



MULTIMEDIA RESEARCH

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Summative Evaluation of  
*Journey into Amazing Caves*  
with an Adult Audience

Report for

MacGillivray Freeman Films

by

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## EXECUTIVE SUMMARY OF SUMMATIVE EVALUATION OF *JOURNEY INTO AMAZING CAVES (ADULT SAMPLE)*

MULTIMEDIA RESEARCH, AUGUST 27, 2001

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With funding from the National Science Foundation, MacGillivray Freeman Films has produced an IMAX<sup>®</sup> film titled, *Journey into Amazing Caves*. The 40-minute film follows two women cavers on an expedition as they explore limestone caverns of the Grand Canyon, underwater caves of the Yucatan and ice caves of Greenland.

The summative evaluation reported here focused on the following major outcomes:

- To what extent and in what ways did the film appeal to adult viewers?
- To what extent did the film achieve its intended viewing goals?
- What did viewers perceive that they learned from the film?
- What new information did viewers learn about scientists?
- What relationship did the film have with the museum cave exhibit?
- Did viewing the program influence the audience beyond the museum visit?

### Method

A sample of 199 adults completed a questionnaire and content test before viewing *Journey into Amazing Caves* at the Cincinnati Museum Center. A second sample of 216 adults completed a questionnaire and content test after viewing the IMAX film. Researchers recruited over a non-holiday period of two weekdays and two weekend days, eliciting questionnaires during 12 weekday shows and 16 weekend shows. Weekend respondents represented 64% of the final sample. The pre and post-viewing groups did not differ significantly with respect to the classifications of gender, ethnicity, age group, education, and number of giant format films ever seen. The sample as a whole was 50% female, 89% white, 44% college educated, ranging in age from 16 to 84 years with a mean age of 40. Three-quarters of the sample had experienced two or more large-format films. Thirty post-viewing respondents were interviewed by phone one week after seeing the film.

### Findings

*Journey into Amazing Caves* was interesting to 95% of the audience; made a significant impact on their knowledge of cave life, cave formation, cave exploration and their understanding of scientists; and continued to influence 40% of the audience after their museum visit.

#### **To what extent and in what ways did the film appeal to adult viewers?**

After seeing the film, respondents rated how interesting or boring it was, as follows:

- 76% Very interesting
- 19% Moderately interesting
- 5% Okay
- 0.5% Moderately boring

The audience was very positive in their quantitative ratings (1-5) of the overall entertainment value of the film. On average, respondents found the film visually exciting (mean = 4.6); liked it (4.6); would recommend it to others (4.5); learned a lot (4.4); had their curiosity increased (4.3); and thought the story interesting (4.2). The latter five ratings were significantly higher for women, for older viewers and for those who felt they had learned something new about scientists from watching the film.

Two-thirds of the audience felt the film met or exceeded their expectations:

- 24% Met Expectations
-

- 41% Exceeded Expectations
- 32% Had No Prior Expectations
- 3% Did Not Meet Expectations - paucity of action; absence of known caves

In response to an open-ended question, the audience liked the following about the film:

- 28% Cinematography
- 20% Story of the science and cavers
- 19% Entertainment value
- 15% Saw places would never see or had never heard of
- 14% Informative
- 10% Experiential quality
- 9% Action, pace
- 6% Variety of caves
- 4% Inclusion of classroom

When asked what they did not like about the film, respondents' answers focused on:

- 9% Balance - not enough about caves
- 6% Not enough information
- 6% IMAX format caused discomfort
- 4% Too short
- 4% Inclusion of classroom

The audience was surprised by the

- 15% ice caves
- 13% danger for cavers and cameramen
- 9% scientific research
- 8% beauty
- 8% realism
- 7% depth and length of the caves

Relatively few of the respondents were disappointed with the film. Those who were noted:

- 14% the film was too short
- 6% not enough footage or information on underground caves
- 4% not enough footage or information on caves themselves
- 3% not enough action
- 2% the storyline lacked direction

### **To what extent did the film achieve its intended viewing goals?**

Viewing the film significantly increased knowledge, as measured by a 12-point content test on the intended viewing goals. Those who saw the film learned about cave life, cave formation, and cave exploration. The mean test score of audience members before seeing the film was 4.8 out of 12 points compared with the significantly higher post-viewing mean score of 8.8. Males scored significantly higher than females on the pre-viewing test, but no other differences occurred for any of the demographic or background variables measured.

### **What did viewers perceive that they learned from the film?**

The most interesting things learned from the film included the following:

- 28% about collecting microorganisms in caves to develop new medicines
  - 11% about extremophiles
  - 10% about halocline
  - 8% about ice caves
  - 7% about different caves
-

- 5% about scientists
- 5% about life in caves
- 2% about 12 new kingdoms added

### **What new information did viewers learn about scientists?**

Two-thirds of respondents felt that learned something about scientists that they had not known before viewing the film. Their new learning included:

- 18% how dangerous, risky, extreme or adventurous scientists can be
- 13% that scientists would search caves for specimens
- 7% that scientists don't just work in labs or behind computers
- 6% how dedicated scientists are
- 5% how physical, athletic they need to be
- 3% that scientists are diverse
- 2% that they go everywhere

### **What relationship did the film have with the museum cave exhibit?**

The Cincinnati Museum Center includes a natural history museum that has cave exhibits. At the time of data collection, there were no marketing efforts to connect the film and the cave exhibits. Of the total audience sample, 29% had visited the cave exhibits prior to seeing the film - 8% felt seeing the caves motivated them to see the film but 21% felt there was no relationship. Prior to seeing the film, 31% of the previewing sample had planned to see the caves later; after seeing the film, 28% of the post-viewing sample felt motivated to see the caves later. Exposure to the cave exhibits was independent of quantitative ratings of the film and film content recall. There appears to be minimal connection made by audience members between the film and the exhibits.

### **Did viewing the program influence the audience beyond the museum visit?**

Telephone interviews of 30 audience members one week after seeing the film revealed that

- 93% discussed the film with someone on the day of seeing it
- 50% discussed the film with others in the week following the viewing
- 57% recommended the film to others to see
- 40% agreed that seeing the film affected their thoughts during the week, including an increased awareness of caves and cave life, a bit of reflection on the ordinary quality of their own life, and an increased interest in activities related to the film (e.g., diving, exploring caves, digging)
- 40% had read or seen something on television that made them think of the film, including commercials for the film, microorganism information, or TV shows on caving or extreme physical behavior

The interviewed sample was quite positive when asked whether or not to make museum exhibits to go with large-format films. Many recommended that the exhibit be viewed after the film and have hands-on artifacts directly related to the film.

All of those interviewed had been given a Family Fun Guide upon exiting the theater: 66% recalled receiving the guide, and of these, 9 adults had read the brochure. These nine noted the factual information but felt the activities were not relevant to their situation or required materials that they did not have at hand.

When asked if they had gone to the film website, 3 of the 30 respondents indicated an intention to do so but the remainder did not know about the site, hadn't thought to look at it, or did not have a computer to do so.

