

AN INVESTIGATION OF
FLOW AND IZOF
UTILIZING THE FSS-2

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of the Requirements for the Degree
Master of Science

by
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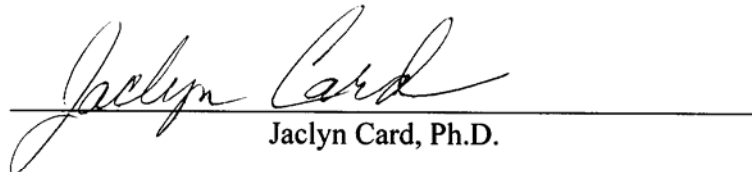
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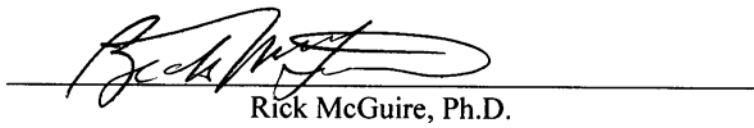
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DEDICATION

To my parents, Paul and Judy McCune, who have displayed endless patience and support throughout the varied chapters of my life.

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AN INVESTIGATION OF FLOW AND IZOF UTILIZING THE FSS-2

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ABSTRACT

When challenge and skill are perfectly balanced, frequently this experience is described as flowing or being in the zone. This relationship describing this optimal zone has been studied in the flow theory. This optimal zone has also been investigated similarly in terms of the relationship of performance and arousal in the individual zone of optimal functioning (IZOF) theory. These two theories, although seemingly describing the same phenomenon, have yet to be combined in study of this phenomenon.

This study primarily attempted to test the correlation of flow and IZOF theories by combining respective instrumentation and methodology. This investigation was based on the combining of flow instrumentation, the Flow State Scale-2 (FSS-2) with the IZOF methodology, self-report recall data collection. Results indicate the FSS-2 is still internally valid when using IZOF methodology. This suggests the optimal experience described by the flow and IZOF theories may describe the same phenomenon.

Subjects were chosen from whitewater slalom athletes based on a convenience sample consisting of athletes participating in an event during summer 2005. Flow is characterized by nine constructs defining the experience. Of these nine characteristics, only one did not display a positive correlation, the transformation of time. This suggests whitewater slalom athletes may not experience the altered perception of time typical of many other optimal experiences.

CHAPTER 1: INTRODUCTION AND PROBLEM

“...now everything ahead seems kind of empty and I find I have already had my reward, in the doing of the thing” (Conley, Dimock, & Welch, 1998, p. 121). The year was 1937. Haldane “Buzz” Holstrom had just become the first individual to navigate the Colorado River including the Grand Canyon *solo*. This was the entry in his journal on his last night on the river. In all, Buzz covered over 1,100 miles entirely by himself.

Sitting beside the largest and most treacherous rapid of his journey, Lava Cliffs rapid (now under Lake Mead), Buzz had successfully navigated the last rapid of his journey. All obstacles were behind him, and he would soon be returning to the rest of the world and civilization. In reflecting on his experience, Buzz realized the true reward was, “the doing of the thing.” Not until 1975, would a name be given to this optimal experience Buzz was describing. Empirically known as an autotelic experience, this phenomenon is more commonly known as a flow experience.

What Buzz Holstrom was experiencing, according to Csikszentmihalyi’s theory of flow, is the result of challenge and skill being perfectly balanced resulting in an autotelic experience (Csikszentmihalyi, 1975). Existing models based on Csikszentmihalyi’s original flow theory reliably predict the occurrence of an autotelic experience when perceived challenge and perceived skill of an activity are perfectly balanced (Hollenhorst, Jones, & Perna, 2003). The Adventure Experience Paradigm (AEP), building on the original theory of flow describes experiences above and below the autotelic zone (Martin & Priest, 1986). However, current models have yet to reliably describe experiences outside of the optimal autotelic experience, when challenge and skill are not balanced,

placing an individual's experience above or below the autotelic zone (Csikszentmihalyi, 1975; Hollenhorst et al., 2003).

The Individual Zones of Optimal Functioning (IZOF) theory is very similar to Csikszentmihalyi's theory of flow. The IZOF theory describes the relationship of performance and arousal (Hanin, 2000). Very similar to flow, the IZOF theory studies optimal experience as a function of the interaction of performance and arousal (Csikszentmihalyi, 1975, 1990; Csikszentmihalyi & Csikszentmihalyi, 1988).

Experiences above and below the flow zone are characterized by over and under arousal, respectively (Csikszentmihalyi, 1975).

Tested and validated instruments for measurement exist for both flow and IZOF theories. Flow instruments are designed to detect an individual's state and trait flow characteristics, using the Dispositional Flow Scale-2 (DFS-2) to measure trait flow, and the FSS-2 to measure state flow (Eklund & Jackson, 2004).

Recall self-report methods of measuring anxiety for peak experiences have proven reliable during studies of the IZOF theory due to the salient nature of optimal experiences in an individual's mind (Hanin & Jokela, 1999). Recall self-report methodology is asking subjects to complete the STAI based on their recollection of their best performance. This methodology is based on the assumption the subject is within their individual zone of optimal functioning for the experience they are recalling. Since such experiences are highly salient in the subject's mind, their recollection of details of the experience for these purposes is considered reliable.

If flow and the IZOF theories describe the same phenomena, instruments and methods from both theories could be combined for analysis of zones above and below the

autotelic zone. Specifically, the STAI for measuring arousal could be used to study the stratification of flow above and below an optimal experience, as proposed in the AEP.

Purpose

The purpose of this study is to determine if the FSS-2 is still internally valid when utilizing IZOF data collection methods.

Subproblems

Testing existing models of flow supports the existence of flow as an autotelic experience occurring when arousal is optimal when challenge and skill are balanced (Hollenhorst et al., 2003). Central to the theory of flow is the level of challenge and skill is based on *individual perception* (Csikszentmihalyi, 1975, 1990). Two participants in the same activity, even when experiencing identical outcomes, can have completely different experiences, due to their individual and distinct perceptions of the situation. Challenge and skill are not determined by absolute, external, and socially accepted measures of difficulty posed by opportunities for action. Rather, challenge and skill are determined based on participant perception of challenge posed by the activity, and their respective perceived skills relative to this perceived challenge (Csikszentmihalyi, 1975, 1990).

Paddling whitewater rivers involves an element of risk, “including, without limitation, recirculating hydraulics, swift moving water, rocks, and other known and unknown risks inherent to...whitewater” (Wiegand, 2004, para. 4). According to the International Scale of River Difficulty, a class III rapid is of intermediate difficulty, which can include narrow passages, require precise maneuvering, and waves capable of swamping an open canoe (Belknap, Bowers, Thorton, & Walbridge, 1998). For one participant, new to paddling and still unfamiliar with a dynamic whitewater environment,

class III can be perceived as petrifying, instilling almost debilitating fear. The second participant, with ten years of whitewater paddling experience, could have a very different experience only a few seconds later. The class III rapid is perceived as quite easy, almost boring. For the second participant, the experience is not at all unlike splashing in the bathtub, with just about as much excitement.

Of importance when considering challenge and skill in autotelic experiences is participant perception. Reality is only important as perceived by the participant. After all, this is the only reality the participant knows, their perception of the world (Csikszentmihalyi, 1975, 1990).

The IZOF model, focusing on the individual zone of optimal functioning, is characterized by an optimal level of arousal intersecting with maximal performance, possesses many similarities with the flow model (Hanin, 2000). Sharing an individual nature of the experience and the description of the optimal level of arousal within this zone, the optimal zone described by both the theory of flow and the IZOF may be describing the same thing. Thus, the subproblems for this study are:

Subproblem 1: Flow & IZOF

Determine if the FSS-2 retains significant internal validity when utilizing self-report recall methodology of the IZOF theory for data collection in conjunction with the FSS-2.

Subproblem 2: Flow Characteristics & State Flow

Determine if any of the nine individual flow constructs possess any greater relation to state flow.

Subproblem 3: Individual Characteristics & State Flow

Determine if any individual demographic characteristics possesses significantly greater relation to state flow.

Hypothesis

H₁ – Flow & IZOF

The FSS-2 does not display significant internal validity when utilizing self-report recall methodology of the IZOF theory for data collection in conjunction with the FSS-2.

H₂ – Flow Constructs & State Flow

No significant correlation exists between any of the nine individual flow zone constructs and state flow.

H₃ – Demographic Characteristics & State Flow

No significant difference exists among the individual demographic characteristics and state flow.

H_{3a} – gender & state flow

No significant difference exists among the gender groups and state flow.

H_{3b} – preferred craft & state flow

No significant difference exists among the preferred craft groups and state flow.

H_{3c} – age group & state flow

No significant difference exists among the age groups and state flow.

Definitions

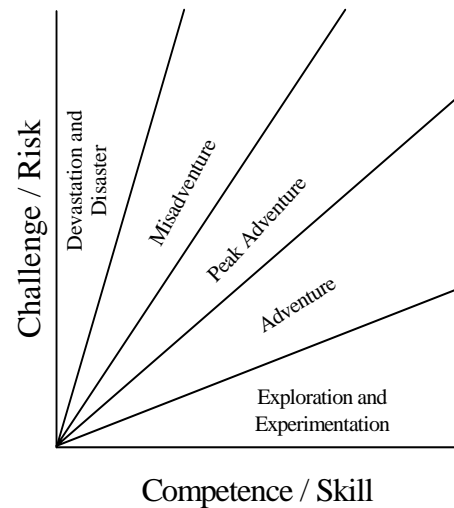
The respective theories of flow and IZOF, by their very nature, possess a vocabulary entirely unto themselves. Much like flow, whitewater paddling, and particularly competitive whitewater paddling also possesses its own vocabulary. It is

therefore necessary to define a number of terms to be able to converse in the language of flow, IZOF and whitewater slalom racing.

Adventure Experience Paradigm (AEP)

Based on earlier ideas relating to the optimal experience and flow, the AEP proposes a five level stratified model of flow ranging from severe under-arousal to optimal arousal to severe over-arousal (Martin & Priest, 1986).

Figure 1: AEP



Note: From "Understanding the Adventure Experience," by Martin and Priest, 1986, *Adventure Education: The Journal of the National Association for Outdoor Education* 3(1), p. 18-20. Copyright 1986 by the National Association for Outdoor Education.

Anxiety

Anxiety is an emotional reaction to a stimulus or stressor perceived as threatening. If an individual does not perceive the stimulus as threatening, then anxiety changes do not occur.

Anxiety is an individualized experience (Hanin, 2000). The same stimulus can produce drastically different responses for different individuals based on the level of threat perceived.

