Perceived and Expected Lifeguarding Behaviors While on Surveillance Duty Versus Actual Observed Behaviors

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PERCEIVED AND EXPECTED LIFEGUARDING BEHAVIORS WHILE ON SURVEILLANCE DUTY VERSUS ACTUAL OBSERVED BEHAVIORS

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Lifeguards are the front line of defense for swimmers when present. Yet in a multitude of cases, lifeguards are failing to recognize drowning victims. Many approaches have been taken to look at the cause of this phenomenon and provide suggestions to prevent such occurrences from happening again, yet no definitive answers have thus far been identified. This study looks at a number of factors that surround lifeguard on-duty behavior. Lifeguard’s perception of their own behavior, lifeguard’s actual observed behavior, and management’s expectation of behavior were all compared to see where there are differences. Other factors including the amount of experience, participation in in-service training, and the amount of time a lifeguard spends on duty were also compared for differences in relation to accurate perception of behavior. Results show that there are some significant differences in perception of accurate behavior, actual behavior and expectations, and expectations and perceptions of behavior.

Keywords:
- Lifeguard
- Behavior
- Surveillance Duty
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CHAPTER I

INTRODUCTION

This study’s purpose is to compare how lifeguards perceive their behavior while on surveillance duty to management’s expectations of behavior. These results will then be compared to the actual behaviors that lifeguards exhibit while on surveillance duty that are observed by the researcher. Major problems can occur and a life can be lost if lifeguards fail to recognize when a swimmer starts into the drowning process. If a victim drowns and an on duty lifeguard fails to recognize and react to the drowning the facility and that lifeguard can be sued, and serious legal action can ensue. This creates a huge risk management issue that surrounds swimmer safety. This study only focuses on confined water, indoor swimming pools.

Statement of the Problem

Drowning is occurring at lifeguarded facilities and this is creating a major safety problem and a potential risk management issue for all aquatic venues. Due to lack of recognition, intrusions of other duties, and distractions, lifeguards are failing to recognize drowning incidents when they occur (Pia, 1984). Though this is a rare event, it does form a potential hazard to all aquatic facilities. Swimmers and patrons at a swimming pool have the assumptions that if they start to drown the lifeguard will save them. What if that doesn’t happen?

Many arguments exist for why this phenomenon is occurring. Many in the aquatics community blame the management of the facilities where these accidents happen. The reasoning is that management is responsible for recruitment of these lifeguards and making sure they have been adequately trained to perform the necessary duties of lifeguarding (Yager, 2008). Management is also responsible for the lifeguards orientation and in-service trainings, as well as daily management and enforcement of policies and procedures related to lifeguard management.
and patron safety. Many also believe that management sets the tone for what are excepted practices and accepted behaviors from their lifeguards. If management fails in any of these areas, it can lead to an unsuccessful, under trained and under managed lifeguard staff which in turn can put swimmers at risk (American Red Cross, 2006).

Others blame the training process that lifeguards go through. There is not a set standard or requirement that a lifeguarding program must meet to ensure lifeguards are properly trained to watch and survey the water for dangerous swimmer risk taking behavior that can lead to drowning (Langan-Leitzel, 2012). Though this research is only looking at American Red Cross trained lifeguards, it is important to recognize that as a whole, the entire lifeguarding industry in the United States does not have a set requirement for lifeguard scanning behaviors and actions. With this inconsistency in scanning techniques, many feel that lifeguards are under trained and may not know how to watch the water properly.

Lastly, some blame lifeguards themselves for not being able to recognize a possible drowning event. Management in some cases may follow through on all duties that they are responsible for, yet it still is the responsibility of the lifeguard to recognize the drowning. All training programs do talk about scanning and effective patron surveillance in some way, so all trained lifeguards are in some way exposed to proper scanning methods, even with a lack of consistency (Langan-Leitzel & Moore, 2010). Lifeguards may only be one layer of protection for prevention of drowning, yet in virtually all drowning cases where a lifeguard was present and on duty, they are the final layer of protection to ensure swimmer safety in the water (American Red Cross, 2011). This leads to the questions about what lifeguards are doing while they are supposed to be actively watching the water. This also leads to questions about the lifeguards behavior and if the lifeguards are aware and perceiving their behavior while on duty accurately.
Management is also called into question for what their expectations are for lifeguard behavior while on surveillance duty.

**Research Questions**

1. Do lifeguards’ perceived behaviors while on surveillance duty compare to management’s expectations of behaviors?
2. How does the lifeguard’s perception of their own behavior while on duty, compare to their actual behavior?
3. How do management’s expectations of behavior compare to lifeguards’ actual behavior?
4. Does lifeguard or lifeguard manager experience have any correlation to accurate perceptions or expectations of behavior?
5. Does lifeguard or lifeguard managers participation in in-service trainings have any correlation to accurate perceptions or expectations of behavior?
6. Does the amount of time a lifeguard spends “on duty,” have any correlation to accurate perceptions or expectations of behavior?

**Hypothesis**

1. Management and lifeguards will have similar perceptions and expectations of the behavior they should exhibit while on surveillance duty.
2. Lifeguards do not perceive their actual behaviors accurately while on duty.
3. Management’s expectations of behaviors do not match the lifeguard’s actual observed behavior.
4. Lifeguard or lifeguard managers will have better accuracy in perceiving and expecting a lifeguard’s “on duty,” behavior with more experience.
5. Lifeguard or lifeguard managers with more frequent participation in in-service trainings will show better accuracy in perceiving and expecting a lifeguard’s “on duty,” behavior with more experience.

6. A lifeguard with a longer amount of time spent “on-duty,” at one time will have a less accurate perception of behavior.

**Significance of the Problem**

When it comes to lifeguards they are the last line of defense a swimmer may have if they enter the drowning process. It is clearly important to adequately train these lifeguards on acceptable behaviors while on surveillance duty. The behavior a lifeguard exhibits while on duty is not a new concept to the drowning prevention spectrum. Frank Pia determined that lifeguards fail to recognize drowning in one of three ways. They either failed to recognize the events, they had in intrusion by a secondary duty while guarding, or were distracted by something else, better known as the RID Factor (Pia, 1984).

Lifeguard vigilance is a pinnacle of safety around the water (American Red Cross, 2006). There are a number of ways in today’s modern world that a lifeguard may be distracted. This can be something as common as day dreaming, to text messaging and surfing the internet on a mobile device. Common distractions are a part of everyday life, yet for a lifeguard this can be a life and death distraction. These distractions lead to questions about acceptable behaviors that lifeguards should exhibit while on surveillance duty. Are lifeguards aware of the distractions and how their behavior deviates from the responsibility of constantly maintaining effective patron surveillance while on duty? Questions also arise from this to what management’s expectations for behaviors are for the lifeguards they are responsible for.
Definition of Terms

Lifeguard- A person who holds an American Red Cross Lifeguarding Certificate and has completed the Lifeguard Training program from the American Red Cross.

Lifeguard Manager- A person who has the designated job of supervision of Lifeguard at their facility.

Patron- A swimmer or guest at the facility where the lifeguard is on surveillance duty.

Surveillance Duty- The time when a lifeguard is designated to watch the water and is in control of patron and swimmer safety.

Behavior- The way in which a lifeguard conducts themselves as well as all actions they exhibit while on surveillance duty.

Expected Behavior- A lifeguard’s supervisor, manager, or director’s expectation of their lifeguard’s behavior while on surveillance duty.

Perceived Behavior- A lifeguard’s perception of their behavior while on surveillance duty.

Actual Behavior- A lifeguard’s actual behavior that was observed by the researcher while conducting the lifeguard observation.

Assumptions

- Facilities will let the researcher in and meet with their staff to conduct the study.
- All participants will answer questions truthfully.
- All lifeguards will be unaware the observation is taking place.

Study Design

This study was designed to be an observational and comparison study. The researcher used SPSS 20 to analyze all data collected. First set of statistics used for the study were descriptive statistics. This showed the comparison of how lifeguard and manager display their expectations.
and perceptions and how they relate to each other. The frequency statistics will show how frequently major events during the observational portion of the study took place. One sample T-Test was used to show the differences between management’s expectation of behavior and the actual observed behavior. One-Sample T-Test was used to show the differences between management’s expectation of behavior and the lifeguard’s perceived behavior. Paired T-Test was used to show the differences between lifeguard’s actual observed behavior and lifeguard’s perceived behavior. One Way ANOVA was used to show differences in the amount of experience, participation in on-going or in-service training, and the time a lifeguard spends on duty to the lifeguard’s ability to accurately perceive their own behavior.

**Limitations**

- Lifeguards must be trained in the 2006 or 2012 version of the American Red Cross Lifeguard Training program.
- Facility must have an indoor pool that observation can take place at.
CHAPTER II
REVIEW OF LITERATURE

Drowning Statistics

According to a research analysis conducted by the Center for Disease Control on how many drowning fatalities had occurred at confined water environments (pools) when a lifeguard was on duty showed that a number of fatalities have occurred when lifeguards were present. This analysis looked at how the drowning occurred, when and where they occurred, and the facility plan and lifeguard statistics to confirm if there were any connections to race, age, location, venue, or dangerous situations that contributed to the death. This article has huge impact for this research topic. This research shows that there is indeed a problem with drowning that occurs when lifeguards are on duty. There are many factors that can lead to a drowning, but the number one layer of protection is thought to be the lifeguard. The reasons why people drown when a lifeguard is on duty is a complex issue that has fascinated the aquatic researchers for years. This research done by the CDC shows and gives justice to my research and others research that continues to fight unwarranted drowning deaths (Pelletier & Gilchrist, 2011). There were a large number of cases that were considered for the study, but the researchers set exclusion criteria in place to make sure that the fatalities they were looking at were indeed taking place at a pool where a lifeguard was on duty and to make sure that no other factors such as age, location, race, or venue contributed to the death. Of almost 3000 cases they narrowed it down to 140 cases that were used in this study and only 106 had complete information. This study only looks at fatalities only. This does not include near drowning or successful resuscitation attempts (Pelletier & Gilchrist, 2011).
The research information was gathered from multiple databases and media outlets. Any information gathered from a media resource that was not a direct database of the CDC was verified by death certificates and other internet based searches. There are a number of databases that hold drowning statistic and fatality information for instance, but this article examined cases where lifeguards were on duty and a drowning death still occurred. In only 22% of the cases studied the lifeguards realize the drowning was taken place. In the other 78% of the cases looked at, bystanders recognized the drowning and reported it to a lifeguard (Pelletier & Gilchrist, 2011). This is an excellent point to why my research is important to the current body of literature, since my study is looking at scanning and behaviors of lifeguards over a period of their shift and looking at how they act in a recognition situation. Overall this is an excellent example of how lifeguards can overlook drowning and further research needs to be done as to why and how this problem can be fixed and what intervention must be done to combat this growing public health problem (Pelletier & Gilchrist, 2011).

These statistics are frightening. Even though drowning fatalities are not as high in numbers as other types of injury related death, they still continue to happen when lifeguards are present. The most shocking part of this phenomenon is that lifeguards still are not able to recognize all drowning incidents. There are very little and inconsistent statistics on near drowning incidents, in which the drowning victim was either resuscitated at some point, or they were rescued by other patrons near the victim. Even in the Center for Disease Control analysis 78% of the victims were not recognized by lifeguards at all, which creates a major concern for the lifeguarding community. These statistics shows the need for studies like this one to work towards understanding why lifeguards are failing to recognize drowning victims (Pelletier & Gilchrist, 2011).
Lifeguard Recognition and Scanning

Dr. Frank Pia has conducted research that shows that lifeguards can miss drowning events when their attention is not fully on the task of watching the water and keeping patrons safe. Dr. Pia is regarded as an expert in drowning prevention and lifeguard training and is also the inventor of the RID factor and is universally recognized as the expected formula for why swimmers drown when lifeguards are present. This is one of the original articles used to introduce the RID factor and how it can lead to drowning (Pia, 1984). R stands for failure of the lifeguard to recognize the drowning, I stands for intrusions of the lifeguard’s duty to watch the water, and D stands for distractions of lifeguards from watching the water. It is now universally accepted that if a swimmer drowns at a lifeguarded facility that the cause can be related back to part of the RID factor. The RID factor is looked upon as the pinnacle scale to assess why a drowning victim was not rescued when an on duty lifeguard was present. This is used by the American Red Cross in their lifeguard training materials and programs as well as other major programs in the United States. I feel that Dr. Pia’s research and findings are still relevant in the training of lifeguards. No other research has disproved his findings and the R.I.D. factor is an important part of many lifeguard training programs (Pia, 1984).

Another research study was conducted by Langan-Leitzel (2010) to see how well lifeguards are able to monitor the events that they have been trained to. The researchers wanted to determine if lifeguards were actually able to effectively scan a pool and recognize events that the text and their training specify they should be able to. This is a relevant piece to my research because this study looks at lifeguards being effectively able to recognize events that can or would lead to possible injury or death, if not dealt with appropriately. These critical events can be small signs about what’s next from the patrons in the water. Each time a lifeguard fails to
recognize an event and take corrective action the risk of incident goes higher. Each event should be recognized and dealt with appropriately as soon as it occurs. Lifeguard training agencies work to train the lifeguards that they certify to be able to effectively recognize such crucial events when they take place. While my research works on observing the lifeguards behavior while scanning and seeing if that matches the lifeguards perception and managements expectation of them while on duty, this research looks at the ability of recognizing major and critical events (Langan-Leitzel, 2010).

