the run that they were going to attempt. As an example, Jane discusses her heightened awareness and desire to follow rafting safety

protocols, as she was about to launch on a river that was running considerably higher than normal:

> Yeah, I was definitely thinking about our policies and thinking this is real because, you know, when you amp up the volume of the water, and you amp up everybody's tension, it's easier to follow the rules sometimes. I wanted to dot my I's and cross my T's.

Many participants discussed a "sizing up" of other paddlers in the parking lots and at the put-ins for whitewater runs. Jason comments on Phil's assessment of unprepared outside paddlers joining his group:

> And so Phil's response is to lecture people in the parking lot…and [tell] them they can't go paddling with us because they don't have the right gear or the right experience or boat. I agree with that, really, now I'm very choosey with who I boat with.

Participants were gauging the mood of the river, the group dynamics, the level of training and experience that fellow members possessed, in addition to the boats they were using and the equipment they carried with them on the river. Jason explains such assessments of a fellow paddler before a Class IV-V creek run:

> We were reluctant to have this person paddle with us. She insisted, and we thought the boat she was paddling was inappropriate for the upper section of the creek. We at the same time felt that she had the boating skills to be there but had an inappropriate boat. We knew she didn't have river rescue skills and felt that she was somewhat of a liability to us, but in paddling with her in the past she was somewhat of a liability to us as well.

Jason refers to previous experience with the paddler in question and that her presence had been problematic on previous runs. Unfortunately for Jason and his friend, allowing this person to join them, despite the anticipation of problems, did turn out to be problematic. Participants in this study expressed they had groups they normally paddled with and some of the accidents, such as this one, were potentially in part due to outside paddlers joining the group. Perhaps it is experiences such as Jason's that cause paddlers to be guarded about outside members joining their group – they have not had the history to assess this person's affect on the group and their personal abilities.

The setting, particularly the wilderness setting, was something that participants considered before attempting a challenging run as well. Russell comments:

> The other thing to think about is we're in this great, crazy deep gorge. And yeah it's only a mile to John's house and it's not far to the railroad grade but you're in this gorge and if you have ever tried to go up and down some of the stuff around here, it's very steep. I mean you can't just walk; it's four-wheel drive you know? You're using your hands and feet to get up some of this stuff because there are no trails. So that's another thing you think about before you go run rapids like this. Like, do I need to run this rapid, here, now, today?

Participants' anticipation and assessment of risk appeared to increase with the remoteness of the setting and henceforth their awareness of their vulnerabilities made the cohesiveness of the group they were with all the more valuable. It is interesting to note that in many cases the participants' anticipation and awareness were sharpened through reflection. Reflecting on levels of actual awareness and anticipation may be aided through time and consideration, while in the moment one's alert response may not be as

sharp as Guy indicates, “with hindsight and really solid introspection, I think he was not ready to be paddling this, but you know, at the time it seemed he was.”

Anticipation and assessing, and all of the phases associated with the model, were alive and active throughout the scenarios that I researched. It is tempting to let my focus rest on the most graphic and compelling parts of the critical incidents and accidents, although the decisions in that moment do not occur in a vacuum. These extraordinary adventurers are anticipating and assessing well before they get to the river. Many are anticipating good times as well! Some of the incidents or accidents could be attributed to certain decisions that were made prior to the event as Larry suggests, “I knew when we got a late start on a high water day, and when the directions to the put in were sketchy, it just may not be a good day.” Nonetheless, in high adventure pursuits such as whitewater boating, there are inherent risks involved in the activities. One could look at all of these scenarios and causally observe that the best decision would have been to stay home. The intent of the study is not to critique or judge the participants decision-making skills, but to understand how the individuals describe and make decisions and what informs that process.

Awareness of Problem(s).

Anticipating and assessing risk variables can assist a paddler in becoming more aware of potential problems and making decisions to mitigate risk propensity. At this stage in the model the participant understands that the anticipated or unanticipated risks have now been realized. The awareness of a problem or problems in this instance is distinct. Guy comments, “I remember my first reaction was I just laughed, almost in disbelief. And then said, where’s James, where is he? And he never came back up.”

Although the component parts of the model may be evolutionary in nature and build to either an epic moment, or quickly satisfy a complete cycle, the focus at this juncture is when these participants must contend with time sensitive, critical decisions, that have consequences. Awareness of the problem(s) at this moment is a *felt* recognition on the part of the participant that they are in fact in a critical situation. Wyatt recollects: "And then it went from watching Thurmond trying to roll up and missing it twice to like 'oh shit, he's going to go over this [drop] upside down.'"

Sometimes the awareness of the problem(s) is immediate as in Guy's case. Guy was assessing and anticipating throughout the day, but James vertically pinning his kayak was perhaps only anticipated immediately before it happened. Sometimes participants had to spend more time assessing the situation before the actual awareness of the problem(s) became apparent, as Russell suggests:

> And I was like fired up you know, and he didn't have a response. And this is the Wildman; you know he's like really excitable. So he pulls into the eddy and rolls on his side. And I was like 'oh'. And I'm 40 feet away from him maybe. And you know we do a bit of signing to each other because you can't always hear each other. But I'm communicating with him and he is not able to communicate with me effectively.

In another instance some participants suggest the relationship and the transition between anticipating and assessing and the awareness of the problem(s) is fluid and instantaneous as Susan indicates:

> I go by this pretty significant hole and I realize that it's going to be an issue, because I realize where the team is in back of me and again what happens is two

> of the members get caught in this hole and it's a pretty straight hole. It's one of those holes where you can get pretty stuck in there.

Susan is discussing her ability to recognize a hazard and anticipate the potential problems for the paddlers in her group, who are less experienced than she is. She is assessing the hydraulic and the risk that it may present to her group. She paddles around the hydraulic. Looking back upstream, she is immediately aware that her assessment was correct, and she is now aware that two of the group members are now trapped.

Active Information Gathering.

After becoming aware of the problem(s), many of the participants indicated that they needed to gather more information to determine the severity and implications of the problem(s). It may not be immediately apparent what the participant may need to do, what decisions and actions they need to take in that moment, so they begin to actively gather more information to confirm their reality, and to develop options. Wyatt discusses the need for him and his partner to gather more information in regards to the accident he was involved with:

> So Cal and I looked at each other and panicked and started to paddle where we needed to be to at least see what was going to happen, and we go to where we could see the whole rapid. And then you could see how powerful it was. But I think I could get close enough to it, to look over, and I could see Thurmond out of his boat and I could see the boat and I could tell that Thurmond was unconscious, like right away.

This information gathering stage appears to be ongoing throughout the entire course of these scenarios. It would appear intuitive that participants are looking for information at

all times and not in just one isolated instance in the experience. Alas, this model is subject to all of the difficulties of attempting to break apart and analyze a human enterprise, which is dynamic, volatile, and inconsistent at times. That said, in probing and investigating the participants, most of them, including Wyatt, are in a state of experience that is best represented as active information gathering. They are actively and intentionally trying to know more of the problem(s) that they are dealing with so they can formulate a plan.

There were cases such as Guy's that also indicate that participants move straight from the awareness of the problem into the decision phase without stopping to gather information and/or weigh options. Guy illuminates his process for us commenting, "at the time my depth was limited and I think the two routes you kind of go at that point are freeze up and do nothing or you do something, either of which may be incompetent, right?" While this quote also has implications for option weighing as well, it appears that Guy was aware there was a problem and proceeded straight into decision-making. I do think that Guy, however short the moment may have been, realized he needed to do something and did in fact look at what he could do. He did have a boat, he could paddle out to James, and he could try to make contact with him. This is indicative of Guy gathering information about his current position and resources and considering the option of going to James. All of this occurred in a split second and could be construed as a reaction without process, although with deeper investigation, it is evident that active information gathering and option weighing were occurring.

In contrast, the components of the active information gathering stage in Russell's scenario occurred methodically and followed a prescribed process informed by formal

medical training. Jackson had attempted a descent of a waterfall that was approximately 30 feet in height and complained of back pain. Thus, there was every reason to believe that he may have broken his back. Russell began a patient assessment protocol that he learned in his Wilderness Emergency Medical Technician (WEMT) training in an effort to actively gather information about his friend's status. Russell illuminates, "So the first thing you do in an initial assessment – does he have feelings, circulation, you know the basics, is he breathing? Part of the secondary assessment requires checking the bones thoroughly and touching each vertebrae." Russell actively gathered information about Jackson's status, which in turn informed his decisions concerning Jackson's evacuation. In instances such as Russell's, the information that he gathered did not lead him to viable rescue options, as his training would suggest. This reality will be explored further in the discussion of the personal and contextual categories.

Option Weighing.

After participants gather more information about the problem(s) they begin to consider options. It may be that they only consider one option and employ that option as they move into making their decision(s). It seems that the model carries with it the assumption that there are options available to these participants at any given moment. There is, in fact, the ever-present option to do nothing, which is apparent to these decision-makers. Some of the option weighing scenarios were not split second and seemed to be relative to time and the need for a quick response as Jason indicates, "we had about a five minute discussion about how to retrieve her boat and then we decided that we would not retrieve her boat and felt that retrieving her boat put us at further risk."

Jason is describing a process that involves weighing options based on risk prevalence and the merit of the decisions to mitigate the risk for him and his fellows.

Karen hurt her shoulder at the bottom of a rapid and had to decide if she could paddle out or if she needed to evacuate the gorge. She had to weight her options and consider the risks and her ability. She also was contending with sincere peer pressure from a member of the group as she weighed her options. Karen comments:

> The hiking is not for the faint of heart, especially if you are going up. And I didn't want to do it alone. But that first little set [of climbs] to get out of the gorge is fairly steep. So that was one of my concerns, was doing that alone. And then the other option was to continue downstream and to kayak out and I wasn't sure if I had the physical ability to do that.

Peer pressure weighed heavily on Karen's decisions and the available options that she was able to consider at that moment. Karen expressed, "I feel like [peer pressure] factored in to the fact that I made a decision in a hurry and that I made the choices that I did." Karen felt that she was inconveniencing the group and Bill began to question the severity of her injury and was overly concerned with getting off the river at the originally planned time. These pressures appeared to influence the need for Karen to decide on a solution quickly. In turn, the apparent limited time frame stemming from peer pressure, prevented Karen and the group from exploring multiple options for success.

I found several cases where individuals considered options that apparently had little potential to mitigate damage or reduce risks. Wyatt comments, "We were thinking he needs a throw bag, except that I already knew that wasn't going to work even though that was sort of our plan." It seems that in this instance Wyatt needed to employ an

available option although his faith in its effectiveness was limited. During these moments individuals such as Wyatt had not yet formulated any other options, and as Guy indicated earlier, there can be a sense that one has to do something, whatever it is. People needed to be in motion as a means to either deal with the stress of the situation or in hopes of learning or experiencing something new that may present a new option.

