

Emotional Salience Across the Life-Span

Introduction

Death is clearly an essential aspect of being human. Could an acceptance of this fact be a dignified, fulfilling experience, *colored* by a joyful feeling of completion? Or rather, to express the question negatively, is it possible to die without an overwhelming sense of despair over one's end, and without anguish over lost opportunities and mistakes? Both cross-sectional and longitudinal studies illustrate, that despite a subjective feeling of closeness to death, deterioration of health, and rising mortality of friends and relatives, older adults do not report a decrease in positive affect or an increase in negative affect. Moreover, despite serious age-normative losses, empirical studies show that life satisfaction is maintained throughout the life-span, and that with increasing age, we experience negative emotions less frequently (Lawton, Kleban, & Dean, 1993; Carstensen, Pasupathi, Mayr, & Nesselroade, 2000; Charles, Reynolds, & Gatz, 2001), and positive emotions as often or slightly more frequently (Carstensen et al., 2000; Mroczek & Kolarz, 1998). Socioemotional selectivity theory (Carstensen, Isaacowitz, & Charles, 1999) posits that positive experience is maintained in the face of death as greater maturity encourages a more positive emotional experience of events and of life in general, either through a more skillful reappraisal of events, a conscious improvement in emotion regulation, or a subconscious avoidance of negative information. More specifically, researchers find that young adults tend to focus on and remember negatively valenced information better than older adults. A recent study (Charles, Mather, Carstensen, 2003) discovered age differences in memory for emotionally valenced slides from the International Affective Picture System (Ito, Cacioppo, & Lang, 1998), a set of pictures with established emotional valence ratings. Participants of different ages viewed 32 slides and then performed a recall and a recognition task. As expected, when compared to young adults, older adults displayed deficits in memory in these tasks across all images. These deficits however, were almost entirely attenuated in recall and recognition of positive images. This illustrates that at the end of life, our memory is proportionally more focused on positive information.

To examine this phenomenon further, I would like to consider the role of a generally negative versus positive gist of events on these age-related changes in memory, as well as the role of central versus peripheral details on memory for emotional information. Would a generally positive framework of information further eliminate age-related deficits in memory? Moreover, would age differences in memory be more significant in peripheral or central information? To address these questions, this summer we invented four stories that differentiate between central and peripheral information in positive, negative, and neutral stories (Appendix A). Some stories were generally positive, and some were generally negative; it is important to know, however, that all stories were balanced to contain equal amounts of positive and negative information. There were two distinct narratives, each one having a positive and a negative version. I will ask 50 older adults and 50 young adults to read two of these stories, a positive and a negative one, and then to administer a recognition task, to see which aspects of the story they remembered (Appendix B). This recognition task will differentiate between the above-mentioned types of emotional information. Our hypotheses are that older adults will remember relatively less information in the negative story than in the positive story. Within both positive and negative stories, young adults will remember relatively more negative information than positive information, when compared to older adults; and this age difference will be greatest for peripheral, rather than central information.

There is an additional exploratory aspect of the study. When participants complete the newspaper-related component of the experiment, they will look at four emotionally ambivalent

pictures and compose stories about what they see. These pictures were obtained from the Thematic Apperception Test (Murray, 1943). This standardized test has been used for over 60 years in both research and clinical settings. Participants will be asked to make up stories that have a beginning, a middle and an end, and these invented stories will be tape recorded, and later analyzed for presence words of different emotional valence with the help of LIWC2001 (Linguistic Inquiry and Word Count, James Pennebaker). After inventing each story, participants will rate emotions they feel regarding each picture on an Emotional Response Scale (Appendix C). Researchers find that emotional experience of adults is more complex because they are more likely to feel a simultaneous mix of positive and negative emotions than younger adults. Therefore, we predict that older adults will endorse feeling a greater number of different emotions than younger adults. We also predict that stories composed by older adults will contain a greater emotional mix and include less negative and more positive information, than those authored by younger participants.