Arousal

Arousal is, "an undifferentiated physiological response" (Hanin, 2000, p. 98). It is a response, nonspecific in nature manifesting as a physical change.

Autotelic Activities

Derived from two Greek words, *auto* meaning self, and *telos* meaning goal, autotelic activities are those offering no extrinsic rewards, only intrinsic rewards (Csikszentmihalyi, 1990). Csikszentmihalyi describes autotelic activities as, "...patterns

of action which maximize immediate, intrinsic rewards to the participant” (Csikszentmihalyi, 1975). He also describes the relationship between extrinsic and intrinsic rewards, “Even if initially undertaken for other reasons, the activity that consumes us becomes intrinsically rewarding” (Csikszentmihalyi, 1990, p. 79) .

Autotelic Experience

“An autotelic experience is a psychological state, based on concrete feedback, which acts as a reward in that it produces continuing behavior in the absence of other rewards...an autotelic activity is one that usually provides autotelic experiences, and an autotelic person is one who tends to have such experiences” (Csikszentmihalyi, 1975, p. 23). An autotelic experience embodies all or most of the characteristics Csikszentmihalyi discusses as typifying the autotelic zone (Csikszentmihalyi, 1975, 1990; Csikszentmihalyi & Csikszentmihalyi, 1988).

Autotelic Person

“An autotelic person is one who is able to enjoy what he is doing regardless of whether he will get external rewards for it” (Csikszentmihalyi, 1975, p. 22). This is the type of person who undertakes activities for their own sake, not for the sake of external goals (Asakawa, 2004). These people enjoy challenges and improve their quality of life by facing challenges daily, have a better sense of the balance of challenge and skill, and are more predisposed to entering into and developing flow experiences (Asakawa, 2004).

Awareness

Awareness, in relation to flow, is a sense of the self (Csikszentmihalyi, 1990). Awareness describes how a person conceptualizes their own self, and their consciousness of this concept. Awareness is how an individual views their self as an athlete, musician,

friend, or any other image a person holds of them self. Frequently awareness of the self relates strongest to outward appearance. (Csikszentmihalyi, 1975, 1990).

Challenge

Challenge is an opportunity for action (Csikszentmihalyi, 1975). In the flow model it is plotted along the y axis against skill on the x axis, with flow occurring at the balance of the two (Csikszentmihalyi, 1990).

Competence

In the Adventure Experience Paradigm, the skill component of the flow model is referred to as competences (Martin & Priest, 1986).

Elite Athlete

Studies by Williams and Parkin (as cited in Cox, 2002) discovered distinct differences in personality profiles of athletes at the national level and above. At the national level and above, athlete personality characteristics were discovered to be highly homogeneous. Based on these findings, athletes performing at a national level or higher are grouped together and distinguished as elite athletes.

This idea is based on a six level stratified pyramid of athletes. At the top is the pinnacle of athletic performance, the best of the best elite athlete. Below this level is Olympic and then national level athletes. These three descending levels, elite, Olympic and national possess homogeneous personality characteristics (Silva and Weinberg, 1984 as cited in Cox, 2002) and are therefore collectively grouped as elite athletes. Below these three levels of athlete are collegiate, scholastic and entrance levels of athletic development and performance.

The lower the level of athletic development, the higher the degree of personality heterogeneity is displayed among athletes. Athletic participants are more diverse and dissimilar at lower levels of athletic development. Increasing athletic performance levels on the athletic pyramid are positively correlated with increasing homogeneity of personality traits (Williams and Parkin 1980 as cited in Cox, 2002).

Extrinsic Rewards

Extrinsic rewards consist of tangible rewards and validation for activity participation and performance. Extrinsic rewards can be thought of as a, “stick and carrot,” (Csikszentmihalyi, 1975, p. 2) type of motivation. In athletic contests, this can consist of medals, ribbons, awards and accolades. The most common extrinsic reward is fiscal. Fiscal rewards are obviously not exclusive

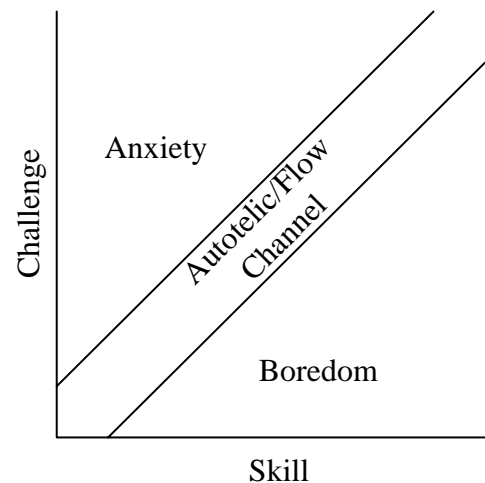
to athletic pursuits but applicable to a wide variety of activities (Csikszentmihalyi & Csikszentmihalyi, 1988; Hollenhorst, Jones, Perna, & Selin, 2000).

Flow

Csikszentmihalyi describes flow as, “opportunities for action which a person can act upon without being bored or worried”

(Csikszentmihalyi, 1975, p. 75). Flow is a theory of how activities produce an optimal experience based on individuals’ perceptions of challenge and skill (G. D. Ellis, Morris, & Voelkl, 1994). Indicators of flow are thought to be facilitated by the relative balance of challenge and skill (Csikszentmihalyi, 1975).

Figure 2: Flow Model



Note: From *Beyond Boredom and Anxiety*, by Mihaly Csikszentmihalyi (p. 49), 1975, San Francisco, CA: Josey-Bass Publishers. Reprinted with permission of John Wiley & Sons, Inc.

Flow: State Flow

State flow, also known as dispositional flow, is the experience of flow in a moment (Eklund & Jackson, 2004). Highly transient, it describes a moment of time in response to external environmental stimuli.

Flow: Trait Flow

Trait flow is the predisposition of an individual to experience flow (Eklund & Jackson, 2004). In comparison to state flow, trait flow is more of a static personality trait, remaining relatively unchanged over time.

International Scale of River Difficulty

Whitewater rapid difficulty is assessed on a system of six classes. Factors taken into consideration when rating rapids include wave height, water velocity, water volume, complexity of maneuvers, and threat of injury and death (Belknap et al., 1998).

- (1) Class I is simply moving water with none or very few obstacles making for simple and easy navigation. If present, waves are small and choppy. Water velocity (current) is slow and gentle. Although always a risk when in the water, threat of injury or death is extremely minimal in class I rapids (Belknap et al., 1998).
- (2) Class II involves simple maneuvering and some obstacles. Passages are obvious, open and clear. Although waves can sometimes be capable of swamping a canoe, they are infrequent. Current is somewhat stronger and faster than class I. Threat of injury and death is still very minimal (Belknap et al., 1998).

- (3) Class III is starting to look like whitewater. The current can start to be increasingly powerful. Waves frequently are large enough to swamp a canoe. Complex maneuvering is required. Although complex, rapid routes are obvious and well defined. Class III presents a threat of injury in some cases, and risk of death is still minimal (Belknap et al., 1998).
- (4) Class IV is really whitewater. Currents are powerful and sometimes very unpredictable. Waves are easily large enough to swamp a canoe. Routes through the rapid can be long, complex and sometimes difficult to immediately recognize. Threat to injury is very much present and the risk of death does exist (Belknap et al., 1998).
- (5) Class V is the limit of navigability. Currents are powerful and highly unpredictable. Routes can be very complex and difficult to recognize. Risk of injury and death is very present (Belknap et al., 1998).
- (6) Class IV is unnavigable. Death is almost guaranteed. In some rare cases, if only run once or twice and never attempted again. In such cases, the class IV rating is retained. Generally, if a rapid becomes run on even an infrequent but regular basis, the rapid becomes a class V (Belknap et al., 1998).

Intrinsic Rewards

Intrinsic rewards possess no external or tangible reward for the participant. Intrinsic rewards are in direct contrast to extrinsic rewards, the participant receiving something tangible for participation or success in an activity. Intrinsic rewards can be described in a variety of ways, but all share a common theme, of the participant receiving a positive and rewarding feeling from activity participation (Csikszentmihalyi, 1990).

Optimal Experience

Csikszentmihalyi describes an optimal experience as:

...we have all experienced times when, instead of being buffeted by anonymous forces, we do feel in control of our actions, master of our own fate. On the rare occasions that it happens, we feel a sense of enjoyment that is long cherished and that becomes a landmark in memory for what life should be like...Contrary to what we usually believe, moments like these, the best moments in our lives, are not the passive, receptive, relaxing times...The best moments usually occur when a person's body or mind is stretched to its limits in a voluntary effort to accomplish something difficult and worthwhile. Optimal experience is thus something we *make* happen. (1990, p. 3)

Psychic Energy

Psychic energy is attention, the total cognitive power or consciousness possessed by an individual (Csikszentmihalyi, 1990). This attention is finite for each individual. Rarely is all attention focused entirely on one task. During normal daily activities, attention is divided among numerous tasks, executed simultaneously either consciously or subconsciously. However, during flow all attention or psychic energy is focused entirely on a single task, occluding all other extemporaneous thoughts.

Self

The self is, "...myself as I see me" (Csikszentmihalyi, 1990, p. 34). It is how each individual views themselves. The self exists exclusively in an individual's consciousness. The self is comprised of, "...everything else that has passed through consciousness: all the memories, actions, desires, pleasures, and pains are included in it. And more than

anything else, the self represents the hierarchy of goals that we have built up, bit by bit, over the years” (Csikszentmihalyi, 1990, p. 34).

Rarely does the self wander far from an individual’s focus of attention. Normally an individual only is conscious of a small part of the self, usually outward appearance.

The boundaries of the self can be extended to include family, home, car or job.

“...however much we are aware of it, the self is in many ways the most important element of consciousness, for it represents symbolically all of consciousness’s other contents, as well as the pattern of their interrelations” (Csikszentmihalyi, 1990, p. 34).

Psychological Resilience

“[Psychological] resilience describes a psychological quality that allows a person to cope with, and respond effectively to, life stressors” (Neill, 2004, p. 2).

Risk

In the AEP, risk is challenge imposed by the environment. This is assuming the AEP is for adventure activities inherently involving a component of risk (Martin & Priest, 1986). In the flow model it is plotted along the x axis against challenge on the y axis, with flow occurring at the balance of the two (Csikszentmihalyi, 1990).

Skill

Skill is the “...capacity to cope with the demands imposed by the environment” (Csikszentmihalyi, 1975, p. 90). Skill level is determined by an individual’s *perception* of the situation, and the capacity to cope with the given situation (Csikszentmihalyi, 1990).