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## INTRODUCTION

With support from the National Science Foundation, MacGillivray Freeman Films has produced an IMAX<sup>®</sup> film titled, *Journey into Amazing Caves*. The 40-minute film follows two women cavers on an expedition as they explore limestone caverns of the Grand Canyon, underwater caves of the Yucatan and ice caves of Greenland.

The summative evaluation reported here focused on the following major outcomes:

- To what extent and in what ways did the film appeal to viewers?
- To what extent did the film achieve its intended viewing goals?
- What did viewers perceive that they learned from the film?
- What new information did viewers learn about scientists?
- What relationship did the film have with the museum cave exhibit?
- Did viewing the film influence the audience beyond the museum visit?

## METHOD

### Design

A quasi-experimental separate-sample pretest/posttest design was used to evaluate the film in its natural theater setting. Over a period of four days at the Cincinnati Museum Center Theater, researchers asked viewers stratified by gender and aged 16 and older to complete pre-viewing or post-viewing questionnaires. A sample was surveyed prior to viewing the film and a different sample was surveyed after viewing. A small subset of the post-viewing sample was interviewed by telephone one week after seeing the film.

### Procedure

During a non-holiday period of two weekdays and two weekend days in July, 2001, the sample was recruited from audience members, 16 and older, as they approached the Cincinnati Museum Center Theater. Single adults accompanied by children below the age of five and adults who were part of a group of five or more typically were excluded from the recruitment. Because of relatively small audience sizes during the recruitment period, sufficient respondent numbers could not be achieved through random sampling; thus, all qualified viewers who lined up more than ten minutes before the theater doors opened were approached to participate in the ten minute pre-viewing questionnaire and latecomers were recruited to complete the post-viewing questionnaire. The latter were provided with colorful leis to help identify them in the exiting crowd. The post-viewing questionnaires were completed at tables set up near the exit staircase, and they required from ten to twenty minutes to complete, depending upon how thoughtful the respondent chose to be.

For a follow-up telephone interview one week later, post-viewing volunteers were called at their suggested times. One researcher handled the telephone interviews and tried each number at least three times before dropping an individual from the list. The first 15 males and 15 females to be reached successfully were interviewed. The interviews concentrated

on assessing whether the viewer had taken actions related to the film in the week after viewing.

## Questionnaires

Demographic and Background Variables. Both the pre-viewing and post-viewing questionnaires established respondents' status with respect to five classification variables (gender, age group, ethnicity, education, number of IMAX films ever seen). The pre-viewing questionnaire also asked about interest in and knowledge of caves and their reason for seeing the film.

Film Appeal. Post-viewing respondents chose one of five scaled statements to indicate how interesting or boring they found the film; rated the film on a variety of descriptors; and selected one of four statements that expressed the degree to which the film compared to their expectations. To reduce the amount of time required for viewers to complete the questionnaire, one-half of the sample was asked to explain what they liked and did not like about the film and why, whereas the other half of the sample was asked to respond to two sentence completion items: "I was surprised . . ." and "I was most disappointed . . ."

Film Knowledge. Both the pre-viewing and post-viewing questionnaires included a knowledge test to assess understanding of the viewing goals. Twelve "true-false-don't know" questions comprised a 12-point test about content covered in the film:

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Underground caves form due to erosion of soil between rocks.	False
Cave bats eat insects and fruit.	True
A halocline is where sea water and fresh water meet in an underwater cave.	True
Ice caves form in glaciers as a result of minor earth movements.	False
Microorganisms from caves may be a source of new medicines.	True
Colored layers along an ice cave wall reveal the age of glacial ice.	True
Bacteria cannot live in the extreme cold of an ice cave.	False
Rock formations in underground caves are extremely durable.	False
Ice caves in glaciers are not permanent but form anew each year.	True
Animals that live in caves are called extremophiles.	False
Underwater cave exploration is dangerous because of ceiling debris falling.	True
Excellent eyesight permits underwater cave animals to live in total darkness.	False

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Those who viewed the film responded to additional open-ended content questions: (a) what was the most interesting thing you learned; and (b) did you learn anything about scientists that you did not know before viewing the film.

Museum cave exhibit. Both the previewing and postviewing respondents were asked if they had seen or were planning to see the Cincinnati Museum cave exhibit and whether the film viewing was related to their cave visit.

Influence of the film beyond the museum visit. The telephone interview, one week later, asked whether or not respondents had:

- a) discussed the film with anyone on the day of viewing or in the week since;
- b) recommended the film to anyone;
- c) purchased anything from the museum store;
- d) their thoughts or activities in the last week been affected by the film;
- e) read anything or seen anything on television or heard anything on the radio that made them think of the film;
- f) done anything related to the "Family Fun Guide" that was given to them after seeing the film.

With any affirmative response, the interviewer asked the respondent to explain further. Finally, respondents were asked if they had seen the cave exhibit and whether or not film producers should make museum exhibits to go large-format films.

## **Sample**

Two researchers recruited over a non-holiday period of 2 weekdays and 2 weekend days during 12 weekday shows and 16 weekend shows. Weekend respondents represented 64% of the final sample. The total number of usable questionnaires (N=415) included 199 pre-viewing questionnaires and 216 post-viewing questionnaires. Information from demographic and background questions was used to determine whether the two independent samples (pre and post) should be looked at as having come from the same population. Chi-square analyses revealed that the pre and post viewing groups did not differ significantly with respect to the classifications of gender, ethnicity, age group, education, and the number of IMAX films ever seen.<sup>3</sup> The distribution of the sample on these classification variables is presented in Table 1 on the next page.

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<sup>3</sup> Statistical analyses in this report include, as appropriate, chi-square and *t*-tests of means. Any results with a *p* value of less than .05 are reported as "significant." All comparisons were made with respect to the classifications of gender, ethnicity, age group, education and frequency of viewing large-format films.



Table 1. Demographic and background variables

<i>Variable</i>	<i>N</i>	<i>Categories</i>	<i>Percent</i>
Gender	415	Female	50%
		Male	50%
Ethnicity	414	White	89%
		Minority	11%
Age Group Range: 16-84 years Mean and Median: 40 years	410	16-32	34%
		33-46	33%
		47-84	33%
Education	412	Completed HS or less	25%
		Some college	31%
		College graduate	24%
		Post graduate	20%
Number of IMAX films ever seen	414	This is my first film.	15%
		One other film.	12%
		2-3 other films.	29%
		Four or more films.	44%

Each member of the pre-viewing group only was asked how interested they were in learning about caves and how much they already knew about caves. About one-quarter of the pre-viewing audience was "very interested" in the film topic and half were "moderately" interested (see Table 2). Only 5% of the pre-viewing group felt that they knew "a lot" about caves prior to seeing the film; most respondents (59%) felt they knew "a little" (see Table 3). There were no significant relationships between Interest ratings and the demographic and background variables of Table 1. Knowledge ratings and education were not independent of each other; those with higher education felt significantly more knowledgeable about caves than those with lower education.

