

DESIGN AFFECTS SHORT-TERM KNOWLEDGE AND ATTITUDE
OUTCOMES IN SEA LION SHOW AUDIENCES

By

Emmeline R. Miller

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ABSTRACT

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This study compared and contrasted knowledge and attitude effects from a theme and zoological park sea lion show with shared educational objectives. Both programs aspired to foster curiosity and appreciation for species conservation. During summer 2010, 580 retrospective pretest-posttest surveys were distributed to visitors. Respondents agreed (n=532, 92%) sea lion shows were positive learning experiences, however, species conservation knowledge and attitude impacts differed between show types. Data showed a possible link between presenting species conservation information and increased positive environmental attitudes. Other factors such as visitors' preconceived expectations and attendance motivations may have affected facility success in achieving show conservation objectives. Results highlight the importance of evaluating animal shows to ensure visitors receive conservation messages.

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CHAPTER 1: INTRODUCTION

Zoological parks traditionally have had one or more primary missions: conservation, education, science, and/or recreation (Association of Zoos and Aquariums [AZA], 2009b). Effective education in zoos is perhaps the most high-priority mission (Clayton, 2009; European Association of Zoos and Aquaria [EAZA], 2008) and is based on the notion that environmental knowledge increases awareness and encourages more responsible, positive environmental actions (Hungerford & Volk, 1990). While it has been shown that achieving a conservation objective depends upon effectively inspiring people to care about animals, zoos have increasingly linked conservation success with effective education (Clayton, 2009). Thus, education is the key focus of this thesis.

Broad and Smith (2004) identified four key zoo education objectives:

- *provide an experience that is recreational, enjoyable, and satisfying;*
- *encourage cognitive learning of facts regarding animals and the function and management of the zoo or exhibit;*
- *develop positive attitudes including a concern for, and commitment to, wildlife;*
- *foster behavioral outcomes including appropriate on-site behavior, and long-term environmentally responsible behavior. (p.16)*

Zoo visitor studies are invaluable for evaluating success in achieving education objectives and influencing zoological institution planning (e.g., what messages are being transmitted, how messages are being delivered), yet such studies were not common until the 1970s when recording daily visitor numbers began. Today it is estimated that 143 million people visit zoos annually in the United States; however, few studies have addressed zoos' impacts on visitor

knowledge, attitude, and behavior (Davy, 2006; Falk *et al.*, 2007). Many zoos proclaim that they motivate individuals to take active conservation roles and teach positive visitor attitudes toward the natural world (Falk *et al.*, 2007). Rabb (2004) stated zoos in the 21st century have been accepted as conservation centers through inspiring people to “celebrate and conserve nature” (p.237). However, the zoo’s educational role has been continually questioned (Broad and Smith, 2004). Falk *et al.* (2007) found zoos frequently succeeded in achieving some conservation education objectives, i.e., influenced visitors to think of themselves as solutions to environmental problems and encouraged stronger people/nature connections. Some organizations contended public education programs helping conserve wild species were ineffective (Broad & Smith, 2004). Jiang *et al.* (2008) found that visitors, while aware of the zoo’s educational role, were not very cognizant of any conservation messages presented.

Keeping animals in captive environments has remained a complex issue. Zoos continuously adapt to public demands, increasing visitor-animal interaction and emphasizing entertainment value, while education has remained a priority (Fernandez *et al.*, 2009; Hyson, 2004). Special attractions, such as animal shows, are becoming more common as means to satisfy these demands and deliver educational messages. Some animal rights activists have voiced opposition to captive animal shows in particular, expounding they exploit animals for monetary gain (Yerke & Burns, 1991).

By definition, a show is “an event... involving the public display or exhibition of animals” (Show, 2010). Facilities that promote animal shows justify their programs by claiming educational benefits. The Association of Zoos and Aquariums (AZA) believes captive animal use in shows has value because they “enhance the delivery of cognitive and empathetic messages and increase affective learning and attitudinal change” (AZA, 2009a). The AZA has established

accreditation standards, policies, and recommendations to ensure animal welfare and handler health and safety, while protecting the public. Furthermore, these standards were developed to maximize successful educational message transmission (AZA, 2009a). In their education standards, the European Association of Zoos and Aquaria (EAZA) recommended that animal displays demonstrate valuable natural abilities and behaviors and avoid humanizing animals including performance of unnatural acts (EAZA, 2008). Even with standards and assurances in place, there was little empirical evidence evaluating the extent to which zoos' shows provided educational benefits.

Early evaluations primarily focused on the extent to which visitors retained context-specific information. For example, Yerke and Burns (1991) used pre-show and post-show questionnaires addressing viewer reactions (favorable, unfavorable) to an individual bird of prey show as well as how well information was recalled following the show's immediate conclusion. Heinrich and Birney (1992) conducted interviews exploring visitor reactions to a children's zoo animal show to determine which messages were being received. Both of these studies disclosed increased factual knowledge and heightened environmental awareness immediately after the show. Both studies also emphasized that show entertainment value influenced educational message transmission (cognitive and affective components) (Heinrich & Birney, 1992; Yerke & Burns, 1991).

Falk *et al.* (2007) went beyond assessing understanding, perception, and emotional connection fostered by zoos and asked how zoos and aquariums impacted peoples' attitudes and behaviors toward animals and the environment. The goal of Falk *et al.* (2007) was to develop assessment methods for educational effectiveness for use by various institutions relying on captive animals for conservation messages transmission. A survey designed to measure attitudes,

motivation to participate in conservation related activities, and perceived conservation role of zoos and aquariums was more accurate for assessing cognitive changes. More so in some contexts than traditional pre/post show survey approaches, Falk *et al.* (2007) found visitors came with specific motivations that strongly impacted their visit. Furthermore, results showed zoo/aquarium visits reinforced visitors' connections to nature and emphasized the individual's integral role in solving environmental problems. This innovative study set the foundation for more specific research on zoological park visitor impacts.

Jiang *et al.* (2008) specifically studied marine park impacts with a survey distributed to visitors designed to assess how they felt about their visit in terms of importance, performance of services provided, and overall feelings after the visit. The survey additionally assessed visitors' environmental values and beliefs as well as opinions on how conservation issues related to their daily lives. Results showed that individuals were well aware of zoos' educational value, but that conservation messages were not being effectively communicated.

In contrast, Povey and Spaulding (2005) designed a survey that distinguished between animal show content and public attitude impacts. A distinction was made between a more traditional animal show approach, presenting animals and delivering animal facts with "conservation sidelines" (Povey & Spaulding, 2005, p.2), and a new concept introduced at Point Defiance Zoo, Washington. The new design was developed to motivate visitor outdoor activity participation (e.g., mountain biking, kayaking, bird watching) the premise being that developing a relationship with nature encouraged more environmentally responsible behavior. Results indicated that after viewing the show, people felt very motivated to participate in outdoor activities. Follow up studies conducted a year later found that many people did indeed participate in an outdoor activity and/or made "tangible" (Povey & Spaulding, 2005, p.3) conservation

contributions (e.g., birdhouse building, Center for Ecosystem Survival's Adopt an Acre program participation, wetland visitation) as a result of the show. While this particular show approach proved effective in achieving conservation objectives, comparisons with alternative approaches were not included. Other animal exhibition attractions (e.g., theme parks) that shared zoos' educational objectives had received little attention, although, these facilities also relied more on animal shows for species conservation message transmission (Broad & Weiler, 1998; Formica & Olsen, 1998).

Different types of animal shows do share similar educational and conservation objectives as those outlined by AZA and EAZA. However, implementation of their objectives varies considerably between different facility types. Zoological facilities have designed shows based on the belief that impacting visitors' conservation knowledge and attitudes was necessary to evoke environmentally responsible behavior (Penn, 2009), reflecting what is known as the Knowledge-Attitude-Behavior (KAB) model concept. This model describes a linear relationship between knowledge, attitude, and behavior (Figure 1). It asserts that increased knowledge leads to more positive attitudes, in turn leading to increased responsible environmental behavior (Hungerford & Volk, 1990). Like zoological park animal shows, theme park shows were designed to change visitors' conservation attitudes and behavior, though show content was not commonly designed around the KAB model. Often, emphasis was not placed on species biology and natural history information, but on stimulating emotion and providing an entertaining experience (Beardsworth & Bryman, 2001).