The participants were 30 unpaid students from Penn State University. Ten of these students were or had been certified lifeguards by the American Red Cross. Eight of the ten were currently certified and two had previously been certified. They all had different backgrounds when it came to work experience in aquatics. All thirty participants were shown sixty, thirty second videos of an aquatic venue and asked to move their eyes to focus in on what they feel are important events. Using the Psychophysics Toolbox Libraries, the software on the computer that the students watched the videos on tracked and recorded their eye movement. This cohort study was analyzed in three ways, the first was to determine frequency of and duration of eye fixation, second was to examine the monitoring of events, and third was a subset of twelve video clips of the same events from different viewpoints (Langan-Leitzel, 2010).

The study found that the untrained participants preformed at the same level of the participants that have been exposed to lifeguard training in the past. The researchers bring up the point that this is a surprising find because the training from the American Red Cross talks about recognizing events that can lead to injury and death. The unique feature of the research is that this comparison of lifeguards to non-lifeguards and seeing what events that each can pick out has
never been done before. This was original research and this comparison has never been done while using this software and analysis technique (Langan-Leitzel, 2010).

A different article was written as a review of lifeguard scanning and how lifeguards recognize victims. The authors looked at a number of different recognition programs that different lifeguard programs use to help train lifeguards and what they should do on the job to help them effectively recognize a drowning and respond accordingly. The article also looked at a number of ways other firms outside the aquatics industry look at recognitions and train for such tasks, such as the company Airbus, Inc. The article points out that recommendations have been made that vigilance can only be maintained for a maximum of 30 minutes ("Study shows lifeguards," 2002). This topic can play an intricate roll in my research questions about lifeguard’s actual observable behaviors. My study focuses on the observations of a lifeguard’s behavior for a 30 minute window. The article does not list the authors, but does cite where the training protocols and recommendations came from ("Study shows lifeguards," 2002).

A more current research study conducted by Langan-Leitzel and Moore (2012) focused on how well lifeguards, instructors and non-lifeguards could each recognize critical events that lead to drowning. The idea and thought behind this research is that lifeguards should be able to recognize known critical events that lead to drowning better than the average lay person. The reason for conducting the study was to continue to work towards finding an answer to why patrons drown at a lifeguarded facility. Because of the reasoning behind this article, it fits very well with my research question. This research also correlates very well to what I want my study to focus on. I am studying the expectation of management and the perceived behavior of lifeguards in comparison to the actual behaviors of lifeguards while on duty. This study looks at how effectively lifeguards can pick out events while scanning, and my research looks at the
behaviors lifeguard exhibit while on scanning duty. Both of these topics works hand in hand with each other (Langan-Leitzel & Moore, 2012).

The method of the research took 8, 2 minute long videos of patrons swimming in the water, and showed them to current lifeguarding experts and instructors. This group picked out critical events that they thought a lifeguard should focus on. Then these videos were shown to a group of lifeguards, pre and post training, as well as non-lifeguards during which they each picked out events that they thought to be critical events that they would focus on. The subjects consisted of 17 lifeguards, 10 lifeguarding instructors, 20 non-lifeguards, and 12 lifeguard candidates enrolled in a current lifeguarding class. All subjects with a lifeguarding background were affiliated with the American Red Cross (Langan-Leitzel & Moore, 2012).

The conclusion of the article showed that lifeguards are not much better at picking out critical events than the average lay person is. The experts are able to recognize events the best, which can be assumed that this is due to better and more extensive training (Langan-Leitzel & Moore, 2012).

The results of this research showed that the lifeguarding instructors and experts identified the most critical events out of any category, yet were not able to have total agreement for each event. The current lifeguards did not seem to recognize the critical events identified by the experts any better than the non-lifeguards or pre training lifeguards. This showed that lifeguards do not have consistency when identifying critical events that lead to drowning. The study does hint at the possibility that with more training, education and experience these lifeguards could identify more events, inferred from the instructors and experts ability with advanced knowledge (Langan-Leitzel & Moore, 2012).
The unique aspect of this research is the idea of adding in non-lifeguards to compare them to actual lifeguards, to see if lifeguards could observe critical events better than the non-lifeguards. This was an unique approach and yielded some very interesting results. The idea that these lay persons can observe events at the same level as a trained lifeguard show that there is need to look in-depth at the training process of lifeguards (Langan-Leitzel & Moore, 2012).

The findings of this research are highly important for backing for this proposed research project. Though this proposed research is not generally look at the training process for scanning and surveying the water, it is questioning lifeguard behavior. The findings of the above research show that lifeguards are unable to recognize critical events that take place much better than non-lifeguards (Langan-Leitzel & Moore, 2012), which better suggests that lifeguards behavior during surveillance duty is critically important. Lifeguards must be focused on the water to recognize events that lead to drowning, and this study will show if lifeguards are perceiving that they are effectively watching the water and through the observation show if they are living up to their perceptions (Langan-Leitzel & Moore, 2012).

A different approach to the problem was part of research that was conducted by Patterson (2007) under the Royal Lifesaving Society of Canada. The Lifesaving Society is the number one training agency for lifeguards in the country of Canada, and is similar in many respects to the Preparedness, Health and Safety branch of the American Red Cross who publishes a training program and is the largest trainer of lifeguards in the United States. This study was completed to determine, if any, what issues lifeguards face when scanning the bottom of the pool for submerged victims. Lifeguards are expected to maintain full scanning of the water at all times. Each lifeguard can face unique challenges when attempting to scan the bottom of the pool for victims. It is well known in the lifeguard community that many challenges exist when trying to
scan the bottom, including current of the water, clarity of the water, number of patrons, and glare, just to name a few. The purpose of this research was to determine the extent of the challenges that are faced by lifeguards and make recommendations about what steps should be taken to help lifeguards get past this challenge. This topic does not directly relate to my research, but can be a challenge that can add to need for my research to better understand what lifeguard behavior is like while a guard is on duty (Patterson, 2007).

The methods for this research used a submerged manikin simulating a small Caucasian boy that sank to the bottom of a pool. The pool was a rectangular commercial pool with six lanes by twenty five meters in length. The depth of the water was from 30 centimeters to 5 meters deep. The lifeguard teams of the selected facilities were asked to try and identify the small manikin body at the bottom. These lifeguards were highly experienced and trained. The water and surroundings were manipulated to test different factors that can contribute to not being able to effectively see the bottom of the pool. The manipulated conditions included different distances and elevations, lighting levels, surface turbulence, under water turbidity, background color of the pool bottom and walls, and different customer activities (Patterson, 2007).

The results of the study were shocking. The manikin was barely able to be seen with calm water conditions in an empty pool. The manikin was only 10 meters away from the lifeguards and most all of the participant lifeguards could not see the manikin. As factors were manipulated it was found the depending on the color of the walls and bottoms of the pool and the lighting, the darker the deep water, the harder it is to spot the manikin. This research reinforced the idea that lifeguards do have extreme difficulty trying to see and recognize victims at the bottom of deep water in a pool. Though it seems like with clear water the lifeguards should be able to clearly identify objects, this is not always the case and this research proved that. The results showed that
a pool should have excellent water clarity and should also be painted white so the lifeguards can easily pick out items of color from the bottom. Lighting was also brought up as well as the location of lifeguard stations should be considered when renovation or building a pool (Patterson, 2007).

Again this research shows that lifeguards have barriers that can inhibit their ability to effectively watch the water, so maintaining appropriate behavior and constantly monitoring the water is of pinnacle importance. This research shows if lifeguards are showing appropriate behaviors and if they perceive this behavior accurately (Patterson, 2007).

A pilot study that was completed by Wendling, Volgelsong, Wuensch, and Ammirati (2007) to see how lifeguards perceived how accidents occur, where accidents occur, how they occur, and how management prepares their lifeguards to respond to such emergencies. The researchers collected data from nine different pools in North Carolina. This research focuses on comparing lifeguard perceptions of rescues, training, and practices at pools to actual accident data. The data was collected by the pool managers or assistant managers using a standardized rescue and accident reporting form that asked lifeguards about their opinions of how, why, and where swimming pool accidents happen. The survey tool also asked the lifeguards about rescues that had occurred and what obstacles there were to work around. The survey also asked the lifeguards who participated in the study what value they saw in testing skill level of lifeguards and conducting or participating in staff meetings (Wendling et al, 2007).

This article is highly applicable to my research question. This is a rare study because it asked about lifeguarding perceptions at a swimming pool setting, which is an aspect of this research as well. The study has an impact on my research because its focus is on lifeguards response to accidents and how that relates to training of the lifeguard. My research is to focus on
lifeguards perceptions of their scanning behaviors, which fits very neatly with this research conducted on lifeguard training and response perceptions (Wendling et al, 2007).

This study had a very small sample size, of only 23 participants, and the geographical location was very limited as well. Though this is a pilot study and was just meant to show that further research needs to be completed, the author even points out how the results may not reflect the general population. The article itself showed the comparison of how the lifeguards viewed events compared to how they were actually reported. Though there was not much significant data that was collected the author points out that this small study shows that lifeguards may not perceive dangers around the pool as well as they should be (Wendling et al, 2007). The authors also looked at how lifeguards perceived their management team’s training and in-service plans. Past research has shown that there is a large body in the lifeguard community that is not receiving the proper training and is not expected to maintain their skill level. This can lead to the lifeguard not being confident enough to complete the rescues required by their training. Even though previous research has proven there is a gap in some lifeguard management plans, this study showed that many of the lifeguards felt confident in their skills. This could be since the surveyed guards all came from a similar location and only looked at eight pools (Wendling et al, 2007).

Dr. Tom Griffith (2002) completed a review on how lifeguards are expected to recognize drowning and found little research has been done to assess how well lifeguards are able to react in high pressure situations. Dr. Griffith compares how lifeguards, much like airline pilots don’t have much to do while on duty, but are expected in a heartbeat to respond to a crises. The author suggests that this can cause problems because lifeguards have to recognize that a crisis is taking place and act accordingly in a small amount of time (Griffith, 2002).. The level of arousal is
discussed because many lifeguards regard their job as boring and have little to no arousal. This can lead to daydreaming and other conflicts that prevent the lifeguard from doing their job. This is a hugely important topic to be discussed in the aquatics community. Lifeguards must be constantly vigilant when performing their job duties. Distractions are part of human nature but we cannot let them overtake a lifeguard’s level of arousal (Griffith, 2002).

In another look on how lifeguards can overlook victims, Hunsicker and Davison (2008) wrote a research-based article about how lifeguards overlook victims in their designated area of responsibility, because of their scanning techniques. This article points out in the beginning that pin-pointing exact problem with lifeguard scanning, vision and signal detection can be difficult at best because of the number of different places that lifeguards are located at. Scanning a waterfront, ocean front, water park, or pool all have their unique challenges and problems that need to be taken into consideration. Yet the researchers point out that a number of different lifeguard agencies all advocate different scanning and recognition techniques. Some of these older techniques have not been changed in years and some defend that this is an area of research that cannot prove much (Hunsicker & Davison, 2008).

The authors looked at the way all human eyes work and started to break down different methods that lifeguards use to watch the water, and it starts to show how some of the techniques guards use could be causing them to miss signals that may lead to a patron drowning. In the end the authors believe that their research proved the fact that simple research in geometry and visual physiology can help improve lifeguards abilities to watch the water (Hunsicker & Davison, 2008). I do agree with the authors that understanding these concepts and learning how these play a part in how humans are able to watch the water, should be used in common practices when designing pools and lifeguard surveillance location. Yet, the fact remains all of the water venues
that exist are different. Each has their own unique features which create challenges (Hunsicker & Davison, 2008).

**Improvements to Lifeguard Scanning**

Schwebel, Lindsay, and Simpson (2007) also conducted research to see if a mid-summer season intervention with a selected group of lifeguards would enhance their scanning and effectiveness with prevention of injuries. The study stated an obvious problem that relates to my study very clearly; there has not been much research completed in the area of lifeguarding behaviors while on duty, and this has led to a lack of knowledge about what lifeguards are actually doing in the chair. While my research works on the idea of evaluation of actual behavior and how it relates to perception and expectation, this research focuses on if an intervention makes an impact on pre and post intervention behaviors (Schwebel et al, 2007).

The participants in the study were lifeguards from an unmentioned Jewish Community Center outdoor swimming pool that was open to the public for a membership fee. Only the one pool was used to collect the information and test the intervention. This pool had 14 lifeguards with an average of 5 years’ experience and an average age of 20.5 years old. There were 60.81 patrons in the pool and 20.97 patrons on deck, on average while the observations (pre and post) were being collected (Schwebel et al, 2007).