Method

Two newspaper stories will be administered to 100 participants: 50 young adults, 18-28 years of age, and 50 older adults, 65 years of age and older. Participants will have 20 minutes available after they finish reading. Unrelated surveys will be passed out during this time. First, subjects will report some basic demographic information (e.g. ethnicity, age, gender, years of education, occupational status, and marital status). We will also assess health status, mental health, cognitive abilities, depressive symptoms, and personality. These filler questionnaires will be used as covariates in analyses because these factors influence emotional experience and memory.

Twenty minutes after participants read the two stories, we will administer a corrected recognition task comprised of true or false questions. These questions will determine how well participants of different ages remember central and peripheral information of different emotional valence within positive and negative contexts. After completing the newspaper-related component of the experiment, participants will look at four emotionally ambivalent pictures and compose a story about what they see in each picture. Specific instructions, which were slightly modified from the Thematic Apperception Test instruction manual, are:

“I am going to show you four pictures, one at a time. Look at each picture and create a story that has a beginning, middle, and an end. Tell what led up to the event shown in the picture, describe what is happening at the moment, what the characters are feeling and thinking, and then give an outcome.”

Participants will also report discreet emotions they are feeling after inventing each story.

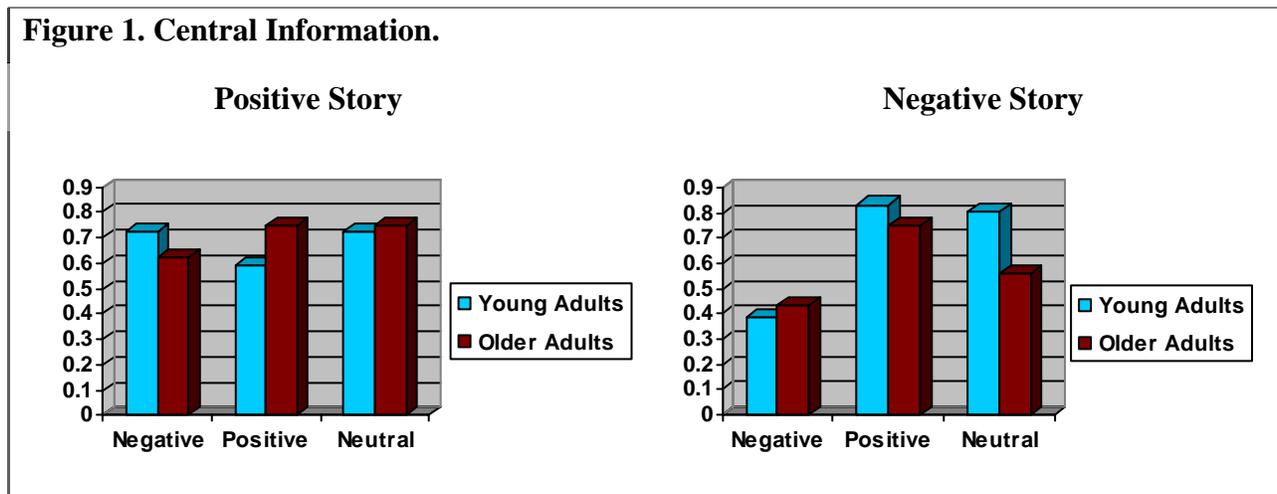
To recruit young participants, we plan to post and hand out advertisements for the study throughout UCI campus and local community college campuses. We will also e-mail this information to UCI faculty and staff through the Social Ecology Dean’s office. For a memory test, a population of full-time college students may not be generalizable to a population of all young adults, because a student’s memory is often in a test-taking mode. It would be unacceptable to compare their memory to that of older adults, who might take tests infrequently. To eliminate this problem, the sample of young adults will be drawn from staff members and part-time students of UC Irvine and nearby community colleges. To conserve resources, nine young adult participants for the pilot study were full-time UC Irvine students, recruited with the help of Social Science Lab Subjects Pool. To recruit elderly people, we will call a set of participants who consented to be contacted for possible future participation in Dr. Charles’s previous studies, post flyers around the community, and post an advertisement in the Laguna Woods Newspaper. Interested people will call our laboratory to schedule an interview. One

hundred participants will be interviewed individually, and each participant will receive \$30 in compensation for 1.5 hours of his or her time.