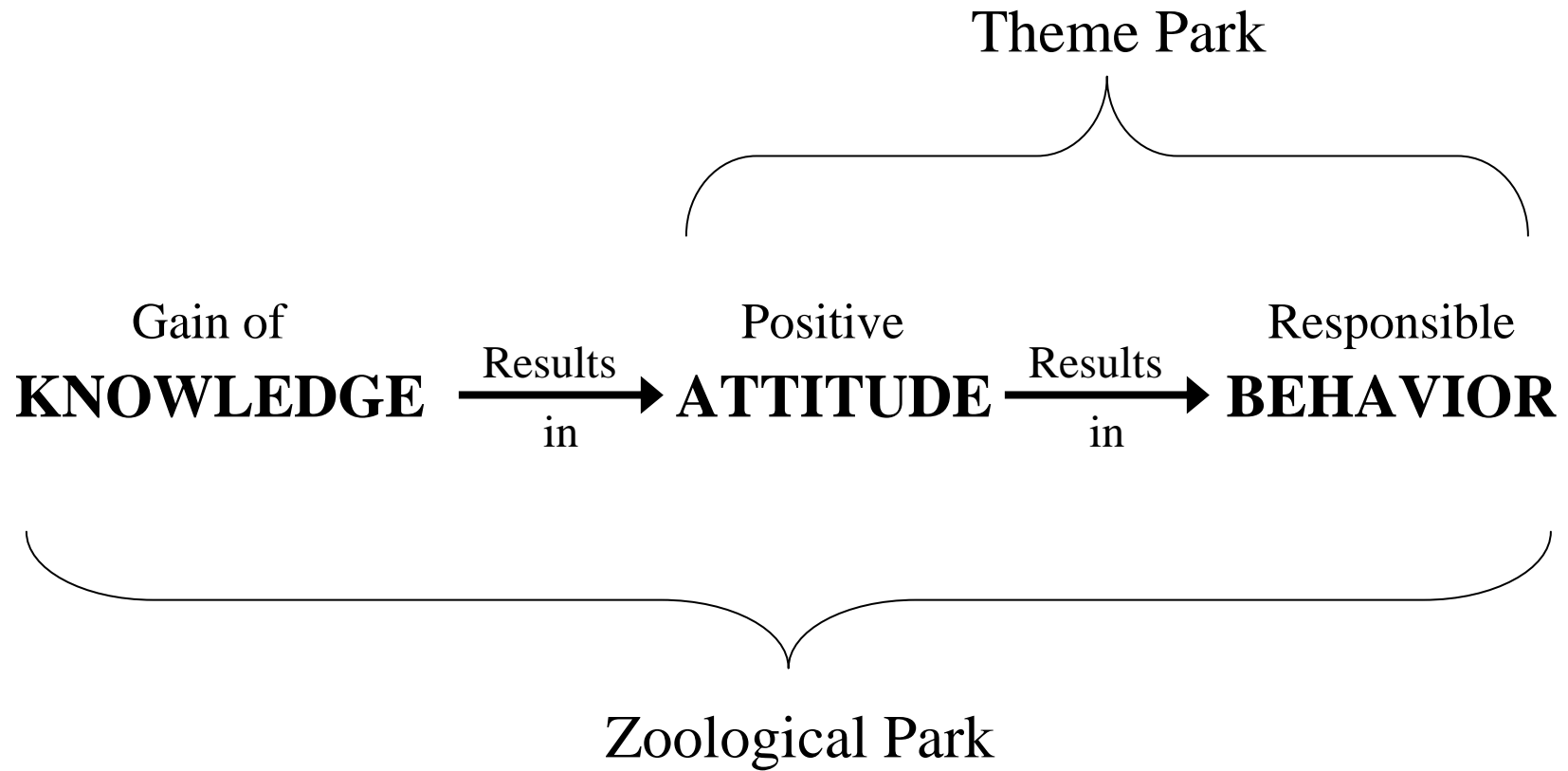


FIGURE 1. Graphic representation of KAB Model. Zoological park animal shows tend to focus on targeting knowledge and attitude to ultimately increase environmentally responsible behavior; theme parks tend to focus on attitude, appealing more to show visitor emotions.

Hungerford and Volk (1990) criticized the KAB model and stated that environmental behavior research had not extensively supported linear models for changing behavior. In contrast, Hyson (2004) later criticized any institution that strayed from the basic KAB model premise, and stated that zoos, “consistently undermined their educational-conservationist image with attractions and amenities more suited to theme parks” (p.249).

Limited research has addressed potential educational effectiveness differences between varying captive animal environments. Broad and Weiler (1998) conducted observations and interviews to compare visitor learning experiences at a zoo and theme park tiger exhibit. Despite learning opportunity variation between the two exhibits, visitors’ learning perceptions were nearly identical. Although, further investigation suggested theme park visitors consistently provided more detail, depth, and breadth to their answers than zoo visitors; visitor impact varied between animal exhibit approaches (Broad & Weiler, 1998).

The zoological community has identified a link between conservation success and effective education, though evaluation of zoos’ conservation impacts on visitors is limited (Clayton, 2009). Zoos have continued to redesign themselves to satisfy public demands, while opposition towards zoos’ existence has increased with these changes. Animal shows and various show approaches have emerged in captive animal facilities as educational tools. Examination of these shows’ impacts on visitor knowledge, attitude, and behavior has been minimal (Yerke & Burns, 1991). More specifically, a comparison has not yet been made between the conservation education achievements of KAB model inspired shows versus non-KAB model show designs.

This study attempted to answer the basic question, “do species conservation impacts differ between animal shows of varying designs?” The goal was to evaluate show effectiveness through inspiring audience animal conservation curiosity and appreciation, and compare and contrast effectiveness between two different show designs. A research plan was developed using one zoological park (KAB model inspired design) and one theme park (non-KAB model design), both of which used the California sea lion (*Zalophus californianus*, Lesson) in their shows.

Specific research objectives were to compare and contrast the following outcomes between zoological and theme park sea lion show audiences:

- (1) level of change between show educational/entertainment value expectations and observations,
- (2) sea lion show attendance motivation,
- (3) level of species understanding and conservation knowledge change, and
- (4) level of attitude change toward sea lions, trainer-sea lion relationships/interactions, and the human individual’s role in sea lion conservation.

The hypothesis was that species conservation impacts differ between animal shows with varying designs.

CHAPTER 2: METHODS

2.1 Study Sites

This research was conducted in two case study sites: a) Oceans of Fun Milwaukee and b) Oceans of Fun Hersheypark. Oceans of Fun Milwaukee is located in Milwaukee, Wisconsin. It has housed harbor seals (*Phoca vitulina*, Linnaeus) and California sea lions since its inception in 1991 and is owned and operated by Oceans of Fun, Inc. The facility is accredited by the Alliance of Marine Mammal Parks and Aquariums (AMMPA) and located within the 200 acre, AZA accredited Milwaukee County Zoological Park. By definition, a zoo is “an establishment that contains a collection of wild animals... for study, conservation, or display to the public” (Zoo, 2010). Therefore, in this study, Oceans of Fun Milwaukee represented the zoological park facility (Table 1). Oceans of Fun Hersheypark is located in Hershey, Pennsylvania. Milton S. Hershey, Hershey’s chocolate company founder, opened the park in 1907. Today the park’s themed areas cover 110 acres. A themed area open since 1990, Minetown, includes roller coasters, restaurants, and an outdoor aquatic arena, the Aquatheater. The Aquatheater has historically been the Hersheypark venue for marine mammal shows. For the 2009 and 2010 show seasons, Oceans of Fun, Inc. provided the marine mammal (sea lion) show for the Aquatheater. A theme park is defined as “an amusement park with a unifying setting or idea” (Theme park, 2010). Therefore, in this study, Oceans of Fun Hersheypark represented the theme park facility (Table 1).