The study procedures started with a pre-intervention observation that was done on each of the 14 lifeguards before the summer half way point. At the half way point of the summer after all pre-intervention observations were completed, an intervention meeting was held to discuss three different topics with the lifeguards. The lifeguards were introduced to an increased awareness of swimmers risky behavior around the pool including lifeguard reactions, the potential severity of different drowning cases, and reviewing American Red Cross education on
scanning and overcoming barriers to scanning while on duty. After the intervention meeting, all observations were completed for a second time and results were analyzed against the first pre-intervention observations. The post-intervention observations were used to see if the mid-season intervention meeting had any positive result of encouraging more effective behavior from the lifeguards (Schwebel et al, 2007).

The study used paired t-tests, descriptive, and frequency distributions to analyze the results. The results showed that after the intervention meeting, patron’s risky behavior was better controlled by the lifeguards and the guards actually showed a better ability to scan the water. In all areas of observation the lifeguards improved their score. This score varied by lifeguards and is shown by the standard deviation, yet it shows a positive correlation that this intervention meeting helped the lifeguards perform better while completing patron surveillance duties (Schwebel et al, 2007).

The conclusions stated by the research team states that lifeguard should have intervention meetings to better assist the lifeguards and reinforce scanning and behavior expectations. My feeling on this is the same as the author, but I am cautious to call this a new and ground breaking find. The recommendations that lifeguards are continually meeting and going over this information and being retrained and practiced on skills is recommended by the American Red Cross Lifeguarding Team, and by a number of other lifeguard training organizations. The question remains if facilities are actually putting this into practice. More research should be done to determine what common practices among facilities is, or to implement a requirement for these meetings (Schwebel et al, 2007).

In a more recent article Schwebel, Jones, Holder, and Marcianai (2011) focused on the impact of doing audits on lifeguards to improve surveillances as it relates to swimmers risk
taking behaviors. The study was conducted in multiple phases in which an aquatics supervisor would audit lifeguards by having them take part in simulated rescues while on duty. Each of the lifeguards was given warning ahead of time and was directed to react to the simulation as if it was a real event and to act appropriately as trained for a real drowning. Each of the lifeguards that completed an audit was evaluated pre and post audit to examine if the audit made the lifeguards surveillance of swimmer behavior increase. The study had undercover undergraduate students go to the facilities in the study and conduct lifeguard evaluations of their scanning techniques, warning patrons of risky behavior and preventing risky behavior. The lifeguards were selected from 14 pools operated by Birmingham, Alabama YMCA and the pools were of different sizes and attractions. All lifeguards were trained by the American Red Cross (Schwebel et al, 2011).

The results showed that audits may in fact help improve lifeguard surveillance and reduce swimmer risk taking behavior in the days following an audit. However the results did not show that lifeguard surveillance and scanning increased by a significant level. However the study did show clearly that the lifeguards was giving more warnings to prevent risky behavior. The study points out to that a cause of this might be that swimmer and children are more likely to not take part in risky behavior when they know they are being monitored by competent supervision (Schwebel et al, 2011).

This section of the literature review covered the research that has been conducted to improve lifeguard scanning processes. Lifeguard scanning is the first line of defense for patrons when the drowning process takes over (Schwebel et al, 2007). These studies point to effective training from the standards and programs in place, good leadership, and constantly staying vigilant can lead to better recognition of victims. These studies also point to an idea that
competent and professional lifeguards are more likely to deter dangerous behavior and better keep a vigilant watch over their areas of assigned responsibility while on duty (Schwebel et al., 2011).

**Lifeguarding and Drowning Prevention**

Schwebel, Jones, Holder, and Marcianai (2010) also compiled a review of lifeguards and the importance they hold in swimmer protection. The authors made clear points on past research and how lifeguards have been counted with saving many lives. The article mentions how facilities and water attractions are cutting back on lifeguards or hiring under trained lifeguards. This creates a huge risk to swimmers and the management team is then open to risk of lawsuits. The authors cite that over 500 drowning cases happen every year at lifeguarded waters around the United States. This is an alarmingly high number and needs to be addressed. The article cites a number of ways management can combat this trend and make a difference to help support lifeguards and work with them to help them appropriately recognize and respond to drowning when it occurs. The main author is a professor in the department of psychology at the University of Alabama at Birmingham and has a focus in the lifeguards’ response and recognition of the drowning process (Schwebel et al., 2010).

**Lifeguard Management**

A review of current lifeguarding leadership roles and duties that looked at the current literature that deals with leadership and management and how they relate to lifeguarding leadership was completed by Avarmidis (2009). This article hits a crucial aspect of my research. The author makes strong connections to the roles of lifeguard leaders and managers to how lifeguards act and react while on duty. In my research I focus on the idea that there is a difference in the level of expectations from management than what the lifeguard perceives their
job duties truly are. This article puts major focus on the idea that management is what sets the tone for lifeguards behaviors and expectations. This article also sets the stage for my research backing in the way it describes what quality lifeguard management should look like. Being that this is considered to be an article based on a review of literature there is no methods section or subjects (Avarmidis, 2009).

The author makes strong points throughout the article that a well-developed and trained head lifeguard should be a key figure at all aquatic venue. The article described current definitions and examples of general leadership traits and how they can be fit and modeled for an aquatic setting. The head lifeguard should be a role model and a problem solver for his team of lifeguards. They must be an open link in between management and lifeguards and be able to have an open mind and respect and respond to both management and lifeguards. Each lifeguard should be able to come to their head lifeguard and let their voice be heard, because the head lifeguard is the representative to the management team. The head lifeguard also has the responsibility of making sure that all lifeguards are ready to handle emergencies appropriately and in emergency situations head lifeguards must play a pivotal role in leading the team in unexpected or untrained for situation (Avarmidis, 2009).

The author makes several very solid points about how lifeguards need a key leader in the head lifeguard position. This person must be well trained and have the people and leadership skills to carry out their job effectively. Though there are many instances when there is too much reliance on the head lifeguard, the author points out that the lifeguard team should be able to take control of situations themselves and their training dictates. Yet having that person who can direct and lead the team in unforeseen and unexpected emergencies and be a voice for the collection of
all of their lifeguards is a benefit and needed for a facility to be safe and have well trained and focused lifeguards (Avarmidis, 2009).

Yager (2008), conducted original research to help determine the factors relate to injury at aquatic venues. This survey was sent out to primarily college level aquatic programs with the idea that these programs are where a vast majority of aquatic management training takes place at the higher education level. The survey was designed to examine the extent of injury that has taken place at these facilities and how that type of injury is managed. The survey’s first four questions asked about the aquatic manager or directors, level of training and educational background. Questions five through twelve asked about the aquatic facility itself, including record keeping of medical incidents that had taken place in the past. Questions thirteen to sixteen asked about the facilities aquatic staff and how they have been trained. The final two questions asked if the leader of the program had any other professional responsibilities. This fits very well with my research topic and questions. I am partly looking at what management’s expectations are for lifeguarding behavior. What this research shows is that some aquatic managers are not well trained and this could lead to having less than adequate expectations for lifeguard, because of lack of training and experience on the part of management (Yager, 2008).

The survey was sent out to 446 university or senior college level aquatic programs and had 146 returned surveys. This author wanted to see what factors do university aquatic programs have that relate directly to injury at an aquatics facility. The author made a point that universities and senior colleges is where a vast majority of the training and education of aquatic management takes place (Yager, 2008). He geared the survey to be able to get information about whom and what experiences do the individuals leading college level aquatic programs have. The author points out that the level of experience in the college and university arena he was set to better
responses from higher trained individuals than he would if he had sent the survey out to the public sector (Yager, 2008).

The statistics for experience showed a very wide range with the most individuals only working in the aquatics field for an average of six to ten years. The level of certification that each participant had varied significantly as well, with most respondents having lifeguarding, certified pool operator and a water safety instructor certification. The final area looked at was the amount of injury or death related cases that occurred at the respondents facilities. At the time of the survey only 10 death related incidents had occurred in the 146 facilities that responded in the past five years. Only 30 had occurred from all facilities with no time limit. The author found that 80% of the respondents did not have the training recommended for appropriate and responsible aquatic management (Yager, 2008).

The author found excellent data about what injuries have occurred at the facilities that returned the survey. He was also able to get a solid look at what the level of training is for these positions and if that made a profound difference on the way that these individuals go about their job. I think that this article was a good look at what level of experience and training do aquatic positions in higher education require or have. The article also takes a great look at the injury rate of each of the facilities and makes comparisons of injuries and of illnesses that have occurred. Overall this simple survey gives great information and leads the author to open up the discussion about what level of training to higher education leaders have in aquatics and does that make a significant tie in to the amount or types of injuries or illness that occur (Yager, 2008).

This section of the literature review about management of lifeguards gives way and strength to the concept that lifeguard will only be as professional and as competent as their management. Lifeguard management sets the tone of seriousness that surrounds a lifeguard job
(Avarmidis, 2009). If management is not serious about the prevention of drowning lifeguard may not be either. Though managers generally are not the ones watching the water, they are the ones watching the water watchers. These managers are a crucial part of the process of keeping swimmers safe (Yager, 2008). Managers may not be the first line of defense, however it is their job to make sure that their lifeguards are following their training and maintaining adequate surveillance. In this study management expectations of behavior are compared to the lifeguard’s observed and perceived behaviors, which will show if there is a correlation to this idea. If management does not expect lifeguards to perform at a high standard, will the lifeguard exceed or fall below the expectations, this research will give answers to this question.

**Shadow Guarding**

According to the literature Shadow Guarding is an informally recognized method for lifeguard training and development by a number of different organizations. Shadow guarding is used to help new and current lifeguards how to properly scan the water. This is a critical skill that new and old lifeguards alike must have a mastery of to help prevent and respond to aquatic emergencies. The Shadow Guarding Grid was developed and pilot tested by Dr. Betsy McKinley and Mr. Robert Ogoreuc (2005).

The Shadow Guarding Grid is used to help new and old lifeguards better recognize what a lifeguard is doing while on duty. This can be a beneficial tool for both new and seasoned lifeguards as it points out deficiencies in a lifeguards scanning and recognition techniques. The Shadow Guarding Grid allows the new lifeguard the ability to shadow and document what a seasoned lifeguard is doing while on surveillance duty. The results of the Shadow Guarding Grid will give a breakdown of the lifeguard’s scanning behavior while on duty and provide documentation for both new and seasoned lifeguards about what they are doing and corrective
steps can then be infused if needed to help the lifeguard’s scanning and recognition abilities in the future (McKinley & Ogoreuc, 2005).

The authors of the tool state that it can be modified for in classroom activities and in practical application. The authors also state that the tool can used to benefit lifeguarding instructors as well, in ways to show the effectiveness of their teaching of scanning and recognition techniques. The authors do not state that this should be a required practice, but do state that this tool can only help to benefit in the training process and ongoing evaluations of lifeguards in all settings. The tool can be modified to fit the use of pools, lakes, and water parks from its original design of open water practices (McKinley & Ogoreuc, 2005). The tool was used and modified to fit the needs of this research study.
CHAPTER III

METHODOLOGY

Participants

The participants for this study were all currently certified by the American Red Cross in Lifeguarding at the time of data collection. All lifeguards were certified using the 2012 Lifeguarding Program released from the American Red Cross in March of 2012 or the 2006 Lifeguarding Program released from the American Red Cross in September of 2006. There was no limitation on how long they have been a lifeguard, however participants will be asked how long they have been a lifeguard for in the survey part of the study. Lifeguards were both male and female. 22 lifeguards were studied overall, with the addition of 4 lifeguard managers or aquatics directors.

Each facility that the observation and survey is taken from must have at least five lifeguards on staff, however not all five of the lifeguards must be working at the time of the observation and surveys are completed. 22 lifeguards and 4 managers took part in the study from 4 different facilities. Each facility selected was a non-profit recreational organization. A commercial facility is likely to have high standards for their lifeguards and management, which could create a bias in the study by mixing the types of facility management. These swimming pools were all indoor location. Due to the time limits of the study, there were more indoor pools operating in the State of Pennsylvania than outdoor facilities. The separation of indoor and outdoor pools can also prevent bias from occurring; due to the different environments and surrounding that outdoor pools can have verses indoor facilities.

These participants were recruited by contacting aquatic facilities in the Central and Western Pennsylvania areas who are known to be not-for-profit, non-profit, or owned by
educational institutions. This is a convenience sampling design due to the researcher’s location in Pennsylvania. The aquatics or lifeguard manager were contacted by phone or email by the principle researcher. The principle researcher explained the nature of the research to see if the facility and the management were interested in taking part in the study. If the facility was interested the principle researcher verified with the facility contact person that all of the lifeguards and the facility meet the requirements to take part in the research.

Once the facility showed interest and had verified that their staff and facility meet the requirements, informed consent letters were sent to the facility. In each consent package there were enough consent letters for every lifeguard that the facility employees and the aquatics or lifeguard manager, as well as the facility manager. Each package had enough letters for each participant to keep a copy of the letter and return the other. There was also a pre-addressed, stamped envelope that can be used to return the consent forms to the principle researcher. Though not every lifeguard had to consent to the study from each facility, the aquatics or lifeguard manager and the facility manager had to consent to taking part in the study. If any facilities manger or lifeguard manager refused to take part in the study at any time, that facility was not used.