Decision.

After participants considered one or several options, over the course of a nanosecond or for five minutes, they each employed a decision. Most participants, such as Susan, attributed her ability to make decisions quickly to her past experience:

> You have little windows of opportunity to do all that and as far as how you calculate all that pre-rescue is a sense of what your options are and you are doing that in micro-seconds and you're making these decisions because of your past experience and your training.

Susan is alluding to pattern recognition in her comments. She is able to recognize social and environmental cues that she relates to past experiences and actions. She is able to anticipate, assess, information gather, weigh options, and make decisions at an impressive rate.

She comments further, "decision-making for me, I'm 20 years into it now, is real instinctual now, I think that people that are in this environment have a 6^{th} sense, [have] multi-tasking abilities." It appears that paddlers can become more adept at processing information as they acquire more experience. Having considerable experience helps paddler's fine tune their ability to recognize patterns and anticipate outcomes and

compels them to make decisions quicker. Experience was also expressed as a multi-faceted and multi-layered entity. Wyatt suggests:

> It's just sort of, those layers of education just kind of like 'wow' they all came together at once and then that was the kind of the situation…I don't think the people that write the books on all this stuff [or what they write]… have any bearing on the outcome of the situation.

Wyatt is suggesting that his educational experience and his practical experience created culminating layers of understanding that informed his decision-making process. He also indicates that accessing these layers of education in the moment of a decision is not an academic process. Decision-making for Wyatt is less about recalling factual information and more congruent with a variety of sources of information lending themselves to a response that is specific to a particular moment and situation. He later commented that his decision-making process was "intuitive."

It is important to note that many of the decisions made in the nine critical incidents and accidents in this study were at some point arrived at collectively. Participants had to negotiate decisions with other paddlers in their groups on numerous occasions. Peer pressure was a factor that influenced individuals and the collective groups' ability to consider options and make decisions. While it would have been interesting to interview several people who were involved in the same incident or accident, that option never presented itself. More will be revealed about the process of these participants having to negotiate decisions with others in the ensuing discussion of the personal and contextual categories. However, one of the criteria for participation in

the study was that each individual was directly at the helm of the decision-making process at some point in the experience.

Evaluation.

After participants made a decision, they looked for social and environmental feedback and cues that their decision was able to have a positive affect on the current situation. There were instances where the feedback from their decision was not immediate. If participants did not receive a positive response from their decision, or no response, they became aware that a problem or problems still existed, or that the situation had continued to deteriorate. Wyatt expresses the evaluative measure of his decision making process, remarking:

> So I'm standing on this big rock and I throw a bag in there just in case, like he is border line in and out [of consciousness] and he could grab it but right then I was like- we need to swim out to him and get to him.

Wyatt realized that his decision to throw Thurmond a rope was ineffective. He became aware that problems still existed.

Essentially, Wyatt is now recirculating through the model. He evaluated his decision, noted that it was ineffective, and now becomes aware that problems still exist. He realizes that he needs to swim to Thurmond and, although he is aware of that option at that very moment, he needs to gather more information to see if it is still a viable option before proceeding. Wyatt indicates:

> I couldn't reach him with a paddle, or the rock was tall enough where I couldn't try to reach and grab him at that point after the throw bag didn't work…somebody had to swim in and get him out of the hole which I'm pretty sure I thought wasn't

a good idea to have two people in the hole that was apparently recirculating that strongly.

We see Wyatt moving back into the model gathering information and weighing options before he makes another decision. It was apparently very stressful for Wyatt to have to contemplate the risks for him and Cal to move into the hole with Thurmond, given its power and danger. Wyatt and Cal finally decided that a live bait rescue would be the optimal scenario.

As the two paddlers are beginning to facilitate a live bait rescue, a member of an outside party ran onto the scene and jumped into the hole as Thurmond's body had begun to flush out and move down stream. This individual's presence was unknown to Wyatt and Cal up until that instance. This individual was able to swim to the bank and pull Thurmond's body out of the water. In light of this sudden shift of events, Wyatt is then again thrust into anticipating future developments and problems and assessing the current situation. Hence, he is now involved in a new iteration of the decision-making experience as indicated by the model.

All nine cases reported an evaluative process regarding the decisions that were made on the river. Jane quickly realized that her decision to throw a rope to her rafting partner, who's raft was stuck in a very strong hydraulic, was unsuccessful. The rope became entangled as she released it. Jane exclaims, "Well, I'm ropeless and he's still surfing with two guests. So we are trying to figure out what we can do." Jane has quickly evaluated that her original decision was ineffective. A problem still exists and so she is gathering more information to inform other potential options. Her evaluation was related to the effectiveness of the decision to throw the rope. She also evaluated the effectiveness

of her earlier decision to not inspect the throw bag she brought to the river that day. Jane remarks, "whoever did stuff it…it was done poorly…which happens when you're getting stuff done and doing it fast." The evaluative process appears to be comprehensive and include considerations of previous decisions that were made prior to the immediate moment. Many accidents can be attributed to a series of prior decisions as opposed to something that just happens to us. Jane is contending with the impact of decisions that were made before she embarked on the river that day.

Overview of Personal and Contextual Categories

"One cannot step into the same river twice." - Heraclitus

As stated at the beginning of this chapter, the purpose of this study was to understand the decision-making process of individuals involved in a whitewater critical incident or accident. There were three central questions that guided this research:

1. What is the process by which individuals make decisions in whitewater critical incidents and accidents?
2. What personal and contextual factors inform the decisions that individuals make in whitewater critical incidents and accidents?
3. How do individuals describe decision-making in whitewater critical incidents and accidents?

The whitewater critical incident and accident decision-making model emerged, and was constructed, through the data and is a manifestation of the first central question that guided this research endeavor. It seems that the model is generally applicable to all of the nine participants I interviewed- however slowly or quickly, however unique their story, or however many times they repeated the cycle. While these process categories form the

decision-making process described by the participants, the richness and complexity of their stories are much more contentious, emotive, and dynamic than the model may initially suggest. The remainder of this chapter squarely addresses the second and third central research questions regarding the influence of personal and contextual factors and descriptions of decision-making.

The decision-making model is the riverbed, moving all water and input downstream. It's rocks and gradient represent the most static elements of the movement downstream. The water in the river, and the confluence of water entering the river channel and main flow, represent the lived experience of the participants in this study. They are unique, remarkable, and their story, their flow, is what breathes life into this whole enterprise. We are all moving downstream so to speak, yet the currents that we create, and that move us, are personal and dynamic.

Training and Education.

Training and education was a pronounced theme in this study and was represented in all nine cases. The assumption was that it would be discussed as something that informed decision-making in a positive way. Most participants referred to their paddle skills training and education as having a positive impact on their judgment and decision-making abilities. Wyatt mentions, "I think SWR [training] was the most pertinent to the situation" in regards to what informed his decisions in the accident he was involved in.

However, there were numerous instances in the data where participants actually cited training and education as being problematic in negotiating and making decisions. Wyatt mentioned later in the interview:

> I already had SWR but I had never got to employ any of it and that was probably, you know that's challenging when you learn something two years ago and you never use it. You kind of forget some of the stuff probably, because you know it's all about rapid response and decision-making.

This reinforces the idea of the "shelf life" of training and education. In the midst of difficulties the ability to recall information and formulate viable options, especially in critical instances, is compromised when training and education is not fresh. Furthermore, It was interesting that Wyatt chose to throw a rope to a victim who was recognizably unconscious. Throwing a rope to a victim is a critical skill, but the training assumes that the victim is responsive. Does the current SWR training address situations like Wyatt's? Throwing the rope was the only option that he felt was available and he had to try it until other options came to light.

There are other instances when training and education are fresh, in addition to being an integral part of the individual's professional life activities, and still these skill sets and experiences can be intrusive to clear thinking and well considered decisions. Jason comments:

> I had a lot of rescue skills and tips and tricks up my sleeve and in feeling responsible to help this person I was willing to probably try some of those tricks and put myself at greater risk than was necessary.

Jason refers the impulse to immediately employ the skills that he had even though the situation perhaps merited further consideration. It is a temptation that is easily understood. If you have the ability to rescue someone, then wouldn't you? The assumption is that the skill set that you possess is the appropriate set and measure for the

rescue, at any given moment. Do whitewater training and education programs promote creative thinking? Meaning, do these programs also discuss the propensity of the skills that they are teaching to not meet certain situations that the trainee may encounter? Is there an avenue in these programs that tends to judgment and when the employment of the skills may cause further risk and problems?

Further, Russell discusses how his training and education as a WEMT helped provide him with a platform and process for assessing and tending to Jackson, who had suffered a broken back. However, Russell was confronted with a difficult decision of whether it would be best to evacuate Jackson without the use of a litter and spine stabilization or leave him in the gorge while he ran for help. The problem with immediate evacuation was the potential to further damage Jackson's spine in the process. His training informed him that he was never to move a spinal patient. However, there were factors that posed significant problems if he was to stay with Jackson. Russell clarifies, "That was part of the assessment you know, he's in this spray [from the waterfall and] in the water…within an hour, he would have been hypothermic, and have gone into shock."

Russell was then confronted with the prospect of evacuating Jackson even though his training informed him otherwise. Russell discusses his decision to immediately evacuate Jackson, who had also agreed to be evacuated immediately:

> Yeah I wrestled with it because it's totally counter indicating of what I'd been trained. You don't ever move a spinal patient- ever….But, the decision [included] all of the factors involved, and his input was, I think, really the deciding factor [to move him].

This is another instance of professional training failing to mirror what trainees may actually encounter in practice. It is unrealistic to think that training programs may provide a program of study that will effectively mirror every possible scenario that one may encounter. Nor can my theory expect to fully capture decision-making as it happened or will happen in the future. I believe that reality should be squarely acknowledged and confronted in training and education programs, as it will be in this theory.

Intuiting and Instincts.

Six of the nine participants discussed, gut level instincts and intuition, as sources of information that contributed to their decision-making process. Moreover, it appears that the intuiting that relates to decision-making is enhanced through experience and is something that can be shared or experienced collectively with other paddlers. Jason highlights:

> It's like an intuition or a sensation you have based on your experiences that is ineffable, you can't explain that and I think that is part of the reason that I enjoyed paddling with [Phil] so much is that we shared a lot of those ineffable thought patterns and we did through eye contact and through decision making that we never talked about.