Pilot Study Results

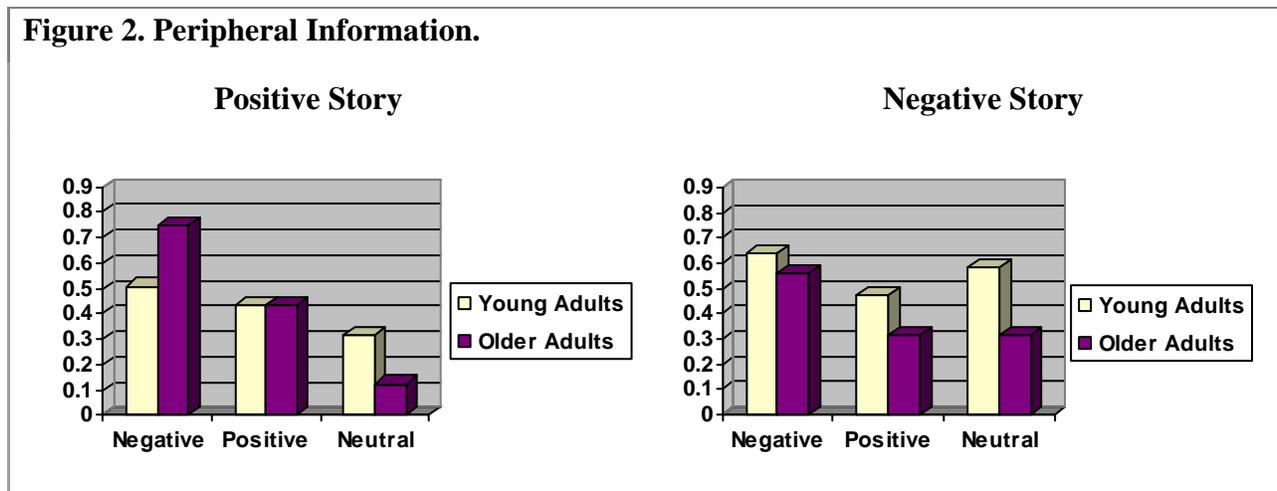
Mean corrected recognition scores were compared between nine UC Irvine students and four older adults in the community. Due to a very small sample size, these results are not statistically significant. Data collected for positive and negative central information within a positive framework suggests the hypothesized trend, where older adults focused somewhat less on the negative information, and somewhat more on the positive information than young adults did. Differences in results for the negative story are too small to be considered for now. It is interesting that both young and older adults seem to focus more on positive information, when the general gist of the story is negative.

Figure 1. Central Information.



Results for peripheral information are more puzzling. Pilot study data seem to suggest different trajectories for memory of central versus peripheral information in people of different ages. It would be interesting to discover differences between these two trajectories when statistically significant results are available.

Figure 2. Peripheral Information.



Student's Responsibilities

Data Collection

- ♦ Recruiting participants through newspaper ads, fliers, phone calls.
- ♦ Scheduling and running 100 participants.

- ♦ Copying measures and consent forms
- ♦ Explaining and administering newspaper stories, measures, and pictures.

Data Coding

- ♦ Entering data.
- ♦ Transcribing tape-recorded material.

Data Analyses

Presenting the study's findings at the UCI Undergraduate Research Symposium

- ♦ Oral PowerPoint presentation.

Writing a final paper for possible publication in The UCI Undergraduate Research Journal

Timeline

Fall Quarter

- ♦ November-December: Continue data collection.