**Procedures/Recruitment Strategies**

For the data collection phase of the study both a survey tool and an anecdotal observation form were used. The survey tool was used to evaluate both the lifeguards and their management on previous lifeguarding knowledge and on behaviors of lifeguards. The anecdotal observation tool was used to observe and record lifeguarding behaviors while a specific lifeguard is on duty. The survey tool which was developed by the principal researcher was pilot tested using a sample lifeguard staff and their management. 6 lifeguards and one lifeguard manager took part in the
pilot test to verify the validity and the reliability of the instruments. Once the pilot test data was analyzed, the researcher set up observational visits with each facility that consented to take part in the full study.

**Instruments**

The anecdotal observation form or shadow guarding form was developed and used in research prior to this study. The tool was developed for open water lifeguard observations by Dr. Betsy McKinnley and Mr. Robert Ogoreuc at Slippery Rock University. Research was conducted for the United States Lifesaving Association and for Ocean City, New Jersey’s Beach Patrol. Permission was given by the creators of the observation tool to use and modify as needed as long as they remain cited as the creators of the tool. The anecdotal observation tool needed to be modified slightly to be used for an indoor confined water environment compared to its original use for outdoor, open water beach environments. Because of this it was pilot tested again. This will be done at the same time as the pilot test for the surveys. The anecdotal observation form was used to collect the actual observed behaviors of the lifeguards. The survey tool was used to gather the expectations of management and the perceptions of behaviors for the lifeguard.

**Statistical Analyses**

The researcher used SPSS 20 software to analyze the data. The set of statistics used for the study were descriptive and frequency statistics. The descriptive statistics showed the standard deviation and variance. This showed the comparison of how lifeguards and managers display their perceptions and expectations as well as how they relate to each other. The frequency statistics showed how frequently major events during the study happened. Frequency statistics were used to analyze results when comparing the results of lifeguard to lifeguard observation, facility to facility comparison or a management to management comparison.
To compare management’s expectations of behaviors and lifeguard’s perception of their own behaviors using the surveys a One Sample T-Test was used to compare the data. When comparing management’s expectations to the lifeguards actual observed behavior by using the survey and the anecdotal observation tool, a One Sample T-Test was used to compare the data. When comparing the lifeguards perceived behaviors versus their actual observed behavior using the survey and the anecdotal observation tool, a Paired Sample T-Test was used to compare the data. To compare the data to see if amount of experience, in-service trainings, and amount of time spent “on-duty,” have any correlation to more accurately perceive and expect behaviors an ANOVA was used to show the relationship of the collected data.

All of these statistics were used to paint a picture and further display how lifeguards perceive their behaviors and expectations while on surveillance duty, how those behaviors compare to management’s expectations and how management’s expectations compare to lifeguard perceptions versus actual observed behaviors.

All data was collected between May 20, 2013 and June 5, 2013. The study plans and proposal was submitted to IRB for review in February of 2013, and received formal approval on March 22, 2013. The research topic was formally approved by the School of Graduate Studies and Research on March 25, 2013. Once approved, contacting the facilities began immediately. Because of the low response rate and multiple attempts to receive completed consent paperwork data collection was delayed until mid-May. All data analysis as completed during the first part of June 2013, and then writing took place directly after the analysis was completed.

**Data Collection Procedure**

For the data collection processes, a step by step procedure was laid out. The principal researcher contacted facilities who are known to be not-for-profit, non-profit, or run by an
educational institution though email or phone conversations with their aquatics or lifeguard manager. Each manager was explained the purpose of the research and asked if consent letters could be sent to the facility for their review. Also each facility was asked to verify at this initial contact phase that they meet the requirements to take part in the research. Once the manager had verified that the facility meets the requirements and that they are willing to take part in the research the principle researcher sent out a consent form package to the facility. In this package there was two informed consent letters for each participant secured in individual packages, including one the lifeguard manager and facilities manager. One form was to keep the other is to sign and return. There was also be a self-addressed stamped envelope in each package to return the forms to the researcher. Once the signed consent forms were received by the principle researcher the manager of the facility was contacted to set up a date for an observational visits, and to conduct the surveys.

On the first day of observations the principal research met with the facilities aquatic manager or aquatic director to complete their survey. This is meant to measure what expectations the management has for the lifeguard’s behavior while on surveillance duty. After the management has completed their survey, the researcher completed multiple visits at each facility to observe the lifeguards. Each observation took 30 minutes to complete. The principle researcher made attempts to not let the lifeguard being observed know that the observation is taking place.

After the data collection on the lifeguard, they were relieved from duty and the principle researcher had the lifeguard fill out a similar survey that their management completed prior to the observation. This survey is being given to the lifeguard to measure what their perceived behavior was while on surveillance duty and to collect information on their specific aquatics
background. After the lifeguard has completed the survey, the information gathered was analyzed to compare management’s expectations of behavior verses actual behavior, actual behavior verses perceived behavior, and expectations of behavior verses perceived behaviors.
CHAPTER IV
RESULTS

Response Rate

49 different recreational non-profit facilities with indoor aquatic venues were invited to participate in this study. An email inviting 48 of the facilities to participate was sent out and another was asked in person. Out of the 49 facilities invited to participate, 9 responded showing interest. After speaking to each aquatic manager from the nine facilities that responded, paperwork including consent forms, site approval forms, and data collection release forms were mailed out. Out of the 9 facilities that paperwork was sent out to, 4 facilities responded with completed paperwork. Multiple phone calls and emails were sent out in an attempt to raise the response rate with no success. This was a much lower response rate than what the researcher planed on when developing this study. Each of the four facilities was a nonprofit recreational facility with indoor pools operating in Western Pennsylvania.

Participants

From the four different facilities 22 lifeguards (n=22) consented to take part in the study as well as each aquatic manager/director from each facility (n=4). The youngest participant was 18 years old and the oldest participant was 84 years old with a mean age of 26.36. Out of the 22 lifeguards 14 were female and 8 were male. All four aquatic managers/directors were female with the youngest age of 23 and the oldest 5w4 with a mean age of 32.75. Each lifeguard was certified by the American Red Cross Lifeguarding Program from either the 2006 or 2012 revisions of the program.
Table 1

Sex of Participants

<table>
<thead>
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<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>8</td>
<td>36.4</td>
<td>36.4</td>
<td>36.4</td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
<td>63.6</td>
<td>63.6</td>
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</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 2

Age Breakdown of Lifeguard Participants

<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>22</td>
<td>18.00</td>
<td>86.00</td>
<td>26.3636</td>
<td>15.95692</td>
</tr>
</tbody>
</table>

Lifeguard’s Perceived Behavior

All participating lifeguards were given a survey to determine what their perceived behavior was during the same 30 minutes that the researcher observed their actual behavior. There were seven categories for lifeguards to code their behavior including actively scanning the water, patron education, preventive actions, first aid, in water rescues, completion of secondary duties, and distracted. Lifeguard responded to each category with the amount of time to the nearest minute they perceived themselves to be exhibiting each specific behavior. The lifeguard participants had a mean score of 24.05 minutes of actively scanning the water, 1.68 minutes of educating patrons, .64 minutes of preventive actions, 0 minutes of completing first aid and in water rescues, 1.23 minutes of completing secondary duties, and 2.45 minutes of being distracted from watching the water.
Table 3

*Lifeguard Perceived Behavior Breakdown*

<table>
<thead>
<tr>
<th>Behavior</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actively Scanning</td>
<td>22</td>
<td>19.00</td>
<td>30.00</td>
<td>24.05</td>
<td>3.32</td>
<td>11.00</td>
</tr>
<tr>
<td>Educating Patrons</td>
<td>22</td>
<td>.00</td>
<td>5.00</td>
<td>1.68</td>
<td>1.52</td>
<td>2.32</td>
</tr>
<tr>
<td>Preventive Actions</td>
<td>22</td>
<td>.00</td>
<td>6.00</td>
<td>.64</td>
<td>1.43</td>
<td>2.05</td>
</tr>
<tr>
<td>First Aid</td>
<td>22</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Water Rescue</td>
<td>22</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Secondary Duties</td>
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<td>.00</td>
<td>5.00</td>
<td>1.23</td>
<td>1.54</td>
<td>2.37</td>
</tr>
<tr>
<td>Distracted</td>
<td>22</td>
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<td>9.00</td>
<td>2.45</td>
<td>2.41</td>
<td>5.78</td>
</tr>
</tbody>
</table>

*Figure 1.* Lifeguard’s perceived behavior.
Management’s Expected Behavior

All participating aquatic managers/directors were given a survey to determine what their expectation of behavior was for the same 30 minutes that the researcher observed their lifeguard’s actual behavior. There were seven categories for aquatic managers/directors to code their behavior including actively scanning the water, patron education, preventive actions, first aid, in water rescues, completion of secondary duties, and distracted. Aquatic managers/directors responded to each category with the amount of time to the nearest minute they expected their lifeguards to exhibit each specific behavior. The aquatic manager/director participants had a mean score of 25.25 minutes of actively scanning the water, 2.25 minutes of educating patrons, 1.50 minutes of preventive actions, 0 minutes of completing first aid and in water rescues, .25 minutes of completing secondary duties, and .75 minutes of being distracted from watching the water.

Table 4

Management Expected Behavior Breakdown

<table>
<thead>
<tr>
<th>Behavior</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actively Scanning</td>
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<td>20.00</td>
<td>30.00</td>
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<td>4.11</td>
<td>16.92</td>
</tr>
<tr>
<td>Educating Patrons</td>
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<td>.00</td>
<td>5.00</td>
<td>2.25</td>
<td>2.06</td>
<td>4.25</td>
</tr>
<tr>
<td>Preventive Actions</td>
<td>4</td>
<td>.00</td>
<td>3.00</td>
<td>1.50</td>
<td>1.29</td>
<td>1.67</td>
</tr>
<tr>
<td>First Aid</td>
<td>4</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Water Rescue</td>
<td>4</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Secondary Duties</td>
<td>4</td>
<td>.00</td>
<td>1.00</td>
<td>.25</td>
<td>.50</td>
<td>.25</td>
</tr>
<tr>
<td>Distracted</td>
<td>4</td>
<td>.00</td>
<td>3.00</td>
<td>.75</td>
<td>1.50</td>
<td>2.25</td>
</tr>
</tbody>
</table>
Figure 2. Management’s expected behavior.

**Actual Lifeguard Behavior**

All participating lifeguards were observed by the principal researcher for a time period of 30 minutes. Every 10 seconds the researcher would code a lifeguard’s behavior based on what was observed. There were seven categories for the researcher to code their behavior including actively scanning the water, patron education, preventive actions, first aid, in water rescues, completion of secondary duties, and distracted. The researcher coded behavior in each category with the amount of time to the nearest 1/6 minute or every 10 seconds. The actual behavior of lifeguard’s participants had a mean score of 27.70 minutes of actively scanning the water, .32 minutes of educating patrons, .22 minutes of preventive actions, 0 minutes of completing first aid
and in water rescues, .99 minutes of completing secondary duties, and .77 minutes of being distracted from watching the water.

Table 5

*Lifeguard Actual Behavior Breakdown*

<table>
<thead>
<tr>
<th>Behavior</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actively Scanning</td>
<td>22</td>
<td>23.00</td>
<td>30.00</td>
<td>27.70</td>
<td>2.25</td>
<td>5.07</td>
</tr>
<tr>
<td>Educating Patrons</td>
<td>22</td>
<td>.00</td>
<td>1.67</td>
<td>.32</td>
<td>.45</td>
<td>.20</td>
</tr>
<tr>
<td>Preventive Actions</td>
<td>22</td>
<td>.00</td>
<td>3.00</td>
<td>.22</td>
<td>.72</td>
<td>.51</td>
</tr>
<tr>
<td>First Aid</td>
<td>22</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Water Rescue</td>
<td>22</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>Secondary Duties</td>
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<td>.00</td>
<td>5.17</td>
<td>.99</td>
<td>1.30</td>
<td>1.69</td>
</tr>
<tr>
<td>Distracted</td>
<td>22</td>
<td>.00</td>
<td>5.17</td>
<td>.77</td>
<td>1.23</td>
<td>1.52</td>
</tr>
</tbody>
</table>
Figure 3. Lifeguard’s actual behavior.

**Lifeguard Experience/In-service Training/Amount of Time On-Duty**

The participating lifeguards were also asked their number of years being certified as a lifeguard, the frequency they take part in in-service trainings, and the average amount of time they are on-duty at one time without receiving a break. The experience was asked as a multiple choice question and lifeguards responded with the following choices: 1= Less than 6 months (2 Lifeguards), 2= 6 months to 1 year (0 Lifeguards), 3= 1-2 years (6 Lifeguards), 4= 2-3 years (5 Lifeguards), and 5= 4+ years (9 Lifeguards). The mean amount of experience was 3.86 which fall closest to answer 4= 2-3 years of experience.
The amount of in-service training participation was asked as a multiple choice question and lifeguards responded with the following choices: 1= 2 or more per month (4 Lifeguards), 2= once per month (5 Lifeguards), 3= once every 2-4 months (6 Lifeguards), 4= once every 4-6 months (3 Lifeguards), and 5= never or over 6 months (4 Lifeguards). The mean amount of participation in in-service training was 2.91 which falls closest to answer 3= once every 2-4 months.