Jason is alluding to a connection with a fellow paddler who was aligned with him in numerous ways including making decisions on rivers where verbal communication was limited and thus there seemed to be an implied understanding, through eye contact, in and around decisions that needed to be made. Decision-making in this sense can be something that is understood on an internal level and can be shared with another, all of which is enhanced through experience, and shared values. Jason mentioned that Phil was a mentor

to him in his paddling career. It is interesting to consider the potential implications of positive mentorship and experience as contributors to intuitive capacities and decision-making.

Shane mentioned that some of his instinctual capacities could be related to instruction and training, yet these instincts were not relative to cognitive recall of training:

> Yeah, I wouldn't say I consciously said, 'hey this was on this particular lesson plan from the ACA instructor's course that I accessed'. Certainly, there were some instructor type instincts [present].

Shane indicated that his training and education, and positive instructor role models, were components that helped to shape his instincts. In addition, he attributed his experience teaching in higher education, commenting, "I'm an instructor by trade", as another avenue that honed his ability to assess peoples' needs. In the critical incident that he was involved in, he was confronted with assessing his partner's ability to successfully navigate the river that day, particularly after she had a very dangerous swim, "my instincts were telling me, just the look on her face was panic…in my instincts it's kind of programmed in me that when people are panicked they make poor decisions."

Shane is alluding to a combination of factors that shape his instincts and his subsequent responses. He mentioned that the whole decision-making process in his critical incident "was more art than science." The implication for developing instincts in future leaders and folks who may be at the helm of decision-making in whitewater critical incidents or accidents is compelling.

In Russell's situation, his professional training and the related WEMT protocols ceased to inform him on how he should proceed with the treatment of Jackson's spinal injury. When asked what sources of information informed his decisions after his training protocols fell short he referenced experience and intuition. Russell expands:

Oh yeah that's all experience based at that point. I mean I'm still following a logical like almost engineering progression of my decision-making but at that point, it becomes experience-based. I've spent a lot of time in the mountains, I know…the path of least resistance and can read terrain and then it becomes just all experience and feel…and intuition based and listening to [Jackson].

Russell appears to still be following a methodical process for decision-making and problem solving while the sources of information that are processed are now less related to a prescribed protocol. He is now heavily relying on his past experience, intuition and listening to Jackson. Russell suggests, "he knows what is hurting, he knows what he can and can't do and so it's really important to draw on that." Russell is more actively leaning on input from the patient at this juncture, as his training protocols are not matching his current reality.

Karen was pressured by Bill concerning the severity of her injury and was made to feel that she was really inconveniencing him and the group. She comments, "Phil seemed just very inconvenienced that I was injured…so he just the entire time was pushing for me to paddle out and I couldn't get a feel on whether he like really thought that I was injured or not." As previously discussed in the process categories, peer pressure in this instance played a considerable role in Karen's decision-making process and the options that she was able to consider. She mentioned, "I didn't stand up saying no

I'm not ok hiking out by myself and no I'm not ok paddling out, you know?" At this point, Karen had to draw on other sources of information to inform her decisions, namely gut instincts and intuition. She clarifies:

> When making the decision in the pool to continue downstream, my gut…like I really felt like I would be able to do it. Like to make it from point a to point b. you know, I was like, you know what, it'll be fine. I can do this. And um, yeah I mean I could not take strokes with my right side. I could rudder and I could stroke on the left basically just my left arm…my intuition was that I could make it from point a to point b without further incident.

Time.

The element of time played a considerable role in the decision-making process of all nine participants in this study. Making decisions in whitewater critical incidents and accidents is a time-sensitive endeavor, especially in terms of rescuing a victim who is gravely compromised. Guy commented:

> But there was that kind of internal decision-making with him anyways of considering whether or not to run this big rapid by himself with the sense of urgency in getting down the river as fast as possible and he said in that moment, that's when he admitted to himself that we were dealing with a body recovery and that he was going to paddle out slowly and safely and get help.

Guy's friend, in a moment of panic, was going to attempt to paddle out quickly for assistance in their rescue, and his initial plan was to run some very technical, dangerous rapids in a hurry, by himself, with no additional safety being set for him. The influence of emotion and panic and the desire to rescue someone can compel the rescuer to be in such

a hurried state that the decision-making is compromised. In this instance the state of panic took awhile to subside as Guy's friend came to the stark realization that the outcome for the victim would be the same in the next minute as it would be 30 minutes later.

It is interesting to note that in this accident, it took other members, including Guy, some time to confront the reality that their friend was dead. So, in essence the perception of time was skewed in this instance. Rescuers were hurrying in an attempt to save James' life, yet they kept hurrying even after the actual reality of saving him was gone. However, decisions were still being made that would indicate there was still hope. This may also be attributed to the lost sense of time altogether as Guy expressed, "Although I could not tell you for the life of me how much time had passed at that point, I think we were all aware that, you know, a critical point had probably already passed." Perhaps decisions may be hurried but become more influenced by hope rather than something that is still perceived as time sensitive.

Time had an effect on decision-making outside of an immediate crisis response as well. In some instances the element of time contributed to decisions that played a part in the development of a critical incident or accident or made the paddlers more vulnerable to future problems. Time was a factor in the commercial rafting industry as expressed by Jane:

> 90% of what I thought about was my timing because that's the ultimate, if you're time is off then all of the other trips are off, and it was. It shouldn't have been the biggest priority, honestly, but it definitely weighed heavy on my decision-making at the time.

Time constraints and demands placed on Jane by her company influenced the decisions she made after the critical incident on the river. She decided to make extra stops along the way to check on the members of her party, continually assessing their injuries and their desire to continue on the river. She mentioned that she felt that this was the ethical thing to do yet felt the pressure to move quickly down the river to not upset the scheduled trips that day. Jane's example provides an interesting look into the intersection between commercial priorities and protocols and the immediate perceptions and actions taken by an employee to mitigate risk potentially at the expense of company profit. Jane did not mention that she incurred any reprimand or penalty for her decisions to slow down and not rush that day. All told it was a stress that she contended with regarding her decision-making.

There is a phenomenon within the field of outdoor leadership known as "heading for the barn" (Gookin & Leach, 2004) where leaders are susceptible to make poor decisions near the end of a trip as their focus begins to shift from the immediate moment to what will be happening post-trip. Shane indicates that he was subject to this phenomenon in his critical incident:

> I regret not spending more time on the decision about maybe getting out of the boat and scouting this particular rapid…we can see the light at the end of the tunnel and so you kind of pick up speed, you know, you become less cautious towards the end.

Time then can be something that is scarce. Time can be perceived as being scarce when in actuality, the reason why time was scarce is no longer relevant. Forces outside of the immediate moment, such as an employer and commercial demands, can apply time

pressures on individuals. Time in this instance is something that may be seen as something that is in abundance or is perhaps is perceived as no longer relative to the current experience.

Ethics, Mentorship and Responsibility.

Several participants referenced river ethics, mentorship and responsibility as personal and contextual factors that influenced their decision-making process. The influence of these factors had both positive and negative impacts in the critical incidents and accidents in this study. Jason referred to his sense of ethics as his "river being" expressing that the types of decisions he made are intimately linked to who he is at his core and are tied to his values, ethics and sense of care and duty. Jason clarifies:

> There's no money, there's no legal liability, there was nothing, it was just river ethics and it was river ethics with a previous background of instruction where you have an increased level of responsibility for the people that you are paddling with, especially when you realized that they are not prepared.

Jason struggled with his ethics and sense of responsibility to assist Sarah, whose lack of preparedness had greatly contributed to the critical incident. Jason attributed his years of working in an instructional setting as having an impact on his decisions to assist in Sarah's rescue. Jason elaborates, "It's really hard for me not to help people because of the number of years I've been responsible for other people in river settings…and I think that some recreational paddlers who are not instructors don't have that same sensation."

Jason's decision to rescue Sarah and his consideration of rescuing her boat would seem intuitive and something to be praised. It is important to remember that there was considerable risk for Jason and Phil to facilitate the rescue. Jason suggested his sense of

ethics and his previous training perhaps interfered with his judgment in this instance. Jason exclaimed:

I think one thing that happens is when you build your tool box of skills…you're ready to try them, you're ready to help…and if you have a sensation of ethics where you feel responsible towards other people you're more willing to do it than you would have normally.

Jason also referenced his mentor Phil as influencing and challenging his decision to help Sarah. Jason suggested that he was willing to "put [himself] in a little bit more jeopardy" due to his previous training and sense of responsibility to Sarah. Phil cautioned Jason to reconsider his decision to enter the river to help Sarah and later to retrieve her kayak. Jason recollects, "[Phil] did not have the same rescue experience that I'd had and didn't feel like [the risk] was calculated." When Jason did not have Phil's support in his decision to retrieve Sarah's kayak he was able to step back from the situation and realized Phil was right. Jason suggests, "when I didn't have buy in from him, that made it a really easy decision for me [not to rescue the kayak]." Jason commented that Phil encouraging him to consider his actions before taking action had a lasting impact on him. Jason remarked that Phil, "burnt that thought pattern in my mind and it has effected my thought patterns about [rescue response] since then."

Jane's critical incident was troubled further when she threw her throw rope to a raft that was stuck in a very dangerous hydraulic. Because the rope was not packed properly, it knotted up when Jane threw it, and it flew out of her hand and into the river leaving her with no way to rescue the raft. Jane had mentioned that she usually packed

her own rope, but she had not done so during this incident. Jane reflects on her sense of ethics as it related to her critical incident:

> You can have strong ethics and like I feel like I do and I tend to go with them, but unfortunately, laziness and…complacency or comfort…a routine that just goes by can make you not forget your ethics but…become lazy.

Jane is pointing out that although she has a sense of ethics that she carries with her on the river, the routine of commercial rafting desensitized her sense of ethics, thus contributing to the complexity of the incident she was involved in. Her sense of ethics compelled her to resume stuffing her own ropes on future trips. Alas, as time passed she resorted back to grabbing ropes that she had not inspected and personally packed.

Jane exclaims, "I still wasn't stuffing my own commercial bag…you just grab and go…it's so far down your ethical list…even though [the critical incident] just happened."

In another instance, Shane points to mentorship as an influential component to his river sense and ethics. Shane reflects on his instructor's influence on him, "she spent a lot of time talking just as much about the head stuff and about decision-making as we did about paddling and boats…and gear." Shane's instructor prompted the class to consider practically how they would address a stranger who approached them and asked to paddle with them that day and "what is the series of questions you need to ask?" The asking of the questions demonstrates an ethic of care for all involved. Shane suggests, "I don't know if a lot of people are indoctrinated into the sport in that kind of way to say 'hey you need to check your ego, you need to be able to say no to people, you need to be able to make good decisions.'" Shane reflected on his decision not to scout the rapid with Amy. Shane points out, "certainly my decision to run that rapid without scouting, without

getting out to take a look at it, was counter to how I'd been brought up in kayaking." In reflection, Shane realizes that his decision was not congruent with the spirit of responsibility instilled in him through training and positive mentorship.