TABLE 1. Outline of study sites' sea lion shows

Zoological Park (KAB)	Show Design	Theme Park (non-KAB)
Oceans of Fun Milwaukee	Facility	Oceans of Fun Hersheypark
Seal and Sea Lion Show	Show	Showdown at Cocoa Canyon
\$2.00/Person	Admission	Free w/ park admission
10:30, 12:00, 1:30, 3:00	Show Times	12:00, 2:30, 3:45 (Sat./Sun.), 5:00
10 to 1000	Audience Size	40 to 1000
<ul style="list-style-type: none"> • 1 Host • 1 to 3 Trainers • 1 to 4 Animals 	Show Participants	<ul style="list-style-type: none"> • 1 Trainer • 1 Star Animal • 3 Performers • Recorded Narrator
<ul style="list-style-type: none"> • Trainers demonstrated medical, natural, and entertaining behaviors of seals and sea lions • Hosts followed a script created by Oceans of Fun, Inc. that highlighted natural behaviors and adaptations of California sea lions • Hosts and trainers chose approximately six script pieces to be presented during each individual show 	Show Synopsis	<ul style="list-style-type: none"> • Slap-stick comedy demonstrating entertaining behaviors of sea lions • Featured the “Sticky Fingers Gang,” three men trying to steal a secret beans recipe from a famous chef (the sea lion) in an attempt to get rich • Highlighted the acrobatic abilities of the performers as well as the beauty and grace of the California sea lion
<p>(1) Inspire curiosity and appreciation of the animals as well as the earth</p> <p>(2) Have audiences learn:</p> <ol style="list-style-type: none"> a.) Importance and role of zoos and aquariums b.) Basic sea lion natural history and adaptations for survival c.) Importance of training and medical care d.) How to help conserve the environment and protect the animals 	Show Objectives	<p>(1) Inspire curiosity and appreciation of the animals as well as the earth</p> <p>(2) Entertain audiences with the amazement of the animals</p> <p>(3) Connect audiences with the animals through anthropomorphic relating</p>

Study sites were selected based on the investigators' available time and resources, the facilities' willingness to participate, and the facilities' accurate representations of specific show designs (i.e., KAB model vs. non-KAB model). In addition, both facilities shared Oceans of Fun Inc.'s overall mission:

Oceans of Fun is a professional organization committed to the advancement of marine mammal husbandry, training, and conservation. Dedicated to the field of marine mammal science and education, it is our goal to provide the best possible environment, training and care for our marine animals with the focus of educating the public about marine life, environmental protection and conservation.

2.2 Data Collection

For this study, data were obtained using retrospective pretest-posttest surveys (Falk *et al.*, 2007). The retrospective pretest-posttest design was utilized to reduce response shift bias. Participants gain understanding as they experience an event, resulting in a discrepancy between pre/post event responses, threatening a study's internal validity. Therefore, response shift bias often can occur when traditional pretest-posttest survey designs are utilized, because survey participants answer questions both before and after a particular event under investigation.

Retrospective pretest-posttest surveys are completed immediately after the event. Participants simultaneously indicate their current responses and what they perceived would have been their responses prior to the event. Response shift bias is reduced and a more accurate estimate of the treatment effect is made because participants respond to each question within the same reference frame (Drennan & Hyde, 2008; Howard *et al.*, 1979).

For the study presented here, two different surveys were constructed; one instrument was used to measure knowledge and the other, attitude. In addition to knowledge and attitude

assessment statements, both surveys included questions addressing show educational and entertainment value and attendance motivation. Location-specific demographic questions concluded each survey. Each survey consisted of 21 total questions. Pilot testing occurred May 2010 with a small group of adults aged 20-58 with varying educational backgrounds, to ensure content clarity and appropriate survey length. The final products were refined instruments that could reliably assess sea lion show survey participant knowledge and attitude change towards species conservation.

Surveys were distributed to Oceans of Fun Milwaukee and Oceans of Fun Hersheypark sea lion show audiences during June-August 2010. Restricted by time, travel, and resource restraints, surveys were distributed and collected on Fridays, Saturdays, and Sundays. A microphone announcement to show audiences five minutes prior to each show's commencement explained the study's purpose and procedure; all audience members 18 years and older were invited to complete surveys at the show's conclusion (See Appendix A). Adults were the chosen demographic because they comprise 55-70% of zoo visiting populations and are considered society's decision makers whose actions have the most direct institutional effects (e.g., monetary, political) (Conway, 1982; Heimlich, 1996).

At each show's conclusion, surveys were handed out on a voluntary basis, distributed only to those that expressed interest in completing a questionnaire. The surveys were handed out in an alternating fashion so that each consecutive participant received a different assessment (knowledge or attitude). Completed surveys were returned to a labeled box or directly back to the investigator. The investigator was always present to ensure each participant only completed one survey. Convenience sampling was used to increase response rate. There were some limitations to this method, including data collected were only representative of the

sample population. The established methodology was designed for individual facility modification and utilization. Therefore, to more accurately determine the causality between show observation and knowledge/attitude change, a high priority was given to increasing internal validity. In addition, convenience sampling may be a more cost effective option for future primary survey investigators. The Michigan State University Institutional Review Board approved all methods (IRB Approval #: i035770).

2.3 Variables

In this study, the manipulated variable was the show design approach (KAB vs. non-KAB). Response variables included observed and expected show educational/entertainment values, show attendance motivations, and species conservation knowledge and attitude changes. Control variables included the survey instruments, survey distributor, and survey distribution method, location, and times. Other variables including show host, specific show animals, and daily temperatures were recorded but are not used in analysis because they were determined to be beyond this study's scope.

2.4 Educational and Entertainment Value

Participants were asked to indicate their opinions of overall show purpose (education and/or entertainment) based on their pre-show expectations and post-show observations. A single question provided a numeric scale for each participant to circle the integer that best represented his or her perspective of the viewed show's educational/entertainment value (See Appendix B1). The scale began at one (purely educational) and included all integers up to ten (purely for entertainment). The difference between expected and observed values was

calculated by subtracting each subject's total before-show value score from his/her total after-show value score.

2.5 Motivation

Surveys included one question addressing visitor motivation to attend animal shows, because of its influence on experiential message reception (Falk *et al.*, 2007). Motivation statements were adapted from Falk *et al.* (2007). Given four different motivations: (1) complete facility experience, (2) watch animals perform tricks, (3) learn about species, and (4) learn about species conservation), participants were asked to identify and rank their top three reasons for sea lion show attendance, with 1 indicating the primary reason for attendance followed by 2 and 3. In addition, participants were provided with an "other" option to report attendance motivations outside those specified (See Appendix B2).

2.6 Knowledge

To assess knowledge, nine different statements were derived from show script material addressing basic California sea lion biology and natural history, training, and conservation. Participants were asked to indicate if each statement was true or false based upon their knowledge before and after the show. A "don't know" option was also provided to prevent forced true/false guesses from skewing results (Weisberg, 2005) (See Appendix B3). Scoring was based upon right or wrong responses, 1 indicating a correct response and 0 indicating an incorrect or "don't know" response. Change in knowledge was calculated by subtracting each subject's total before-show knowledge score from his/her total after-show knowledge score. Scores were calculated for subjects that responded to all knowledge statement questions.

2.7 Attitude

Nine different statements were generated to reflect subjects' overall appreciation of California sea lions and sea lion conservation. "Appreciation" was defined by attitude measurements in three major categories: (1) sea lions, (2) trainer-sea lion relationships/interactions, and (3) the individual human's role in sea lion conservation. Based upon their opinions before and after the show, participants were asked to indicate their agreement level with each statement using the following five-point Likert-type scale: 1 – strongly disagree, 2 – disagree, 3 – neither agree or disagree, 4 – agree, 5 – strongly agree (See Appendix B4). This attitude measuring system was used because scales containing five to seven points are the most reliable and valid (Krosnick & Fabrigar, 1997). A five-point scale was used to score how positive (in relation to each measured attitude category) each response was, 5, the most positive answer, down to 1, the least positive. Change in attitude was calculated by subtracting each subject's total before-show attitude score from his/her total after-show attitude score. Attitude change was also calculated for each individual attitude statement. Scores were calculated for subjects that responded to all attitude statement questions.

2.8 Demographics

Nine demographic questions concluded all surveys. Question topics included subject gender, age, location of residence, education level, show attendance frequency, varying show attendance, park and zoo membership statuses, as well as show cost (See Appendices C1 & C2). These questions were included to account for possible demographic factors influencing survey participants' calculated species conservation knowledge and attitude change.