The amount of time a lifeguard spends on-duty without receiving a break was asked as a multiple choice question and lifeguards responded with the following choices: 1= less than 30 minutes (0 Lifeguards), 2= around 30 minutes (2 Lifeguards), 3= 30-45 minutes (3 Lifeguards), 4= 45-60 minutes (2 Lifeguards), 5= 60-120 minutes (1 Lifeguard), 6= over 120 minutes (14 Lifeguards). The mean amount of time a participating lifeguard spends on-duty without receiving a break was exactly 5.00, which corresponds to 5= 60-120 minutes.

Table 6

*Lifeguard Survey Responses*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years of Experience</td>
<td>22</td>
<td>1.00</td>
<td>5.00</td>
<td>3.86</td>
<td>1.25</td>
<td>1.55</td>
</tr>
<tr>
<td>In-Service Training</td>
<td>22</td>
<td>1.00</td>
<td>5.00</td>
<td>2.91</td>
<td>1.38</td>
<td>1.90</td>
</tr>
<tr>
<td>Time On-Duty</td>
<td>22</td>
<td>2.00</td>
<td>6.00</td>
<td>5.00</td>
<td>1.48</td>
<td>2.19</td>
</tr>
</tbody>
</table>
Management Experience/In-service Training/Amount of Time On-Duty

Aquatic Manager/Director’s Experience/In-service Training/Amount of Time On-Duty

The participating aquatic managers were also asked their number of years of experience in aquatics, the frequency they take part in in-service trainings, and the average amount of time they have their lifeguards on-duty at one time without receiving a break. The experience was asked as a multiple choice question and lifeguards responded with the following choices: 1= Less than 6 months (0 Managers), 2= 6 months to 1 year (0 Managers), 3= 1-2 years (0 Managers), 4= 2-3 years (0 Managers), and 5= 4+ years (5 Managers). The mean amount of experience was exactly 5.00, which corresponds to 5= 4+ years.

The amount of in-service training participation was asked as a multiple choice question and aquatic managers/directors responded with the following choices: 1= 2 or more per month (0 Managers), 2= once per month (2 Managers), 3= once every 2-4 months (2 Managers), 4= once every 4-6 months (0 Managers), and 5= never or over 6 months (0 Managers). The mean amount of participation in in-service training was 2.50 which falls in-between answer 2= once per month and answer 3= once every 2-4 months.

The amount of time an aquatic manager has a lifeguard on-duty without receiving a break was asked as a multiple choice question and aquatic managers/directors responded with the following choices: 1= less than 30 minutes (0 Managers), 2= around 30 minutes (0 Managers), 3= 30-45 minutes (0 Managers), 4= 45-60 minutes (0 Managers), 5= 60-120 minutes (1 Manager), 6= over 120 minutes (3 Managers). The mean amount of time a participating manager has a lifeguard on-duty without receiving a break was 5.75, which is closest to answer 6= over 120 minutes.
Table 7

*Management Survey Responses*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>M</th>
<th>SD</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years of Experience</td>
<td>4</td>
<td>5.00</td>
<td>5.00</td>
<td>5.00</td>
<td>.00</td>
<td>.00</td>
</tr>
<tr>
<td>In-Service Training</td>
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<td>2.00</td>
<td>3.00</td>
<td>2.50</td>
<td>.58</td>
<td>.33</td>
</tr>
<tr>
<td>Average Time On-Duty</td>
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<td>5.00</td>
<td>6.00</td>
<td>5.75</td>
<td>.50</td>
<td>.25</td>
</tr>
</tbody>
</table>

**Perceived Behavior Versus Expected Behavior**

The mean score of the lifeguard’s perceived behavior was compared to the mean score of the manager’s expectation of behavior. The mean score of the manager’s expectation of behavior was set to a test value of 0. The mean score of the lifeguard’s perceived behavior was then subtracted from the manager’s expectation of behavior. A one sample t-test was performed to determine if there were any significant differences between the mean scores of the manager’s expected behavior and the mean score of the lifeguard’s perceived behavior for each category. Water Rescue and First Aid were not included in this calculation because no values exist. When comparing the mean scores for expected and perceived behavior, a highly significant difference was found in the preventive actions, secondary duties, and distraction behavior categories. The figures below show each individual category’s distribution.
Table 8

*Table 8: Perceived Behavior Versus Expected Behavior*

<table>
<thead>
<tr>
<th>Behavior</th>
<th>M</th>
<th>SD</th>
<th>t(21)</th>
<th>p</th>
<th>95% CI</th>
<th>LL</th>
<th>UL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Scanning</td>
<td>-1.36</td>
<td>4.08</td>
<td>-1.57</td>
<td>.132</td>
<td>-3.17</td>
<td>.44</td>
<td></td>
</tr>
<tr>
<td>Patron Education</td>
<td>-.46</td>
<td>2.63</td>
<td>-.81</td>
<td>.427</td>
<td>-1.62</td>
<td>.71</td>
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</tr>
<tr>
<td>Preventive Actions</td>
<td>-.96</td>
<td>1.50</td>
<td>-2.99</td>
<td>.007</td>
<td>-1.62</td>
<td>-.29</td>
<td></td>
</tr>
<tr>
<td>Secondary Duties</td>
<td>1.05</td>
<td>1.61</td>
<td>3.03</td>
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<td>.33</td>
<td>1.77</td>
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<tr>
<td>Distracted</td>
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<td>2.02</td>
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<td>.88</td>
<td>2.67</td>
<td></td>
</tr>
</tbody>
</table>

*Note. 95% CI = 95% Confidence Interval; LL= Lower Limits, UL= Upper Limits*

*Figure 4. Preventive actions perceived vs. expected.*
Figure 5. Secondary duties perceived vs. expected.

Figure 6. Distracted perceived vs. expected.
Actual Behavior Versus Expected Behavior

The mean score of the lifeguard’s actual behavior was compared to the mean score of the manager’s expectation of behavior. The mean score of the manager’s expectation of behavior was set to a test value of 0. The mean score of the lifeguard’s actual behavior was then subtracted from the manager’s expectation of behavior. A one sample t-test was performed to determine if there were any significant differences between the mean scores of the manager’s expected behavior and the mean score of the lifeguard’s actual behavior for each category. Water Rescue and First Aid were not included in this calculation because no values exist. When comparing the mean scores for expected and actual behavior, a highly significant difference was found in the active scanning, patron education, preventive actions, and secondary duties behavior categories. The figures below show each individual category’s distribution.

Table 9

<table>
<thead>
<tr>
<th>Behavior</th>
<th>M</th>
<th>SD</th>
<th>t(21)</th>
<th>p</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LL</td>
</tr>
<tr>
<td>Active Scanning</td>
<td>2.29</td>
<td>3.76</td>
<td>2.86</td>
<td>.009</td>
<td>(.62, 3.96)</td>
</tr>
<tr>
<td>Patron Education</td>
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<td>1.90</td>
<td>-4.49</td>
<td>&lt;.001</td>
<td>(-2.66, -.98)</td>
</tr>
<tr>
<td>Preventive Actions</td>
<td>-1.37</td>
<td>1.18</td>
<td>-5.43</td>
<td>&lt;.001</td>
<td>(-1.90, -.85)</td>
</tr>
<tr>
<td>Secondary Duties</td>
<td>.80</td>
<td>1.37</td>
<td>2.74</td>
<td>.012</td>
<td>(.19, 1.41)</td>
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<tr>
<td>Distracted</td>
<td>.90</td>
<td>1.29</td>
<td>.33</td>
<td>.744</td>
<td>(-.48, .66)</td>
</tr>
</tbody>
</table>

Note. 95% CI = 95% Confidence Interval; LL= Lower Limits, UL= Upper Limits
Figure 7. Active scanning actual vs. expected.

Figure 8. Patron education actual vs. expected.
Figure 9. Preventive actions actual vs. expected.

Figure 10. Secondary duties actual vs. expected.
**Actual Behavior Versus Perceived Behavior**

The mean score of the lifeguard’s actual behavior was compared to the mean score of the lifeguard’s perceived behavior. The mean score of the lifeguard’s perceived behavior was set to a test value of 0. The mean score of the lifeguard’s actual behavior was then subtracted from the lifeguard’s perceived behavior. A one sample t-test was performed to determine if there were any significant differences between the mean scores of the lifeguard’s perceived behavior and the mean score of the lifeguard’s actual behavior for each category. Water Rescue and First Aid were not included in this calculation because no values exist. When comparing the mean scores for expected and actual behavior, a highly significant difference was found in the active scanning, patron education, preventive actions, and distracted behavior categories. The figures below show each individual category’s distribution.
Table 10

*Actual Behavior Versus Perceived Behavior*

<table>
<thead>
<tr>
<th>Behavior Comparison</th>
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<th>SD</th>
<th>S.E. Mean</th>
<th>95% CI</th>
<th>t(21)</th>
<th>p</th>
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</thead>
<tbody>
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<td></td>
<td></td>
<td></td>
<td>LL</td>
<td>UL</td>
<td></td>
</tr>
<tr>
<td>Active Scanning</td>
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<td>-2.47</td>
<td>-6.40</td>
</tr>
<tr>
<td>Vs. Actual</td>
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<tr>
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<tr>
<td>Secondary Duties</td>
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<td>1.73</td>
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*Note.* 95% CI = 95% Confidence Interval; LL= Lower Limits, UL= Upper Limits
Figure 11. Active scanning actual vs. perceived.

Figure 12. Patron education actual vs. perceived.
Figure 13. Preventive actions actual vs. perceived.

Figure 14. Distracted actual vs. perceived.
Experience, In-Service Training, Time On-Duty Comparison to Distraction

The lifeguard’s perception of their own behavior was compared to the amount of time that the lifeguards spent on duty at one time without receiving a break. Lifeguard’s actual behavior was also compared to the amount of time that they spent on duty at one time without receiving a break. Interesting results were found when comparing the amount of time a lifeguard was on duty for at one time without receiving a break to the amount of time a lifeguard perceived that they were distracted from watching the water and the actual amount of time a lifeguard was distracted from watching the water.

Figure 15. Perceived distracted to time on-duty.
Figure 16. Actual distracted to time on-duty.

The lifeguard’s perception of their own behavior was compared to the total number years of experience the lifeguard had accumulated. Lifeguard’s actual behavior was also compared to the total number years of experience the lifeguard had accumulated. Interesting results were found when comparing the total number years of experience the lifeguard had accumulated to the amount of time a lifeguard perceived that they were distracted from watching the water and the actual amount of time a lifeguard was distracted from watching the water.
Figure 17. Perceived distracted to years of experience.

Figure 18. Actual distracted to years of experience.
The lifeguard’s perception of their own behavior was compared to the frequency a lifeguard participated in ongoing or in-service trainings. Lifeguard’s actual behavior was also compared to the frequency a lifeguard participated in ongoing or in-service trainings. Interesting results were found when comparing the frequency a lifeguard participated in ongoing or in-service trainings to the amount of time a lifeguard perceived that they were distracted from watching the water and the actual amount of time a lifeguard was distracted from watching the water.

Figure 19. Perceived distracted to in-service training.
Experience, In-Service Training, Time On-Duty Comparison to Accurate Perceptions

A SPSS case summery was also completed to determine if there was any relationship between the amounts of experience a lifeguard has, the frequency of in-service training, and the amount of time a lifeguard spends on duty at one time to their ability to accurately perceive their behavior. This analysis was completed by visually comparing each lifeguards experience, in-service training, and amount of time on-duty to how accurately they perceived their behavior. This comparison grouped lifeguards together based on their experience level, participation in in-service training, and amount of time they spend on duty. Each category was broken down by group and visually compared to how well a lifeguard was able to perceive their behavior. Based on the visual comparison of each lifeguard’s experience, participation in in-service training, and amount of time on duty, there was no significant relationship present. In each category some lifeguards were able to accurately perceive their behavior while some lifeguards where far from an accurate perception. Since there is no visual significance shown, the lifeguard’s experience,
participation in in-service training, and amount of time spent on duty cannot be compared to their ability to accurately perceive their behavior.

To support the findings of the visual analysis produced from the SPSS case summery, the data was slightly modified so a statistical analysis could be performed. The years of experience a lifeguard has accumulated was categorized into 5 different categories yet because of the overall low participation level (n=22) certain categories were combined. Three categories were created which included 2 or less years lifeguarding, 2-3 years of lifeguarding, and 4 or more years were the new categories created. These new values were compared to the values of lifeguard's perceived behavior for actively scanning after being subtracted from their actual behavior for actively scanning the water. A one way ANOVA was used to compute the data. No significance was found.