Group Dynamics.

Participants in all nine of the scenarios were boating with other individuals and discussed group dynamics as it pertained to decision-making in their critical incident or accident. As previously expressed, there appears to be a significant "feeling out" and assessing of the outside members or newer members wishing to join an existing group. The bonds that are created in adventuring in whitewater boating are significant and deep. Paddling groups have their own set of group dynamics that influence how they proceed down the river and how they respond to crisis and need.

The group Karen paddled with included very proficient boaters and she mentioned that they really enjoyed being on the river together and that they like to have fun even on difficult runs, where she found many folks to be very serious. When she was injured, she remarked that the group affect changed positing, "any injury on the river, although it may be minor, I think it does change the group dynamic from that point forward, with how the rest of the day is going to go." She mentioned that in this instance her injury was perceived to be an inconvenience to a member of her group who had joined her group that day but who did not normally paddle with her group. She felt that Bill was most concerned with getting off the river at meeting his wife at the take out at the time they had agreed on.

Bill questioned the severity of Karen's injury insinuating that she had the ability to paddle out as opposed to hike out which would slow the group down considerably. Karen remarked:

> As I reflected on it, I really feel like Bill peer-pressured me to paddle out and I gave into that peer pressure. Bill was upset with me for getting hurt. It was an inconvenience…and a little bit of a resentment feeling.

Beyond the hurt feelings and disconnect between Bill and Karen are the decisions that were made as a result of the group dynamics and feelings. Karen commented that she gave into the peer pressure and that by doing so, she agreed to paddle out with her shoulder injury. Karen acknowledged that the decision to paddle out, and the pressure from Bill to that end, put the group in a vulnerable position and increased the risk of a future accident occurring on the remainder of the run given Karen's limited ability.

This is another incident where someone who was not part of the original paddling group, changed the dynamic of the group in ways that proved to be detrimental and contributed to a critical incident or accident. To that point, Shane recalls his instructor addressing outside parties requesting to join a paddling group for the day commenting:

> I distinctly remember her talking about what you do if you're sitting there at the put in and you're gearing up and somebody you don't know walks up and says 'hey, can I paddle with you' and what's the series of questions you need to ask to be comfortable addling that person to your group.

Group dynamics are intertwined in the entire decision making process. Shane is referring to anticipating and assessing the group as well as the awareness of potential problems.

The decisions that are made at the put in can change group dynamics on the river, which could have implications for accident and critical incident propensity and response.

In other instances, Guy and Russell encountered rescue squads during the accidents that they were involved in. They both had similar experiences that provide an interesting perspective on the group dynamics that can exist between kayakers and outside groups or authorities. Guy shares:

> When the rescue squad showed up it became very…it was a very interesting interaction with the rescue squad because the guy in charge, the first thing he did is he came down and he says everybody better be out of the water right now or I'm going to have you arrested… he was a little scared, not sure what to do. He was uncomfortable and in an unfamiliar environment.

Russell mentioned that the rescue squad they encountered would not let Russell and his fellow paddler assist in carrying their friend out of the gorge on a backboard as it was not in accord with their policy. Russell noticed that the rescue squad probably did not have the physical ability to evacuate Jackson from the gorge. He remarked, "I know you are doing your job, but we're going to help you carry this guy out, and not only because he's our friend, but this is what you do, you know?"

In both scenarios, the kayakers were the one's who were intimately involved in the rescue efforts and had intimate knowledge of the setting and the actors. Russell and Guys' comments indicate that the outside authorities were uncomfortable and unfamiliar with the kayakers and the context of the setting. The group dynamics changed from a group with intimate familiarity and involvement in the rescue to a group with a distant association and connection the event.

Lastly, I assumed that decision-making in and around whitewater critical incidents and accidents would be directed towards the immediate rescue of a victim or victims. I came to realize that in certain instances, such as a body-recovery, decisions can be made as a coping mechanism by the group involved in a rescue. Guy elaborates:

> There was sort of this feeling of I have to keep doing something not only for my sake but for Allen. It's like, I can't just not do anything because here's Allen watching his best friend die you know? I think that emotion affected me in that way. I wonder if we would have tried as diligently for as prolonged of a period to continue the recovery if it weren't for that level of Allen's emotion with us you know?

Guy is suggesting that their decisions were being made as expressions of hope. In some sense the group was not willing to collectively and publicly acknowledge that James had died. Decisions at this point were coping mechanisms. To continue rescue efforts was to continue to express hope and emotional encouragement for Allen. Guy mentioned that when the rescue squad arrived, that was the moment that the group was able to stop their efforts and they were overcome with the grief of the event.

Chapter Summary

This grounded theory study culminated in a substantive theory of the process by which individuals make decisions in whitewater critical incidents and accidents. In addition to the decision-making process, the theory also brings to light the personal and contextual factors that informed the process. The two central categories of the theory are *process categories* and *personal and contextual categories.* The theory suggests that the

decision-making process of individuals involved in whitewater critical incidents and accidents involves six distinct steps:

1. Anticipating and assessing
2. Awareness of problem(s)
3. Active information gathering
4. Option weighing
5. Decision
6. Evaluation

The entire decision-making process was informed by personal and contextual factors. The personal and contextual categories of the theory include:

1. Training and education
2. Intuiting and instincts
3. Time
4. Ethics, mentorship, and responsibility
5. Group dynamics

The theory indicates that the individuals in this study followed a similar decision making process. Participants' decisions were influenced and informed by the aforementioned personal and contextual factors and categories. These categories indicate that there were numerous challenges for the individuals as they made decisions. These challenges included not only the physical setting, but the social setting as well. Sources of information needed to make decisions were in some instances compromised by the setting or actors or were partially available to the decision maker or not available at all. Participants had to search for and draw upon internal and external sources of information

to inform their decisions. The theory illuminates the complexities and inconsistencies of making decisions in whitewater critical incidents and accidents. The utility of the theory and its ability to inform training and practice will be discussed in Chapter Five.

CHAPTER 5

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

The purpose of this study was to understand the decision making process of individuals who were involved in a whitewater critical incident or accident. There were three central questions that guided this research:

1. What is the process by which individuals make decisions in whitewater critical incidents and accidents?
2. What personal and contextual factors inform the decisions that individuals make in whitewater critical incidents and accidents?
3. How do individuals describe decision-making in whitewater critical incidents and accidents?

This qualitative study consisted of in-depth interviews with nine whitewater boaters. The face-to-face interviews for this qualitative study ranged from an hour and fifteen minutes to an hour and a half. The interviews took place over a five-week period beginning November 12, 2013 and ending on February 21, 2014 and occurred in the southeastern United States. Grounded theory analysis suggested a substantive theory of decision-making including two sets of core categories: process categories and personal and contextual categories. This chapter will include the following:

- Key structures of the study;
- Summary of the findings;
- Conclusions;

- Implications for practice;
- Limitations;
- Chapter summary

I chose to focus specifically on the personal and contextual categories in the implications of the findings. The *process categories* represent the process of decision-making as expressed to me by the participants. The *personal and contextual categories* represent the lived experience of the participants and provide data that is exhibitive of the challenges and inconsistencies of making decisions in this context. Subsequently, the data analysis related to the personal and contextual categories lends itself to deeper investigation and discussion and ultimately informs the utility of the theory and its ability to inform practice.

Key Structures of the Study

It is important to revisit the key structures of the study, how they are linked together, and how the research question, purpose and design of the study contribute to its significance.

Thematically:

- The philosophy of adventure education substantiates the value and use of risk as the vehicle for change ⇒
- The goals of adventure programs clarify the potential human growth and developmental gains of adventure programs ⇒
- The responsibilities of outdoor leaders center upon the management of risk such that the goals of adventure programs may be realized ⇒
- Decision making is the central expression of risk management efforts ⇒

- Adventure education texts portray decision making theories and models that inform professional practice and the education of aspiring outdoor leaders ⇒
- Critical assumptions related to risk are embedded within the adventure education literature and the subsequent decision making theories are incomplete ⇒
- A crisis of professional confidence is experienced by an outdoor leader when their training and education is incomplete and does not adequately prepare them or mirror what they are encountering in their professional experiences ⇒

Leading to:

- A study on the decision making processes of individuals who have been involved in whitewater critical incidents or accidents ⇒

Because:

- Whitewater critical incidents and accidents provide a rich platform to investigate accident mitigation and critical decisions. The decisions are time sensitive, can occur in remote wilderness environments, and place a premium on communication. The outcome of certain decisions can in some instances relate directly to the life or death of an individual or group of individuals. Boating on whitewater rivers is exhibitive of an activity that involves negotiating risks, communicating and making decisions related to group and individual success and safety. Whitewater boating is an activity that many outdoor leaders pursue either as solo recreationists, informal leaders on recreational outings, or as appointed leaders with specified program goals, outcomes, and risk management protocols. An accident scenario in whitewater can elicit the vitality of a moment in many regards and certainly in relation to decision-making ⇒

Such that:

- The lived experiences of the participants in this study culminated in the generation of a theory and a conceptual description and framework that may contribute to the discussion of decision making in the adventure education literature and the practice of outdoor leadership.

Summary of the Findings

The whitewater critical incident and accident decision-making theory was generated from deep discussions with the nine participants and the related grounded theory analysis. The interviews yielded two sets of categories that have informed a theory of decision-making in whitewater critical incidents and accidents. The two distinct sets of categories relevant to the data are *process categories* and *personal and contextual categories*. The process categories highlight the decision-making process that was communicated by the participants. The process categories are:

1. Anticipating and assessing,
2. Awareness of problem(s)
3. Active information gathering
4. Option weighing
5. Decision
6. Evaluation

The personal and contextual categories represent the multiple sources of information that informed the decision-making process. These categories also depict the lived experience of the participants as they made decisions in whitewater critical incidents and accidents. The personal and contextual categories are:

1. Training and education
2. Intuiting and instincts
3. Time
4. Ethics, mentorship and responsibility
5. Group dynamics

Conclusions

There were three conclusions based on the finding of this study: (a) decision-making in whitewater critical incidents and accidents is a process that involves six distinct steps – anticipating and assessing, awareness of problem(s), active information gathering, option weighing, decision, and evaluation; (b) personal and contextual factors including training and education, intuiting and instincts, time, group dynamics, ethics, mentorship and responsibility, inform and influence all six stages of the process of decision-making in whitewater critical incidents and accidents; (c) challenges and inconsistencies in the decision-making process imply that whitewater training and education programs need to be amended.