2.9 Statistical Analyses

Non-parametric tests were used for analysis because samples were non-random and normality tests confirmed data were not normally distributed (Vaske, 2008). Wilcoxon rank sum tests were performed to compare and contrast education/entertainment value, knowledge, and attitude change levels between theme and zoological park sea lion show research subjects (Conover, 1980). Chi square tests for independence explored specific demographic variable effects on knowledge and attitude change. Fisher's exact tests were utilized for all demographic variable analyses that resulted in a two by two contingency table and/or a sample size that was not large enough for valid chi square test results (Conover, 1980; Daniel, 1990) (See Appendices D1, D2, D3, & D4 for individual survey response data). An alpha level of 0.05 was used in all statistical analyses (Conover, 1980). All statistical analyses were performed in Windows SAS 9.2.

CHAPTER 3: RESULTS

3.1 Survey Collection

At Oceans of Fun Milwaukee, research was conducted on four June days and four July days for 28 total shows. Research days were selected based on investigator time (availability outside of work and internship) and resource (i.e., budget) availability. One hundred fifty three knowledge surveys were distributed of which 131 were completed and collected (response rate = 86%) and 148 attitude surveys were distributed of which 138 were completed and collected (response rate = 93%).

At Oceans of Fun Hersheypark, research was conducted on three June days, five July days, and two August days for 26 total shows. Research days were selected based on investigator time (availability outside of work and internship) and resource (i.e., travel budget) availability. One hundred forty knowledge surveys were distributed of which 132 were completed and collected (response rate = 94%) and 141 attitude surveys were distributed of which 131 were completed and collected (response rate = 93%).

3.2 Objective 1: *Assess the level of change between show educational/entertainment value expectations and observations*

Oceans of Fun Milwaukee research subjects expected a higher show entertainment value than observed. Oceans of Fun Hersheypark subjects expected more show educational content (Table 2).

3.3 Objective 2: *Assess sea lion show attendance motivation*

Show attendance motivation was analyzed using response percentages. The highest percentage of both Oceans of Fun Milwaukee and Hersheypark subjects reported their primary show attendance motivations as “to complete their facility experience” (27.2%; 27.7%) or “to watch sea lions perform tricks” (48.7%; 51.8%). The lowest percentage of subjects reported, “to learn how their actions can help save wild sea lions and their habitats” (4.8%; 1.8%), “to learn more about California sea lions” (6.6%; 6.2%), or “other” (12.7%; 12.5%) to be their primary show attendance motivations (Table 3). Primary attendance motivation was determined most important for analysis because previous findings showed that approximately half of visitors arrive at a zoo with a single dominant attendance motivation, and that these dominant motivations are most important in understanding visitor experience responses (Falk *et al.*, 2007); therefore, secondary and tertiary attendance motivations were not included in the current study’s analysis.

3.4 Objective 3: *Assess level of species understanding and conservation knowledge change*

Species conservation knowledge change was significantly higher in Oceans of Fun Milwaukee versus Oceans of Fun Hersheypark survey participants (Table 2, Figure 2).

3.5 Objective 4: *Assess level of attitude change toward sea lions, trainer-sea lion relationships/interactions, and individual human’s role in sea lion conservation.*

Overall, species conservation attitude change was significantly higher in Oceans of Fun Milwaukee versus Oceans of Fun Hersheypark survey participants (Table 2, Figure 3).

More specifically, subjects' attitude changes towards sea lions significantly differed between the two study sites ($p = .0086$).

Individual Wilcoxon rank sum tests were performed for each attitude statement.

Attitude change for three specific statements was significantly higher in Oceans of Fun

Milwaukee versus Hersheypark subjects: (1) "Every sea lion has a unique personality"

($p = .0065$), (2) "I am amazed at the number of behaviors a sea lion can learn" ($p = .0051$), and

(3) "Sea lion shows inspire show audiences to contribute to efforts to save sea lions in the wild"

($p = .0086$).

TABLE 2. Mean differences between survey before and after show responses

Variable	n		Mean Difference ^a		Test Statistic (Z) ^b	p-value ^b
	Z	T	Z	T		
Educational/ Entertainment Value	268	261	-2.22	0.57	11.08	< .0001
Knowledge	125	127	1.62	0.34	6.29	< .0001
Attitude	129	125	2.40	1.43	-1.97	.0484

Z = Zoological Park; **T** = Theme Park

^a Average differences between participants' total after and before show scores

^b Wilcoxon rank sum test

TABLE 3. Primary attendance motivation distribution

Facility	n	Primary Attendance Motivation (%)				
		C	LA	W	LC	O
Oceans of Fun Milwaukee	228	27.2	4.8	48.7	6.6	12.7
Oceans of Fun Hersheypark	224	27.7	1.8	51.8	6.2	12.5

C = Complete your facility experience

LA = Learn how your actions can help save wild sea lions and their habitats

W = Watch sea lions perform tricks

LC = Learn more about California sea lions

O = Other

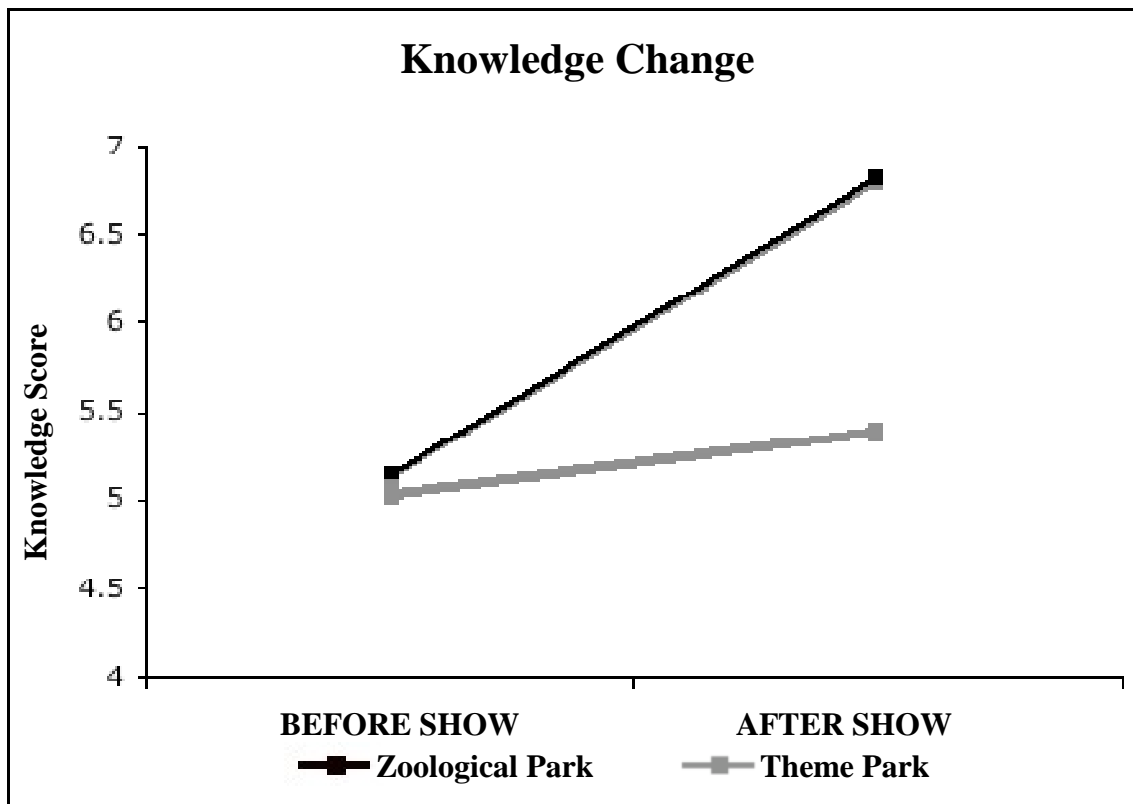


FIGURE 2. Mean knowledge change significantly more positive in zoological park (1.62) versus theme park (0.34) research subjects ($p < 0.001$). Total scores based upon correct answers given (Correct=1, Incorrect=0)