Winter Quarter

- ♦ January-February: Complete data collection; transcribe taped recordings; data entry; preliminary data analyses.
- ♦ March: Final data analyses

Spring Quarter

- ♦ April: Begin working with Dr. Charles on a final paper to be possibly published in a professional psychology journal.
- ♦ May: Complete a PowerPoint presentation to display the results of the study at the UCI Undergraduate Research Symposium.
- ♦ June: Submit a final paper for possible publication in The UCI Undergraduate Research Journal.

Itemized Budget

Item	Cost
100 participants will be compensated \$30 for 1.5 hours of their time.	\$3 000
Parking fee: \$5 compensation for subjects who elect to participate in our lab, rather than their home. Most likely, about half of participants will choose to do this. These subjects will be non-UCI affiliated young adults (staff and part-time students from nearby community colleges) and some older adults.	\$250
Copying fees for measures (23 pages per packet, at \$.05 cents per page)	\$115
Tapes	\$5
Total	\$3370 minus \$2370* = \$1000

* I received \$2500 SURP fellowship this summer. Approximately \$150 was used to run participants in the pilot study. The rest of the fellowship, as well as some of my personal money will be used to cover research expenses.

References

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Appendix A

ON A LIGHTER NOTE....

Frolicking Polar Bear Stumbles Upon Submarine

A polar bear made friends with a National Geographic submarine researching global warming off the coast of northern Alaska. Dr. Ronald Millfin and his research team were collecting images and samples of icebergs when, coming to the surface near the coastline, they shattered a piece of ice on which a polar bear was resting. A female polar bear with a distinctive dark mark on her left ear was first angered by this disturbance, but also curious of this stranger. She investigated the deck by sniffing and pawing the submarine, but seemed especially amused by the periscope. For an hour, the research team and sailors enjoyed watching the polar bear with her newfound toy. At sea for two months, the crew welcomed this diversion. "The morale was quite low on the submarine because we've been away from our families for so long, but the bear lifted our spirits. We all just fell in love with her," said navigator Jim Johnson, "I think we had as much fun laughing at the bear, as the bear had playing with the periscope!"

In her exploration, the polar bear bit off a piece of the periscope. She then tried to gnaw on the remainder that was still attached to the submarine. Within the next few minutes, the bear became less playful. She grew noticeably wary of the submarine and researchers began to worry about the bear's health and the periscope piece that was still lying on the ground. They wanted to send a team to collect it, but unfortunately no one was trained in working around wild animals or in veterinary medicine. Millfin ordered the submarine to depart immediately.

After hearing the report of this journey, National Geographic and several federal government agencies, the main sources of funding, were pleased with the research data collected. However, they were also concerned about the disruption of the habitat and the health of the polar bear. Many people were upset with Millfin's insensitivity about possible negative consequences of his visit. Millfin was chastised for not remaining in the area longer to retrieve the debris after the bear's departure. Millfin defended his decision, stating, "A submarine is very expensive to operate. Each passing hour costs taxpayers thousands of dollars."

Last week, and four months after the submarine's visit, National Geographic requested that Alaska Wildlife Rescue and Rehabilitation Sanctuary dispatch a helicopter to locate the

debris and to report on the health of the bear. The mission was lead by Pilot Michael Stone, and was fortunate to include veterinarian Nina Gelfind, famous for her legendary success in difficult surgery situations. It was hoped that Dr. Gelfind's presence would ensure the bear's healing in case the periscope caused an injury. The helicopter crew found a polar bear with the same distinctive dark mark on her left ear playing happily with two baby cubs.

After landing, the helicopter crew retrieved the ice-covered periscope. They also found an unexpected and positive result of the submarine's visit. By shattering a piece of ice on which the polar bear was resting, the submarine had inadvertently created a new fishing hole near the area that polar bears use for mating purposes. Gelfind thinks that extra fishing opportunities added a boon to a growing population of polar bears in this area. In addition, local polar bears looked healthier than they had in the past, and Gelfind believes this may increase the survival rate of cubs.