Whitewater Slalom

Whitewater slalom is a timed race through a whitewater rapid while navigating through an ordered series of gates. The winner of whitewater slalom is the fastest

competitor from the top to the bottom of the course, who successfully navigates all the gates. Gates consist of poles suspended over the river with either red or green color banding to indicate the direction of navigation, either upstream or downstream respectively. A whitewater slalom course is at least 800 feet long, consisting of at least 25 gates, with a minimum of three upstream gates suspended over a class III or IV whitewater rapid (USACK, 2005).

Only one competitor is on the course at a time. Penalties are assessed for touching (2 seconds) or missing a gate entirely (50 seconds). These penalties are added to a competitor's time, to derive their score for each attempt (run). Competitors have two runs on the course, and their two scores (time plus penalties) are totaled to determine the placing of athletes in a race (USACK, 2005).

Delimitations

Those who are familiar with more formidable challenges will experience more tangible and intense autotelic experiences (Csikszentmihalyi, 1975, 1990; Hollenhorst, et al., 2003). Due to having more intense autotelic experiences, these individuals will have more concrete perceptions of challenge, skill, and their interaction producing an autotelic experience (Csikszentmihalyi, 1975, 1990; Hollenhorst et al., 2003).

This study was delimited to a group of people who seek out the challenge not only through risk, but combine risk with competition, whitewater slalom athletes. Competitive whitewater paddlers, seeking challenge beyond that posed by the whitewater alone, seek out additional challenge by introducing competition.

Further, athletes for this study are of a highly competitive nature, participating in a national level competitive event. Based on the higher level of competition, athletes

participating in this event represent more advanced and competitive athletes. Such athletes are typically known as elite athletes. These elite athletes represent a distinct psychological profile characterized by interaction between the athlete and the situation. Elite athletes are much more acutely aware of themselves and their surrounding environment (Cox, 2002).

Limitations

This sample for this study is subject to geographic and temporal limitations. Subjects for this study were athletes selected based their participation a competitive whitewater event during the summer of 2005.

Athletes were approached directly and asked to participate in the study. This study was conducted during the course of one day at a whitewater slalom race held during summer 2005 in the United States. Athletes sampled were those participating in this event.

Need for Study

Autotelic experiences offer an opportunity for life enrichment by facilitating expansion of the self (Csikszentmihalyi, 1990), and increasing the capacity for coping with life stressors (Neill, 2004). The growing community of adventure sports professionals stands to benefit from an increased understanding of optimal experiences. With an increased knowledge of flow, these professionals are better able to facilitate optimal experiences with their customers. This enables their customers to derive the personal benefits of flow (Cryer, Ross, & Evers, 2003).

An increased understanding of the relationship of skill and challenge outside of the optimal experience would allow individuals and professionals to both better achieve

and find autotelic experiences. Further, the study of flow has thus far focused on identifying and predicting the existence of the flow zone (Eklund & Jackson, 2004), and quantifying the experience outside of the flow zone has been less than successful (Csikszentmihalyi & Csikszentmihalyi, 1988). By looking to a similar theory, the IZOF theory could offer a solution to these limitations.

Sports Psychology

Expansion of the self

The nature of flow facilitates expansion of the self, challenge slightly exceeding skill, necessitating skills to be expanded and further developed (Csikszentmihalyi, 1975, 1990). Due to this increased proficiency in the activity, the individual possesses more specialized and rarer skills, thus becoming a more unique individual. Additionally, generalized life skills have shown to be derived from such experiences, particularly psychological resilience (Neill, 2004).

Autotelic experiences, by their very nature, force an individual to extend their skills in response to challenges faced (Csikszentmihalyi, 1975, 1990). Following the experience, the participant's level of skill has been increased, making them a more competent individual. This increased competence builds confidence, leaving the individual feeling more skilled and capable, able to better meet the challenges faced by both the immediate activity and the larger world as well. Due to this extension of skills, every flow experience facilitates personal growth of the individual (Csikszentmihalyi, 1990).

Psychological resilience

Psychological Resilience, "...is about a person's capacity to not just survive, but to thrive on life's challenges" (Neill, 2004, p. 3). This resilience has been shown to be a positive outcome of autotelic experiences (Neill).

The very nature of challenge as an objective or obstacle to be overcome makes it a stressor (Mitchell, 1983). "The physical problems related to chronic stress include the lowering of the immune response, chronic muscle tension, and increased blood pressure. These problems can eventually lead to serious life-threatening illnesses such as heart attacks, kidney disease, and cancer" (Engs, 1987). By being exposed to stressors, and successfully overcoming them, participants actually become better prepared to face stressors in other aspects of their lives (Neill, 2004).

The nature of the interaction of psychological resilience and autotelic experiences is much like the immune system developing immunity to a pathogen after being exposed to it. Neill (2004) describes this interaction as similar to being cut with a sword, with the inflicted wound actually healing stronger than before.

With this improved ability to manage life stressors, individuals can lower their stress levels and increase their quality of life. Merging the instruments and methods of flow and IZOF facilitates an increased understanding of the interaction of challenge and skill will provide for more effective facilitation of challenging experiences by adventure leaders (Neill, 2004).

Adventure Leadership

High risk recreational activities, once regarded as the domain of Generation Xer's, are quickly entering the mainstream (Cryer et al., 2003). Activities which were not

very long ago pursued only by ‘professionals’ or ‘hard-core’ amateurs are now pursued by ‘ordinary’ people (Cryer et al., 2003). Activities such as rock climbing, whitewater paddling, mountain biking, skydiving, kite-boarding, parasailing, and hang-gliding have become regular weekend recreational activities for mainstream or ‘ordinary’ users. In the 1980’s a new industry emerged, and has continued to grow in response to this growing segment of users. The growth of this user group has been sufficient to support the development of professionalism in the field of adventure leadership (Gass & Priest, 1997).

With the development of professionalism in the field of adventure leadership, comes the need to better understand motivations of this growing segment of the population (Cryer et al., 2003). The theory of flow explains the motivation to pursue intrinsically rewarding activities as a balance between challenge presented by the activity and the skill possessed by the participant (Csikszentmihalyi, 1975). A better understanding of the motivations behind and the potential benefits of high risk activities would enable adventure leadership professionals to better facilitate flow experiences, allowing their customers to gain the personal growth rewards associated with flow.

Beyond the Flow Zone

Existing instruments studying flow are designed to detect and predict flow (Csikszentmihalyi & Csikszentmihalyi, 1988; Eklund & Jackson, 2004). Even the most recent instruments, the Dispositional Flow Scale-2 (DFS-2) and the FSS-2 (FSS-2) are designed to merely detect the existence of flow, rather than to quantify the level of skill, challenge or arousal present for the individual for the activity or event (Eklund & Jackson).

Hanin's IZOF theory builds upon existing studies of the Inverted-U Hypothesis and the subsequent Optimal Arousal Theory (Hanin, 1986, 2000; Hanin & Jokela, 1999). These studies describe the connection between arousal and anxiety as related to performance.

The Inverted-U hypothesis observes the relationship between arousal and performance with performance increasing with increasing arousal, then decreasing past an optimal level. Frequently referred to as the Yerkes-Dodson law, it states this relationship traces an inverted-U shape (Dodson & Yerkes, 1908). With the initial research conducted on rats, transference to humans proved difficult. The research methods increased arousal through increased stimulus, an electric shock. Transference of this principle to humans required not inducing arousal, but measuring arousal using the State Trait Anxiety Inventory (STAI).

Anxiety, as a measure of arousal can be used to measure the distance from the peak of performance based on a normal curve (Hanin, 2000). The flow theory and the zone described by IZOF could be describing the same experience. If this is the case, anxiety level could describe the zones above, in and below the flow zone (see Figure 2). The STAI could be used to study this relationship of arousal and the zones describing and surrounding the optimal experience of flow.

CHAPTER 2: LITERATURE REVIEW

Man – and Woman...come equipped with the biochemical gear to take on a sabretooth. To experience that transformation in all its hair-raising glory is to discover something important about our identity. It is to plunge our bucket into a well-spring of innate power. One blessing and curse of human affairs in the very late 20th century is that we barely allow ourselves to experience just an overture to that powerful and ancient reflex. But involving our bodies in “risk sports” not only permits a reconnect to the vibrancy of our animal nature, it also allows a complete, physical follow through to a conclusion. One makes tremendous discoveries in that process. (Hodgson, 1994, p. 118-119)

Why are people drawn to risk sports? Risk sports rarely offer any substantial extrinsic rewards (Csikszentmihalyi, 1975). However, they do offer substantial intrinsic rewards (Asakawa, 2004; Csikszentmihalyi, 1975, 1990; Csikszentmihalyi & Csikszentmihalyi, 1988; Csikszentmihalyi & Jackson, 1999; Hollenhorst et al., 2003). Growing out of the study of motivations for intrinsically motivated activities, Csikszentmihalyi refined study of play and intrinsic motivation in the 1970's. His exploration into intrinsically motivated activities gave rise to the theory of flow (Csikszentmihalyi, 1975).

Csikszentmihalyi continues to study intrinsically motivated activities and flow, while a number of other individuals have proposed parallel theories and modifications to the original model. Mortlock proposed a very similar parallel theory, the Adventure Alternative in 1984. Priest proposed the Adventure Experience Paradigm (AEP) in 1986

as attempt to further refine the understanding of intrinsically motivated activities through synthesis of Csikszentmihalyi's theory of flow and Mortlock's Adventure Alternative (Martin & Priest, 1986).

Sensation Seeking

Ellis, studying motivations for play, concluded play largely served a need for maintaining optimal arousal.

In human terms the organism behaves in such a way as to avoid boredom or to avoid unpleasant over-stimulation...The major portion of the behavior serving this drive for optimal arousal is concerned with stimulus-seeking. (Ellis, 1973, p. 80)

Task specific skills related to arousal seeking behavior also possess a correlation with task proficiency. Participants require increased task difficulty to achieve optimal arousal as their task specific skill increases. Seeking out challenge and stress to provide optimal arousal serves to provide emotional release for the participant (Ellis, 1973). This study of play as sensation seeking behavior held many similarities with a parallel evolving theory of flow, proposed two years later by Csikszentmihalyi (1975).

The Flow Theory: Do You Feel It?

Upstream – From a Trickle to Flow

Headwaters – origins of flow

All human behaviors are attributable to a cause or reason; they simply do not occur due to chance (Csikszentmihalyi, 1990). Why then, do people pursue activities possessing no rational extrinsic rewards, only intrinsic rewards? Csikszentmihalyi pondered this question while studying painters in 1965. Csikszentmihalyi first looked to

Maslow's description of peak experiences driven by need for self-actualization, self discovery of "potentialities and limitations through intense activity and experience" (Csikszentmihalyi & Csikszentmihalyi, 1988, p. 5) for insight into this question. This led to an inquiry of play motivations, since play is "clearly intrinsically motivated" (Csikszentmihalyi & Csikszentmihalyi, p. 5).