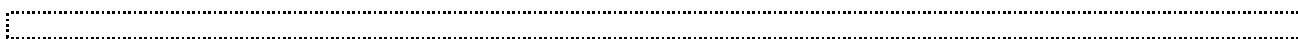
Table 2. Interest in learning about caves (Pre-viewing only)

<i>Variable</i>	<i>N</i>	<i>Categories</i>	<i>Percent</i>
Interest	196	Very interested	27%
		Moderately interested	49%
		A little interested	19%
		Not interested at all	5%

Table 3. Self-reported knowledge of caves (Pre-viewing only)

<i>Variable</i>	<i>N</i>	<i>Categories</i>	<i>Percent</i>
Knowledge	189	Know a lot	5%
		Know a moderate amount	25%
		Know a little	59%
		Know nothing	11%

Interviewed sample. Of 216 post-viewing respondents, 34% volunteered their names, telephone numbers and suggested times for a week-later follow-up interview. The first 15 males and 15 females to be reached successfully by telephone one week later constituted the interviewed sample.



## RESULTS

### Reason for seeing *Journey into Amazing Caves*

Prior to entering the theater, the pre-viewing sample was asked to explain why they chose to see the film. Table 4 presents the main reasons. The largest portions of the audience found the topic interesting (18%) or followed the plan of their visiting group (15%) or just viewed "what was playing" (11%). No one said that they attended because they had visited the cave exhibits in the natural history museum.

Table 4. Reasons for attending film (Pre-viewing)

<i>Variable</i>	<i>N</i>	<i>Categories</i>	<i>Percent</i>
Reason for attending	199	Caves are interesting. Film sounded interesting.	18%
		Plan of family, friends or group	15%
		It's what was playing.	11%
		Enjoy IMAX-try to see all films.	6%
		It's something to do.	6%
		Am a caver. Enjoy visiting caves.	4%
		Saw or heard advertisement.	4%
		Free tickets	3%
		Word of mouth recommendation	3%
		Educational	2%

### Appeal of *Journey into Amazing Caves*

After seeing the film, respondents were asked to rate how interesting or boring *Journey into Amazing Caves* was (see Table 5). Three-fourths of the sample rated the film as "Very Interesting" and 19% of the sample rated the film as "Moderately Interesting." Appeal ratings were independent of gender, age group, ethnicity, education, and number of large-format films ever seen.

Table 5. Rating of film appeal (Post-viewing)

<i>Variable</i>	<i>N</i>	<i>Categories</i>	<i>Percent</i>
Appeal	216	Very Interesting	75.5%
		Moderately Interesting	19.0%
		Okay	5.0%
		Moderately Boring	0.5%
		Very Boring	0.0%

Respondents also rated the film overall on a variety of descriptors, as indicated in Table 6. Respondents were quite positive about the overall entertainment value of the film. Women and older viewers rated the film significantly higher on most descriptors compared to men and younger viewers, although all sub-samples gave high mean ratings (see Table 6 for specific means and significant mean comparisons). There were no subsample rating differences for ethnicity, educational background or frequency of previous IMAX film viewing.

Table 6. Mean ratings of film's entertainment value

	1	2	3	4	5	
Disliked the film					4.6	Liked the film
					Male = 4.5; Female = 4.7	
					16-32 years=4.4; 33-46=4.6; 47-84=4.7	
Visually boring					4.6	Visually exciting
Will not recommend to others					4.5	Will recommend to others
					16-32 years=4.2; 33-46=4.5; 47-84=4.7	
Learned nothing					4.4	Learned a lot
					Male = 4.2; Female = 4.6	
					16-32 years=4.2; 33-46=4.5; 47-84=4.5	
Decreased my curiosity					4.3	Increased my curiosity
					Male = 4.2; Female = 4.5	
					16-32 years=4.1; 33-46=4.4; 47-84=4.6	
Boring story					4.2	Interesting story
					Male = 4.0; Female = 4.5	
					16-32 years=3.8; 33-46=4.3; 47-84=4.6	

### Comparison of Film to Expectations

After viewing, half of the respondents were asked to choose from four statements the one that best described whether or not the film met their expectations. Two-fifths of the group said the film exceeded their expectations, and one-quarter felt the film met their expectations. Only four respondents felt the film had not met their expectations because of a paucity of action or a focus on unknown caves (see Table 7).

Table 7. Comparison of film to viewer expectations

<i>Variable</i>	<i>N</i>	<i>Categories</i>	<i>Percent</i>
Expectations	111	I had no expectations before seeing the film.	32%
		The film exceeded my expectations.	41%
		The film met my expectations.	24%
		The film did not meet my expectations because	3%
		... I hoped for more action (3 of 4 responses)	
		... I expected to see well-known caves (1)	

## What viewers liked

After viewing the film, half of the post-viewing respondents were asked what they liked about *Journey into Amazing Caves* and why. Responses were sorted into the categories presented in Table 8 below; each viewer may have given more than one category of response in their answer.

Most respondents were impressed by the cinematography (28%), by the story of the science and cavers (20%) and by the entertainment value (19%). Smaller portions of the audience focused on a range of other qualities of the film, as indicated in Table 8.

Table 8. What viewers liked about *Journey into Amazing Caves*

Categories	%	Examples of Responses
Cinematography	28%	<ul style="list-style-type: none"><li>• "The photography - the angles and movements were very impressive."</li><li>• "Panoramic shots. Great cave shots."</li><li>• "Amazing footage."</li></ul>
Story of the science and cavers	20%	<ul style="list-style-type: none"><li>• "How they looked for different microorganisms."</li><li>• "Interesting and comforting to know scientists are searching for cures no matter what personal risks they may take."</li></ul>
Entertainment value	19%	<ul style="list-style-type: none"><li>• "So exciting."</li><li>• "Very interesting."</li></ul>
Saw places would never see or had never heard of	15%	<ul style="list-style-type: none"><li>• "Seeing places I'd never have the nerve to go to."</li><li>• "Saw some types of caves that I never knew existed."</li></ul>
Informative	14%	<ul style="list-style-type: none"><li>• "It was informative, educational."</li><li>• "Learned a great deal."</li></ul>
Experiential quality	10%	<ul style="list-style-type: none"><li>• "How it made you feel as if you were right there with them exploring the places for the first time."</li></ul>
Action; pace	9%	<ul style="list-style-type: none"><li>• "Kayaking scenes, climbing scenes, fast movement and motion."</li></ul>
Variety of caves	6%	<ul style="list-style-type: none"><li>• "All the different types of caves."</li></ul>
Classroom	4%	<ul style="list-style-type: none"><li>• "Way it tied the classroom aspect into the film."</li></ul>

## What viewers did not like

After the film, half of the respondents were asked what they did not like about the film and why. Responses indicating a disliked feature were sorted into categories presented in Table 9 below. The majority of viewers left the question blank or responded that they disliked "nothing." The strongest concerns were an interest in more footage and information about caves themselves.