While helicopter crew was looking for the periscope, the polar bear appeared to block the way of her cubs, which headed toward the helicopter to investigate. The research team left, content that the habitat was uncontaminated and the polar bear experienced no lasting consequences except for a healthy fear of technology and a new fishing spot.

MORE BAD NEWS....

National Geographic Submarine Harms Polar Bear

A polar bear was harmed by a National Geographic submarine researching global warming off the coast of northern Alaska. Dr. Ronald Millfin and his research team were collecting images and samples of icebergs when, coming to the surface near the coastline, they shattered a piece of ice on which a polar bear was resting. A female polar bear with a distinctive dark mark on her left ear was first angered by this disturbance, but also curious of this stranger. She investigated the deck by sniffing and pawing the submarine, but seemed especially amused by the periscope. For an hour, the research team and sailors enjoyed watching the polar bear with her newfound toy. At sea for two months, the crew welcomed this diversion. "The morale was quite low on the submarine because we've been away from our families for so long, but the bear lifted our spirits. We all just fell in love with her," said navigator Jim Johnson, "I think we had as much fun laughing at the bear, as the bear had playing with the periscope!"

In her exploration, the polar bear bit off a piece of the periscope and inadvertently swallowed it. She then tried to gnaw on the remainder that was still attached to the submarine. Within the next few minutes, the bear became less playful. She grew noticeably wary of the submarine and researchers began to worry about the bear's health. They wanted to send a medical team to examine her, but unfortunately, but unfortunately no one was trained in working around wild animals or in veterinary medicine. Millfin ordered the submarine to depart immediately.

After hearing the report of this journey, National Geographic and several federal government agencies, the main sources of funding, were pleased with the research data collected. However, they were also concerned about the disruption of the habitat and the health of the polar bear. Many people were upset with Millfin's insensitivity about the possible negative consequences of his visit. Millfin was chastised for not remaining in the area longer to monitor the bear's behavior. Millfin defended his decision, stating, "A submarine is very expensive to operate. Each passing hour costs taxpayers thousands of dollars."

Last week, and two days after the submarine's visit, the National Geographic requested that Alaska Wildlife Rescue and Rehabilitation Sanctuary dispatch a helicopter to assess the environmental impact of the visit and to report on the health of the bear. The mission was lead by Pilot Michael Stone, and was fortunate to include veterinarian Nina Gelfind, famous for her legendary success in difficult surgery situations. It was hoped that Dr. Gelfind's presence would

ensure the bear's healing in case the periscope caused an injury. The helicopter crew found a polar bear with the same distinctive dark mark on her left ear laying on the ground, alone.

After landing, the team also found an unexpected and negative result of the submarine's visit. By shattering a piece of ice on which the polar bear was resting, the submarine had inadvertently disturbed a fishing hole near the area that polar bears use for mating purposes. Gelfind thinks that reduced fishing opportunities further hurt the diminishing population of polar bears in this area. In addition, local polar bears looked less healthy than they had in the past, and Gelfind believes this may decrease the survival rate of cubs.

The helicopter crew tranquilized and transported the injured polar bear to the Sanctuary for treatment. The polar bear is in critical condition. Gelfind commented, "Fortunately, we removed the periscope, but the bear was without medical aid for too long. A sharp angle of the periscope tore away at her intestines. We are afraid the damage was too great."

ON A LIGHTER NOTE....

Rain brings needed water to parched land

A storm of moderate intensity hit a local historic area last week, causing minor flooding, but bringing much needed water to a drought region. Two people witnessed the rising water, which reached but stopped short of flooding an area that includes 15 homes. The flood was highly localized within a small region, 28 miles northwest from Jefferson City, Missouri. The area is home to a small, long-standing community of farmers and cattle ranchers. The community was almost evacuated when danger of the flood became evident. No homes were flooded and, therefore no one had to use the temporary shelter provided by the American Red Cross. The town's invaluable historic landmark, one of the state's earliest one-room schoolhouse, was fortunately not damaged.