Implications for Practice

Clarke (2005), declares:

We need to address head-on the inconsistencies, irregularities, and downright messiness of the empirical world – not scrub it clean and dress it up for the special occasion of a presentation or a publication. This does not at all mean presenting raw data- but rather doing even more analysis and extended reflection that can take rawness into a fuller and more explicit account (p. 15).

One aspect of gaining an understanding of decision-making in outdoor adventure education comes from textbooks and the accompanying decision-making theories and models. Other avenues of consideration include training and educational programs that focus on skill development, certification, and instructor training. While all nine participants referenced training and educational programs as having an impact on their decision-making process, only one of the nine participants indicated that their formal academic experience in an outdoor education program had any influence on their decision-making process and duty to act. Jane commented, "My ethics [were] developed through those kind of people and…getting into school and it being an option to actually learn more about water, whitewater, through an educational view." Hence, the implications of this study reach beyond the critique of the literature and existing theories and move into the realm of training and education.

Through close inspection of the data, particularly within the personal and contextual categories, the participants are indicating that training and education had considerable influence in their decision-making process. All of the participants in this study had formal training in whitewater paddling and rescue, with seven of the nine participants having served in instructional roles. In addition, the personal and contextual categories including intuiting and instincts, group dynamics, and ethics, mentorship and responsibility, revealed data that underscored the challenges and difficulties of making decisions in whitewater critical incidents and accidents. These categories also lend themselves to training and education. The personal and contextual categories, as well as the process categories, are not siloes, insular entities rather they are interrelated and more fluid in their practice. There were aspects of training and education that were woven into

the other personal and contextual factors. Training and education is where the utility of this theory may be realized.

Data within the personal and contextual categories suggested that there are several key implications for the audit and possible amendment of training and educational curriculums related to whitewater rescue. Whitewater training and educational programs need to contend with the following potential realities as revealed in this study:

- Training and educational programs can positively influence one's ability to make decisions and negotiate rescue efforts in whitewater critical incidents and accidents
- The skills acquired in training and educational programs, in addition to the sense of responsibility one may feel as a result of participating in a training and educational program, may limit one's ability to make sound decisions in whitewater critical incidents and accidents in both professional and solo recreational boating
- Training and educational programs may not provide all of the information that one will need to negotiate certain whitewater critical incidents and accidents
- Individuals involved in whitewater critical incidents draw on multiple sources of information to make decisions, such as intuition and instincts, which may not be represented in training and educational programs
- The skills learned in training and educational programs have a "shelf life" and need to be practiced on a continual basis to have future relevance in an actual critical incident or accident
- Training and educational programs have access to instructors with intimate familiarity of whitewater paddling and rescue. Including their stories in the programs can enliven and develop intimate knowing and connection to the curriculum

- Positive instructor mentorship and role modeling can have a significant impact on the behaviors and attitudes that students develop and is strengthened through extended program exposure

The American Canoe Association (ACA) is the nationally recognized provider of whitewater paddling instruction, rescue and instructor certification courses. All of the participants in the study had participated in training with the ACA. Seven of the nine participants in this study were ACA instructors in one or more disciplines. Seven of the nine participants had participated in an ACA Swiftwater Rescue Course (SWR). Three of the nine participants were SWR instructors and instructor trainers. Please refer to the Appendix A for the American Canoe Association's Swiftwater Rescue Curriculum.

In reviewing the ACA Level Four: Swiftwater Rescue Curriculum it is evident that the outstanding thrust of the course is based in technical skill development. As a participant in six different SWR courses involving different instructors, my experience is that the SWR curriculum presented in Appendix A is what the instructors adhere to. Each instructor had his own teaching style, delivery and areas of emphasis. However, they all adhered to the standardized curriculum. In reviewing the curriculum, reflecting on my experiences in the course, and considering the finding of this study, I can see where the curriculum is effective as well as areas for improvement.

Listed under the "Introduction, Expectations, & Logistics" component of the syllabus, the first bullet point addresses the course limitations. In my experience, the instructors were candid and honest about the course being a beginning and not an end

in terms of knowledge and rescue effectiveness. I have been certified as an ACA instructor in two different disciplines and there are many areas of the SWR curriculum that are standard to all ACA skills courses and syllabi. Instructors acknowledge that the course content is situated within the context of a dynamic environment and that continual training, practice, and experience are essential to development and effectiveness. There is an opportunity in this section of the course for instructors to talk more openly about some other potential limitations to the curriculum. Quite frankly, it would be instructive to openly acknowledge the dynamic, complex, and inconsistent nature of human beings negotiating rescues on whitewater. These difficulties must be considered in relation to the skills students are learning in the course, in a very controlled setting.

In the "Rescue Philosophy" section, there is considerable discussion regarding accident prevention, priorities, and the duty to act. I appreciate the discussion of accident prevention especially in relation to the Anticipating and Assessing phase of the decision-making process of participants in this study. As discussed, the data strongly suggested that when paddlers are not paying attention to social and environmental cues and their instincts, many times a critical incident or accident occurs. Larry suggests, "when we got a late start and the directions were sketchy, and with the high water, I wasn't so sure it was going to be a good day." Invoking stories of when instructors failed to heed situational warnings, deciding to press on, and the resultant outcome of those decisions, would prove to be beneficial for students in SWR courses.

> Having students reflect on times where they got into trouble on the river through limited awareness and anticipation could personalize the message and heighten the relevancy of the lesson. My experience in these courses is that at times instructors give some credence to personal story and reflection, yet it is not as stated in the curriculum as the data from this study suggests that it should be. Jason referenced a pioneer in whitewater rescue to sum up the importance of anticipation, awareness and training, "That's what Charlie Walbridge says, 'safety is no accident'…the best rescue is the one that doesn't happen."

The data from this study suggested that rescuers can struggle with the priorities of rescue and the sense of ethics or responsibility to act. Jason and Susan talked about the blurred lines of responsibility between personal and professional trips in regards to the responsibility to those in distress. Jason referred to his "sensation of ethics" and his extended experience in instructional settings as influencing his initial decision to put himself in harms way to rescue Sarah and her equipment. It was Phil who reminded him of rescue priorities before proceeding – rescuer, victim, equipment. Susan discussed how decision-making could be slowed down in personal trips stating, "There may be more hesitation because things are not as defined." Susan is alluding to the difficulties in negotiating decisions on personal trips, as leadership roles are less defined. It would be important to discuss how the material covered in the SWR course translates to personal and professional trips and the differences in the two settings and subsequent challenges.

Students in these courses need to be confronted with the difficulties and distractions to paying attention. They need to contend with the ethical dilemmas that they may encounter in their personal or professional experiences with paddling and possible rescue

scenarios. The assumption is that whatever distractions or difficulties one experiences in the course will mirror what they will experience real time. If there are sincere impediments and constraints to effecting rescue above and beyond the application of the skill should those struggles not be given more credence and emphasis in the curriculum?

Instructors of these courses tend to have considerable experience on whitewater. Within an extensive experience base they surely possess stories that include valuable lessons, which may not be expressed. Alas, the acquisition of technical skills is privileged over lived experience and the subsequent struggles (or successes!) with the application of the technical skills. There may be instances where students may have to draw upon sources of information that are not represented in the training. Jason, Shane, Russell and Wyatt discussed intuiting and instincts as informants to their decision-making process. Specifically, Russell had to negotiate the evacuation of Jackson, who had broken his back. His WEMT training had failed to inform his current reality and thus he drew on experience and intuition commenting, "then it [decision-making] becomes just all experience and feel, and intuition based and listening to him." Could there be discussions and possible practice in developing skills and heightened awareness in SWR courses? What can be done to develop students' intuition and instincts?

Klein (1999) found intuition to be a central informant in making decisions in crisis situations and that intuition could be trained, suggesting:

> The part of intuition that involves pattern matching and recognition of familiar and typical cases can be trained. If you want people to size up situations quickly and accurately, you need to expand their experience base. One way is to arrange for a person to receive more difficult cases…another training strategy is to

> compile stories of difficult cases and make these the training materials. (pp. 42-43)

Klein's findings clarify strategies that lend themselves to the SWR curriculum. Instructors have a wealth of stories as well as access to case studies involving failed rescue attempts. Watters (1996) suggests, "Experience is always the best teacher, but short of being involved or being on hand during actual river accidents, the next best way to prepare is through the study of river accidents" (p. 159). Among others, the ACA publishes the *River Safety Report*, which includes case studies and whitewater accident data. The ACA could make more stated use of their research in the delivery of the SWR curriculum.

In addition to having the power of experience and story at their command, not to mention the respect of their students, ACA SWR instructors have a significant opportunity to serve as mentors to students. The personal and contextual categories in this study include mentorship, ethics and responsibility. Participants talked of positive mentors having an impact on how they carried themselves on the river and in their decision-making process. Jason posits, "I do think that your ethics don't come just from being an instructor but your ethics come from probably who you started paddling with. Who taught you to paddle? What were their ethics?" SWR instructors have a distinct opportunity to make a difference in the skill base of students but also in their dispositions and how they carry themselves and in the development of their "river being."

The participants in this study illuminated training and educational programs as having a distinct impact on their decision-making process in whitewater critical incidents and accidents. In some instances that impact may have also been detrimental to the

overall rescue. The data from this study have implications for training and educational programs. One such program is the American Canoe Association's Swiftwater Rescue Course. In reviewing and personally experiencing the curriculum it is apparent that technical skill development is privileged over lived experience and story. The participants in this study shared stories of their rescue scenarios that included certain struggles or informants, which are minimally represented or non-existent in the SWR curriculum. The SWR curriculum could benefit from instructors invoking their stories of their rescue experiences, in addition to accessing case studies, to help illuminate the complexities of whitewater rescue. SWR courses could allow students time to review case studies, reflect on their own experiences, and participate in rescue simulations that include the constraints and complex problem solving tasks that were represented in this study. Students in these courses could actively participate in exercises to increase their awareness, intuition and instincts. The positive mentorship of students by instructors helps indoctrinate students into whitewater rescue in a way that promotes and celebrates lived experience and story.