A trickle – developing flow

Through a study on rock climbers and the intrinsic motivations associated with play, Csikszentmihalyi first formed his model of flow in 1971 (Csikszentmihalyi & Csikszentmihalyi, 1988). This study consisted of in-depth interviews with thirty rock climbers of varying educational levels, ages, and socioeconomic status. The interviewers were also rock climbers themselves. The original study posed two questions. First, "Why are people attracted to an activity that offers no 'rational' rewards" (Csikszentmihalyi, 1975, p. 5). Why are people attracted to activities offering no extrinsic rewards such as money and fame? These are activities possessing only intrinsic, self-fulfilling rewards. Second, he examined the connection between playful activities and "real" life.

This study proposed activities producing deep play or flow are all characterized by, "...total involvement of body and mind with a feasible task which validates the competence, indeed the very existence of the actor. It is this that makes the activity worthwhile, despite the absence of utilitarian rewards" (Csikszentmihalyi, 1975, p. 99). With regard to the connection between these experiences and the "real" world, Csikszentmihalyi concluded:

A person who has attained this state of being inevitably compares it with the experiences of normative life. The comparison affords a revitalizing perspective

on the culture in which one is usually immersed...it seems appropriate to consider the heightened mental state of flow a prerequisite for the development of new cultural forms (Csikszentmihalyi, 1975, p. 99-100).

Further, this study identified the close relation of skill to the difficulty of the task to produce the intrinsic rewards of a flow experience. However, this study did not expand on this concept (Csikszentmihalyi, 1975).

Csikszentmihalyi continued to study flow in rock dancing, surgery, everyday life, and even the effects of deprivation of flow. In 1975, based on this research, he published his flow theory in *Beyond Boredom and Anxiety*. In this book, he describes flow as an autotelic experience, outlines the identifying characteristics of flow, and describes the interaction of challenge and skill to produce an autotelic experience.

Current Flow – Flow as It Stands Now

Characteristics of flow

Through the study of flow experiences, characteristics have been identified which can be used to identify flow experiences (Csikszentmihalyi, 1975; Csikszentmihalyi & Jackson, 1999). Although not imperative for all characteristics to be present for flow to occur, most usually are. These characteristics have shown to be universal around the world, unaffected by race, origin, or culture (Asakawa, 2004; Csikszentmihalyi & Csikszentmihalyi, 1988).

Csikszentmihalyi proposes nine identifying characteristics (Csikszentmihalyi, 1975; Eklund & Jackson, 2004). These nine characteristics have been used to subsequently design two instruments for the measure of flow, the Dispositional Flow Scale-2 and the Flow State Scale-2 (FSS-2) (Eklund & Jackson):

- (1) Challenge-Skill Balance: The most basic and fundamental dimension of Flow, the balance of challenge and skill indicates a one to one ratio of these two constructs. According to the theory of flow, when these two constructs are balanced or even when challenge just barely exceeds skill, flow will occur (Csikszentmihalyi, 1990; Eklund & Jackson, 2004).
- (2) Merging of Action and Awareness: This is one of the most universal and distinct aspects of an autotelic experience. An individual ceases to have awareness of them self outside of the actions they are performing to execute the activity. The perception of the self merges with the activity, and actions become automatic...almost flowing. It is this automatic nature of actions, for which an autotelic experience is also known as flow (Csikszentmihalyi, 1990).
- (3) Clear Goals: When correctly implemented, goal setting is a central element to achieving a flow experience. Once a salient goal has been established to work toward, the path toward this goal obvious. Progress along this path or lack thereof is obvious to the performer on a moment-by-moment basis, providing immediate feedback to the participant (Csikszentmihalyi, 1990; Eklund & Jackson, 2004).
- (4) Unambiguous Feedback: Following the setting of clear goals, the concept of this immediate and unambiguous feedback is also central to a flow experience. With such defined goals, progress toward them is clearly defined and obvious to the participant. Any variation in the quality of performance toward this goal, due to its salient nature, becomes immediately apparent to participant. (Csikszentmihalyi, 1990; Eklund & Jackson, 2004).

(5) Total Concentration on the Task at Hand: An autotelic experience, while it lasts, challenges an individual to use their maximum skills, including the entire mental capacity, or consciousness. This focused mental energy is also carefully filtered. The sensory information allowed through the consciousness is limited to information relevant to the task at hand (Csikszentmihalyi, 1990).

(6) Sense of Control: Flow activities offer the opportunity for possible control over the situation. Flow activities rarely offer an opportunity for complete control (Csikszentmihalyi, 1990). A climber may fall and break a bone. A whitewater paddler may turn over and have to swim out of their boat. However, the perfection of control over the flow activity is conceivably attainable.

Enjoyment of flow activities is derived from not the danger itself, but from the ability to minimize this danger, the sense of control (Csikszentmihalyi, 1990; Hollenhorst et al., 2003). This is accomplished through the development of sufficient skills to control potentially dangerous activities. Therefore enjoyment in autotelic activities is derived from not being in control, but exercising control over difficult situations. For the opportunity to be exposed to difficult and dangerous situations, the safety of protective daily routines must be abandoned. Only when the outcome becomes doubtful, and the individual must influence this outcome through their skills does the individual know if they are in control or not.

(7) Loss of Self-Consciousness: Flow activities, due to their high level of challenge, require the entirety of consciousness to be devoted to the activity.

During normal daily life, the consciousness is divided into many simultaneous tasks. One of these tasks is maintaining a conscious sense of the self, the information representing who we are to our self.

During an autotelic experience, there is not enough consciousness left over for the sense of self, and this slips below the surface of consciousness.

Conceivably this temporary lack of self consciousness allows opportunity to perform at a higher level and expansion of skills.

The cognitive effort required to devote this high level of consciousness exclusively to one activity is high. Initially individuals frequently need external incentives to make the first steps toward autotelic activities.

However, once individuals have experienced the rewards of autotelic experiences, they will continue to pursue them for the intrinsic rewards.

(Csikszentmihalyi, 1990)

- (8) Transformation of time: The reference of time becomes the rhythm of the activity, rather than the conventional time of day (Hollenhorst et al., 2003). Conventional time is perceived to speed up, slow down, or sometimes even stand still (Csikszentmihalyi, 1990; Csikszentmihalyi & Csikszentmihalyi, 1988).

The objective, external duration we measure with reference to outside events like night and day, or the orderly progression of clocks, is rendered irrelevant by the rhythms dictated by the activity. Often hours seem to pass by in minutes; in general, most people report that time seems to pass by much faster. (Csikszentmihalyi, 1990, p. 66)

This altered perception of time is not exclusive to accelerated perception of the passage of time. During many highly intense activities requiring a high level of skill successfully to execute a task, time is perceived to slow down. Such activities, which may take only a few seconds to complete, are perceived to take an eternity to complete with participants being acutely aware of every minute detail of the experience as it occurs (Csikszentmihalyi, 1990).

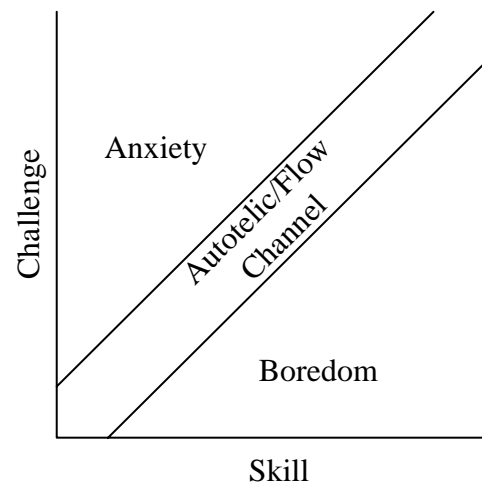
(9) Autotelic Experience: This term, coined by Csikszentmihalyi, is the embodiment of the flow zone (1990). Derived from the Greek words auto, meaning self, and telos, meaning goal, they have been combined in the word autotelic. Flow, as an intrinsically motivated experience, is pursued for motivations intrinsic to the self, and is in the pursuit of a defined goal (Csikszentmihalyi, 1990; Eklund & Jackson, 2004).

Challenge versus skill interaction

Autotelic experiences occur when the perceived challenge of the activity is perfectly balanced with, or slightly exceeds the perceived skills possessed by the individual (see Figure 2) (Csikszentmihalyi, 1975, 1990; Csikszentmihalyi & Jackson, 1999; Cutler & Martin, 2002; Jackson, Marsh, Thomas, & Smethurst, 2001).

Perception of the individual experiencing the activity is important. Both skill and challenge are as the individual perceiving the activity perceives both. Therefore external measures of

Figure 3: Flow Model



Note: From *Beyond Boredom and Anxiety*, by Mihaly Csikszentmihalyi (p. 49), 1975, San Francisco, CA: Josey-Bass Publishers. Reprinted with permission of John Wiley & Sons, Inc.

skill and challenge are irrelevant. Although many variations on this model have been proposed by both Csikszentmihalyi and other researchers, the only aspect which has been reliably reproduced is the challenge and skill interaction to produce the flow channel (Hollenhorst et al., 2003).

Upping the ante: Increasing challenge through competition

Due to the rewarding nature of the autotelic experiences, participants in an activity select and cultivate particular skills related to the activity, seeking increased challenges in response to increased skills (Bassi, Fave, & Massimini, 2003). Participants will seek out increased difficulty and risk in their recreational pursuits to meet their increased demand for challenge (Bassi et al., 2003; Csikszentmihalyi, 1975). An avenue by which participants can increase their challenge without increasing risk is by engaging in competition (Csikszentmihalyi, 1990). In the case of whitewater paddling, individuals may engage in whitewater slalom racing.

The Flow Model Crossing Cultural Barriers

A potential weakness of the flow model was most of the research has been conducted in western culture (Asakawa, 2004). Asakawa addressed this by testing the most basic model of flow with Japanese college students. His study found a positive relationship between flow and the balance of challenge and skill. Further, a positive relationship was found between the level of flow throughout the flow zone (increasing perceived challenge and skill), and students' quality of experience. The quality of experience is described using words such as, "concentration, enjoyment, happiness, activation, satisfaction, perceived control of the situation, and perceived future importance (Asakawa, p. 145)." Asakawa's findings are consistent with past research

conducted on flow from western samples, suggesting autotelic experiences are a universal human trait.

A Flow Personality

Csikszentmihalyi noted the existence of a predisposition toward autotelic experiences (Csikszentmihalyi, 1975, 1990; Csikszentmihalyi & Csikszentmihalyi, 1988). Asakawa (2004) further examined this phenomenon with his study of Japanese college students, discovering a direct relationship between an individual's predisposition toward and preference for flow experiences. Individuals possessing a predisposition toward and preference for flow experiences will seek out and feel more at ease during such experiences. Conversely, those who do not possess this predisposition toward and preference for flow experiences will avoid them and feel more comfortable and at ease in low challenge situations requiring comparatively low levels of skill.