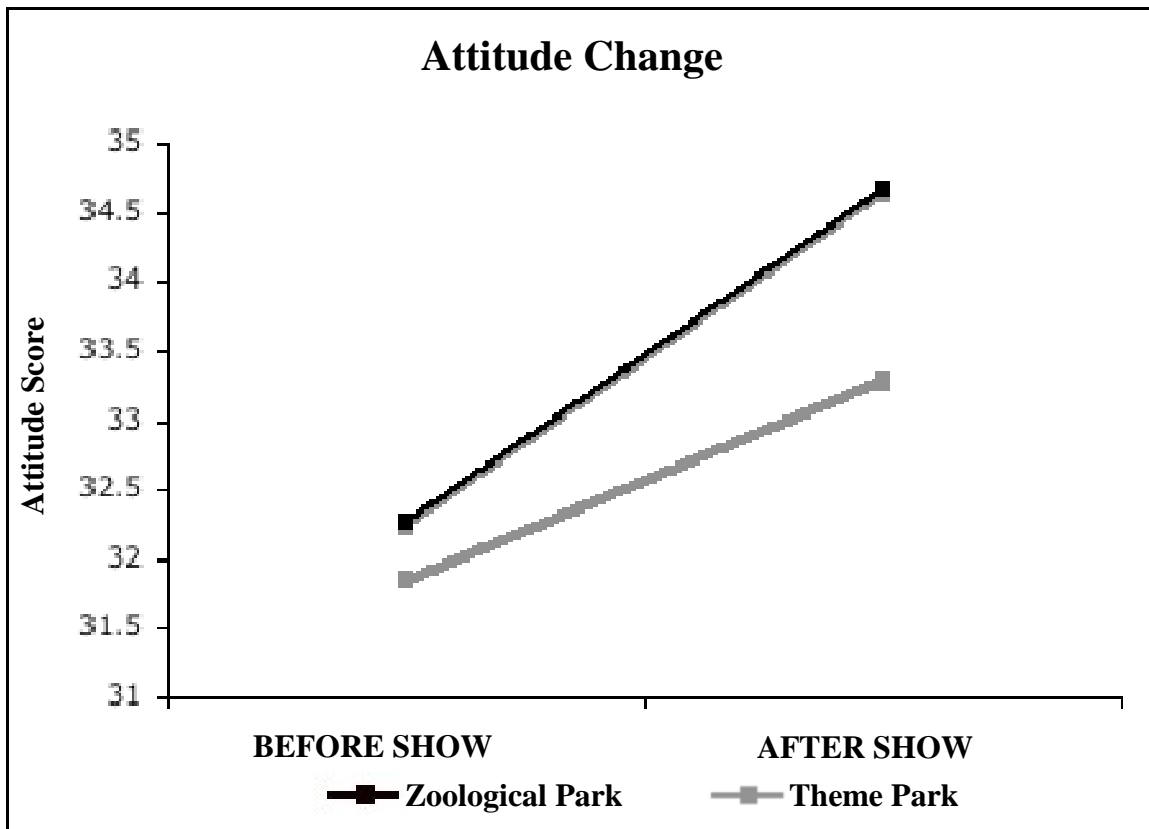


FIGURE 3. Mean attitude change significantly more positive in zoological park (2.40) versus theme park (1.43) research subjects ($p=0.0484$). Total scores based upon five-point Likert-type scale (Least Positive=1 to Most Positive=5)

3.6 Demographics

For all demographic variable analyses, calculated knowledge and attitude differences were treated as categorical variables: category '0' included all difference values less than or equal to zero; category '1' included all difference values greater than zero. These categories were created to determine if any demographic variables had possibly affected whether subjects' knowledge or attitude changes were positive or nonexistent/negative.

Oceans of Fun Milwaukee results showed independence between knowledge and attitude change and all measured demographic variables including subject gender, age, location of residence, education level, show attendance frequency, varying show attendance, park and zoo membership statuses, as well as show cost.

Oceans of Fun Hersheypark results showed a relationship between subject knowledge/attitude change and whether or not subjects had ever viewed a sea lion show at a different institution ($p = 0.0013$, Fisher's exact test). Approximately 86% of subjects with nonexistent/negative knowledge change reported that they had previously seen a sea lion show at a different institution, while only 24% reported that they hadn't. Approximately 80% of those with nonexistent/negative attitude change reported that they had previously seen a sea lion show at a different institution, while only 20% reported that they hadn't. Responses for this demographic variable were much more evenly distributed among subjects with positive knowledge (yes- 57% versus no- 43%) or attitude (yes-58% versus no-42%) change. Results showed independence between knowledge and attitude change and all other measured demographic variables including subject gender, age, location of residence, education level, show attendance frequency, park and zoo membership statuses, as well as show cost.

CHAPTER 4: DISCUSSION

Anderson *et al.* (2003) found that public animal training with interpretation provided visitors with a more positive zoo experience. The study presented here attempted to more clearly define “positive” by specifically measuring knowledge and attitude impacts. Falk *et al.* (2007) was criticized for not accounting for individual zoo visit components (e.g., specific exhibits, shows, etc.) and consequently, those components’ specific effects on visit outcomes (Marino *et al.*, 2010). The study presented here focused on a single captive animal facility component (animal shows), more reliably showing causality between an experience and its outcomes.

This study’s results show that audiences’ preconceived educational/entertainment value expectations and attendance motivations may affect overall show conservation impacts. Zoological park research subjects were pleasantly surprised by the extent of show information, while theme park subjects expressed a desire for more educational content. Measured knowledge change levels corresponded with subject perceptions of the extent of show information presented (Table 2). In addition, theme park visitors that had seen a sea lion show at a different institution were more likely to have nonexistent or negative species conservation knowledge or attitude change after show observation ($p = 0.0013$). These results provide evidence of expectation effects (e.g., disappointment, elements of surprise, number of novel experiences) on animal show impacts. Positive knowledge and attitude change occurred despite “learning” not being identified as a primary show attendance motivation; though, changes in both variables (knowledge and attitude) were significantly less when show educational value expectations were not met, as shown in Table 2. Heimlich (1996) said that knowledge gained by adults after a zoo visit did not depend on whether they came to learn or to socialize. However, Falk *et al.* (2007) found that attendance motivations impacted visitor outcomes directly.

Attendance motivations' influences on show conservation impacts remain unclear; additional research is needed. It is evident that facilities should consider visitor expectations and motivations when designing animal shows, and if desired outcomes are not being achieved, look to audience expectations and motivations as possible show impact barriers.

It is evident that both study sites achieved their shared objective of inspiring curiosity and appreciation for sea lion conservation; after a sea lion show experience, zoological and theme park research subjects reported increased species understanding and conservation knowledge and positive attitudes. However, results support the hypothesis that species conservation impacts differ between animal shows of varying designs.

Presenting species conservation information may be linked to an increase in positive environmental attitudes. Both species conservation knowledge and attitude change was significantly higher in zoological versus theme park research subjects (Figures 2 & 3). The zoological park sea lion show had a greater effect on subject perceptions of sea lions as unique individuals with large behavioral repertoires. Even more importantly, the zoological park sea lion show convinced a greater number of subjects that sea lion shows do in fact inspire conservation action ($p = .0086$). Behavior change was not measured directly, though KAB model principles predict positive behavioral outcomes in research subjects as both knowledge and positive attitudes increased (Figure 1). In the future, behavioral outcomes could be specifically measured, though this study identifies knowledge and attitude as practical show success evaluation criteria. Indicators of success should measure progress and provide needed information, but should also account for available skills and resources (Flora *et al.*, 1998). Measuring knowledge and attitude may be more feasible and cost effective than directly measuring behavior.

Overall, this study provides support for KAB model application in animal show design and highlights a desire for increased information presentation in theme park shows, supporting the integration of educational elements into non-KAB model show designs. Milman (1991) even reported elevated adult interest in visiting local theme parks if a learning experience was involved. However, it is important to note that educationally based zoological park shows may appeal more to adults, whereas theme park shows may appeal more to children. Future studies researching show impact on children are necessary, though the importance of reaching adults should not be underestimated. Adults have the capacity to be proactive and opportunity to reinforce conservation messages to their children (Heinrich & Birney, 1992). In addition, other show designs, e.g., zoo theater, that attempt to achieve greater balance between show educational and entertainment content and reach a more diverse audience should be further explored (Penn, 2009).

Captive animal facilities continually work hard to better convey conservation messages to their visitors. Although constructing future conservation education objectives is important, initial evaluation of facilities' current conservation impacts is invaluable; these assessments provide the information necessary to maximize future conservation education success and support captive animal facilities as sustainable tourism industry members (Smith *et al.*, 2008).