Table 11

ANOVA for Years of Experience to Behavior Perception

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<tr>
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<td>Total</td>
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<td>21</td>
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This same type of analysis was performed when comparing the amount of in-service training to a lifeguard’s ability to accurately perceive their behavior. The lifeguard responses for the amount of in-service training were also combined into new values for a better statistical analysis. The new categories included one or more per month, once every 2-4 months, more than 4 months or never. These new values were compared to the values of lifeguard’s perceived behavior for actively scanning after being subtracted from their actual behavior for actively scanning the water. A one way ANOVA was used to compute the data. No significance was found.
Table 12

ANOVA for In-Service Training to Behavior Perception

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Figure 22. In-service training to perceived active scanning.

This same type of analysis was performed when comparing the amount of time a lifeguard spends on duty at one time to a lifeguard’s ability to accurately perceive their behavior. The lifeguard responses for the amount of time a lifeguard spends on duty were also combined into new values for a better statistical analysis. The new categories included less than 45 minutes, 45 minutes to 120 minutes, or over 120 minutes. These new values were compared to the values of lifeguard’s perceived behavior for actively scanning after being subtracted from
their actual behavior for actively scanning the water. A one way ANOVA was used to compute the data. No significance was found.

Table 13

ANOVA for Time On-Duty to Behavior Perception

<table>
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<td>Total</td>
<td>150.902</td>
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**Figure 23.** Time on-duty to perceived active scanning.
CHAPTER V
DISCUSSION/CONCLUSION

Summary of Findings

The goal of this research study was to determine what behaviors lifeguards are exhibiting while on duty, how lifeguard perceive their behavior and what management’s expectation are. Both the lifeguard’s perception of behavior and management expectations were also compared to the actual observed behavior that lifeguards exhibit while on duty. Management’s expectations were also compared to lifeguards perceptions. In each comparison there were significant differences.

Since the sample size was only 22 lifeguards and 4 managers from 4 different facilities it is difficult to show a strong relationship in the statistical analysis. The research questions and hypothesis can be answered broadly and show some significance from the sample population. For more a more concise analysis and defined answer to the research questions posed, future research is needed.

Seven different behavioral categories were analyzed. Lifeguards were asked how they perceived their behavior in a 30 minute time frame and to categorize that behavior. Management was asked what they expect their lifeguard’s behavior to be in a 30 minute time frame and to categorize that behavior. Lifeguards were also observed by the principal researcher for 30 minutes and coded their actual behavior that was witnessed. The seven categories included actively scanning the water, providing patron education, taking preventive actions, making a water rescue, providing first aid, completion of a secondary duty or being distracted. Five out of the seven categories were analyzed for a relationship. First aid and water rescue received a zero score in all parts of the data collection so it was omitted from the analysis.
The first research question posed by this study asked if lifeguard’s perceived behaviors while on surveillance duty compare to management’s expectation of behaviors. The researcher hypothesized that management and lifeguards would have similar perceptions of expectations of the behavior they should exhibit while on surveillance duty. Based on the statistical results and analysis the hypothesis cannot be proven or disproven. The mean score of the lifeguard’s perceived behavior was compared to mean score of their management’s expectations using a one sample t-test.

A significant difference was found in three of five behavior comparisons. These differences included preventive actions (M=-.96, SD=1.50, t(21)= -2.99, p=.007), secondary duties (M=1.05, SD=1.61, t(21)= 3.03, p=.006), and distraction (M= 1.77, SD= 2.02, t(21)= 4.11, p=<.001). However there was no significant difference behavior expectation or perception in active scanning and patron education. Since only three out of the five behavior categories proved to be significantly different, there is no way to prove or disprove the hypothesis that lifeguards and managers have similar expectations of behavior. Based on the data we can see that lifeguards perceived their behavior very closely to what management expected for actively scanning and similarly for providing patron education. Lifeguards did however spend more time on average completing secondary duties and being distracted while on duty than management expected. Since active scanning is the most frequent behavior it is impossible to state that the hypothesis is valid.

The second research question asks how lifeguard’s perception of their own behavior compares to their actual behavior. The researcher hypothesized that lifeguards do not perceive their behavior accurately while on duty. Based on the statistical results and analysis the
hypothesis cannot be proven or disproven. The mean score of the lifeguard’s perceived behavior was compared to mean score of their actual behavior using a paired t-test.

A significant difference was found in four of five behavior comparisons. These differences included actively scanning the water (M=-3.66, SD= 2.68, t(21)= -6.40, p=<.001), providing patron education (M= 1.36, SD= 1.50, t(21)= 4.26, p=<.001), preventive actions (M=.46, SD= .81, t(21)= 2.42, p=.025), and distraction (M= 1.68, SD= 1.73, t(21)= 4.57, p=<.001). However there was no significant difference behavior expectation or perception in completion of secondary duties. Since only four out of the five behavior categories proved to be significantly different, there is no way to prove or disprove the hypothesis that lifeguards do not perceive their behavior accurately while on duty. Based on the data we can see that there are significant differences in the lifeguard’s ability in all areas except their competition of secondary duties. Though secondary duties only makes up a small part of the total behavior calculations, there is not enough proof to definitively show that lifeguards are completely unable to have an accurate perception of behavior while on duty. This trend does however point that in most areas of the behavior that was studied there is a significant difference the in ability for the lifeguard to accurately predict their behavior. This is an interesting result since in most of the areas there was a significant difference in the perceptions of actual behavior.

The third research question asks how lifeguard’s actual behavior compares to their management’s expectation of behavior. The researcher hypothesized that lifeguard’s actual behavior does not match management expectations. Based on the statistical results and analysis the hypothesis cannot be proven or disproven. The mean score of the lifeguard’s actual behavior was compared to mean score of management’s expectation of behavior using a one sample t-test.
A significant difference was found in four of five behavior comparisons. These differences included actively scanning the water ($M=2.29$, $SD= 3.76$, $t(21)= 2.86$, $p=.009$), providing patron education ($M=-1.82$, $SD= 1.90$, $t(21)= -4.49$, $p=.001$), preventive actions ($M=-1.37$, $SD= 1.18$, $t(21)= -5.43$, $p=.001$), and completion of secondary duties ($M=.80$, $SD= 1.37$, $t(21)= 2.74$, $p=.012$). However, there was no significant difference for the distracted category.

Since only four out of the five behavior categories proved to be significantly different, there is no way to prove or disprove the hypothesis that lifeguard’s actual behavior does not meet management expectations. Based on the data, we can see that there are significant differences in the lifeguard’s ability in all areas except distraction. Though distraction only makes up a small part of the total behavior calculations, there is not enough proof to definitively show that lifeguards actual behavior does not meet management expectations. This trend does, however, point that in most areas of the behavior that was studied there is significant differences that lifeguard’s actual behavior is not meeting management expectations.

The fourth research question asked if there was any correlation between the years of experience a lifeguard or manager has to a better accurate perception or expectation of behavior. Both an ANOVA and a visual case summery were used to analyze these questions. Based on the data, there is no significant finding. In both the visual and statistical analysis there is no definitive correlation that shows any type of relationship between experience and a better perception or expectation of behavior. This could have resulted from the small sample size. The researcher hypothesized that there would be a better perception and expectation of behavior with more experience. Based on the data, the hypothesis is rejected.

The fifth research question asked if there was any correlation between the frequency that a lifeguard participates in on going or in-service training and an accurate perception or
expectation of behavior. Both an ANOVA and a visual case summery were used to analyze this question. Based on the data there is no significant finding. In both the visual and statistical analysis there is no definitive correlation that shows any type of relationship between participation in on-going or in-service training and a better perception or expectation of behavior. This could have resulted from the small sample size. The researcher hypothesized that there would be a more accurate perception and expectation of behavior with more frequent participation in on-going or in-service trainings. Based on the data they hypothesis is rejected.

The sixth and final research question asked if there was any correlation between the amount of time a lifeguard spends on-duty and an accurate perception or expectation of behavior. Both an ANOVA and a visual case summery were used to analyze this question. Based on the data there is no significant finding. In both the visual and statistical analysis there is no definitive correlation that shows any type of relationship between the amount of time a lifeguard spends on-duty and an accurate perception or expectation of behavior. This could have resulted from the small sample size. The researcher hypothesized that there would be a less accurate perception and expectation of behavior with the more time that a lifeguard spends on-duty. Based on the date the hypothesis is rejected.

An interesting finding was found while analyzing the data. The research showed the lifeguards with more experience, less participation in on-going or in-service training, and more time on duty spend more time being distracted than other lifeguards. A trend was shown in certain figures that the more experience that a lifeguard has the longer they tend to be distracted when compared to lifeguards with less experience. Both perception and actual behavior both showed this trend. The same trend was noticed with lifeguards that do not frequently participate in on-going or in-service training. The less a lifeguard participates in in-service training the long
amount of time they spent distracted. Both perceived and actual behavior both showed this trend. This trend was also noticed with lifeguards who are on-duty for longer periods of time. The longer time a lifeguard is on-duty for the more they seemed to be distracted. Both perceived and actual behavior showed this trend. Because of the small sample size of this study it is impossible to draw a definitive connection between these variables. Though it is interesting to note that these factors all showed the same trend with a lifeguard’s amount of time spent being distracted while on surveillance duty.

**Interpretation of Findings**

Lifeguard and their management have their respective perceptions and expectations for the behavior that a lifeguard does or should exhibit while on surveillance duty. The major goal of this research was to determine if lifeguards perceptions and management expectations differ from what lifeguard behavior actually is while they are on surveillance duty. Though the research questions could not fully be answered based on the data analysis some important information was learned. There is a significant difference in many behavioral categories that were observed. When comparing lifeguard’s actual behavior to management expectations it was found that lifeguards are actively scanning the water more than what the average manager expected. Though there are some lifeguards that did not meet the average manager’s expectation, many more lifeguards exceeded it. Yet when we compared the lifeguard’s actual behavior to their perception of their behavior, it was found that most lifeguards perceive that they are actively scanning the water much less that what they actually are. This means that the average lifeguard in the study perceived that they were watching the water much less that what they actually were.
In contrast, on average lifeguards also perceived that they spent more time distracted than what they really were. This shows that lifeguards on average perceive distraction much more than they truly are distracted. Both of these findings show that lifeguards in many ways do not accurately perceive their behavior, however are watching the water much more than they perceive they are and spending less time distracted than what they actually are. The RID Factor developed by Dr. Frank Pia places distraction as one of the reasons why lifeguards fail to recognize a drowning victim (Pia, 1984). An accurate perception of the amount of time a lifeguard is distracted is key to preventing it. Though this study shows that lifeguards are less distracted than they perceive, it does show that lifeguards do not have an accurate perception.

This research is unique in the many ways that it contributes to the current body of knowledge. This is the only study known to the researcher that completed a comparison of lifeguard’s actual behavior, their perceived behavior, and what their management expected. This research provides a glimpse of how lifeguard’s perceived behavior compares to what they actual exhibit while lifeguarding.

**Limitations of Study**

Though this study takes a wide look at what lifeguard behavior is while a lifeguard is on-duty and how that compares to expectations and perceptions of behavior, there are limitations present that could have a result on the study’s findings. First and foremost there was a small sample size available to the researcher. Only four facilities participated in the study. This severely limited the amount of lifeguards that were available to participate in the study. Though 22 lifeguards participated, a stronger sample size may have provided with better results. The limited response rate from facilities that fit the requirements to take part in the study may have also created a situation of studying too many lifeguards from the same facility. Having a more
stratified sample with a population of lifeguards from many more facilities may have provided better results.

Another limitation of this study is the time that the data collection took place. Because of the researcher’s location in Pennsylvania, the time in the year in which data collection took place meant there were only indoor pools open. The researcher did set this study up for only indoor pools because of this fact; however this limited the response rate since indoor pools that met all of the specific requirements were tough to find. Some facilities that were asked to participate and agreed did not use American Red Cross Lifeguarding which excluded them from participation.

The data collection tools also created some limitations. The seven behavior categories that were used could have been modified slightly to provide possibly better data. Two of the behavior categories, water rescue and first aid were never used and could have been combined into one rescue category and allowed for another category to be created. Lifeguards also had some confusion when filling out their behavior categories on their survey form. Another question that could have also been asked of the lifeguards is if they felt that when completing a secondary duty if this interrupted them from providing patron surveillance or if they felt they were unable to maintain surveillance. The behavior observation form that was used by the principal researcher to code a lifeguard’s actual behavior also could have more defined categories to help better code the data specifically to what each lifeguards behavior was.

Another limitation was that every behavior that was observed by a participating lifeguard was coded based on the perception of the lifeguards behavior by the principal researcher. The principal researcher is an American Red Cross Instructor Trainer in Lifeguarding and has over 7 years of lifeguarding experience. Even with experience however the coding is based on the perception of what is seen. This means that another person may have interpreted the behavior
slightly different than the researcher did. There was consistency because the principal researcher collected all of the data from each lifeguard. If this same study was to be performed by another researcher the results may have been somewhat different based on how they perceived the lifeguard’s actual behavior being exhibited.