The Adventure Alternative: An Idea from England

Colin Mortlock: Background and Basis

Colin Mortlock, a British outdoor adventure educator, proposed the Adventure Alternative in 1984. Mortlock's Adventure Alternative was based on over 30 years of practical experience and personal observation while leading youth outdoor adventure activities. Interestingly, Mortlock had no knowledge of any of the research regarding flow. Still his model possesses many similarities to the flow theory. The Adventure Alternative is also based on arousal, or the interaction of challenge and skill. The Adventure Alternative consists of four increasing levels of arousal on a linear continuum. In increasing order of arousal, the stages are: play, adventure, frontier adventure, and misadventure (Mortlock, 1984).

Four Levels

Play: Stage I

This stage is characterized by an individual performing far below their abilities (Mortlock, 1984). The challenge is far below the skills possessed by the individual. Due to the relatively low challenge, the individual has very little involvement in the activity. Fear of physical harm is nonexistent at this level. Frequently the individual will describe the experience as fun, pleasant, boring, or even a waste of time.

On a whitewater river, a highly accomplished expert paddler whose skills are capable of meeting the challenge posed by class V can very easily manage a class II river. Since their skills are so much higher than the challenge posed by class II, they may spend much of their time bored, or even consider the experience a waste of time.

Adventure: Stage II

In this stage an individual still feels very much in control (Mortlock, 1984). Challenge is present, but easily overcome with the skills possessed by the individual. Fear of physical harm is almost completely nonexistent due to the level of control. If any fear is present, it is very much below the surface since, even if danger is present, it can be easily managed with the skills possessed. For an outdoor adventure educator, this is also the most conducive environment for teaching and skill development with students.

On a whitewater river, a student in a whitewater paddling clinic may be capable of successfully navigating class IV. However the clinic is conducted on class III. Since the challenge posed is not at the student's maximum skill threshold, the student feels comfortable in this situation. Since the student is within their comfort zone, they are

willing and able to try new skills. This is why this stage is so conducive to teaching new skills.

Frontier adventure: Stage III

In frontier adventure, the individual is no longer in complete control of the situation (Mortlock, 1984). Challenge is either in perfect balance with, or slightly exceeds the level of skill possessed. Danger is present, and due to the level of challenge relative to skill, there is a degree of uncertainty and fear of physical harm. In this stage the individual will feel they can, with a degree of luck and maximum skill, successfully execute the task at hand. After such autotelic experiences the individual frequently feels a sense of elation. These experiences will also be highly memorable, possibly being pivotal life experiences.

For the class V paddler, this is what paddling class V is all about. The challenge posed by the river is at the level of skill possessed by the individual. Class V, by definition embodies a very real and salient element of danger to the paddler. It takes every bit of skill possessed by the paddler to successfully and safely navigate the rapids.

Misadventure: Stage IV

At this stage, challenge vastly exceeds skill (Mortlock, 1984). The individual is no longer in control of the situation. Skills are pushed to the limit, and even past. Danger is highly salient and the outcome is extremely questionable. In misadventure fear can take on an extreme character. Severe injury and even death are a possibility at this level, though usually the result is merely a less than rewarding experience. Any learning which takes place in this level is usually less than productive. Still, at the lower stage of this level some productive learning can occur, in the form of discovering one's limits.

If the student from the example in stage II, the paddler capable of class IV, were to unknowingly venture into a class V rapid, they would experience misadventure. As earlier discussed, class V poses a very real and salient danger. Many times, this danger can even embody a very real threat to life. For a paddler not possessing the requisite skills to adequately meet the challenge posed, such an experience can produce extreme fear and deter the individual from future participation (Martin & Priest, 1986).

The Adventure Experience Paradigm: Putting It All Together

Priest, already interested in outdoor adventure education and programming, was familiar with Mortlock's Adventure Alternative and Csikszentmihalyi's theory of flow. Priest synthesized both theories into the Adventure Experience Paradigm (AEP) (Martin & Priest, 1986).

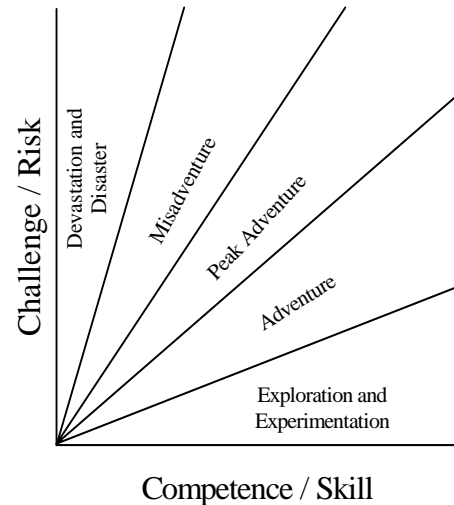
Flow: Challenge versus Skill Interaction

The AEP is based on the theory of flow. The interaction of challenge and skill is the basis for determining an autotelic experience, which Priest refers to as Frontier Adventure. Priest accepted the concept of a flow zone, and was interested in the area below and above this channel. He focused on the areas which Csikszentmihalyi broadly described as boredom where skill exceeds challenge, and anxiety where challenge exceeds skill (Martin & Priest, 1986).

Adventure Alternative: Arousal Stratification

Priest retains Csikszentmihalyi's visual model of challenge and skill (Martin & Priest, 1986). The axes are renamed from risk to challenge and skill to competence (see Figure 4). Attempting to better describe the interaction of challenge and skill above and below the flow channel, Priest turns to the Adventure Alternative and the stratification of arousal proposed by Mortlock (Martin & Priest, 1986). Priest subdivides stage IV misadventure into two stages, and renames a few others as follows (Martin & Priest):

Figure 4: AEP



Note: From "Understanding the Adventure Experience," by Martin and Priest, 1986, *Adventure Education: The Journal of the National Association for Outdoor Education* 3(1), p. 18-20. Copyright 1986 by the National Association for Outdoor Education.

- (1) Exploration and Experimentation: This is the zone referred to as play in the Adventure Alternative (Martin & Priest, 1986). Skill vastly exceeds the challenge. There is very low involvement by the individual, and very little useful learning takes place (Mortlock, 1984).
- (2) Adventure: There is a level of challenge and danger presented. However, the participant's skill is very capable of meeting the challenge (Martin & Priest, 1986). This is the zone where optimal learning takes place, and therefore desirable for an outdoor adventure educator (Mortlock, 1984). Arousal is increased to the extent of creating personal involvement (Martin & Priest). There is a high level of involvement by the individual due to meeting the challenge (Mortlock).

- (3) Peak Adventure: This is frontier adventure in the Adventure Alternative, and an autotelic experience in the flow model (Martin & Priest, 1986). The level of arousal is optimal in this zone for maximum performance. The outcome is questionable, but able to be met with maximal application of skill by the participant (Mortlock, 1984). Skill is very close to perfectly balanced with challenge, or challenge may slightly exceed skill to the extent the participant can, by focusing, still meet the challenge (Csikszentmihalyi, 1990). Personal involvement is very high in this zone, due to the focus required to meet the challenge. Since the student is so highly focused, learning can be conducive in this zone. However, since this zone is at the limits of a student's abilities, it can be difficult to facilitate for an outdoor adventure educator (Mortlock, 1984).
- (4) Misadventure: This zone is similar to the same in The Adventure Alternative. However, it does not include the extreme level of severe injury and death (Martin & Priest, 1986). At this level challenge exceeds skill. The outcome of this level is extremely uncertain. However, severe injury or death is not generally a consequence of failure. Arousal is very high in this zone, with an accompanying very high level of involvement (Martin & Priest; Mortlock, 1984).
- (5) Death and Disaster: This is the highest level of misadventure in The Adventure Alternative (Martin & Priest, 1986). At this level, challenge dwarfs skill. Outcomes are even more uncertain, and carry extreme consequences

such as debilitating injury or death. At such a high level of arousal, panic is not unusual. Personal involvement is extreme.

Csikszentmihalyi identified and graphed the relationship of challenge and skill to produce an autotelic experience. Mortlock focused on the stratification of experiences based on challenge and skill, without providing a graphical representation. By synthesizing elements from both Csikszentmihalyi's theory of flow and Mortlock's Adventure Alternative, Priest provides a model to describe not only the autotelic experience, but experiences outside of this optimal zone graphically.

IZOF: Individual Zones of Optimal Functioning

Yerkes-Dodson Law – Inverted-U Hypothesis

In 1908 Yerkes and Dodson, investigated the relationship of stimulus intensity and habit formation (Hanin, 2000). They studied the effect of varying levels of shock on the ability of rats to learn a complex maze. From this research they proposed the Inverted-U Hypothesis, stating performance increases up to a level of stimulus. Past this point, increasing levels of stimulus produce diminishing levels of performance.

What became known as the Yerkes-Dodson Law was generalized to a number of constructs such as drive, motivation and learning. However, it is most frequently associated with arousal (Hanin, 2000). With the Inverted-U Hypothesis generalized to the construct of arousal, it was not long before it was also generalized to humans as the Optimal Arousal Theory.

To test the optimal arousal theory, rather than shock humans a number of physiological and psychological measures can be observed to measure arousal. Physiological measures include heart rate, blood pressure and muscle tension (Bunting et

al., 2000; Hanin, 2000). These physiological measures are also highly correlated with the psychological construct of anxiety (Hanin). Anxiety has been successfully and consistently measured through self-report methods in humans. Although many instruments have been designed and tested, the State Trait Anxiety Inventory (STAI) has become a reliable instrument for measuring anxiety in adults.

IZOF – Evolution of Inverted-U

Expanding upon the Optimal Arousal Theory, Hanin proposed each individual possesses an optimal level of anxiety and arousal for each activity based on their skill level (Hanin, 1986, 2000; Young, 2004). When testing, each individual's zone of optimal functioning is determined by utilizing a self-report instrument for measuring anxiety. This instrument is completed according to the individual's recalled best performance. A mean and distribution is calculated based on each individual's results on the STAI (Hanin, 2000).

Based on the results, the individual's performance curve for the activity is plotted as a normal curve, much like the Inverted-U, except this is a normal distribution curve. One standard deviation around the mean (1/2 standard deviation above and below) is determined to be each individual's zone of optimal functioning for the activity. Since testing is frequently considered invasive immediately before competition, recall methods of testing have frequently been used with reliable accuracy anywhere from two days to 22 months after competition (Hanin, 2000).