Lastly, the program duration would need to be lengthened in order to accommodate these possible recommendations. Currently the program occurs over two days and lasts 16 -18 hours. In my experience there has been little room for significant conversation or exploration of anything beyond the stated skills listed in the curriculum. I can tell that the instructors are doing all they can to stay on task and hit every point on their teaching outline. These courses are more accessible if they can be delivered in a two-day, weekend format. Nonetheless, the courses include a simulation of a river accident where students must use the skills they learned over the previous two days. This

is always the highlight of the course and there is so much that students want to and need to process after it is over. Regrettably, the time to do so is at the end of the program, the day is running long and the space to really debrief, reflect and make sense of things is cut short. I believe having an additional day, or half day to practice, reflect, and connect would be highly beneficial. Although these changes are not currently part of the ACA SWR curriculum, I will make space for such conversations, reflections and activities in the water pursuits classes that I teach this fall and beyond.

Limitations

In reflecting on my experience with this research study, I am aware of some potential limitations that merit discussion. I contacted thirty potential participants for this study. Of these thirty, nine participants ultimately met the criteria for participation and were willing to be a part of the study. I had more options for recruitment, yet the data were saturated after interviewing these nine participants. I was curious as to why some of the individuals I contacted did not respond to my emails or phone calls. One high profile person in the rescue world had expressed initial interest in my study. After I sent him the overview of the study, he did not communicate with me any further. The email I sent him clearly communicated my understanding of the sensitive nature of the research project, my intent to learn from his story and not to judge him, and the related measures to protect his confidentiality and privacy.

I suppose that one can acknowledge the risks involved in whitewater kayaking but that acknowledgement does not make the risks go away. The same may be true for the people I recruited for this study. The research is sensitive for some people, potentially too sensitive to participate. I can conjecture that the sensitive nature of the research kept

some folks from participating although I do not have proof of that. Nonetheless, a potential limitation of this study is that more people did not come forward to participate. If I was able to have more interest and willingness to participate amongst those I recruited, I would have had a larger range of participants to choose from and could have possibly captured more diversity in my sample.

Another potential limitation is that all of the participants I interviewed lived in the southeastern United States. All of the critical incidents and accidents, with one exception, occurred on rivers in this region. Susan's incident occurred in Brazil and she mentioned some particular challenges of paddling rivers in jungle environments, namely that they are subject to flooding and are continually changing. This makes it hard to establish baseline knowledge of the safest routes and where hazards exist. This makes me wonder what other contextual challenges boaters in other regions experience and if specific regional challenges nuance their decision making process based on varying conditions.

I also had hoped for an even representation of men and women in the study. Six of the participants were men and three were women. Of the thirty people I recruited for the study, seventeen were women. Some of them were very willing to participate in the study but had moved to other areas of the country or they had not been involved in a whitewater critical incident or accident where they were directly making decisions facilitating rescue efforts. Others responded to me initially and then ceased to communicate. Some never responded to my initial contact. As the study progressed it did become increasingly difficult for me to locate women to participate in the study. There is the potential that current themes would have been stronger and new themes may have emerged if the study would have included more women.

In addition to more equal gender representation, I would have enjoyed more diverse racial representation in this study as well. All nine participants were Caucasian. In reflecting on my personal experiences in whitewater, I have noted little racial diversity on the rivers that I have paddled. Commercial rafting comprises the majority of racially diverse participants that I have encountered on the river. The study may have been more effective and rich had it included a more racially diverse sample.

I employed member-checking measures to make sure that my analysis and related representation were congruent with the spirit of what participants felt they had communicated to me in the initial interview. One of the requirements, which were communicated to all potential participants, was their ability and willingness to participate in a follow up face-to-face or phone interview lasting no more than thirty minutes. It proved very difficult to make contact with the participants after the initial interview – either by phone or email. I made the decision to email participants their interview transcripts, and an overview of the process and personal and contextual categories with a general explanation of the components of each category. I also included the visual model of the theory.

After repeated attempts to make contact with the participants, I was able to generate three responses. I had to laugh because Shane, who had earned a PhD, supplied the most substantive and detailed feedback, far and above the other two participants. He understood where I was and what I was trying to do. The feedback from the other two participants was helpful as well. They all expressed that the theory made sense to them and generally captured what they had communicated to me. A potential limitation of the

study is the minimal participation in the follow up interviews and lack of feedback from all participants.

Adventure involves the unknown as well as risk. The unknown can represent many things and in the instance of whitewater boating, it is the acknowledgement of possibility – both good and bad, both real and perceived. It is a human enterprise, just like this research endeavor and the accompanying theory. There is an inevitable fragility, and vulnerability to both endeavors that must be acknowledged. This reality did not keep these kayakers from moving forward as the potential reward of the experience is worth it. I have similar aspirations of the reward of being closer to understanding what decision-making is about in whitewater critical incidents and accidents. I also enjoyed sharing a passion and stories with other boaters. Alas, I feel this theory should contend with its limitations in a very direct way.

All nine participants experienced moments in the interviews when they struggled to remember certain details of the critical incident or accident that they were involved in. It was also impressive the amount of detail that they did remember, even from many years past. All of these participants had spent considerable time reflecting on their experiences and were searching for meaning and understanding. Guy was able to share an interesting insight regarding his memory of the accident he was involved in:

> James was in a black and white Dagger Gradient. My recollection of that accident is him in a blue and white Gradient. Whenever I visualize it, even to this day, I picture him in a blue and white Gradient, which is what I paddled for some time. So I think it's really interesting the tricks [the mind plays]…I have used this in teaching sometimes to actually illustrate how our mind can play some significant

> tricks on us and we….things we perceive as real and having happened sometimes are not the way we perceive them.

Guy's insight tells me that people can have difficulty recalling information and in some instances the information we recall can be altered in a way such that it does not match reality. Some of the joys in telling and hearing stories are to understand how people shared an experience, to see and hear what others experienced, to compare notes, to remember, to share perceptions and misperceptions. This interview research is comprised of such a telling and recounting of experiences, and I enjoyed the exchange immensely. I found that I am closer to an understanding of what interested me, all the while realizing the vulnerabilities of the enterprise. Recognizing these limitations acknowledges the incompleteness and vulnerability of the stories of decision-making in this context and of this research project as well.

Chapter Summary

The purpose of this study was to understand the decision-making process of individuals involved in a whitewater critical incident or accident. I completed in-depth interviews with nine participants. I coded and analyzed the interview transcripts. Grounded theory analysis yielded three conclusions: (a) decision-making in whitewater critical incidents and accidents is a process that involves six distinct steps – anticipating and assessing, awareness of problem(s), active information gathering, option weighing, decision, and evaluation; (b) personal and contextual factors including training and education, intuiting and instincts, time, group dynamics, ethics, mentorship and responsibility, inform and influence all six stages of the process of decision-making in whitewater critical incidents and accidents; (c) challenges and inconsistencies in the

decision-making process imply that whitewater training and educational programs need to be amended. In addition to exploring and discussing these conclusions, I also explored the theoretical and practical implications of this study as well as pedagogical implications. Theoretically, this research builds upon existing decision-making theories and advances the knowledge and literature base of the outdoor adventure education field. Practically, this research provided recommendations for improving whitewater training and education programs. Pedagogically, this research informs how I will proceed with discussing and teaching decision-making with my students.

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Appendix A

Level 4: Swiftwater Rescue (Sample Skills Course)

Course Overview: The Swiftwater Rescue workshop teaches recognition and avoidance of common river hazards, execution of self-rescue techniques, and rescue techniques for paddlers in distress. Emphasis is placed both on personal safety and on simple, commonly used skills. Techniques for dealing with hazards that carry greater risks for both victim and rescuer, such as strainers, rescue vest applications, entrapments, and pins, also are practiced. Scenarios will provide an opportunity for participants to practice their skills both individually and within a team/group context.

Course Objectives: Promote proactive prevention of river accidents and injuries. Develop and practice key self-rescue skills. Identify and avoid river hazards by understanding hydrology, hazards, and river features. Focus on fast, low-risk strategies for early management of river accidents Develop and practice methods for recovering swimmers, and loose boats and equipment Develop and practice more advanced rope-based and in-water skills Gain experience using the rescue PFD, and understand it's strengths and weaknesses Utilize rescue scene management principles needed within a paddling group

Essential Eligibility Criteria: In order to participate in an ACA Skills Course, each participant must satisfy the following essential eligibility criteria:

Be able to independently participate in all individual skills and activities listed in the course outline while also maintaining an appropriate and safe body position Be able to hold their breath while under water and, while in the water wearing a properly fitted lifejacket, be able to independently turn from a face down to a face up position keeping their head above water Be able to effectively communicate with the instructor and other course participants Be able to manage all personal care independently, or with the assistance of a companion Be able to manage all personal mobility independently, or with the assistance of a companion

Course Prerequisites: All paddle craft are welcome. Ideally, students should be able to competently maneuver their craft in at least class II whitewater. However, all boaters, and non-boaters with an interest in swiftwater rescue (e.g., professional rescuers), will benefit from the class. Participants should be in good health and overall fitness, possess solid swimming ability, and be comfortable swimming in moving current during river drills.

Participants should dress appropriately for weather and temperature, and should expect to be in the water for extended periods of time.

Minimum personal equipment for class: PFD designed for whitewater use, whitewater helmet, protective clothing suitable for extended swimming in cold water, protective footwear, boat, paddle, whistle, throw rope, 15+ feet of one inch tubular nylon webbing, 2 locking carabiners, and 2 prusick loops.

Course Duration: Two days (16 – 18 hours)

Course Location / Venue: A chute of water with deep, clean wave action, well-defined eddy lines and no immediate hazards or risks below. Ideally, the site should contain class II rapids, although it may be taught on less difficult rapids. Protected space is needed for on-land work, with adequate shelter for inclement weather.

Class Ratio: 5 Students : 1 Instructor; with a qualified assistant the ratio can be 10:2

Succeeding courses: Level 5: Advanced Swiftwater Rescue

The following is a general summary of course content for the Swiftwater Rescue course. The content covered and sequence of instruction should be adjusted to best fit the participant's needs, class location and time allowance.