Table 9. What viewers did not like about *Journey into Amazing Caves*

<i>Categories</i>	<i>%</i>	<i>Examples of Responses</i>
Balance-Not enough about caves	9%	<ul style="list-style-type: none"> <li>• "It was more about collecting samples and not about the caves."</li> <li>• "There was too much about cavers and not enough about caves."</li> </ul>
Not enough information	6%	<ul style="list-style-type: none"> <li>• "It covered many expeditions without going into detail about one."</li> <li>• "Not much information on extremophile."</li> </ul>
IMAX format caused discomfort	6%	<ul style="list-style-type: none"> <li>• "Feeling of claustrophobia I felt when explorers were in caves."</li> <li>• "Made me dizzy at times."</li> </ul>
Too short	4%	
Classroom	4%	<ul style="list-style-type: none"> <li>• "Phony and hokey classroom Internet uplink sidestory."</li> </ul>
Not enough action	3%	<ul style="list-style-type: none"> <li>• "Should have been more action shots."</li> </ul>
Problems with projection	3%	<ul style="list-style-type: none"> <li>• "Second half very out of focus."</li> </ul>

## What surprised viewers

In order to capture unplanned appeal effects, half of the post-viewing sample was asked to complete the sentence, "I was surprised . . ." Responses were sorted with keywords, and percentages of each major mutually exclusive category are presented in Table 9. Most viewers were surprised by the ice caves (15%) and dangers of caving (13%).

Table 9. Viewers' completion of "I was surprised . . ."

<i>Categories</i>	<i>%</i>	<i>Examples of Responses</i>	<i>"I was surprised . . ."</i>
Ice caves	15%	<ul style="list-style-type: none"> <li>• "about the ice caves."</li> <li>• "that such ice caves exist."</li> <li>• "by the way they climbed out of the ice cave."</li> </ul>	
Danger for cavers; filmers	13%	<ul style="list-style-type: none"> <li>• "at amount of potential danger one would put selves in for science and for fun."</li> <li>• "with the bravery of the photographers."</li> </ul>	
Science research	9%	<ul style="list-style-type: none"> <li>• "how much research was being done in caves around the world."</li> <li>• "research is being done to try to find cures for disease."</li> </ul>	
Diversity of caves	9%	<ul style="list-style-type: none"> <li>• "at the number of different caves."</li> <li>• "different forms of cave exploring, glacial, underwater."</li> </ul>	
Beauty	8%	<ul style="list-style-type: none"> <li>• "at the beauty and mystery of the various caves."</li> <li>• "that caves are so beautiful."</li> </ul>	
Realism + sense of movement	8%	<ul style="list-style-type: none"> <li>• "at how realistic everything was."</li> <li>• "by the sense of movement."</li> <li>• "how it seemed you were right there really experiencing everything."</li> </ul>	
Depth, length of cave	7%	<ul style="list-style-type: none"> <li>• "at the depth of the caves."</li> <li>• "at the length and depth of some of the caves."</li> </ul>	

## What most disappointed viewers

Half of the post-survey respondents also completed the sentence stem: "I was most disappointed . . . ." Responses were sorted with keywords, and percentages of each mutually exclusive category are shown in Table 10. Most (61%) of respondents either gave no answer to this question or were not disappointed in the film. The largest group of respondents felt the film was "too short" (14%).

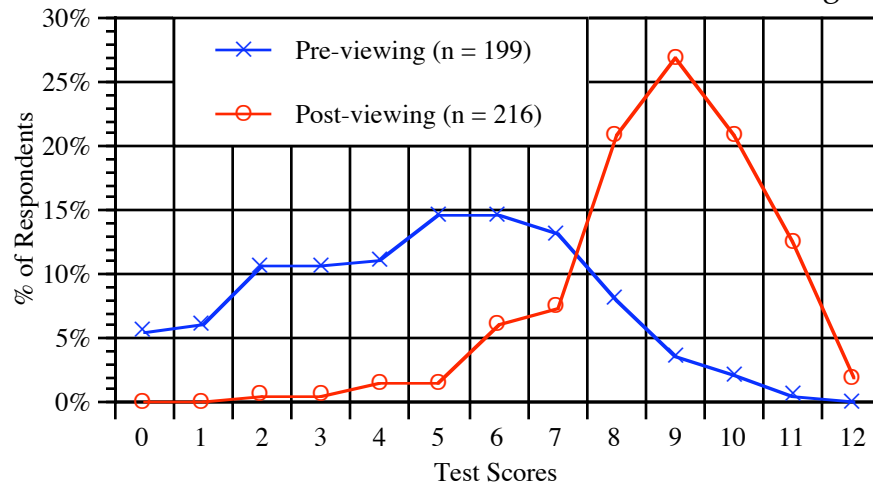
Table 10. Respondents' Completion of "I was most disappointed . . . ."

Categories	%	Examples of Responses	"I was most disappointed . . . ."
Film was too short	14%	<ul style="list-style-type: none"> <li>• "that it was not long enough."</li> <li>• "that it seemed short."</li> </ul>	
Not enough footage, information of underground caves	6%	<ul style="list-style-type: none"> <li>• "at not going inside caves at Grand Canyon."</li> <li>• "that I didn't see Mammoth caves."</li> </ul>	
Not enough footage, information on caves themselves	4%	<ul style="list-style-type: none"> <li>• "at not getting to see more inside the caves."</li> <li>• "with lack of information about caves themselves."</li> </ul>	
Not enough action	3%	<ul style="list-style-type: none"> <li>• "that there was not more action and thrills."</li> </ul>	
Storyline lacked direction	2%	<ul style="list-style-type: none"> <li>• "by lack of direction of what film was representing - the physical feat, the actual cave, etc."</li> </ul>	

## Impact on Knowledge

Achievement of intended viewing goals. Recall of main content points as presented in *Journey into Amazing Caves* was assessed via a 12-point True-False-Don't Know test. "Don't Know" was provided as a possible answer but was scored as "incorrect." Figure 1 compares the distribution of test scores for the pre-viewing and post-viewing samples. Clearly viewers knew more about the film concepts than non-viewers.