Two men who were trying to direct cattle to higher ground saw the Missouri river rising. John Edwards, 52, and Sam Carlson, 35, were hired for the summer to work for several cattle ranchers. Longtime residents of Jefferson City, they used their cellular phones to warn their wives and children about the flood. In turn, their wives, Jillian Edwards and Paula Carlson, alerted the small town of impending danger. News of the flood spread immediately, and the community was soon ready to be evacuated. Edwards and Carlson's phone-call to their families prepared a community for evacuation and helped prevent possible casualties.

"We were not prepared for how quickly the waters rose," said Thomas Smith, a local farmer whose house was closest to the flooded area. He worried about his property because it was closest to the river and in danger of flooding the most. "My wife and children were visiting family at the time the waters started rising," commented Smith, "I am thankful they didn't try to drive back. I'm glad they did not have to worry about the possible destruction of everything we have worked so hard to build."

At the peak of the flood, most residents were ready to evacuate the area. Mary Richardson, a mother of twin baby girls said, "I'm glad we were all ready to leave together when we saw that the waters were rising. It just shows how united we are as a community. My neighbors helped me with my children while my husband and I loaded the truck." Shannon Morris, a long-time resident commented, "We were prepared to leave our homes and then we saw the waters beginning to recede. My house has been in my family for 2 generations. I am overjoyed that we will be able to stay here."

The storm had eliminated this summer's big problem for these farmers - drought. "We have grown and sold wheat for generations," observed Jack Lavoie, a father of three, "It was very difficult to make ends meet, and we were in danger of bankruptcy because the awful drought almost destroyed this summer's crop. Floods were something I always feared, but this one was the answer to my prayers!" Lavoie's statement reveals the general optimistic outlook of

most farmers. Farmers note that this flood was an overwhelming compensation to their strained financial situations. Most predict that they will be able to make progress.

Seeing the successful teamwork of farmers during troubled times, nearby communities had donated money to help prevent future droughts. Farmers voted to use the money to update their aged irrigation system to modern standards. This decision narrowly outvoted a large minority of dissatisfied cattle ranchers, who wanted to use the money for purchasing better feed for the cattle.

MORE BAD NEWS....

Rain brings disaster to an already flooded land

A storm of moderate intensity hit a local historic area last week, causing major flooding, thus bringing even more water to an already flooded region. Two people were killed and 15 homes were flooded in this area. The flood was highly localized within a small region, 28 miles northwest from Jefferson City, Missouri. The area is home to a small, long-standing community of farmers and cattle ranchers. Victims from the flooded homes had to use the temporary shelter provided by the American Red Cross. The town's invaluable historic landmark, one of the state's earliest one-room schoolhouses, was fortunately not damaged.

Two men who were trying to direct cattle to higher ground drowned when their truck stalled in the rising riverbank. Adam Edwards, 52, and Sam Carlson, 35, were hired for the summer to work for several cattle ranchers. Longtime residents of Jefferson City, they used their cellular phones to warn their wives and children about the flood. In turn, their wives, Jillian Edwards and Paula Carlson, alerted the small town of impending danger. News of the flood spread immediately, and the community was soon ready to be evacuated. Edwards and Carlson's heart-breaking final good-bye to their families prepared a community for evacuation and helped prevent more possible casualties.

"We were not prepared for how quickly the waters rose," said Thomas Smith, a local farmer whose house was flooded. He lost not only his house, but also his entire crop. "My wife and children were visiting family at the time the waters started rising," commented Smith, "I am thankful they didn't try to drive back. I'm glad they did not have to worry about the destruction of everything we have worked so hard to build."