Course Content

Introduction, Expectations, & Logistics:

- Welcome, introductions, paperwork
- Student & instructor course expectations and limitations
- Course itinerary & site logistics
- Review waiver, assumption of risk, challenge by choice, medical disclosure
- About the ACA
- PFD policy (always wear on water)
- Appropriate personal behavior
- No alcohol / substance abuse Proper etiquette on & off the water
- Respect private property
- Practice Leave No Trace ethics

The Paddling Environment:

- Wind
- Waves
- Weather
- Water

Personal Preparation:

- Personal ability
- Swimming ability
- Water comfort & confidence
- Fitness, conditioning, and warm up
- Safe paddle and boat handling
- Safety and rescue considerations
- Personal equipment (reviewed by Instructor)

Rescue Philosophy

- Accident avoidance and proactive rescue
    - Accident timeline o Prevention and "what if...?"
    - Prior planning for accident management
- Priorities
    - Me, my group, bystanders, the victim
    - Simple and fast to complex and slow
- Liability and Ethical issues
    - Negligence, duty to act, breach of duty, harm, standard of care, abandonment
    - Moral vs. legal obligation to act
    - Trip leader vs. common adventurer
- Trip Organization
- Trip planning principles Emergency action plan
- Lead and sweep
    - Know the group, the river and the weather
    - Plan the trip and communicate the plan

Scene Management

- Locate, access and assess, stabilize and transport
- Prioritizing the rescue
- Most rescues performed quickly, without a formal structure
- Larger groups and longer rescues often need more structure
- Incident Command structure
    - Leader
    - Safety
    - Rescuer
    - Additional roles – medic, rigger, runner, ...
- Complete the rescue without compounding the situation
- Communication (AW signals)
    - Hand and whistle signals
    - Cell phone or radio if appropriate

Medical Issues

- NOT a first aid class; perform medical care to your level of training
- Don't make the situation worse
- Obtain more training; calling 911 is rarely an effective option
- Rescuers should be familiar with common medical problems including hypothermia, drowning, cuts and scrapes, and dislocations/broken bones.
- CPR and wilderness first aid skills are essential for rescuers

Equipment

- Protection from rocks and water
    - Shoes, helmet, PFD
- Thermal protection
    - Wet suit vs. dry suit, wool vs. synthetics, avoid cotton in cold/wet conditions
- Personal rescue gear
    - Boat, paddle, whistle, throw rope, knife, saw, first aid kit, rescue PFD
- Group rescue gear
    - Survival kit, haul rope, communications, ...
    - Specific needs depend on the river paddled and local weather
- Survival equipment
    - Food, water, extra clothing, shelter, fire making supplies, ...
    - Specific needs depend on the river paddled and local weather

Rescue Vest

- Multi-use rescue tool
- Components of the vest
    - Sewn in harness
    - Quick release buckle
    - Belt
- Hazards of the vest
    - Buckle jam (avoid by correct release, smooth belt end and appropriate belt length)
    - Cross lock harness and belt (avoid by using only locked carabiners)
    - In-water risk exposure (avoid by practicing and recognizing limits)
    - Tow tether strengths, limitations and hazards
- Communications
    - One hand waving in air means “help me”
    - Point with one or two hands for directional changes
- Applications
    - Anchor and belay
    - Towing boats or gear (with tether)
    - Personal extrication
    - V-lower and direct lower
    - Live bait (preset and “on the fly”)
    - Uses limited only by your imagination

Throw Ropes

- Selection based on rope material, diameter, and length
- Advantages and disadvantages of traditional bags, waist bags, coiled lines
- Care of the rescue rope
    - Avoid sun exposure, keep clean, avoid stepping on the line, avoid sharp or

rough edges
    - When in doubt, replace the line
- Rope safety
    - Avoid standing over lines
    - Avoid tensioning lines perpendicular to current
    - Keep your body out of loops in the line
    - Consider clean line techniques
    - Keep entire rope in bag to avoid accidental deployments
- Throwing and recovery zones
    - Consider where the victim will land, don't make their situation worse
- Types of throws
    - Over-arm (football and arc), underarm, side-arm
    - Deploying less than full length for close targets
- Factors impacting an accurate throw
    - Rope length and diameter, brush and trees, footing, distance to target, cold hands, practice
- Receiving the rope
    - Hold over your shoulder, with hands on your chest and elbows tucked into stomach
    - Rope ideally should sit on the shoulder opposite the target shore (to set ferry angle)
- Belay techniques
    - Hip belay, sitting, buddy, dynamic, tree
    - Line on downstream side
- Coiling and rethrowing
- Vector pull to assist landing
- Stuffing techniques
- Multiple swimmers

Line Ferries and Line Crossings

- How do you get a line across the river?
- Essential skill for many rope-based rescues
- General principles
    - Look for narrow areas
    - Look for clear throwing zones
    - Establish a line receiver o Tethered line receiver using rescue vest
    - Keep the line as high as possible out of the water, to avoid drag
    - Upstream safety and downstream safety vital
- Throwing techniques
    - Direct throw
    - Buddy throw
    - Messenger line
- Boating, swimming, and wading techniques
    - Use a reverse pendulum and, whenever possible, keep the line out of the water

    - Downstream loop
    - Rescue vest
- Simple line crossings
    - Pendulum (can be done with multiple people, vector pull speeds the pendulum)
    - Hand over hand tag line (hard in fast water, excellent wading assist)

Knots

- Components of a good knot o Recognizable form, strong, easy to tie and untie, minimal rope use, minimal loss of rope strength, common use
- Terminology
    - Standing and running ends, bights, loops
- Key actions
    - Set, dressed, backed up
- Figure eight family
    - Strong, easily tied and recognized, fundamental rescue knots
    - Figure 8, figure 8 on a bight, figure 8 follow- through (as both a loop and a bend),
- Additional important knots
    - "no-knot" (friction hitch), butterfly knot, clove hitch, two half hitches, water knot (for webbing), double fisherman's bend, prusik
- Many other knots available; these form the foundation of river rescue
- Knot mastery comes from practice; plan on tying knots with cold hands, under water

Anchors

- Foundation for many advanced skills
- Places team at higher risk; consider what happens if the anchor fails
- Good anchors
    - Can hold the load
    - Are close to the load, and in line with it (anchor-belayer- climber concept)
    - Can be attached to a haul line
- General concepts
    - Stay low to the ground
    - Pad or, better yet, avoid friction points
    - Consider what happens if the anchor fails
    - Internal angles ideally less than 90 degrees
    - Hard on soft, soft on hard
- One point anchors
    - "no-knot"
    - Simple loop
    - 3 bight (internal angles should be less than 90 degrees to reduce risk of triloading carabiner
- Two point anchors

    - Use with marginal anchors, when a live load is attached, and just on general principles
    - Load distribution and self- equalizing loop
    - Expect the load to move

Mechanical Advantage

- Key for advanced unpinning techniques and rope rescues
- Places team at higher risk, takes time, and is complex
- Safety rules
    - Use dampers when possible
    - Use brakes when possible
    - Stay out of the line of fire
    - Pull with your back towards likely failure point, wearing PFD and helmet
    - Consider directional changes
- 10 boy scouts
- Vector pull standard method and progressive vector
    - Good for MA, bad for anchors
- 3:1 (Z-drag)

Pins

- Avoid getting pinned or entrapped by recognizing hazards
- Pin mechanics
    - Balance between gravity, friction, and force of water
- Types of pins
    - Vertical, center broach, end to end, pinch pin, flat pin
- Release by unbalancing forces
- Tag line on boat for recovery after release
    - Consider what happens when the boat releases
- Stabilization line to support trapped victim Cinch line techniques may be helpful for pinned gear
- Self rescue
    - Avoidance, high side to avoid flipping, wiggle off the rock, bail out
- If all participants are safe, waiting for low water may be a viable option Advanced techniques
    - Hull wraps/Steve Thomas rope trick with slippery clove hitch
    - Raft tacos

Entrapment

- High risk; hands-on rescue places rescuers near the entrapping object
- Most commonly foot entrapments, strainers, or trapped in a boat
    - Avoid by hazard recognition, appropriate swimming techniques, and appropriate outfitting
    - Extrication often requires hands on contact by a rescuer (e.g., two+ person

wading techniques, live bait)
- Keep victim heads up with stabilization line
- Snag line to release foot entrapments
- Cinch line to secure victim

Stabilization, snag, and cinch lines

- Upstream and downstream safety is essential
- Consider what happens when the victim is freed; consider pre-set live bait
- Fundamental tool for entrapment and pin rescues
- Stabilization line
    - Supports trapped victim
    - Set a sharp downstream pointing V in the line for optimal support
    - Line ideally should be under armpits and support victim in heads up position
    - Very effective, with documented saves
    - Very difficult for unresponsive victims – requires some victim cooperation
- Snag line
    - Line designed to release a foot entrapment
    - Tensioned and deep
    - May need to be weighted or submerged with a paddle
- Cinch lines
    - Designed to wrap about victim and maintain control
    - Takes more time and practice
    - Victim is at higher risk, but also is more secure
    - Very useful for pinned gear
    - Simple cinch – open and closed
    - Lasso loop cinch
    - Kiwi stabilization line/cinch

Hazards and Hydrology

- Rivers are powerful, predictable and persistent
- Subjective vs. objective hazards
    - Poor judgment can be fatal
    - River hazards don't care if you don't recognize them
    - Flooding dramatically increases risk
- Water reading (upstream and downstream Vs)
- Eddies and eddy lines
- Waves
- Hydraulics
- Strainers
- Horizon lines
- Undercut rocks, broaching rocks
- Foot entrapment risks

Swimming (60 minutes)

- Essential self-rescue and access tool
- Safe eddy rule, don't try to stand in swift current
- Defensive and aggressive swimming
- Strategies to conserve energy including positioning, short aggressive position sprints and "porpoising" for in-water scouting
    - Breathing techniques – timing in waves and focus on downstream side
- Defensive to aggressive transitions Aggressive upstream and downstream orientation (upstream ferry and downstream eddy catching)
- Crossing eddy lines
- Ferry techniques
- Swiftwater entries
    - Modified belly flop; head and feet up, impact on the PFD
    - Enter water with a good ferry angle
    - Protect face with crossed arms
    - Consider crawling or sliding into water, especially if shallow and rocky
- Managing holes and drops
    - Ball up over drops
    - Escape holes by aggressive swimming towards ends, changing shape or
    - Crawling to river bottom
- Swimming with gear
    - Keep boats downstream
    - Boat and paddle in one hand

Strainers

- Lethal hazard, common cause of river fatalities
- May appear benign (it's just a tree...)
- Possible approaches
    - Avoid (best by far)
    - Aggressively swim into and over (best if can't be avoided)
    - Defensive and/or passive (potentially fatal)

Wading

- Safe eddy rule
- Swim instead of fighting for marginal footing
- Water depth, water speed, bottom conditions affect performance
- Maintain balance
- "Look with your toes"
- One person with paddle/prop
- Two person
- Wedge
- Line astern