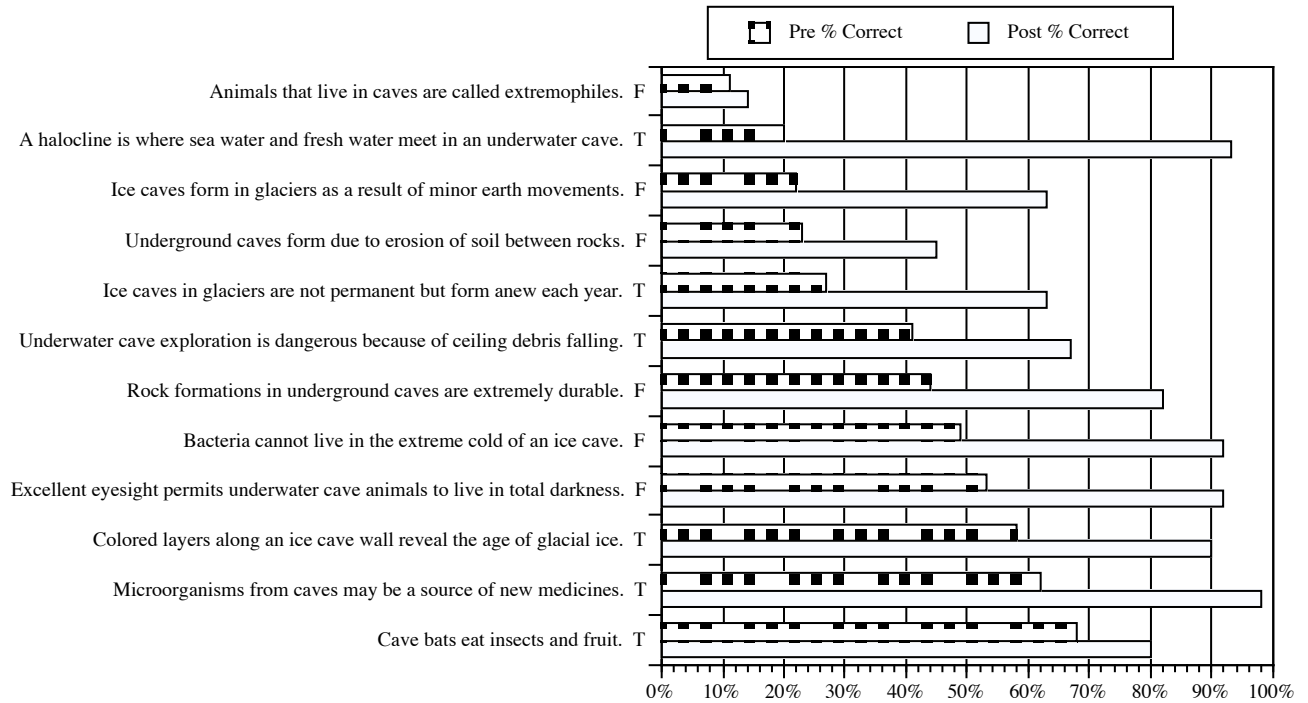
Figure 1. Distribution of Test Scores for Pre- and Post-viewing Samples



The mean achievement score for the post-viewing group was 8.79, significantly higher than the mean score of 4.76 for the pre-viewing group. Males scored significantly higher than females on the pre-test (5.4 vs. 4.1), but no other pre or post test differences occurred for gender, age, education, ethnicity and frequency of viewing large-format films.

Figure 2 provides a more detailed presentation for individual test items. Significantly more film viewers chose correct responses compared to non-viewers for every statement but one ("animals that live in caves are called extremophiles"). Seven of the 12 statements were answered correctly by 80% or more of the post-viewing audience.

Figure 2. Percent correct responses for each content statement before and after viewing film



Most interesting thing learned. Prior to completing the test section mentioned above, an open-ended question asked viewers to describe the most interesting thing that they learned from the film. Table 11 presents the main categories of responses. The largest group (28%) responded that the most interesting thing learned was about the collection of microorganisms for medical research.

Table 11. Most interesting thing learned from the film

<i>Categories</i>	<i>%</i>	<i>Examples of Responses</i>
About collecting micro-organism in caves to develop new medicines	28%	<ul style="list-style-type: none"> <li>• “about collecting samples to find cures for diseases.”</li> <li>• “didn't realize cavers took samples for research purposes.”</li> <li>• “that there are possible microorganisms in caves to cure diseases.”</li> </ul>
About extremophiles	11%	<ul style="list-style-type: none"> <li>• “extremophiles and where they exist.”</li> <li>• “that people are studying extremophiles.”</li> </ul>
About halocline, where sea water and fresh water meet	10%	<ul style="list-style-type: none"> <li>• “about the layer of sea water and fresh water meeting, wouldn't have expected life there.”</li> <li>• “halocline where fresh and saltwater meet.”</li> </ul>
About ice caves	8%	<ul style="list-style-type: none"> <li>• “existence of ice caves.”</li> <li>• “how unstable ice caves are.”</li> <li>• “how to age an ice cave.”</li> </ul>
About different caves	7%	<ul style="list-style-type: none"> <li>• “different types of caves, different places where caves are located.”</li> <li>• “never realized how caves are in so many different environments.”</li> </ul>
About scientists	5%	<ul style="list-style-type: none"> <li>• “how deep they go into caves, risking their lives to help others.”</li> <li>• “that scientists will go to the lengths demonstrated to find extremophiles.”</li> </ul>
About life in caves	5%	<ul style="list-style-type: none"> <li>• “biodiversity.”</li> <li>• “how things can live anywhere on this earth.”</li> </ul>
12 new kingdoms added	2%	<ul style="list-style-type: none"> <li>• “there have been 12 new kingdoms added in past 6 years.”</li> </ul>



Anything new learned about scientists. Almost two-thirds (63%) of post-viewing respondents felt that they had learned something about scientists that they had not known before viewing the film. Those who said they had learned something new about scientists did not differ in demographics from those who said they had not learned something new, but the two groups did differ in most of their quantitative ratings of the film. Table 12 presents the significantly different means for the two groups:

those who had learned something new about scientists (Yes; n = 137) and those who said they had not learned something new (No; n = 79). Despite the beyond chance differences, the mean ratings for both groups are still very high on the five point scales.

Table 12. Mean ratings of film's entertainment value

	1	2	3	4	5	
Disliked the film				4.6		Liked the film
				No = 4.4; Yes= 4.6		
Visually boring				4.6		Visually exciting
Will not recommend to others				4.5		Will recommend to others
				No = 4.3; Yes= 4.6		
Learned nothing				4.4		Learned a lot
				No = 4.1; Yes= 4.6		
Decreased my curiosity				4.3		Increased my curiosity
				No = 4.2; Yes= 4.5		
Boring story				4.2		Interesting story
				No = 4.0; Yes= 4.4		

Table 13 presents the main categories of responses of what viewers felt they had learned about scientists. Most respondents were impressed that scientists would do dangerous activities (18%) and that they would search caves for samples (13%).