A variety of instruments have been tested when studying anxiety levels as related to arousal and the IZOF. For adolescents below age 18, the Competitive Sports Anxiety Inventory-2 (CSAI-2) has shown the most reliable results. However, for measuring

arousal and investigating the IZOF with adults, the STAI has shown to be a more reliable instrument (Hanin, 2000).

The individual zone of optimal functioning described by Hanin described being so similar to the flow zone described by Csikszentmihalyi, the two zones could very well be the same thing. Flow models have evolved, attempting to describe experiences above and below the optimal flow zone. However, reliable empirical results for these models have proven difficult to produce. Establishing a correlation between the optimal zone described by the flow theory and IZOF theory could enable researchers with new tools. The STAI currently used to measure and quantify arousal with the IZOF theory could be utilized in the study of flow, possibly facilitating more precision in the study of flow stratification above and below the flow zone.

CHAPTER 3: RESEARCH METHODS

Research Design

This study was a quasi-experimental, cross-sectional design, utilizing physical data collection methods to sample competitive whitewater paddlers' perceptions associated with autotelic experiences and activities. Traditional pen and paper surveys were used to collect the data. Data was collected at a national level whitewater slalom race during summer 2005. Both descriptive and inferential statistical methods were utilized for data analysis.

Participant Selection

Increased challenge can be pursued not only through increased risk, but also through introducing competition into the activity (Csikszentmihalyi, 1975). Whitewater competition offers the opportunity for increased challenge through the combination of both increased risk and increased challenge (Hollenhorst et al., 2000). Athletes are first challenging themselves with the inherent risk of whitewater, the challenge of successfully navigating whitewater rapids.

Whitewater slalom athletes further increase their challenge by introducing competition. Athletes are increasing their level of challenge by combining two aspects of challenge, risk and competition (Csikszentmihalyi, 1975). Subjects for this study were selected based on their participation in competitive whitewater events.

USA Canoe and Kayak Federation (USACK), the national governing body for human powered paddle sport in the US, currently has 291 members registered indicating slalom as their competitive discipline (Rachel Gunn, personal communication, February

2005). Based on this information, 291 is the population of whitewater slalom athletes in this country and for this study. Data was collected at a national level whitewater slalom competition held during the summer of 2005.

The event selected for the administration of this survey was a national level competition attracting athletes from around the country. Based on the higher level of competition, athletes participating in this event represent more advanced and competitive athletes. Such athletes are typically known as elite athletes. These elite athletes represent a distinct psychological profile characterized by interaction between the athlete and the situation. Elite athletes are much more acutely aware of themselves and their surrounding environment (Cox, 2002). As such, these athletes are aware of and know what their optimal experience was and are therefore also very acutely aware of what their perceptions were regarding this experience (Hanin, 2000).

Instrument

This study utilized the Flow State Scale-2 (FSS-2) to measure the construct of flow (Eklund & Jackson, 2004). This instrument is designed to, “assess flow experiences in physical activity” (Eklund & Jackson, 2004, p. 7). The FSS-2 utilizes a five point Likert scale to indicate agreement or disagreement with 36 statements. This instrument focuses on a specific instance, a specific competitive event such as a single instance of a race.

The FSS-2 has undergone repeated validity testing since inception in 1996 (Eklund & Jackson, 2004). During validity testing, the instrument, “consistently elicited internally consistent responses and hence have desirable reliability properties” (p. 55). The FSS-2 has also displayed acceptable levels of construct validity, referred to as

psychometric properties. There is a positive relationship between the instrument and the flow construct. It can be assumed the FSS-2 is a reliable instrument for the measurement of state flow (Eklund & Jackson, 2004).

Data Collection

Previous research supports the premise of athletes being able to accurately recall emotions related to a competitive event (Harger, Raglin, & Wilson, 2000). Therefore, subjects were asked to recall their best performance within the last year, and respond to the FSS-2 according to how they felt pertaining to optimal performance event.

Summer is the season for whitewater competitions with competitions all over the United States (American Whitewater, 2005; Kopp, 2005; League of northwest whitewater racers, 2005; USACK, 2005). During one of these events, data was collected by requesting athletes to complete surveys. This method produced a convenience sample from the total population of 291 whitewater slalom athletes in the United States.

The researcher approached subjects and requested their participation as they exited the bottom of the course. Due to the unique characteristics of the venue, athletes exited up the river bank via a single trail up to the parking area. The researcher staged at the top of this trail in the parking area.

Athletes complete two runs down the course during this competition, one during the morning and one during the afternoon. At the top of this trail, all athletes were approached following their second run down the course in the afternoon and asked to participate in the study. Since athletes were started in one-minute intervals, they also exited the course in roughly one-minute intervals. This made the researcher's task much easier, since all potential research subjects were not exiting simultaneously. Subjects

came in a steady stream at one-minute intervals. The methods and instrumentation outlined above were approved by the Institutional Review Board at the University of Missouri-Columbia (approval number 1051258).

If athletes agreed to participate, they were be presented with a copy of the survey and asked to fill it out on-site. Response rates for face-to-face surveys are traditionally high, in the 0.78 to .91 range (U.S. Department of Health and Human Services, 2002). Based on this information, a response rate of 0.85 was the goal for the administration of traditional surveys.

Statistics

Descriptive and inferential statistics were used to analyze the data. Survey scales used were questions divided into nominal categories measured with interval scores. The Statistic Package of Social Science (SPSS) was used to analyze the data (SPSS 13.0, 2004). Descriptive statistical analysis procedures consisted of calculation of means and standard deviations for the nine constructs, and for the total survey. Additionally, gender, age grouping, and craft type (boat) information was collected and the descriptive statistics of mean and standard deviation was reported for these measures. Statistical methods utilized for inferential analysis were Cronbach's Alpha, Person product moment correlation and three one-way ANOVAs.

To determine the internal validity of FSS-2 utilizing self-report recall methodology, Cronbach's Alpha was utilized. Consistent with Ekland and Jackson's methods, state flow was included as one of the factors considered in Cronbach's Alpha (Eklund & Jackson, 2004). This is due to state flow being a discrete metric in addition to

the nine constructs. According to these established methods of data analysis for the FSS-2, this constitutes 10 metrics which can be calculated from results of the FSS-2.

To evaluate the reliability of the FSS-2 for measuring state flow, the nine construct means was evaluated against the grand mean through the use of the Pearson product moment correlation matrix. To examine possible relationships of state flow and the demographic information collected, three one-way ANOVAs were performed.

Data was collected at a national level whitewater slalom race during summer 2005 utilizing face-to-face collection methods. Data collection utilized flow instrumentation and IZOF collection methods. Subjects were asked fill out the FSS-2 (flow instrumentation) according to recollection of their best performance (IZOF methodology). The data was compiled and analyzed in SPSS through the use of:

- (1) Cronbach's Alpha to determine internal validity of FSS-2 when utilizing self-report recall methodology
- (2) Pearson product moment correlation to determine if a correlation exists between any of the individual flow constructs and state flow
- (3) Three one-way ANOVAs to determine if a significant difference exists among individual characteristics and state flow

CHAPTER 4:
DATA ANALYSIS

Surveys Collected & Response Rates

Forty-one total surveys were administered. Three of the administered surveys were not considered for analysis due to participants only filling out demographic characteristics. The remainder of the survey was left blank. This left 38 surveys for analysis consideration.

A design characteristic of the Flow State Scale-2 (FSS-2) is generous vertical and horizontal spatial separation. The remaining 38 surveys were easily interpreted and therefore valid due to this design.

Demographic Characteristics of Participants

Of the 38 surveys considered, relating to gender 76.3% (29 respondents) were male and 23.7% (9) female (table 1). Participants' preferred craft distribution was 68.4% (26) K-1, 15.8% (6) C-1, 10.5% (4) C-2, 2.6% (1) OC-1, and 2.6% (1) OC-2 (table 2). Age group distribution was 23.7% (9) juniors, 42.1% (16) seniors, and 34.2% (13) masters (table 3).

Table 1:

Gender Descriptive Statistics

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	29	76.3	76.3	76.3
Female	9	23.7	23.7	100.0
Total	38	100.0	100.0	

Table 2:

Preferred Craft Descriptive Statistics

Preferred Craft	Frequency	Percent	Valid Percent	Cumulative Percent
K-1	26	68.4	68.4	68.4
C-1	6	15.8	15.8	84.2
C-2	4	10.5	10.5	94.7
OC-1	1	2.6	2.6	97.4
OC-2	1	2.6	2.6	100.0
Total	38	100.0	100.0	

Table 3:

Age Group Descriptive Statistics

Age Group	Frequency	Percent	Valid Percent	Cumulative Percent
Junior	9	23.7	23.7	23.7
Senior	16	42.1	42.1	65.8
Master	13	34.2	34.2	100.0
Total	38	100.0	100.0	

Hypotheses Results

H₁ – Flow & IZOF

This study modified the included data collection methodology of the FSS-2 to utilize self-report recall. With this combination of flow instrumentation and IZOF data collection methodology, the FSS-2 still displayed internal validity.

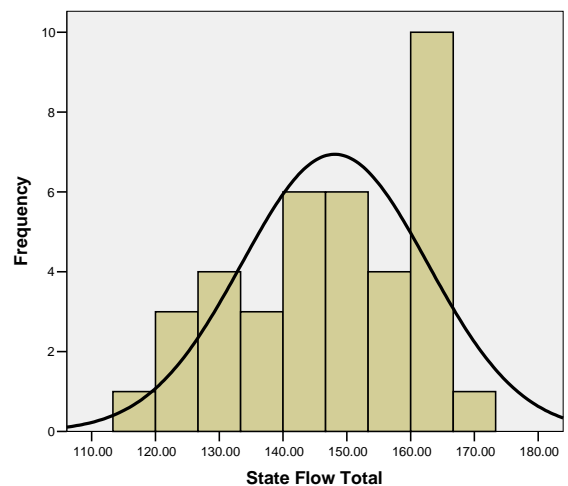
Consistent with the procedures and assumptions of IZOF, by instructing participants to respond according to their best performance in the last year it is assumed the athlete was performing within their own individual zone of optimal functioning for

the activity during this recalled experience (Hanin, 1986, 2000). By utilizing recall methodology we know the subject was performing within their individual zone of optimal functioning (Hanin, 1986).

Data collection methodology included with the FSS-2 is survey administration as soon as practicable following a potential flow experience to determine if the experience indeed was a flow experience (Eklund & Jackson, 2004) . By requesting subjects to complete the FSS-2 based on this recalled experience, the existence of state flow during this recalled optimal experience can be assessed through assessing the validity of the FSS-2 with this differing data collection methodology.

Descriptive statistical results for the relationship of state flow and the individual zone of optimal functioning are displayed graphically in figure five. The mean for this sample was 148.11 and the standard deviation 14.56.