This study evaluated show effectiveness through inspiring audience animal conservation curiosity and appreciation and compared and contrasted effectiveness between two different show designs. Based upon the results, it is apparent that show design affects overall audience impact – not all animal shows are created equal. This finding emphasizes importance of evaluation. Continually increasing controversy has made it a necessity for captive animal facilities to defend their existence with supportive evidence. This study's established

methodology can be used to evaluate various animal shows' effectiveness in a broad range of facilities. Critics' claims of animal exploitation with minimal gain (Yerke & Burns, 1991) stress change from output to outcome-based evaluation. Evidence of educational effectiveness now needs to be quantitative.

APPENDICES

APPENDIX A
(Microphone Announcement)

Hello! I know all of you are waiting for the seal and sea lion show to begin, and I promise that it will begin shortly, but I was hoping that you could give me a moment of your time. My name is Emme and I am a graduate student at Michigan State University. I am here because I'm trying to gather data for my Master's thesis research. I am trying to determine how shows - just like the one you're about to see - affect you, the audience. After the show, I ask that anyone 18 years of age and older pick up and fill out a survey that will ask you to share your thoughts and opinions based upon the show you just watched. This is not a test and all surveys are completely anonymous so if you could take 5 to 10 minutes after the show to fill out a survey I would greatly appreciate it. Your participation in this study will not only help me earn my degree, but will also contribute to the quality of these types of experiences in the future. I will be outside the exit gates handing out the surveys as you leave the show. There will be a box at the Sea Lion Shoppe located right outside the stadium where you can return the surveys and pens when you are finished. I can answer any questions that you may have after the show so please don't hesitate to ask! Thank you so much for your time and I hope that all of you decide to participate! Enjoy the show!

APPENDIX B1

(Show Educational/Entertainment Value Survey Question)

The following statements address the sea lion show you just saw. Your honest opinions will be used to improve this experience for you and other visitors in the future.

1.) On a scale of 1 to 10 (1 - purely to educate to 10 - purely to entertain), please indicate your thoughts on the purpose of this sea lion show.

1a.) Currently, what do you think the purpose of this sea lion show is?

1 2 3 4 5 6 7 8 9 10
Purely to Educate Purely to Entertain

1b.) Before viewing the sea lion show, what did you think its purpose was?

1 2 3 4 5 6 7 8 9 10
Purely to Educate Purely to Entertain

1c.) Please explain why your responses to 1a and 1b are different or why they are the same:

APPENDIX B2
(Show Attendance Motivation Survey Question)

The following statements address your interest in attending today's sea lion show.

12.) From the list below, please identify the top three reasons why you attended today's sea lion show:

***Place a '1' next to your primary reason for attending followed by '2' (second) and then '3' (third)*

- To complete your Milwaukee County Zoo experience
- To learn how your actions can help save wild sea lions and their habitats
- To watch sea lions perform tricks
- To learn more about California sea lions
- Other (Please Specify) _____

APPENDIX B3
(Knowledge Survey Statements)

Please consider the following statements:

2.) Sea lions have external ear flaps on the sides of their heads.

2a.) Based upon your **current** knowledge, is Statement #2 true or false?

2b.) Based upon your knowledge **prior to viewing this sea lion show**, did you believe Statement #2 to be true or false?

3.) Sea lions do not rely heavily upon their sense of sight to survive

3a.) Based upon your **current** knowledge, is Statement #3 true or false?

3b.) Based upon your knowledge **prior to viewing this sea lion show**, did you believe Statement #3 to be true or false?

4.) Specialized whiskers help sea lions locate fish

4a.) Based upon your **current** knowledge, is Statement #4 true or false?

4b.) Based upon your knowledge **prior to viewing this sea lion show**, did you believe Statement #4 to be true or false?

Please consider the following statements:

5.) The sea lions in the show are trained to voluntarily participate in medical procedures

5a.) Based upon your **current** knowledge, is Statement #5 true or false?

5b.) Based upon your knowledge **prior to viewing this sea lion show**, did you believe Statement #5 to be true or false?

6.) Training is mentally and physically stimulating for the sea lions in the show

6a.) Based upon your **current** knowledge, is Statement #6 true or false?

6b.) Based upon your knowledge **prior to viewing this sea lion show**, did you believe Statement #6 to be true or false?

7.) The sea lions in the show are trained using negative reinforcement

7a.) Based upon your **current** knowledge, is Statement #7 true or false?

7b.) Based upon your knowledge **prior to viewing this sea lion show**, did you believe Statement #7 to be true or false?

Please consider the following statements:

8.) Our seafood choices have no impact on the survival of wild sea lions

8a.) Based upon your **current** knowledge, is Statement #8 true or false?

8b.) Based upon your knowledge **prior to viewing this sea lion show**, did you believe Statement #8 to be true or false?

9.) In the United States, it is illegal to feed a wild sea lion

9a.) Based upon your **current** knowledge, is Statement #9 true or false?

9b.) Based upon your knowledge **prior to viewing this sea lion show**, did you believe Statement #9 to be true or false?

10.) Because the sea lions in the show are trained, they are no longer considered wild animals

10a.) Based upon your **current** knowledge, is Statement #10 true or false?

10b.) Based upon your knowledge **prior to viewing this sea lion show**, did you believe Statement #10 to be true or false?

APPENDIX B4
(Attitude Survey Statements)

Please consider the following statements:

2.) I am interested in learning more about sea lions

2a.) What is your **current** level of agreement with Statement #2?

2b.) **Before viewing the sea lion show**, what was your level of agreement with Statement #2?

3.) Every sea lion has a unique personality

3a.) What is your **current** level of agreement with Statement #3?

3b.) **Before viewing the sea lion show**, what was your level of agreement with Statement #3?

4.) I am amazed at the number of behaviors a sea lion can learn

4a.) What is your **current** level of agreement with Statement #4?

4b.) **Before viewing the sea lion show**, what was your level of agreement with Statement #4?

Please consider the following statements:

5.) The sea lions do not have a choice whether or not they participate in a show

5a.) What is your **current** level of agreement with Statement #5?

5b.) **Before viewing the sea lion show**, what was your level of agreement with Statement #5?

6.) Humans assert dominance over sea lions by training them

6a.) What is your **current** level of agreement with Statement #6?

6b.) **Before viewing the sea lion show**, what was your level of agreement with Statement #6?

7.) Sea lions are highly aggressive towards humans

7a.) What is your **current** level of agreement with Statement #7?

7b.) **Before viewing the sea lion show**, what was your level of agreement with Statement #7?

Please consider the following statements:

8.) As an individual, I feel like there is nothing I can do to help save sea lions in the wild

8a.) What is your **current** level of agreement with Statement #8?

8b.) **Before viewing the sea lion show**, what was your level of agreement with Statement #8?

9.) It is not my responsibility to help save the wild sea lion population

9a.) What is your **current** level of agreement with Statement #9?

9b.) **Before viewing the sea lion show**, what was your level of agreement with Statement #9?

10.) Sea lion shows inspire audiences to contribute to efforts to save sea lions in the wild

10a.) What is your **current** level of agreement with Statement #10?

10b.) **Before viewing the sea lion show**, what was your level of agreement with Statement #10?

APPENDIX C1
(Oceans of Fun Milwaukee Demographic Survey Questions)

13.) Gender: ___ M ___ F

14.) Age:

- ___ 18-29
- ___ 30-39
- ___ 40-49
- ___ 50-59
- ___ 60 and Older

15.) Where do you currently live?

- ___ The City of Milwaukee
- ___ The Greater Milwaukee Area
- ___ The State of Wisconsin
- ___ Outside Wisconsin but in the Midwest (MN, IA, IL, OH, MI)
- ___ Regions of the United States Outside the Midwest

16.) What is your highest level of education completed?

- ___ Some High School
- ___ High School Graduate
- ___ Some College
- ___ Technical/Vocational/Associates
- ___ Undergraduate Degree
- ___ Graduate Degree

17.) After viewing the show, I feel the following about the show ticket price:

- ___ Tickets were overpriced
- ___ Tickets were priced appropriately
- ___ I would have been willing to pay more for a ticket

18.) How many times have you ever seen this sea lion show?