Table 13. New learning about scientists

Categories	%	Examples of Responses
How dangerous, risky, extreme, adventurous science, scientists can be	18%	<ul style="list-style-type: none"> <li>• "danger and risks that they take."</li> <li>• "that they risk their lives."</li> <li>• "that they go to great extremes for the love of science."</li> </ul>
That scientists would search caves for specimens	13%	<ul style="list-style-type: none"> <li>• "didn't know they collected their own samples in caves."</li> <li>• "they explore caves to find new cures for diseases."</li> </ul>
They don't just work in labs, behind computers or microscopes	7%	<ul style="list-style-type: none"> <li>• "that the work is not just confined to a lab, field work can be exciting."</li> <li>• "they don't just sit in labs looking through a microscope."</li> </ul>
How dedicated they are	6%	<ul style="list-style-type: none"> <li>• "how consumed by their work. It wasn't just a job, it was their lives."</li> </ul>
How physical, athletic they need to be	5%	<ul style="list-style-type: none"> <li>• "wide variety of skills ( climbing, kayaking) that scientist have."</li> </ul>
Scientists are diverse	3%	<ul style="list-style-type: none"> <li>• "scientists come in all ages, from many countries and both young and old and women and men."</li> </ul>
They go everywhere	2%	<ul style="list-style-type: none"> <li>• "they search anywhere and everywhere for our future."</li> </ul>

## Film relationship with museum cave exhibit

The Cincinnati Museum Center encompasses a natural history museum as an entity physically distant and financially separate from the theater. This museum includes two permanent cave exhibits - one underground and one on ice caves. During data collection, there was no signage or announcement at the theater that the cave exhibits were available nor was there signage or announcement of the film at the cave exhibits. However, there was a video playing at the entrance of the underground cave exhibit that presented the cavers from *Journey into Amazing Caves*.

Due to a limited budget, the influence of seeing the cave exhibits was assessed in a simple and limited manner. In the pre and post-viewing questionnaires, visitors were asked if they had seen or were intending to see the Cincinnati Museum cave exhibits on that day (see Table 14). The pre-viewing and post-viewing samples did not differ significantly in their answer distribution. Table 14 indicates that 29% of the total sample had visited the cave exhibits prior to seeing the film: 8% felt seeing the caves motivated them to see the film and 21% felt that their seeing the caves was unrelated to their seeing the film. Prior to seeing the film, 31% of the pre-viewing sample had planned to see the caves later; after seeing the film, 28% of the post-viewing sample felt motivated to see the caves later. The small difference in cave visitation "plans" would indicate minimal influence of the film on a decision to visit the cave exhibits.

Table 14. Exposure to museum cave exhibits

Category	Pre-viewing	Post-viewing	Both samples
Have you seen today the Cincinnati Museum cave exhibits?			
Yes, and seeing the cave exhibits motivated me to see this film.	5%	10%	8%
Yes, but seeing the cave exhibits was unrelated to my seeing this film.	19%	23%	21%
We plan to see the caves later today.	31%		
Seeing the film makes me plan to see the cave exhibits later today.		28%	
No, I have not seen and will not see the cave exhibits today because...	45%	39%	42%
No time	15%	13%	
Museum is/was/will be closed	10%	6%	
No reason provided	7%	7%	
Have other plans	5%	2%	
Have seen exhibit during a previous visit	3%	4%	
Came for a different museum	3%	1%	
Only planned to see film	1%	3%	
Did not know about cave exhibits	1%	1%	
No more money	-	2%	

Visitors who had seen the caves and those who had not were compared in terms of their demographics (as in Table 1), their reactions to the film (ratings as shown in Tables 5 and 6) and their film content knowledge test score (as in Figure 1). No significant differences were found. Exposure to the cave exhibits was independent of quantitative ratings of the film and film content recall. [More on reactions to the cave exhibits by film viewers interviewed later by phone appears on pages 16-17 of this report.]

## Influences Beyond the Museum Visit

Fifteen men and fifteen women participated in a telephone interview one week after viewing *Journey into Amazing Caves*.

Discussion with others. All but two of the 30 respondents (93%) reported that they had discussed the film with their co-viewers or family on the day of their visit. Half (50%) of the phoned audience reported that they had spoken with others about the film in the week since their visit. Typically, the conversations were with relatives, co-workers, friends or neighbors; for example:

"I talked with the person I saw it with, and after we saw it, we talked about it with some friends we met up with. We told them it was awesome and exciting, and I used the term informative and, I think, entertaining. She asked if it would be appropriate for her son, who is four, and I said it would be for anyone. I told her I was surprised at how much I learned. I didn't even know that cave exploration is done. I never thought about it. Then after dinner, we had an hour drive back to Louisville, and we talked about it just about the whole way. We kept asking questions, like I wonder how they got the cameras down there, and how they got them underwater, and how they filmed this and that, and then all the dangers that they captured. . . . When we got back in Louisville, I told the people I work with and my parents, and it has all been the same comments."

Without reservations, 26 interviewees said their discussion was positive. In their conversations, they spoke about:

- the "informative" quality of the film (n=8)
- how "real" the film felt (6)
- the unique and beautiful "camera work" (6)
- how "entertaining and exciting" the film was (6)
- the "personal sacrifices" scientists make (4)
- how they enjoyed the "different caves" (4)
- the "new discoveries" for medicine (4)
- the "halocline thing" and underwater caving (4)
- the "amazing ice caves" (3) and
- how the film was "a good format" for families (2)

The film raised some interesting personal connections for four respondents:

"I talked with my neighbors. I talked about the girl herself, Nancy, and her website, and since I am a teacher, I was really into this part."

"To me it was educational, and hopefully to the kids. They can learn how they get specimens for the betterment of medicine. I am a nurse and so that was exciting to me."

"I discussed it with all the ones who we went to see it with. And then a friend who is a diver. I talked with him about the underwater caves and how cool all the underwater scenes are. I also talked with a friend; I am contemplating buying him a copy of the video. I told him he would like it because of the different types of caves that it goes into. Also, I have a boyscout troop, and we have been caving and it would be a good idea to give them a sense for what we could do, but on a smaller scale."

"I talked about it with my mom and sister, who also said that it was good, and we all agreed that we liked the Grand Canyon part, since we are going there in a couple of weeks. It made us more enthusiastic."

Of the four respondents who were less positive in their conversations, two were uncomfortable with the feeling of movement, one felt the film did not have as much action or

storyline as other films she had seen, and one felt the film "couldn't decide what it wanted to be" jumping from caves to classrooms to scientists.

Recommendation to others. When asked if they had recommended to anyone to see *Journey into Amazing Caves*, 17 (57%) said that they had. The remaining commented they had not had an opportunity to make a recommendation but would do so in a positive manner. The recommendation conversations repeated the observations listed above - that the film was exciting, realistic, informative, showed different types of caves, and a search for medicine.

Store purchase. Eight respondents (27%) reported buying something from the Museum store. No one reported making any store purchases related to the film; however, one respondent complained that she tried to purchase a tee-shirt, hat and DVD, but they were out of the needed sizes and did not have the film in DVD format.

Film's influence on thoughts and actions. Those interviewed by telephone were also asked if seeing *Journey into Amazing Caves* had affected anything they had thought about or done in the previous week. Two-fifths (40%) of the 30 respondents answered affirmatively in a wide variety of ways, including an increased awareness of caves and cave life; a bit of reflection on the ordinary quality of their own life; and an interest in activities related to the film (diving, exploring caves, digging).

"I guess it kind of made me more aware of the fragile nature of caves and how sensitive all that stuff is and how easily the caves and all can be destroyed. Overall, as a picture, I think it made me more aware."

"I think it has opened my mind more to caves in general. I've found in my past 25 years I haven't thought about caves, but I feel like I have thought much more about them since I saw the film."