**Recommendations for Future Research**

There are many different ways that this research could lead to future research. First, because of the small sample size of this study it would be interesting to see if the results would be significant if a larger sample size was used over a wider area. This may provide valid answers to the posed research questions. This larger type of study could both be performed at both indoor and outdoor swimming pools. This study could also be replicated to be used to analyze lifeguard behavior at water parks, flat water beaches, and open water. To truly understand how lifeguards are able to perceive their actual behavior and if that is meeting management expectations, multiple studies would need to take place with large sample sizes at all types of venues.

This type of research study could also be completed to compare if different lifeguard training programs provide any different type of results. This research study only used American Red Cross Lifeguards. It would be interesting to see if a different training program provides any different results. If a difference does exist between training programs this could have huge implications on the way all lifeguards are trained.

Further research can also be conducted to provide a more in-depth look at what management expectations of lifeguards truly are. This study had a small number of lifeguard managers participate. There was a wide variation between what each individual manager expected from their lifeguards. A larger study should be conducted to provide a clear picture of what the background and experience level lifeguard managers poses and what expectations they
have for their lifeguards. A comparison of managers using different lifeguarding programs should also be conducted to see if different training programs have any impact on the expectations they have for lifeguards.
References


Study shows lifeguards can't see everything, always. (2002, February). *Parks & Recreation, 37*(2), 70-72.

Appendix A

Consent Letter to Lifeguards

*(was printed on letter head for the actual study)*

You are invited to participate in a research study because you are a lifeguard. The information given in this Informed Consent Form is written to help you make an informed decision about whether or not you want to participate. The aquatic facility management that you work for has given permission for Mr. Adam Katchmarchi to conduct part of his research study with the staff at your facility.

This is a study of scanning behaviors practiced by lifeguards. Information will be collected using a combination of survey and observational tools to help the researchers learn more about behaviors practiced by lifeguards are while they are on duty. All lifeguards at your facility are being invited to participate in this study; however only a small number of randomly selected guards will actually be observed.

If you choose to participate in this study, Mr. Katchmarchi will visit your facility unannounced to complete an observation and ask you to complete a brief survey after the observation. During this visit, Mr. Katchmarchi will observe you while on duty. This observation will take about 30 minutes to complete. After the observation is complete, Mr. Katchmarchi will then ask you to fill out the brief short survey. There is no compensation for taking part in the study.

Lifeguard’s names, observations, and survey information will be kept strictly confidential and only group information pertaining to the research will be shared or published. If you decide to participate, you will be assigned a number that will be used in place of your name to protect your confidentiality. Mr. Katchmarchi will be the only person with the information linking your name and number and this information will be kept in a locked office during the research and will be destroyed after the research has been completed. However, to help protect against potential liability, any negligent behavior that could lead to or did result in the injury or death of a patron that is witnessed during the observation, will be reported to facility management using a “Negligence Reporting Form.” If any type of accident, injury, or rescue takes place during the observation it will be documented in the studies “Accident/Injury Reporting Form.” These forms will include a written description of the event witnessed by the researcher and your information. Your management has acknowledged that they have no interested and no ability to use the observation or survey responses as employment evaluation. There is minimal risk to you if you decide to take part in this study.

Participation in this study is completely voluntary! If you decide to participate, you may withdraw at any time without penalty. If you choose to withdraw, all information pertaining to you will be destroyed. To withdraw, you simply have to email the principal researcher at the email listed below. Should you decide not to participate or decide to withdraw, there is no penalty and it will not affect your relationship with your facility or with Indiana University of Pennsylvania or the Health and Physical Education Department.

If you have any questions please contact the principal researcher listed below.

This research is being conducted by Mr. Adam Katchmarchi under the direction of Dr. Richard
Hsiao, Associate Professor of the IUP Department of Health and Physical Education.

This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone: 724/357-7730)

<table>
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<tr>
<th>Principal Researcher:</th>
<th>Co-Researcher:</th>
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</thead>
<tbody>
<tr>
<td>Mr. Adam Katchmarchi</td>
<td>Dr. Richard Hsiao</td>
</tr>
<tr>
<td>Graduate Student</td>
<td>Associate Professor</td>
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<tr>
<td>Health and Physical Education Department</td>
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By filling out and signing the spaces below, I have read and understand the information on the form and consent to taking part in the research study. I understand that there is no compensation for taking part in this study. I understand that all information pertaining to me will be kept confidential and will not be shared with my employer or in any other way released. I also understand that I may withdraw consent at any time by contacting the principal researcher listed above. I have received an additional copy of this form to keep for my possession.

Participants Name (Please Print): __________________________________________________________

Participants Signature: __________________________________________________________

Date: ____________________________________________________________________________
Appendix B

Consent Letter to Lifeguard Manager

*(was printed on letter head for the actual study)*

You are invited to take part in a research study because you are a Lifeguard Manager. This information is given to help you make an informed decision about whether or not to participate.

This is a study of lifeguard behavior, and data will be collected by using a combination of survey and observations tools to help understand what lifeguard behaviors are while on duty. Lifeguard Managers will be asked to complete a brief survey to help us understand what expectations you have for your lifeguard’s behavior while on surveillance duty.

If you choose to participate in this study, Mr. Katchmarchi will set up a time to conduct your survey and observe participating lifeguards. After meeting with you to complete your survey, Mr. Katchmarchi will then observe the lifeguards unannounced. This observation will take about 30 minutes, per lifeguard, to complete. After the observations are complete, Mr. Katchmarchi will then meet with each lifeguard to fill out their survey. There is no compensation for taking part in the study.

Lifeguard’s names, observations, and survey information will be kept confidential and only group statistical information pertaining to the research results will be shared or published. You, as well as your lifeguards, will be assigned a number in place of your name. Mr. Katchmarchi will be the only person with the information linking your name and number and this information will be kept in a locked office during the research and will be destroyed after the research has been completed. However, to provide protection against liability, any negligent behavior that could or did result in the injury or death of a patron will be reported to facility management using a “Negligence Reporting Form.” If any type of accident, injury, or rescue takes place during the observation it will be documented in the studies “Accident/Injury Reporting Form.” These forms will include a written description of the event witnessed by the researcher and the lifeguard(s) involved information so that corrective action (if needed) can be taken.

This research will be conducted in a professional manner. Data and results will only be shared in professional publications and at professional gatherings. There are no known risks for taking part in this study.

Participation in this study is completely voluntary! If you consent to the study, you may withdraw participation at anytime, without penalty. In the event that you choose to withdraw any information pertaining to you will be destroyed. To withdraw consent, you simply need to email the principal researcher at the email listed below. Should you decide not to participate or decide to withdraw, there is no penalty and it will not affect your relationship with your facility or with Indiana University of Pennsylvania or the Health and Physical Education Department.

If you have any questions please contact the principal researcher listed below.

This research is being conducted by Mr. Adam Katchmarchi under the direction of Dr. Richard Hsiao, Associate Professor of the IUP Department of Health and Physical Education.
This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone: 724/357-7730)

<table>
<thead>
<tr>
<th>Principal Researcher:</th>
<th>Co-Researcher:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr. Adam Katchmarchi</td>
<td>Dr. Richard Hsiao</td>
</tr>
<tr>
<td>Graduate Student</td>
<td>Associate Professor</td>
</tr>
<tr>
<td>Health and Physical Education Department</td>
<td>Health and Physical Education Department</td>
</tr>
<tr>
<td>235 Zink Hall</td>
<td>114 Zink Hall</td>
</tr>
<tr>
<td>Indiana University of Pennsylvania</td>
<td>Indiana University of Pennsylvania</td>
</tr>
<tr>
<td>1190 Maple Street</td>
<td>1190 Maple Street</td>
</tr>
<tr>
<td>Indiana, PA. 15705</td>
<td>Indiana, PA. 15705</td>
</tr>
<tr>
<td>724-357-2630</td>
<td>724-357-0123</td>
</tr>
<tr>
<td><a href="mailto:a.b.katchmarchi@iup.edu">a.b.katchmarchi@iup.edu</a></td>
<td><a href="mailto:Hsiao@iup.edu">Hsiao@iup.edu</a></td>
</tr>
</tbody>
</table>

By filling out and signing the spaces below, I have read and understand the information on the form and consent to taking part in the research study. I understand that there is no compensation for taking part in this study. I understand that all information pertaining to me will be kept confidential and will not be shared or in any way released. I also understand that I may withdraw consent at any time by contacting the principal researcher listed above. I have received an additional copy of this form to keep for my possession.

Participants Name (Please Print): ________________________________________________

Participants Signature: __________________________________________________________

Date: _________________________________________________________________________
Appendix C

Site Approval Form

*(was printed on letter head for the actual study)*

Your facility is invited to take part in a research study. This information is given to help you make an informed decision about whether or not to participate.

This is a study of lifeguard scanning behaviors, and data will be collected by using a combination of survey and observations tools to help understand what lifeguard behaviors are while on duty. Lifeguard Managers will be asked to complete a brief survey to help the researcher better understand what expectations they have for your lifeguard’s behavior while on surveillance duty. The researcher will then observe lifeguard’s at your facility with their consent. After the observation, the lifeguard will be asked to complete a brief survey.

If you choose to participate in this study, Mr. Katchmarchi will work your lifeguard manager to set up a time to conduct surveys and observe participating lifeguards. After meeting with the lifeguard manager to complete your survey, Mr. Katchmarchi will then observe the lifeguards unannounced. This observation will take 30 minutes, per lifeguard to complete. After the observations are complete, Mr. Katchmarchi will then meet with each lifeguard to fill out their survey. There is no compensation for taking part in the study.

You as the lifeguard’s employer will not have access to any results from their observation. A release form stating that you have no interest in viewing a lifeguard’s results will need to be signed in conjunction with this site approval form. However if any negligence is seen, or any accident or rescue takes place it will be reported to you as the facility manager on a written form from the researcher with the lifeguard’s information. If you would like to see the final results of this study, please let Mr. Katchmarchi know and he will be happy to provide you with a copy.

Lifeguard’s names, observations, and survey information will be kept confidential and only statistical information pertaining to the research will be shared or published. Your facility, as well as your participating staff will be assigned a number in place of your name. Mr. Katchmarchi will be the only person with the information containing your name and number and this information will be destroyed after the research has been completed. This research will be conducted in a professional manner. Data and results will only be shared in professional publications and at professional gatherings. There is minimal risk to taking part in this study.

Participation in this study is **completely voluntary**! If you consent to the study, you may withdraw participation at anytime, without penalty. In the event that you choose to withdraw any information pertaining to you will be destroyed. To withdraw consent please email the principal researcher at the email listed below. Should you decide not to consent or withdraw consent; it will not hinder your relationship with the Indiana University of Pennsylvania or the Health and Physical Education Department.
If you have any questions please contact the principal researcher listed below.

This research is being conducted by Mr. Adam Katchmarchi under the direction of Dr. Richard Hsiao, Associate Professor of the IUP Department of Health and Physical Education.

This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone: 724/357-7730)

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</tr>
<tr>
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<td>724-357-0123</td>
</tr>
<tr>
<td><a href="mailto:a.b.katchmarchi@iup.edu">a.b.katchmarchi@iup.edu</a></td>
<td><a href="mailto:Hsiao@iup.edu">Hsiao@iup.edu</a></td>
</tr>
</tbody>
</table>

By filling out and signing the spaces below, I have read and understand the information on the form and consent to my facility taking part in the research study. I understand that there is no compensation for taking part in this study. I understand that all information pertaining to my facility and its staff will be kept confidential and will not be shared or in any way released. I also understand that I may withdraw consent at any time by contacting the principal researcher listed above. I have received an additional copy of this form to keep for my possession.

Facility Name (Please Print): ______________________________________________________

Facility Manager’s Name (Please Print): _____________________________________________

Facility Manager’s Signature: ___________________________________________________

Date: _________________________________________________________________________
Appendix D

Negligence Reporting Form

This form is to report negligence that was observed while conducting an observation at your facility.

Date and Time of Observation:_____________________________________________________

Location of Negligence Seen:_____________________________________________________

Lifeguard Involved in Negligence:_______________________________________________

Type of Negligence:_____________________________________________________________

Description of Events:
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

Date Submitted to Facility Management:_____________________________________________

If you have any questions please do not hesitate to contact the researcher.