- ___ This is my first time
- ___ 1-3 times
- ___ 4-6 times
- ___ 6 or more times

19.) Have you ever seen a sea lion show at another institution?

- ___ Yes
- ___ No

20.) Are you a Milwaukee County Zoo member?

- ___ Yes
- ___ No

21.) Are you a member of another zoo (If yes, please specify)?

- ___ Yes
- ___ No
- Please Specify* _____

APPENDIX C2
(Oceans of Fun Hersheypark Demographic Survey Questions)

13.) Gender: ___ M ___ F

14.) Age:

- ___ 18-29
- ___ 30-39
- ___ 40-49
- ___ 50-59
- ___ 60 and Older

15.) Where do you currently live?

- ___ The City of Hershey
- ___ The State of Pennsylvania
- ___ Outside Pennsylvania but in the Northeast (ME, NH, VT, MA, RI, CT, NY, NJ)
- ___ Regions of the United States Outside the Northeast

16.) What is your highest level of education completed?

- ___ Some High School
- ___ High School Graduate
- ___ Some College
- ___ Technical/Vocational/Associates
- ___ Undergraduate Degree
- ___ Graduate Degree

17.) Would this show have been worth a ticket entrance fee?

- ___ Yes
- ___ No

If yes, please indicate amount you would be willing to pay _____

18.) How many times have you ever seen this sea lion show?

- ___ This is my first time
- ___ 1-3 times
- ___ 4-6 times
- ___ 6 or more times

19.) Have you ever seen a sea lion show at another institution?

- ___ Yes
- ___ No

20.) Do you have a Hershey Park Season Pass?

- ___ Yes
- ___ No

21.) Are you a member of zoo (If yes, please specify)?

- ___ Yes
- ___ No

Please Specify _____

APPENDIX D1
**(Table 4. Oceans of Fun Milwaukee Individual
Knowledge Survey Responses)**

Table 4. Oceans of Fun Milwaukee Individual Knowledge Survey Responses

Survey #	Edu./Ent. Value Change	Knowledge Change	Motivation
1001	-9	-2	
1002	0	0	
1003	3	6	W
1004	-2	-1	LA
1005	0	3	C
1006	-3	3	C
1007	0	0	LC
1008	-3	4	W
1009	-3	3	C
1010	-2	4	W
1011	-1	0	W
1012	-2	4	C
1013	-4	0	C
1014	-3	2	W
1015	0	0	W
1016	-2	4	
1017	1	2	
1018	0	2	LC
1019	-1	4	W
1020	-3	1	W
1021	-2	7	W
1022	-5	3	W
1023	-3	3	W
1024	-1	6	O
1025	-3	2	W
1026	0	2	
1027	0	1	C
1028	-2	3	W
1029	0	-1	C
1030	-2	-2	O
1031	-1	3	C
1032	0	1	W
1033	-6	2	W
1034	-3	2	W
1035	-2	2	

Table 4. (cont'd)

Survey #	Edu./Ent. Value Change	Knowledge Change	Motivation
1036	0		C
1037	-3	0	
1038	-7	1	
1039	1	0	W
1040	-2	0	
1041	-3	0	
1042	-3	1	O
1043	0	4	W
1044	-4		C
1045	-2	4	C
1046	-4	3	W
1047	-5	2	
1048	-2	0	
1049	-3	1	W
1050	-6	-1	O
1051	-5	3	W
1052	-3	6	C
1053	-5		
1054	-5	1	
1055	0	0	W
1056	-3	4	W
1057	-2	3	C
1058	0	3	
1059	1	0	C
1060	-3	2	W
1061	-6	3	W
1062	0	1	W
1063	-4	2	W
1064	-1	-1	LA
1065	-3	1	W
1066	-6	-2	W
1067	-4	2	
1068	-4	0	W
1069	-3	4	C
1070	-4	1	O

Table 4. (cont'd)

Survey #	Edu./Ent. Value Change	Knowledge Change	Motivation
1071	-3	0	W
1072	-1	0	W
1073	0	0	O
1074	-3	0	W
1075	-2	2	C
1076	-3	4	O
1077	-2	0	W
1078	-4	1	C
1079	0	4	C
1080	0	3	LC
1081	0	3	LA
1082	-4	2	C
1083	-4	0	W
1084	-2	3	W
1085	0	0	C
1086	-3	1	W
1087	-3	4	LA
1088	-3	2	W
1089	-5	0	
1090	-1	0	W
1091	-1	0	W
1092	-3	-1	W
1093	-3	4	W
1094	0	-3	
1095	0	0	
1096	1	0	C
1097	-3	0	
1098	-5	4	C
1099	0	2	W
1100	5	1	O
1101	1	3	W
1102	-2	2	W
1103			
1104	-3	3	W
1105	-4	3	W

Table 4. (cont'd)

Survey #	Edu./Ent. Value Change	Knowledge Change	Motivation
1106	0	0	C
1107	-3	2	W
1108	0	1	C
1109	-3	1	O
1110	-5	3	W
1111	-1	5	O
1112	-3	3	W
1113	-4	0	W
1114	0		W
1115	-5	1	O
1116	-3	-1	W
1117	-4	0	O
1118	-5	3	C
1119	-1	2	LA
1120	-5	3	O
1121	-2	1	C
1122	-5	4	C
1123	-3	2	C
1124	-2	3	C
1125	-2	2	
1126	-2	2	W
1127	-5	1	C
1128	2	1	
1129	-5		W
1130	0	0	O
1131	0	1	O

APPENDIX D2
**(Table 5. Oceans of Fun Milwaukee Individual
Attitude Survey Responses)**

Table 5. Oceans of Fun Milwaukee Individual Attitude Survey Responses

Survey #	Edu./Ent. Value Change	Attitude Change	Motivation
2001	-5	4	
2002	0	10	W
2003	0	9	C
2004	1	0	C
2005	-5	3	
2006	0	0	W
2007	0	-1	C
2008	-1		O
2009	-2	-1	C
2010	-4	3	W
2011	-4	0	W
2012	-3	4	C
2013	-2	0	O
2014	-2	-4	LC
2015	-3	8	LA
2016	-3	4	O
2017	-1		C
2018	-2	11	C
2019	-2	2	O
2020	-1	4	W
2021	-5	-3	W
2022	-3	4	W
2023	-2	4	C
2024	-3	2	W
2025	-2	0	W
2026	-3	2	C
2027	-6	1	W
2028	-1	1	LC
2029	-3	10	W
2030	0	0	
2031	-2	0	LC
2032	1	0	W
2033	0	1	W
2034	-4	2	W

Table 5. (cont'd)

Survey #	Edu./Ent. Value Change	Attitude Change	Motivation
2035	-3	3	W
2036	0	1	LA
2037	-5	1	C
2038	-1	1	O
2039	-3	0	W
2040	-2	4	LC
2041	0	0	W
2042	-4.5	0	
2043	0	1	W
2044	-4	9	C
2045	-4	3	LC
2046	-2	3	LC
2047	-5	-3	W
2048	0	0	C
2049	-5	2	W
2050	-3		W
2051	0	0	W
2052	-3	2	
2053	-3	-1	C
2054	0	0	W
2055	-9	2	C
2056	-5	4	C
2057	-2	7	LC
2058	-2	9	
2059	0	0	C
2060	-3	0	LA
2061	-4	0	W
2062	-3	0	O
2063	-5	0	W
2064	0	0	C
2065	0	1	W
2066	-2	-2	C
2067	-4	2	C
2068	0	2	O
2069	0	0	O
2070	0	0	LC

Table 5. (cont'd)

Survey #	Edu./Ent. Value Change	Attitude Change	Motivation
2071	-3	1	W
2072	-4	4	W
2073	-5	5	W
2074	2	1	W
2075	0	0	W
2076	-2.5	0	C
2077	-2	6	W
2078	0	7	
2079	0	3	LC
2080	0	-1	W
2081	-3	3	C
2082	-4	5	W
2083	-2	3	O
2084	-1	0	C
2085	-3	0	LA
2086	-1		
2087	-1	3	
2088	-3	1	C
2089	-3	12	W
2090	-3	8	W
2091	-3	5	O
2092	4	1	W
2093	-3	7	LA
2094	-3	5	W
2095	-6	2	W
2096	-4	6	W
2097	0	0	W
2098	-5	-1	C
2099	-4	0	C
2100	-3	6	W
2101	-3	6	LC
2102	0	3	
2103	-1	8	W
2104	-5	2	
2105	0	-2	W