"I thought a lot about that bacteria that lady got from the ocean that was mixed in with the cave water. She had a name for it, and I was trying to remember it. I also thought about how she is looking for different organisms that might help with disease and that that was an important contribution."

"We took some books out of the library that talked about extreme lifeforms."

"I thought it was very exciting. I had a dream about it. I was glad I woke up, because I found myself below surface in a cave, and I couldn't get out."

"I've thought about it a lot, because it was so exciting and I think people ought to see it. To show the people going in these caves and how they risk their lives and that they love it. I thought that was amazing. I would never ever do that."

"It has affected things I've thought about. I realized I am a real fuddy duddy. I knew I was boring before, but I didn't think I was that bad. I told my husband, 'could you imagine waking up every morning and knowing that that was your job?' I really found myself thinking about my own life. And I was glad I could see it from the theatre, because I would never see it any other way."

"We went to the caves at the Natural History Museum afterwards. I never knew there was a little tunnel thing you crawl through, and I had the urge to do so, which is insane. When I got out, I figured it was not a good idea to do what I was doing. I never would have done it if I didn't see the movie. It did make me feel like going out and getting a life or doing something more adventurous."

"Because we saw the film, we were thinking about maybe going to Mammoth Caves. We thought it would be fun for my son and his friend, but the film kinda scared his friend from going. He's just 9, so I understood it."

"The diving part I thought about a few times. Oh, one thing I did do was I took the brochure and read it. I plan on doing the sink hole activity with my son, the one with the sand and water and stuff."

"The next day my kids went out into the yard, and they dug and dug and dug trying to find something deeper; definitely that had to do with the film. And in the neighborhood pool they have been act-

ing like the divers in the film. I thought that was pretty neat. And now they want to repel [like the cavers].

"It made me want to scuba dive again. I was thinking about getting certified this week even, but then again, they showed a lot of dangers in underwater cave diving, so I would have to think about it."

Film's connection to other media. The interviewed sample was asked whether they had read or seen anything on television or heard anything on the radio that made them think of *Journey into Amazing Caves*. Two-fifths (40%) agreed that they had. Of this group, six reported having seen television commercials for the film for the theaters in Cincinnati and Louisville.

Two respondents mentioned related print materials:

"I saw something in the newspaper about a [microbe] discovery. I guess the microbes in the film sparked my interest."

"We took a lot of books out of the library, and they talked about extreme lifeforms and all. My youth kids and I probably learned more about that [topic] from reading the books."

Four respondents recalled seeing television programs in the previous week that were related to caving or extreme physical behavior:

"That new show "Fear Factor" made me think of [the film] because that would be something I would fear. I am too much a chicken to repel."

"There was a documentary on about jumping off the sides of mountains and hang gliding, and then there was a documentary about glaciers and they talked about ice caves and masts and stuff."

"There is a lot on TV about caving and diving that my son pointed out last week."

"I saw animal shows about the Grand Canyon on TV and they were talking about caves in the Grand Canyon."

Recommendation about museum exhibits associated with films. Almost half (47%) of the interviewed sample had seen the museum's cave exhibits on the day they saw the film. All but one of these respondents were quite positive when asked whether or not to make museum exhibits to go with the films. Many recommended that the exhibit be viewed after the film and have hands-on artifacts directly related to the film:

"My five year old son was with me, and he really enjoyed the museum caves and didn't want to leave it to see the film. But then afterwards he saw the film, and he saw the value of seeing the movie. I think it is a good idea, especially if you can make it so people see it after the film."

"It was amazing. We didn't expect it to be nearly as elaborate as it was. I think it is a good idea [to have an exhibit]. It coincides really well. I'm not sure if it is better to go there first or not, but I kinda wish I did it after. . . I think I would have learned more and been more in tune with what was being shown if I saw the exhibit after the film."

"We saw it after we saw the film. I think it would be neat to actually see some of what is featured in the film in the exhibit. Maybe some of the stagoltytes - is that how you say it? It would be more of an impact after it is all explained to you then just seeing it. Especially for kids, I think it would be really neat to have the two together."

"We saw it afterwards. Go for it! It would be awesome to be able to watch the film and then experience it with a hands-on feeling. If they do it so you get the visuals and sounds with the film and then one other way of learning with all the touch and smell, it would make the experience more fulfilling. They could have an exhibit of like the blind fish in the show to show people some of the specific things in the film but featured in more detail [in an exhibit]."

"We saw the caves a little bit after we saw the film. The kids just loved it, and it related a lot for them to see things afterwards in a display that has some physical artifact like that they saw in the movie. I think it is a good idea to relate the things in the film to something in an exhibit. It helps reinforce the ideas."

"I think it is a good idea. It makes sense to me to reinforce the show with real life examples in an exhibit."

"We went before the film. I think it is a nice idea. It is very educational, if you take the children with you. This was very beneficial for our grandson, and we went through both exhibits. You get a chance to see more up close and with the hands-on, I think that helps make it real."

"We saw the caves first, but I think we should have seen the caves afterward. We were basically walking through it not knowing what we were looking at. If you can tie the two together, maybe with a tour guide or something, so that you can say, 'here is the film and here is the example in real life', that would be great. Make it like a complete package."

"I liked the cave exhibit. If it is a good exhibit, then it is a good idea to go with it. I just don't like how everything has to be child-oriented these days. If they could make a section more for adult participation, that would help."

"We went after the film. I think they would be more inclined to do something like that after they see a film. I know they did that about the Egypt film, and I think that is a good idea, so that is not a foreign concept to movie making."

"I think they should [make related exhibits]. The cave at the science center wasn't that realistic. They should do something more realistic. I saw something like that from the Titanic show. They had something that was a huge iceberg that if you touched it, it was cold. If they would make something that made you feel like you were there, that would be something. They could have the ice that forms in the cave be real ones that would make you feel like you were experiencing it."

"Yes, I would go to that kind of combination [film and exhibit]. I'd like to see one with the ice caves. Something that isn't really going to melt down. I think it is a great idea to have them go together."

"I get claustrophobic so I whirled through and out. I think it would be good to have a visual exhibit. Being an art teacher, I know that you can relate the information to something visual, even if it is just a cardboard cutout. I think that if there could be something like that in the exhibit, it would be great."

"We went to the exhibit before seeing the film. I think it is a good idea but to be honest, I'm not sure it would impact the film's experience. I don't think it would get you greater viewership, if that is what you are looking for."

All but three of those who had not seen the cave exhibit felt that seeing an exhibit after seeing the film would be "real educational" and "would be good to reinforce the ideas in the film." These respondents also suggested using artifacts from the film ("represent things from the movie in the exhibit that will get people to pay more attention") and including a hands-on format ("have some cool things that you could touch or learn more about at your own pace, things that complement the film"). Those who hesitated recommending an associated exhibit were concerned mostly with time constraints, which was the reason they hadn't seen the cave exhibit with their film viewing.