Figure 5: State Flow Histogram



Even with the modified data collection technique of self-report recall, the FSS-2 is still internally valid. Cronbach's Alpha for state flow was 0.818, greater than the accepted standard of 0.800 (Bryman & Cramer, 1997). Therefore, H_1 was rejected. When utilizing self-report recall methodology from IZOF to collect data using the FSS-2, subjects tested still are experiencing state flow. This suggests state flow and the individual zone of optimal functioning may describe identical experiences.

H₂ – Flow Constructs & State Flow

The FSS-2 is designed to measure state flow. For this purpose, this instrument possesses both face and internal validity (Eklund & Jackson, 2004). When initially designing the instrument, Eklund and Jackson consulted with Csikszentmihalyi. After reducing the number of questions to the 36 most relevant, the FSS-2 displayed a Non-Normed Fit Index of 0.923 and a Comparative Fit Index of 0.929 with a sample size of 422. For this study the FSS-2 is considered reliable for measuring state flow and the nine constructs. The study consists of 36 questions with four questions of the total 36 pertaining to each of the nine flow constructs.

H₂ was accepted with only one of the nine flow constructs. A significant correlation exists between eight of the nine constructs and state flow. The one exception being the transformation of time construct. To examine the relationship of state flow and the nine constructs, a Pearson-r correlation matrix was utilized (see Table 4).

Table 4:

Pearson-r Correlation Matrix of Flow Constructs & State Flow

Flow Construct		Flow	Balance	Merging	Goals	Feedback	Concentration	Control	Consciousness	Time	Autotelic
Flow	Pearson Correlation		.771**	.574**	.785**	.560**	.589**	.712**	.701**	.214	.501**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.198	.001
Balance	Pearson Correlation	.771**		.412*	.598**	.381*	.322*	.518**	.496**	.130	.234
	Sig. (2-tailed)	.000		.010	.000	.018	.049	.001	.002	.438	.157
Merging	Pearson Correlation	.574**	.412*		.251	.004	.253	.214	.287	.198	.370*
	Sig. (2-tailed)	.000	.010		.129	.981	.126	.197	.081	.234	.022
Goals	Pearson Correlation	.785**	.598**	.251		.482**	.574**	.514**	.500**	.112	.359*
	Sig. (2-tailed)	.000	.000	.129		.002	.000	.001	.001	.502	.027
Feedback	Pearson Correlation	.560**	.381*	.004	.482**		.158	.522**	.293	-.029	.314
	Sig. (2-tailed)	.000	.018	.981	.002		.344	.001	.074	.864	.055
Concentration	Pearson Correlation	.589**	.322*	.253	.574**	.158		.369*	.455**	-.139	.322*
	Sig. (2-tailed)	.000	.049	.126	.000	.344		.022	.004	.407	.049
Control	Pearson Correlation	.712**	.518**	.214	.514**	.522**	.369*		.590**	-.082	.174
	Sig. (2-tailed)	.000	.001	.197	.001	.001	.022		.000	.625	.297
Consciousness	Pearson Correlation	.701**	.496**	.287	.500**	.293	.455**	.590**		-.129	.005
	Sig. (2-tailed)	.000	.002	.081	.001	.074	.004	.000		.441	.979
Time	Pearson Correlation	.214	.130	.198	.112	-.029	-.139	-.082	-.129		.225
	Sig. (2-tailed)	.198	.438	.234	.502	.864	.407	.625	.441		.175
Autotelic	Pearson Correlation	.501**	.234	.370*	.359*	.314	.322*	.174	.005	.225	
	Sig. (2-tailed)	.001	.157	.022	.027	.055	.049	.297	.979	.175	

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (2-tailed)

H₃ – Demographic Characteristics & State Flow

No significant difference exists among the individual demographic characteristics and state flow. Age group, gender and preferred craft demographics display respective significance levels of 0.695, 0.691 and 0.434 (see Table 5). Therefore, H_{3a}, H_{3b}, and H_{3c} were accepted, with no significant demographic differences noted among genders, age groups, nor preferred crafts in this sample.

Table 5:

Demographic Characteristics & State Flow

		Sum of Squares	df	Mean Square	F	Sig.
Gender	Between Groups	4.702	27	.174	.804	.691
	Within Groups	2.167	10	.217		
	Total	6.868	37			
Age Group	Between Groups	14.746	27	.546	.799	.695
	Within Groups	6.833	10	.683		
	Total	21.579	37			
Preferred Craft	Between Groups	26.728	27	.990	1.142	.434
	Within Groups	8.667	10	.867		
	Total	35.395	37			

CHAPTER 5: CONCLUSIONS

Can such an ordeal be remotely conceived as “pleasure” or “sport”? Are we masochists to “enjoy” such a battering, such cold, such wind, lack of food, lack of sleep, lack of water? Emphatically not. Our stay at Camp VII, ten days of hardship and anxiety, was terribly hard. It brought each of us down to fundamentals. The deepest springs of character were tapped for our survival. The lack of oxygen at great altitudes may dull the mind and weaken the body, but there is an inner strength of spirit, a bigger power which emerges undiminished, even magnified, to bring a man through such an experience. We faced nature’s wildest forces with our pitifully feeble tents and clothing as our only weapons, plus our inner determination. Perhaps it is this conquest, conquest of one’s self through survival of such an ordeal that brings a man back to frontiers again and again. It may be a frontier of the spirit or of the mind. By testing himself beyond endurance man learns to know himself. He endures and grows. (Houston & Bates, 1954, p. 159-160)

In 1953, nine men embarked upon the Third American Karakoram Expedition. They journeyed halfway around the world to the infant country of Pakistan in an attempt to summit (not conquer) the second highest peak in the world, K2 at 28,251 feet above sea level. These men did not summit, but they did emerge heroes (Houston & Bates, 1954).

After being struck with an accident severely injuring one of the five to make the push toward the summit, the team became trapped by a lethal storm. To save the life of

one of the injured climber, the other four descended from the relative safety of their tents at over 26,000 feet. Descending over 7,000 feet to base camp, they survived and lived to tell the story. The above passage describing the experience of finding new limits of personal skill when confronted with seemingly insurmountable challenge is part of the reflection in their account, *K2: The Savage Mountain* (Houston & Bates, 1954).

Although the experience of facing death is not the desired result, this discovery of inner strength is precisely the benefit of facing similar challenges, of developing psychological resilience (Neill, 2004). When faced with challenges forcing discovery of previously undiscovered levels of skill, participants discover the positive benefits of flow through discovery of how to maximize their own individual zone of optimal functioning.

Challenge is merely an opportunity for action. Skill is the capacity to take action when the opportunity is presented (Csikszentmihalyi, 1975). The positive benefits of flow can be found in any activity characterized by formidable challenges which must be balanced by the skills of the participants. Such experiences can include painting, rock climbing, mountaineering, chess and even whitewater slalom paddling (Csikszentmihalyi, 1975; Hollenhorst et al., 2000).

Implications

Results of this study indicate state flow and the individual zone of optimal functioning (IZOF) are describing the same phenomenon. Investigation of the relationship between the nine flow constructs and state flow produced interesting results. Finally, demographic differences did not yield significantly different results.

FSS-2 & STAI: Flow and IZOF describing optimal

Flow detection instrumentation, the Flow State Scale-2 (FSS-2) displayed internal validity when used with IZOF data collection methodology, self-report recall. Self-report recall methodology asks subjects to recall their individual zone of optimal functioning and respond to the instrument presented accordingly (Hanin & Jokela, 1999). Due to the salient nature of optimal performances, responses are reliable.

The State Trait Anxiety Inventory (STAI) is traditionally the instrument administered for IZOF research. However, this investigation replaced the STAI with the Flow State Scale-2 (FSS-2). The FSS-2 is was designed and has been validated to detect flow experiences (Eklund & Jackson, 2004). The FSS-2 includes specific protocol for administration, specifically stating to be used as soon as practicable following a potential flow experience.

This investigation combined IZOF self-report recall methodology used with flow instrumentation, the FSS-2. Data was collected utilizing an instrument detecting the presence or absence of flow (FSS-2) referencing a highly salient experience in the participant's mind, an optimal experience, one where the participant was performing within their individual zone of optimal functioning.

In this investigation the FSS-2 displayed a Cronbach's Alpha of 0.818. This is above the accepted minimum of 0.800 (Bryman & Cramer, 1997). The FSS-2 displays internal validity when participants respond according to their perceptions when in their individual zone of optimal functioning. This suggests the optimal zone described by the flow and IZOF theories may be the same phenomenon.

Flow Constructs: Transformation of Time?

No significant correlation exists between any of the individual flow zone constructs and state flow, except the transformation of time construct. In the Pearson-r correlation matrix for this construct, transformation of time is not significantly related to state flow or any of the other constructs.

When a participant experiences transformation of time conventional time is perceived to speed up, slow down, or sometimes even stand still (Csikszentmihalyi, 1990; Csikszentmihalyi & Csikszentmihalyi, 1988). The reference of time becomes the rhythm of the activity, rather than the conventional time of day (Hollenhorst et al., 2003). Many times when describing a flow experience, athletes will describe a feeling of being able to see everything and react easily. For these athletes experiencing flow, their perception is exactly as if time was slowing down for the duration of this flow experience.

In whitewater slalom, lack of transformation of time could be a characteristic of the sport. Slalom is a sport requiring force applied with a tremendous level of skill, precision, and timing (Shipley, 2001). Noticing this same very weak correlation in some of their studies, Ecklund and Jackson commented, “Time awareness may be part of the challenge to some activities. Certainly in some sports, the clock is an integral part of the structure of the situation or the performance evaluation” (Eklund & Jackson, 2004, p. 42). Requiring such precision timing of maneuvers, nuances of slalom may be such the construct of transformation of time could be a detractor to performance. Loss of time awareness may be a detractor to performance for the sport of whitewater slalom, thus not associated with optimal experiences and performances.

Demographics may not Matter

The tested demographic groups of age group, gender and preferred craft display respective significance levels of 0.695, 0.691 and 0.434 (see Table 5). Individuals participating in whitewater slalom may be homogeneous. This is difficult to ascertain as the data is inconclusive given the grouping cells for the ANOVA analysis were not well balanced (see Tables 1, 2 & 3). Gender was heavily weighted toward males, with 76.3% male and only 23.7% female. Preferred craft was heavily weighted toward K-1, with 68.4% of participants. The remaining 31.6% of preferred craft distributions were represented with 15.8% C-1, 10.5% C-2, 2.6% OC-1 and 2.6% OC-2. Age groups distributions were only 23.7% junior (18 years old), 42.1% senior (19 to 30 years old) and 34.2% master (over 30).