At the peak of the flood, most residents were ready to evacuate the area. Mary Richardson, a mother of twin baby girls said, "I'm glad we all decided to leave together when we saw that the waters were rising. It just shows how united we are as a community. My neighbors helped me with my children while my husband and I loaded the truck." Shannon Morris, long-time resident whose house was not affected by the flood, commented, "We were prepared to leave our homes and then we saw the waters beginning to recede. My house has been in my family for 2 generations. I am overjoyed that we will be able to stay here."

Some residents who left their homes heard that the damage is not as extensive as they had first feared. Cattle were out of harm's way because the water has not reached the ranch area. Also, the water does not appear to have damaged the foundations, and residents will eventually be able to return to their homes.

In response to the plight of these families, nearby communities have donated food and clothing. Some people have offered childcare services and temporary employment. However, the storm had intensified this summer's big problem for these farmers – flooded crops. "We have grown and sold wheat for generations," observed Jack Lavoie, a father of three, "It was very difficult to make ends meet even before the flood. Now we are in danger of bankruptcy because these awful floods destroyed this summer's crop. Floods were something I always feared, and this one was probably my last." Lavoie's statement reveals the general gloomy outlook of most

farmers. Farmers note that this flood was an overwhelming injury to their already strained financial situations, a disaster from which most will not be able to recover.

Appendix B

QUESTIONS FOR POLAR BEAR STORIES

Negative

True – Central

- Submarine crewmembers were worried about possible dangers of a periscope.
- Millfin was chastised for not retrieving the debris.
- The general public and scientific community were concerned about possible danger the periscope might cause.
- The bear became noticeably wary of the submarine after biting off the periscope.

True – Details

- Many people were upset with Millfin's insensitivity about possible negative consequences of his visit.
- The submarine first angered the polar bear.
- The morale among crewmembers was low before the submarine encountered the bear.
- Unfortunately, no one on the submarine was trained in working around wild animals.

False – Central

- Submarine crewmembers were angry at the bear for swallowing the periscope.
- Veterinarian Gelfind was angry with Captain Millfin.
- The submarine crewmembers were ashamed to disturb the bear.
- Report about submarine's effect on Alaskan wildlife became boring to the general public.

False – Details

- The polar bear showed aggression towards other polar bears.
- The scientific community was upset with Dr. Millfin's wasteful use of money.
- The polar bear was first fearful of the submarine.
- The periscope contained a dangerously amount of lead.

Positive

True – Central

- The polar bear was curious of the submarine.
- The periscope especially amused the polar bear.
- Submarine crewmembers felt affection for the bear.
- The helicopter crew included a first-rate veterinarian.

True – Details

- The scientific community was pleased with research data collected by submarine crewmembers.
- The bear's comical playfulness lifted spirits among submarine crewmembers.
- The periscope was eventually removed.
- The polar bear played with her newfound toy for a while.

False – Central

- The submarine crewmembers were relieved to leave the polar bear's habitat.
- The polar bear seemed happy to meet the submarine crewmembers.
- Millfin was amused with the public's reaction to his research.
- Researchers were instructed by National Geographic that polar bears are often interested in technology.

False – Details

- The polar bear was affectionate with veterinarian Gelfind.
- Millfin was pleased to find that the habitat was unharmed.
- The helicopter crewmembers were delighted to find the bear.

- The helicopter had inadvertently created a new mating area for polar bears.

Neutral

True – Central

- The polar bear had a distinctive mark on her left ear.
- Millfin ordered the submarine to depart soon after the bear bit off the periscope.
- The submarine shattered a piece of ice on which the polar bear was resting.
- A helicopter was dispatched to locate the bear.

True – Details

- Michael Stone was the captain of the helicopter.
- The bear tried to gnaw on the remainder of the periscope that was still attached to the submarine.
- Millfin defended his position by noting the expense of submarine operation.
- The bear sniffed and pawed the submarine deck.