Reactions to "Family Fun Guide" brochure. All post-viewing respondents and those accompanying them to the film received at least one and sometimes multiple copies of the "Family Fun Guide." Two-thirds (66%) of the 30 respondents recalled having received a copy of the brochure; of the 10 who did not remember the brochure, 7 were men.

Of the 20 respondents who recalled the receiving brochure, 9 had read it and 4 did not read it but intended to ("still on the dining room table"). The nine who had read the brochure noted the information but felt the activities were either not relevant to their situation or required materials that they did not readily have:

"I read it soon after I got it for fun and didn't think much about it. I didn't do the stuff it suggested because it doesn't really seem made for adults."

"I let my husband do most of the reading. It had good information. We didn't do all the stuff inside. We just looked at some of the info it had."

"It had some interesting information about caves but the activities didn't seem relevant to me."

"My kids are little and it didn't seem relevant to them."

"I glanced through it. We were headed toward lunch, then it went in the trash. I remember that there wasn't anything in it we could use."

"I scanned it for a second then dumped it."

"I was thinking about having the kids to do the activities. I might have started but didn't have the right stuff that it required."

"I did look through it but we haven't done the activity inside. They want to do it, but we don't have sand or the other things you need."

"I don't remember having a strong reaction to it. I do plan on doing the activities with my kids."

Film website. When asked if they had gone to the film website, 24 of the 30 respondents replied that they did not know about the site or hadn't thought to look at it, and 3 noted that they did not have a computer. The remaining 3 respondents also had not looked at the site but did indicate an intention to do so:

"I have been meaning to go to the site 'Nancy4caves' and I think I will. I remember seeing that site in the film where the lady was talking with her students. I just haven't had the time to check it out."

"I haven't but I may go to Nancy's caves website and I would look at what she is doing right now."

"No, but when Nancy was talking to her class, she mentioned the website, and my son and I looked at that and said, 'let's remember that, we want to go to that.' But we sort of forgot and will have to do more about it later."

## DISCUSSION

- *To what extent and in what ways did the film appeal to adult viewers?*

Nearly the entire sample (95%) thought *Journey into Amazing Caves* was either “very” or “moderately” interesting. The rating of “very interesting” was given by 75.5% of the audience and the rating of “moderately interesting” by 19%. Additionally, respondents were quite positive in their quantitative ratings (1-5) of the overall entertainment value of the film. On average, the audience found the film visually exciting (mean = 4.6); liked it (4.6); would recommend it to others (4.5); learned a lot (4.4); had their curiosity increased (4.3); and thought the story interesting (4.2). The latter five ratings were significantly higher for women and older viewers and those who felt they had learned something new about scientists from watching the film. Otherwise, the ratings were independent of gender, age group, ethnicity, education and exposure to large-format films.

About two-thirds of the audience reported that *Journey into Amazing Caves* met (24%) or exceeded their expectations (41%). Only four respondents felt the film had not met their expectations because of a paucity of action or the exclusion of well-known caves. The remaining respondents came to the film with no expectations.

Viewers were most impressed by the cinematography (28%) of the film, by the story of the science and cavers (20%) and by the entertainment value (19%). They felt that they saw places they would never see or had never heard of (15%) and were informed by the film (14%). Smaller portions of the audience liked the film's experiential quality, the action, the variety of caves and the classroom. Respondents were surprised most by seeing the ice caves (15%), by seeing the dangers of caving (13%), by learning about the scientific research (9%) and the diversity of caves (9%). Smaller groups were surprised by the beauty of the caves, by the realism of the film and by the depth and length of caves.

Few respondents disliked parts of the film or were disappointed with their experience. Some suggested that there was not enough about the caves themselves (9%) and others were disappointed that the film was so short (14%).

- *To what extent did the film achieve its intended viewing goals?*

Viewing the film significantly increased knowledge, as measured by a 12-point content test on the intended viewing goals. Those who saw the film learned about cave life, cave formation, and cave exploration. The mean test score of audience members before seeing the film was 4.8 out of 12 points compared with the significantly higher post-viewing mean score of 8.8. Males scored significantly higher than females on the pre-viewing test, but no other differences occurred for any of the demographic or background variables measured.



- *What did viewers perceive that they learned from the film?*

The audience mainly felt they learned about collecting microorganisms in caves to develop new medicines (28%); about extremophiles (11%); and about the halocline (10%) in the underwater cave. Smaller portions of viewers learned about ice caves, the different types of caves, about scientists and about cave life.

- *What new information did viewers learn about scientists?*

About two-thirds of post-viewing respondents felt that they had learned something about scientists that they had not known before viewing the film. Most were impressed that scientists would do dangerous activities (19%) and that they would search caves for samples (13%). Smaller groups noted how scientists don't just work in labs, that they are dedicated, athletic, diverse and go everywhere.

- *What relationship did the film have with the museum cave exhibit?*

The Cincinnati Museum Center includes a natural history museum that has cave exhibits. At the time of data collection, there were no marketing efforts to connect the film and the cave exhibits. Of the total audience sample, 29% had visited the cave exhibits prior to seeing the film - 8% felt seeing the caves motivated them to see the film but 21% felt there was no relationship. Prior to seeing the film, 31% of the previewing sample had planned to see the caves later; after seeing the film, 28% of the post-viewing sample felt motivated to see the caves later. Exposure to the cave exhibits was independent of quantitative ratings of the film and film content recall. There appears to be minimal connection made by audience members between the film and the exhibits.

- *Did viewing the film influence the audience beyond the museum visit?*

Our telephone interviews of 30 audience members one week after seeing the film indicated that 93% of the interviewees discussed the film with someone on the day of seeing it, 50% had discussed the film with others in the week following their visit, and 57% had recommended to others that they see *Journey into Amazing Caves*. Two-fifths of the respondents agreed that seeing the film had affected something that they had thought about during the week after the viewing, including an increased awareness of caves and cave life, a bit of reflection on the ordinary quality of their own life, and an interest in activities related to the film (e.g., diving, exploring caves, digging). Two-fifths of those interviewed had read or seen something on television that made them think of the film, including commercials for the film, microorganism information, or TV shows on caving or extreme physical behavior.

Although it is difficult to assess reliably the impact of a program beyond its real-time frame, it appears that 40% of the audience felt that they were still influenced by the film one week later in a variety of ways.

The interviewed sample was quite positive when asked whether or not to make museum exhibits to go with large-format films. Many recommended that the exhibit be viewed after the film and have hands-on artifacts directly related to the film.

All of those interviewed had been given a Family Fun Guide upon exiting the theater: 66% recalled receiving the guide, and of these, 9 adults had read the brochure. These nine noted the factual information but felt the activities were not relevant to their situation or required materials that they did not have at hand.

When asked if they had gone to the film website, 3 of the 30 respondents indicated an intention to do so but the remainder did not know about the site, hadn't thought to look at it, or did not have a computer to do so.

In conclusion, *Journey into Amazing Caves* was interesting to 95% of the audience; made a significant impact on their knowledge of cave life, cave formation, cave exploration and viewers' understanding of scientists; and continued to influence 40% of the audience after their museum visit.