Boat-based rescue

- Often fastest and easiest technique for boaters, but potentially high risk
- Essential to critically evaluate personal boating skill
- Many uses for boats
- Ferries for people and equipment
- Tool to sprint for help
- Paddle recovery
    - Throw, two paddles in hand, put in your boat
- Boat recovery
    - Bulldozer or shove
    - Set a ferry angle
    - Tow with tether system on rescue PFD
    - Tow with painter or tow line on boat
- Self rescue
    - Hold boat and paddle in one hand when swimming with gear
    - Set a ferry angle
    - Boat stays downstream or to the side of victim
- Swimmer rescues and assists
    - Hand of God rescue
    - Assisting victims back into boats
    - Strengths, limitations and techniques with canoes, kayaks and rafts
    - Stern and bow tows

"Live Bait" Rescues

- Higher risk for rescuer, but fast and simple
- Requires rescue swimmer, rescue vest, locking carabiner, throw rope and belayer; vector pullers, backup belayers and landing zone helpers are useful
- Downstream safety is essential
- Victim psychology
    - Normal: able and willing to assist in their own rescue
    - Panicked / aggressive: extremely dangerous
    - Near (or counter) panic: initially nearly unresponsive, then becomes panicked
    - Unresponsive: assume C-spine injury for unconscious victims
- Timing for water entry is key, and takes practice
    - Hold 10 to 20 feet of rope on entry (toss downstream)
    - Entry ferry angle is key
    - Time entry so as to ferry directly to victim
    - Avoid hovering
- Speak to victim
    - Splash and back away for self protection
    - Rescuer safety is highest priority

- Turn victim and hold to PFD, or execute cross chest or surf carry
- Rescuer and victim belayed in to shore
    - Vector-puller on shore helpful

Contact Rescues and C-spine control

- Fast, simple, extremely risky
- Very difficult to swim victim to shore
    - Redundant downstream safety is essential
    - Requires fins or near- competitive swimming ability
- Recommended only for unconscious victims where no other option exists
- Maintain in-line c-spine control to the extent possible and bring victim face up
    - Crossed wrist method for fast moving water
    - "Body sandwich" for deep slow moving water

V-lowers

- Slower, higher risk, more complex
- Requires two belay teams, rescue vest, rescue swimmer, downstream safety,
- Locking carabiner and at least two throw ropes
- Allows direct maneuvering to rescue location
- Hand signals and safety plan
    - One hand waving in air means "help me"
    - Point with one or two hands for directional changes
- Arching back to plane to surface
- Hands behind head to help create an air pocket
- Single rope technique for direct lower
- Higher water volumes and deeper water can overwhelm the rescuer
- Very effective as a wading assist
- Provides strong support for rescuer forced to work upstream of significant hazards

Scenarios

- Managing common river problems, including multiple swimmers and loose gear
- Debriefing to reinforce rescue priorities
- Emphasis on what worked and what could be done differently next time.
- Goal is to create appropriate confidence in training and techniques

Conclusion & Wrap Up:

- Group debrief / Individual feedback
- Course limitations
- Importance of First Aid & CPR Importance of additional instruction, practice, experience
- Importance of appropriate level of safety & rescue training
- Demo advanced maneuver

- Life sport / Paddling options
- Local paddling groups / Clubs
- Handouts / Reference materials
- ACA Membership forms
- Course evaluation
- Participation cards

Resources

- Whitewater Rescue Manual (Walbridge and Sundmacher)
- Swiftwater Rescue (Ray)
- River Rescue (Bechdel and Ray)
- Heads Up! (video)
- Whitewater Self Defense (video - Ford, Walbridge and DeCuir)
- River Safety Reports (Walbridge)
- Whitewater Safety and Rescue (Ferrero)
- Kayaker's Toolbox (video – Holt and Dickert)
- High Angle Rescue Techniques (Vines and Hudson)

Level 4: Swiftwater Rescue (Sample Skills Course)

Appendix B

Research Questions and Interview Protocol

Research Questions.

1. What is the process by which individuals make decisions in whitewater critical incidents and accidents?
2. What personal and contextual factors inform the decisions that individuals make in whitewater critical incidents and accidents?
3. How do individual describe decision-making in whitewater critical incidents and accidents?

Interview Protocol.

1. Think of a time when you were involved in a critical incident or accident in a whitewater setting and tell me about that in as much detail as possible.
2. Describe the physical and social setting.
3. Walk me through the precipitating factors that you believe contributed to this critical incident or accident.
4. Describe the decisions that you made that you believe were important in this critical incident or accident.
5. What did you consider in making these decisions?
6. What historical factors or previous experiences influenced your decisions?
7. What contextual factors influenced your decisions?
8. Do you feel emotions influenced your decisions and if so, tell me about that?
9. What formal training and instruction do you have in whitewater pursuits and rescue?
10. Do you feel that your formal training and instruction influenced your decisions and if so, tell me about that?
11. Tell me about your relationships with those involved in this critical incident or accident.
12. If these relationship dynamics influenced your decisions, tell me about that.
13. What informs your decisions?
14. What influenced your decisions?

Appendix C

Script for Participation Selection For Phone and Email (with no incentives)

Hello, my name is Rob Dussler and I am doing a dissertation research study under the direction of Dr. Corey Johnson, in the Department of Counseling and Human Development at the University of Georgia. The purpose for this study is to develop an increased understanding of the decision-making process of individuals involved in whitewater critical incidents or accidents. This study will use conversational interviews and talking about your experiences with decision-making in this context.

I have obtained your name/contact information from _____. I would like to ask you some questions about your experience with decision-making in whitewater critical incidents and accidents to determine if you might qualify for this study. This should take no more than 10 minutes of your time. You do not have to answer any questions you do not want to answer. You may stop this interview at any time. If you qualify for this study, you will be asked to take part in two conversational interviews in a quiet location of your choosing at a time that works for both you and I. One interview will be face to face and the interview will take from 1 hour to 1 hour and twenty minutes. The second interview will last 30 minutes and be conducted either face to face or over the phone. Both interviews will be audio recorded. Participation in this screening and the main portion of the study is completely voluntary. There are no gifts or incentives

I do not anticipate any foreseeable risks or discomforts associated with the screening process.

If you are eligible to participate in the main portion of the study, you will be provided an opportunity to read a Consent Form at the beginning of our first interview, as well as suggest a pseudonym to be used as a replacement of your name. You will be provided with a copy of the Consent Form.

All information that I receive from you during this phone screening interview, including your name and any other information that can possibly identify you, will be strictly confidential, unless required by law. Remember, your participation is voluntary; you can refuse to answer any questions, or stop this phone interview at any time without penalty or loss of benefits to which you are otherwise entitled. At any point during this screening interview you may elect to stop the session, at which point any and all material collected will be destroyed. If you do not qualify for this study, the information you give me today will be destroyed immediately.

Do I have your permission to proceed?

Are you 18 years of age or older?

What city and state do you currently reside?

Have you ever been involved directly in a whitewater critical incident or accident?
What was your role and involvement in this experience?
Did you make decisions that you feel were directly related to the critical incident or accident?

Thank you for answering my questions today. You do/do not qualify to participate in this research study. [If qualified to participate] I would like to arrange a convenient place/time to meet to discuss the study and obtain your consent to participate. Are you interested in participating in this study?

If you have any questions regarding this study, please call me at (or e-mail me at) 706-897-0302 or rdussler@uga.edu or Dr. Corey Johnson 706-542-4335, cwjohns@uga.edu

If you have any questions or problems about your rights as a research participant, please call The Chairperson, Institutional Review Board, University of Georgia at 706-542-3199.

Thank you for your willingness to participate!

Appendix D

Consent Form

I, _____, agree to participate in a research study titled " Understanding Decision-Making in Whitewater Critical Incidents and Accidents" conducted by Rob Dussler from the Department of Counseling and Human Development at the University of Georgia (706-542-5064) under the direction of Dr. Johnson, Department of Counseling and Human Development, University of Georgia (706-542-4335). I understand that my participation is voluntary. I can refuse to participate or stop taking part at anytime without giving any reason, and without penalty or loss of benefits to which I am otherwise entitled. If I decide to stop or withdraw from the study, the information/data collected from or about me up to the point of my withdrawal will be kept as part of the study and may continue to be analyzed.

The reason for this study is to develop an increased understanding of the decision-making process of individuals involved in whitewater critical incidents or accidents. This study will use conversational interviews and talking about my experiences with decision-making in this context.

If I volunteer to take part in this study, I will be asked to do the following things:

1) Participate in two conversational interviews. The first interview will be in-person and will last approximately an hour to an hour and twenty minutes in length, where I will talk about my experiences with decision-making in whitewater critical incidents or accidents. The second follow up interview will last approximately 30 minutes and will be in-person or on the phone.
2) Suggest a pseudonym to be used during analysis and write up of the findings

An anticipated risk is that I may become distressed in remembering and discussing my experience with a whitewater critical incident or accident. I can skip any questions I do not want to answer or can terminate the interview if at any point I feel I am unwilling or unable to proceed with the interview. Referral information to counseling services will be made available to me during the debriefing process of the interview.

The benefits for me are that my participation in these interviews may help me understand my decision-making process more fully as it relates to whitewater critical incidents or accidents. The researcher also hopes to learn more about the decision-making process of individuals involved in whitewater critical incidents and accidents.

Each interview session will be audio recorded. Only the investigators will have access to the audio files, which will not be publicly disseminated. The audio files will be destroyed after 5 years of the date of the study. No individually-identifiable information about me, or provided by me during the research, will be shared with others without my written permission except if it is required by law. I will suggest a pseudonym, which will be used to refer to my responses during the data formation and representation. The key to the code which will be used to link my pseudonym to my real name will be kept for 5 years

so researchers can contact participants for further clarification questions during data analysis, for presentations and publications, to recruit individuals for future longitudinal phases of the research.

Any identifying information will be kept under lock and file for hard copies and/or through the use of password protected computer programs.

The investigator will answer any further questions about the research, now or during the course of the project.

I understand that I am agreeing by my signature on this form to take part in this research project and understand that I will receive a signed copy of this consent form for my records.

Name of Researcher: _____

Signature:_____

Date: _____

Telephone: _____

Email: _____

Name of Participant: _____

Signature: _____

Date: _____

Additional questions or problems regarding your rights as a research participant should be addressed to The Chairperson, Institutional Review Board, University of Georgia, 629 Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; (706) 542-3199; IRB@uga.edu

Appendix E

Script for Debriefing Interview Process with Participants

I appreciate your willingness to participate in this research study. I understand that you may have revisited some painful memories and experiences during the course of the interview. If you feel that you need counseling or psychological services to assist you with your process I would recommend contacting the Smoky Mountain Center. They have a licensed clinician on staff 24 hours a day, seven days a week and can provide you with screening and counseling services. They can be reached at 888-757-5726.