False – Central

- Researchers on the submarine were investigating changes in polar bear behavior.
- The submarine encountered a group of polar bears.
- The polar bear incident allowed National Geographic to see that submarines are unsuitable for missions.
- The public concluded that more information needs to be gathered regarding polar bear habitats.

False – Details

- The bear was fishing when the submarine surfaced.
- National Geographic decided against sending an airplane to locate the bear.
- Another National Geographic submarine was stationed near Nova Scotia.
- The helicopter crew included a wildlife expert, Dr. Paul Rakim.

QUESTIONS FOR FLOOD STORIES

Negative

True – Central

- A storm caused flooding.
- The community was ready to evacuate.
- The region was experiencing problems prior to this flood.
- Farmers' financial situations were strained before the flood.

True – Details

- A farmer noted that he was not prepared for how fast the waters rose.
- The flood reached 15 homes.
- Thomas Smith's property was closest to the flooded area.
- Jack Lavoie grieved that it was very difficult to make ends meet before the flood.

False – Central

- A partisan political argument took place after the flood was reported.
- The public concluded that farmers misused communal funds, intended for flood prevention.
- Residents expressed great anger at the flood.
- Residents of a large nearby town expressed contempt because they warned farmers about the possibility of a flood.

False – Details

- A small child was in danger of drowning during the flood.
- One farmer grieved over expensive farming equipment that was damaged by the flood.
- Many paintings of a local artist became soaked with water.
- Nearby communities were frustrated with having to help the farmers.

Positive

True – Central

- Many farmers expressed pride for their excellent teamwork.
- Edwards and Carlson’s phone-call prepared farmers for evacuation and helped prevent possible future casualties.
- Nearby communities helped the farmers.
- The area’s invaluable historical landmark was not damaged.

True – Details

- Thomas Smith was thankful that his wife and children were not home to worry about the flood’s danger.
- The flood was highly localized within a small region.
- Mary Richardson was happy with the support she received from her neighbors.
- Shannon Morris was overjoyed that her family would be able continue living in their home.

False – Central

- The flood helped erode tough edges in land relief.
- The flood ensured extra financial support from the government
- Most farmers were content find out that the flood was nearing their region.
- A state-of-the-art system that is now installed, promises to prevent floods in the future.

False – Details

- The flood did not prevent farmers from offering their crops at the fair.
- Jillian Edwards and Paula Carlson were overjoyed to receive many letters of gratitude from farmers.
- Farmers were happy to find that various citrus trees received much needed irrigation.
- Shannon Morris was relieved to find that her children were safe.

Neutral

True – Central

- The flood affected an area, close to Jefferson City, Missouri.
- News of the flood spread immediately.
- The farming community was very established, with some families residing there for two generations.
- The area is home to farmers and cattle ranchers.

True – Details

- The American Red Cross provided temporary shelters.
- The storm’s strength was of moderate intensity.
- Among other crops, farmers harvested wheat.
- Some farmers were not home to witness the flood.

False – Central

- Victims were taken to a hospital.
- A nearby local town has been hosting the fair, an important revenue generator for the region.
- During the flood, the height of Missouri River broke this decade’s record.
- Farmers noted that their most valuable crop is pomegranate.

False – Details

- During the night of the flood, many residents stayed with their friends in Jefferson City.
- Residents were ready to use boats to evacuate the flooding area.
- Jack Lavoie was a father of two children.
- A population of salmon was seen moving through the nearby Missouri stream.

Appendix C

Emotional Response Questionnaire

Please rate the degree to which you felt the following emotions while looking at the picture and telling your story.

amusement	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
anger	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
arousal	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
confusion	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
contempt	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
contentment	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
disgust	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
embarrassment	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
fear	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
happiness	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
interest	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
pain	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
relief	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
sadness	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
surprise	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
tension	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>
other: _____	<u>1(not at all)</u>	2	3	4	5	6	<u>7(extremely intense)</u>