Mr. Adam Katchmarchi
814-590-0393
A.B.Katchmarchi@iup.edu
Lifeguard Management Survey Form

Manager Age__________     Sex (Circle): Male or Female

Section 1)
Please answer all questions regarding your background.
1. How many years have you been lifeguarding or managing lifeguards?
   a. Less than 6 months
   b. 6 months – 1 year
   c. 1-2 years
   d. 2-3 years
   e. 4+ years
2. How often do you complete an in-service training?
   a. 2 or More Times Per Month
   b. Once Per Month
   c. Once Every 2-4 Months
   d. Once Every 4-6 Months
   e. Never or Over 6 Months
3. On average, how long are your lifeguards “ON DUTY,” or responsible for patron safety at one time before you receive a break?
   a. Less than 30 Minutes
   b. Around 30 Minutes
   c. 30-45 Minutes
   d. 45-60 Minutes
   e. 60-120 Minutes
   f. Over 120 Minutes

Section 2)
Please answer all questions regarding “ON DUTY,” Lifeguards.
In a 30 minute time frame while being considered “ON DUTY,” meaning that you are the lifeguard responsible for patron safety, I would expect myself or another lifeguard to:

a. Actively scan the water ________ minutes. (Watching the water for patron safety and recognizing drowning)
b. Educate patrons about the facility or respond to questions from patrons ________ minutes. (Providing information to patrons about facility information or responding to questions)
c. Take preventive actions to stop a dangerous behavior or situation ________ minutes. (Directing patrons to shallow water, stopping horse play and rule infractions.)
d. Complete First Aid related duties ________ minutes. (Providing any type of first aid to a victim or patron who is not in the water.)
e. Make a Water Rescue ________ minutes. (Actively involved in a water rescue.)
f. Complete assigned secondary duties ________ minutes. (Completion of any work related task while is primarily responsible for patron surveillance.)
g. Be distracted from watching the water ________ minutes. (Guard is primarily responsible for patron safety and surveillance but is not actively watching the water.)
Lifeguard Survey Form

Lifeguard Age__________     Sex (Circle): Male or Female

Section 1)

Please answer all questions regarding your background.

1. How many years have you been lifeguarding?
   a. Less than 6 months
   b. 6 months – 1 year
   c. 1-2 years
   d. 2-3 years
   e. 4+ years

2. How often do you complete an in-service training?
   a. 2 or More Times Per Month
   b. Once Per Month
   c. Once Every 2-4 Months
   d. Once Every 4-6 Months
   e. Never or Over 6 Months

3. On average, how long are you “ON DUTY,” or responsible for patron safety at one time before you receive a break?
   a. Less than 30 Minutes
   b. Around 30 Minutes
   c. 30-45 Minutes
   d. 45-60 Minutes
   e. 60-120 Minutes
   f. Over 120 Minutes

Section 2)

Please answer all questions regarding “ON DUTY,” Lifeguards.

In a 30 minute time frame while being considered “ON DUTY,” meaning that you are the lifeguard responsible for patron safety, I would expect myself or another lifeguard to:

   a. Actively scan the water ________ minutes. (Watching the water for patron safety and recognizing drowning)
   b. Educate patrons about the facility or respond to questions from patrons ________ minutes. (Providing information to patrons about facility information or responding to questions)
   c. Take preventive actions to stop a dangerous behavior or situation ________ minutes. (Directing patrons to shallow water, stopping horse play and rule infractions.)
   d. Complete First Aid related duties ________ minutes. (Providing any type of first aid to a victim or patron who is not in the water.)
   e. Make a Water Rescue ________ minutes. (Actively involved in a water rescue.)
   f. Complete assigned secondary duties ________ minutes. (Completion of any work related task while is primarily responsible for patron surveillance.)
   g. Be distracted from watching the water ________ minutes. (Guard is primarily responsible for patron safety and surveillance but is not actively watching the water.)

Lifeguard Observation Reporting Form
Appendix G
Lifeguard Observation Reporting Form

<table>
<thead>
<tr>
<th>Date of Observation</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifeguard Number</td>
<td>Facility Number</td>
<td></td>
</tr>
<tr>
<td>Start Time</td>
<td>End Time</td>
<td></td>
</tr>
<tr>
<td>Location of the Guard Position</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Directions**- Observer will keep time and every 10 seconds will place a hash mark in the category that best fits the lifeguard’s behavior that is being exhibited. This observation will be for a duration of 30 minutes.

<table>
<thead>
<tr>
<th>Actively Scanning Water</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Watching the water for patron safety and recognizing drowning)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Public Education</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Providing information to patrons about facility information or responding to questions)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preventive Actions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Directing patrons to shallow water, stopping horse play and rule infractions.)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First Aid (Land Based)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Providing any type of first aid to a victim or patron who is not in the water.)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In Water Rescue</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Actively involved in a water rescue.)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Completing Secondary Duty</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Completion of any work related task while is primarily responsible for patron surveillance.)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distracted (Off Task)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(Guard is primarily responsible for patron safety and surveillance but is not actively watching the water.)</td>
<td></td>
</tr>
</tbody>
</table>
**Calculation of Totals:**

<table>
<thead>
<tr>
<th>Actively Scanning Water</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Education</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>In Water Rescue</td>
<td></td>
</tr>
<tr>
<td>Completing Secondary Duty</td>
<td></td>
</tr>
<tr>
<td>Distracted (Off Task)</td>
<td></td>
</tr>
</tbody>
</table>

***TOTAL NUMBER OF RECORDINGS***
Appendix H

Data Collection Release Form

Facility and Lifeguard Management

To protect the confidentiality of the participants in this study, facility management as well as the lifeguard manager or any immediate supervisor will not have the right or ability to see the direct results of their performance during their observation and survey responses.

If during an observation the researcher views any negligent behavior from a lifeguard that can lead to the injury or death of a patron or causes injury or death of a patron, you as the management team will receive a written report from the researcher. The “Negligence Reporting Form,” will give you a detailed written report including the time, place, and events that were witnessed during the observation. If any type of accident or rescue takes place, regardless of any negligence, it will be reported to facility management using the “Accident/Injury Reporting Form.” This will be used to document what the researcher witnessed during the event. Both of these form will include the lifeguard’s name. This is the only time a lifeguard’s information or any results from a lifeguard’s observation will be shared with you as the management team.

By signing this form, you agree that you as well as all management at the facility who are directly or indirectly responsible for lifeguard employment relinquish the right to view or use any information collected about a specific lifeguard(s) performance. I understand that I will have access to view the results of the entire study once it has been finished and released.

Facility Name__________________________________________________________

Facility Manager’s Name (Print)___________________________________________

Facility Manager’s Signature_____________________________________________

Lifeguard Supervisor’s Name (Print)________________________________________

Lifeguard Supervisor’s Signature__________________________________________

Researcher’s Signature___________________________________________________

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Appendix I

Accident/Injury Documentation Form

Date and Time of Witnessed Event: ________________________________

Lifeguard Involved: _____________________________________________

Location of Event: _____________________________________________

Type of Event: _________________________________________________

Description of Event:
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________

Signature of Researcher _________________________________________

Date Submitted to Management _________________________________
Appendix J

Permission for Observation Tool

Subject: Re: Adam Katchmarchi Thesis

From: Betsy McKinley
   <mckinley.belmar@gmail.com>

Date: 01/14/13 03:45 PM

To: Adam B Katchmarchi <a.b.katchmarchi@iup.edu>
Cc: robert.ogoreuc@sru.edu

Hi There Adam,

It's great hearing from you! Your parents must be so proud of you!

By all means, please use our Shadow Guarding grid. It's cool that it will be adapted for your
educational and applied use. You have my blessing, as always and forever.

Please stay in touch, and good luck! On my way to Sarasota for 10 days.....retirement is
awesome, and as a true lifeguard, I can't stay away from the water! Siesta Key, here I come.

Take care,

Dr. McK (Betsy)

Sent from my iPhone

On Jan 14, 2013, at 1:48 PM, "Adam B Katchmarchi" <a.b.katchmarchi@iup.edu> wrote:

Hi Dr. McKinley,

It's Adam Katchmarchi, I got your email from Sis. I am currently working on my Graduate
Research Thesis at IUP and of course I am focusing my research on lifeguarding and aquatics.
When I was coming up with my research topic, Bob (Mr. Ogoreuc) gave me an idea that would
involve shadow guarding. I have formed a research topic and method around observations of
lifeguard scanning. Bob gave me permission to use and modify the shadow guarding form that
you and him created to use in my study. Through this email I would like to ask your permission
to use and modify the shadow guarding form for my research. I of course will give both you and
Bob credit as the creators and original researchers in the Thesis and in any publication or
presentations that comes from it. The anecdotal observation form will allow me to use a
creditable and tested model to base my research on. I will be modifying the form to fit my study
which will be based around confined water, indoor pools that non-profits operate, instead of open
water.
Thank you for considering this!

Please let me know your decision and if you would like anymore information on my study!

Hope all is well with you!!!!!!

Thanks!

Adam B. Katchmarchi
Graduate Assistant - Sport Management
CPR/AED/First Aid Instructor Trainer
Health & Physical Education Department
Indiana University of Pennsylvania
Zink Hall
1190 Maple Street
Indiana PA, 15705

Subject: Re: Shadow Guarding
Permission

From: "Ogoreuc, Robert <robert.ogoreuc@sru.edu>

Date: 01/14/13 05:22 PM
To: Adam B Katchmarchi <a.b.katchmarchi@iup.edu>

Adam
You have permission and glad that the shadow guarding grid is being used for your graduate studies.
Good luck with your research!
Bob Ogoreuc
Sent from my iPhone

On Jan 14, 2013, at 5:19 PM, "Adam B Katchmarchi" <a.b.katchmarchi@iup.edu> wrote:

Hi Mr. Ogoreuc,

Please respond to this email to confirm that you consent to giving me the right to use and modify the shadow guarding form the you and Dr. McKinley created. Both of you will receive credit as the creators and original researchers in the Thesis and in any presentations or publication. This will be used as a research tool in my thesis research project at IUP.
Thank you!
Adam B. Katchmarchi
Graduate Assistant - Sport Management
CPR/AED/First Aid Instructor Trainer
Health & Physical Education Department
Indiana University of Pennsylvania
Zink Hall
1190 Maple Street
Indiana PA, 15705
Appendix K

IRB Approval Letter

Indiana University of Pennsylvania
Institutional Review Board for the Protection of Human Subjects
School of Graduate Studies and Research
Stright Hall, Room 113
210 South North Street
Indiana, Pennsylvania 15705-1048

March 22, 2013

Adam B. Katchmarchi
127 Fourth Street
Falls Creek, PA 15840

Dear Mr. Katchmarchi:

Your proposed research project, "Perceived and Expected Lifeguarding Behaviors While on Surveillance Duty Versus Actual Observed Behaviors," [Log No. 13-030] has been reviewed by the IRB and is approved as an expedited review for the period of March 20, 2013 to March 20, 2014.

It is also important for you to note that IUP adheres strictly to Federal Policy that requires you to notify the IRB promptly regarding:

1. any additions or changes in procedures you might wish for your study (additions or changes must be approved by the IRB before they are implemented),
2. any events that affect the safety or well-being of subjects, and
3. any modifications of your study or other responses that are necessitated by any events reported in (2).

Should you need to continue your research beyond March 20, 2014 you will need to file additional information for continuing review. Please contact the IRB office at (724) 357-7730 or come to Room 113, Stright Hall for further information.

Although your human subjects review process is complete, the School of Graduate Studies and Research requires submission and approval of a Research Topic Approval Form (RTAF) before you can begin your research. If you have not yet submitted your RTAF, the form can be found at http://www.iup.edu/page.aspx?id=91683.

This letter indicates the IRB's approval of your protocol. IRB approval does not supersede or obviate compliance with any other University policies, including, but not limited to, policies regarding program enrollment, topic approval, and conduct of university-affiliated activities.

I wish you success as you pursue this important endeavor.

Sincerely,

[Signature]

John A. Mills, Ph.D., ABPP
Chairperson, Institutional Review Board for the Protection of Human Subjects
Professor of Psychology

JAM: job

CC: Dr. Richard Hsiao, Thesis Advisor
    Ms. Brenda Boal, Secretary
March 25, 2013

Adam Katchmarchi
127 Fourth Street
Falls Creek, PA 15840

Dear Mr. Katchmarchi,

Now that your research project has been approved by the Institutional Review Board for the Protection of Human Subjects, I have reviewed your Research Topic Approval Form and approved it.

Your RTAF indicates your anticipated graduation date as August 2013. You must apply for graduation by August 1, 2013. This means that your thesis or dissertation must be submitted to the School of Graduate Studies and Research by July 15, 2013 if you desire to graduate by your anticipated date. For deadlines for subsequent graduation dates, please access http://www.iup.edu/page.aspx?id=16883.


Also, The Applied Research Lab provides free assistance with statistical analysis and research design—both quantitative and qualitative—to all IUP students. The ARL can also provide assistance in the use of the features in Word and Acrobat you’ll need to correctly format your thesis or dissertation. For more information, please visit their website: http://www.iup.edu/art/default.aspx.

You are now eligible to receive a FREE copy of Adobe Professional! This software will help you to create an electronic thesis or dissertation. It can be picked up at the IT Support Center, G35 Delaney Hall. If you live off campus, you can send an email from your IUP email account to it-support-center@iup.edu. Please indicate you are a graduate student requesting Adobe Professional and include your Banner ID, mailing address, and which version - Windows or Mac.

Finally, if you change your topic, the scope or methodology of your project, or your committee, a new Research Topic Approval Form must be completed.

I wish you well and hope you find this experience to be rewarding.

Sincerely,

Hillary E. Creek, J.D., Ph.D.
Assistant Dean for Research

cc: Dr. Mary Swinker, Interim Dean
Dr. Robert Kostelnik, Graduate Coordinator
Dr. Richard Hallac, Thesis Committee Chair
Ms. Julie Sassano, Secretary

HEC Orb