Implications

Flow and IZOF Playing Together: STAI for Flow Stratification Study

If the optimal zone described by the flow and IZOF theories is the same, a possibility exists to use recall methodology with the STAI to determine participant's individual zone of optimal functioning for an activity. Through repeated testing utilizing both the FSS-2 and STAI following subsequent experiences, the zones above and below the optimal flow zone could be more precisely quantified.

Targeted Characteristics: Do not worry Over Time

For adventure professionals working with whitewater slalom athletes, the insignificance of the transformation of time construct is an interesting discovery with implications. For whitewater slalom, professionals working with slalom athletes are coaches at all levels. This is inclusive of coaches at every single level, from a parent

working with their son or daughter after school on a local creek to a national team coach making their living working with slalom athletes. Already this discovery has started discussion over how to more accurately meet the needs of slalom athletes with coaches in this country. The exact implications are not immediately clear. Still, this discovery has instigated discussion over how to better work with the athletes, to meet their needs of athletes.

Expansion and increasing understanding of the optimal zone described by the flow and IZOF theories can be facilitated by the combination of instrumentation and methodology of both theories. Further, investigation into constructs characterizing flow experiences for slalom athletes offers new understanding for whitewater slalom coaches working with athletes.

Recommendations for Future Research

Investigating a smaller sample could be improved upon by replicating the sample with a larger sample. Additionally, based on the correlation of flow and IZOF demonstrated by the results of this study, instrumentation and methods could be combined for investigation of stratification of flow experiences. Finally, further investigation of characteristics of whitewater slalom paddlers could be investigated utilizing flow instrumentation designed to measure enduring flow characteristics the DFS-2.

Increased Sample Size

In subsequent testing, a larger sample could produce a stronger correlation. Thirty eight is not the largest sample size. However, with a total whitewater slalom domestic

population of 291 (USACK, 2005), achieving a significantly larger sample size may require slightly different methods, to venture outside of the box.

Data collection could still remain within the sport of slalom, but expand beyond the borders of the United States. For convenience, it may be easier to initially sample English speaking countries to avoid having to establish validity of translated instruments. An alternative, another way to investigate the relationship of flow and IZOF, could be expansion beyond the sport of whitewater slalom.

Investigations of Flow Utilizing STAI

Descriptions of the optimal zone described by Csikszentmihalyi's flow theory and Hanin's IZOF theory are extremely similar (Csikszentmihalyi, 1990; Hanin, 2000). Each utilized unique methods and instrumentation for investigation of a seemingly identical phenomenon. This study utilized flow instrumentation, the FSS-2 combined with the recall methodology of data collection from IZOF.

Recently instrumentation has been developed and validated for the detection of flow experiences, the FSS-2 (Eklund & Jackson, 2004). The FSS-2 data collection methodology was immediate data collection as soon as practicable following a potential flow experience.

Investigations of IZOF utilizing the STAI for measurement of anxiety during optimal performances proved a reliable method of detecting optimal arousal (Hanin, 1986, 2000; Hanin & Jokela, 1999; Harger et al., 2000). Subjects are asked to complete the STAI based on their recollection of their best performance. This methodology is based on the assumption the subject is within their individual zone of optimal functioning for the experience they are recalling. Since such experiences are highly salient in the

subject's mind, their recollection of details of the experience for these purposes is considered reliable. This investigation of flow and IZOF followed this precedent, utilizing recall methods of data collection. Based on this premise of similarity between flow and IZOF, recall methodology established for data collection for IZOF can be utilized to determine the mean level of arousal for a participant when in the optimal zone (Hanin, 1986, 2000).

Data is then collected following subsequent experiences utilizing both the FSS-2 and STAI. The FSS-2 indicates the strength of the flow experience (Eklund & Jackson, 2004). If the experience was above or below the optimal zone, FSS-2 scores will decrease as the participant deviates further from the optimal zone. The degree of arousal could be detected and measured utilizing the STAI. The STAI could be administered immediately following in conjunction with the FSS-2. Based on the level of arousal above or below the optimal mean determined from recall methods, the stratification of experiences above and below the optimal zone could be more precisely studied and quantified.

Investigations of Slalom Athlete Characteristics Utilizing the DFS-2

Eklund and Jackson developed instruments not only for measurement of state flow but dispositional flow as well. State flow is a transient experience of the optimal zone, in a moment. Dispositional flow characterizes not the actual experience of flow, but the predisposition of an individual toward seeking out optimal experiences, enduring characteristics of an individual in relation to flow (Eklund & Jackson, 2004).

This study indicates the construct of transformation of time is not positively correlated to this study group of whitewater slalom paddlers. Not experiencing the transformation of time construct may be a global characteristic of whitewater slalom.

Further investigation of this phenomenon, the characteristics defining slalom athletes' flow experiences would be better investigated utilizing the instrument designed for measurement of individual participant enduring characteristics of flow, the Dispositional Flow Scale-2 (DFS-2) (Eklund & Jackson, 2004).

This study, investigating a relatively small sample, could benefit from being replicated with larger sample. With flow and IZOF demonstrating the same optimal zone, instrumentation and methods could be combined for investigation of stratification of flow experiences. Investigation of whitewater slalom paddlers' flow characteristics could be further investigated utilizing flow instrumentation designed to measure enduring flow characteristics the DFS-2. In reality, empirical discovery is not of the utmost importance. The importance is improvement of each individual's quality of life through the discovery of the benefits of being motivated not by extrinsic, but intrinsic motivational factors (Csikszentmihalyi, 1975, 1990; Csikszentmihalyi & Jackson, 1999).

True Conclusion

“Since what we experience *is* reality, as far as we are concerned, we can transform reality to the extent that we influence what happens in consciousness and thus free ourselves” (Csikszentmihalyi, 1990, p. 20). After all, the only way we are equipped to perceive the world is through our own senses, and the world rarely changes simply according to individual whims. “How we feel about ourselves, the joy we get from living, ultimately depends directly on how the mind filters and interprets everyday experiences” (p. 9). In short, “the control of consciousness determines the quality of life” (p. 20).

The only aspect of our lives we can control is our perception of what comes in through our senses, what we choose to pay attention to. “Attention can be invested in

innumerable ways, ways that can make life either rich or miserable” (Csikszentmihalyi, 1990, p. 33) Attentional direction controls quality of life. By mastering our perception of the world, we cease to merely be participants in our quality of life. We become the owners of our quality of life.

Some people learn to use this priceless resource efficiently, while others waste it.

The mark of a person who is in control of consciousness is the ability to focus attention at will, to be oblivious to distractions, to concentrate for as long as it takes to achieve a goal, and no longer. (Csikszentmihalyi, 1990, p. 31).

Empirical research seeking to better understand flow and IZOF seeks to better understand the phenomenon of optimal experiences. While interesting, this research is useless if not for the benefit of helping people improve their quality of life. Investigation into the nuances of optimal experiences leads to better understanding of these experiences, enabling practitioners of challenging activities to better facilitate optimal experiences. This opportunity to discover previously unknown levels of performance by exposure to formidable challenges is the opportunity to be alive. Lou Whittaker said it best. “When it comes down to dying, I want to know what it is like to have truly lived” (1994, p. 4).

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APPENDICES

Appendix A: Flow State Scale-2

Appendix B: Creative Commons Deed

Appendix C: Creative Commons License

Appendix D: Flow Model Copyright Information

Appendix E: Adventure Experience Paradigm Copyrights

Appendix A: Flow State Scale-2 (FSS-2)

Background Information

Please circle your gender:

Male

Female

Please circle your preferred competitive whitewater craft:

Kayak Single
(K-1)

Canadian Single
(C-1)

Canadian Double
(C-2)

Solo Open
Canoe (OC-1)

Tandem Open
Canoe (OC-2)

Please circle your age group class:

Cadet (15 and Under)

Junior (16 -18)

Senior (19-39)

Master (40 and
Above)

Event Experience Scale (FSS-2)

Please answer the following questions in relation to your experience during your best performance within the last year. These questions relate to the thoughts and feeling you may experienced while taking part. There are no right or wrong answers. Think about you felt during the event/activity and answer the questions using the rating scale below. For each question circle the number best matching your experience.

Rating Scale

Never
1

Rarely
2

Sometimes
3

Frequently
4

Always
5

Please Circle Answer:

1. I was challenged, but I believed my skills would allow me to meet the challenge.

1

2

3

4

5

2. I made the correct movements without thinking about trying to do so.

1

2

3

4

5

3. I knew clearly what to do.

1

2

3

4

5

4. It was really clear to me how my performance was going.

1

2

3

4

5

5. My attention was focused entirely on what I was doing.

1

2

3

4

5

6. I had a sense of control over what I was doing.

1

2

3

4

5

7. I was not concerned with what others may have been thinking of me.

1

2

3

4

5

8. Time seemed to alter (either slows down or speeds up).

1

2

3

4

5

9. I really enjoyed the experience.				
1	2	3	4	5
10. My abilities matched the high challenge of the situation.				
1	2	3	4	5
11. Things just seemed to be happening automatically.				
1	2	3	4	5
12. I had a strong sense of what I wanted to do.				
1	2	3	4	5
13. I was aware of how well I was performing.				
1	2	3	4	5
14. It was no effort to keep my mind on what was happening.				
1	2	3	4	5
15. I felt like I could control what I was doing.				
1	2	3	4	5
16. I was not concerned with how others may have been evaluating me.				
1	2	3	4	5
17. The way time passed seemed to be different from normal.				
1	2	3	4	5
18. I loved the feeling of the performance and want to capture it again.				
1	2	3	4	5
19. I felt I was competent enough to meet the high demands of the situation.				
1	2	3	4	5
20. I performed automatically, without thinking too much.				
1	2	3	4	5
21. I knew what I wanted to achieve.				
1	2	3	4	5
22. I had a good idea while I was performing about how well I was doing.				
1	2	3	4	5
23. I had total concentration.				
1	2	3	4	5

24. I had a feeling of total control.				
1	2	3	4	5
25. I was not concerned with how I was presenting myself.				
1	2	3	4	5
26. I feel like time went by quickly.				
1	2	3	4	5
27. The experience left me feeling great.				
1	2	3	4	5
28. The challenge and my skills were at an equally high level.				
1	2	3	4	5
29. I did things spontaneously and automatically without having to think.				
1	2	3	4	5
30. My goals were clearly defined.				
1	2	3	4	5
31. I could tell by the way I was performing how well I was doing.				
1	2	3	4	5
32. I was completely focused on the task at hand.				
1	2	3	4	5
33. I felt in total control of my body.				
1	2	3	4	5
34. I was not worried about what others may have been thinking of me.				
1	2	3	4	5
35. I lost my normal awareness of time.				
1	2	3	4	5
36. I found the experience extremely rewarding.				
1	2	3	4	5

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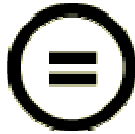
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