Table 5. (cont'd)

Survey #	Edu./Ent. Value Change	Attitude Change	Motivation
2106	0	0	W
2107	0		
2108	-2		
2109	-9	0	
2110	1		
2111	0	0	W
2112	-5		W
2113	-1	-2	W
2114	-6	0	C
2115	-3	2	C
2116	-3	-2	W
2117	-3	19	LC
2118	-2	0	W
2119	2	6	C
2120	-5	0	
2121	-3	1	W
2122	2	-2	C
2123	-5	7	C
2124	-2	12	W
2125	0	2	O
2126	-2	3	W
2127	0	2	LA
2128	0	0	LC
2129	-5	11	
2130	0	4	C
2131	0	2	W
2132	-3	0	O
2133	0		O
2134	-3	0	O
2135	-3	1	W
2136	-3	-1	C
2137	-3	7	W
2138	-5	-2	

APPENDIX D3
(Table 6. Oceans of Fun Hersheypark
Individual Knowledge Survey Responses)

Table 6. Oceans of Fun Hersheypark Individual Knowledge Survey Responses

Survey #	Edu./Ent. Value Change	Knowledge Change	Motivation
3001	2	5	O
3002	0	1	W
3003	3	-1	W
3004	-3	0	W
3005	0	1	LC
3006	3	2	
3007	-2	-1	W
3008	0	0	LC
3009	3	0	O
3010	2	0	LC
3011	0	0	W
3012	-2	0	W
3013	0	0	C
3014	3	0	W
3015	3	0	W
3016	-3	4	
3017	-5		W
3018	0	7	W
3019	4	0	W
3020	5	1	O
3021	4	0	C
3022	0	0	W
3023	0	0	
3024	1	-3	W
3025	-1	1	C
3026	0	2	W
3027	0	1	
3028	0	-1	W
3029	0	0	LA
3030	0	0	C
3031	-3		C
3032	-3	1	W
3033	-3	0	W
3034	-4	1	W
3035	3	-1	W

Table 6. (cont'd)

Survey #	Edu./Ent. Value Change	Knowledge Change	Motivation
3036	3	-1	W
3037	0	0	W
3038	-1	0	C
3039	0	1	
3040	3	0	W
3041	0	0	C
3042	0	0	C
3043	5	0	
3044	-1	2	C
3045	0	0	C
3046	-4	3	W
3047	5	0	
3048	4	0	W
3049	-3	0	W
3050	3	1	C
3051	0	-5	W
3052	5	0	W
3053	5	0	
3054	0	-2	W
3055	-2	0	W
3056	3	0	W
3057	0	0	W
3058	-3	3	
3059	-3	2	W
3060	0	0	O
3061	0	0	C
3062	-5	5	
3063	0	0	
3064	-2	0	O
3065	5	0	C
3066	0	0	W
3067	0	0	C
3068	0	2	
3069	7	0	W
3070	4	0	W

Table 6. (cont'd)

Survey #	Edu./Ent. Value Change	Knowledge Change	Motivation
3071	0	0	C
3072	0	1	O
3073	-2	0	LC
3074	0	0	
3075	5	0	W
3076	-5	4	W
3077	-3	1	W
3078	0	7	W
3079	3	0	C
3080	-2	0	
3081	-2	-4	LC
3082	0	0	C
3083	5	0	C
3084	7	-3	W
3085	5	1	W
3086	-2	1	C
3087	1	0	C
3088	-3	0	W
3089	3	0	W
3090	6	0	C
3091	0	0	W
3092	-4	1	W
3093	3	1	W
3094	0	0	C
3095	1	-5	C
3096	0	0	LC
3097	-1	5	W
3098	-3	1	W
3099	5		W
3100	-3	0	
3101	0	0	W
3102	0	0	W
3103	-2	-1	W
3104	0	0	W
3105	5	0	O

Table 6. (cont'd)

Survey #	Edu./Ent. Value Change	Knowledge Change	Motivation
3106	0	0	W
3107	0	0	C
3108	-1	0	W
3109	-1		
3110	-1	0	C
3111	6	0	W
3112	3	0	C
3113	0		
3114	-3	1	C
3115	-4	1	LA
3116	0	0	W
3117	5	0	C
3118	0	1	
3119	-2	0	
3120	-1	-1	C
3121	2	0	W
3122	0	0	W
3123	0	0	W
3124	3	0	W
3125	0	0	C
3126	4	0	W
3127	0	1	W
3128	5	0	
3129	-2	1	
3130	1	0	O
3131	6	0	W
3132	4	0	W

APPENDIX D4
(Table 7. Oceans of Fun Hersheypark
Individual Attitude Survey Responses)

Table 7. Oceans of Fun Hersheypark Individual Attitude Survey Responses

Survey #	Edu./Ent. Value Change	Attitude Change	Motivation
4001	-4	7	C
4002	0	-1	O
4003	0	2	W
4004	0	1	C
4005	-6	3	LC
4006	0	1	W
4007	-4	3	C
4008	0	0	O
4009	0	1	O
4010	4	2	C
4011	4	1	C
4012	-1	0	W
4013	3	0	O
4014	3	1	W
4015	-2	0	W
4016	0	2	C
4017	2	4	
4018	0	8	O
4019	0	1	C
4020	0	0	W
4021	-2	5	C
4022	0	5	LC
4023	0	0	O
4024	-3	4	
4025	0	11	C
4026	-3	3	
4027	1	2	C
4028	-4	1	W
4029	-2	0	
4030	2	5	
4031	8	0	O
4032	4	0	C
4033	0	0	C
4034	-1	2	C
4035	-4	2	W

Table 7. (cont'd)

Survey #	Edu./Ent. Value Change	Attitude Change	Motivation
4036	4	0	C
4037	0	1	W
4038	0	0	
4039	0	2	W
4040	5	-1	LC
4041	4	0	W
4042	5	0	W
4043	0	0	O
4044	6	1	W
4045	0	-1	W
4046	-1	0	W
4047	0	0	LC
4048	-5	2	W
4049	0	4	O
4050	3	0	C
4051	5	0	LC
4052	0	-4	
4053	5	2	LC
4054	5	-6	W
4055	9	0	C
4056	2	0	W
4057	1	0	C
4058	-2	2	C
4059	7	0	W
4060	0	0	C
4061	2	-1	W
4062	-2	2	C
4063	-1	-1	
4064	0		
4065	-2	1	
4066	0	-2	O
4067	0	0	O
4068	-5	0	W
4069	-5	2	O
4070	-3	11	W

Table 7. (cont'd)

Survey #	Edu./Ent. Value Change	Attitude Change	Motivation
4071	0	1	
4072	-2	1	W
4073	-2	3	W
4074	0	2	W
4075	0	0	O
4076	0	0	C
4077	0	2	O
4078	2		O
4079	-1	6	W
4080	0	6	C
4081	4	0	C
4082	0	0	W
4083	-1	-2	W
4084	0	0	
4085	0	0	W
4086	0	0	W
4087	5	2	C
4088	0	3	W
4089	-2	0	O
4090	2	3	W
4091	-1	2	W
4092	4	0	O
4093	0	1	C
4094	-9		W
4095	-1	3	C
4096	-2	6	LC
4097	7	0	LC
4098	0	2	O
4099	2	0	W
4100	5	7	W
4101	7		
4102	5	0	W
4103	0	0	W
4104			
4105			

Table 7. (cont'd)

Survey #	Edu./Ent. Value Change	Attitude Change	Motivation
4106	5	-1	O
4107	0	0	W
4108	-1	0	LA
4109	0	0	W
4110	5	1	C
4111	-4	0	W
4112	0	0	C
4113	0	8	C
4114	0	0	O
4115	-3	0	C
4116	5	1	C
4117	0	-1	W
4118	5	0	W
4119	0	-2	W
4120	3	0	
4121	1	2	W
4122	5	1	C
4123	0	3	
4124	0	1	W
4125	0	10	W
4126	-5	7	W
4127	-2	2	W
4128	-1	2	W
4129	6	7	
4130	1	0	W
4131	-1	0	LA

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