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Do You Recall Where You Where When...?: Support For Automatic Encoding of One's Location

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DO YOU RECALL WHERE YOU WHERE WHEN…?: SUPPORT FOR AUTOMATIC ENCODING OF ONE'S LOCATION

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by

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ABSTRACT

"DO YOU RECALL WHERE YOU WERE WHEN…?: SUPPORT FOR AUTOMATIC ENCODING OF ONE'S LOCATION"

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The present experiment tested whether one's personal location is automatically encoded into memory. Twenty-one groups of students were given a tour of the Marshall University campus. At each of 10 locations on the tour, participants were told an interesting fact about the University. Participants were informed of a test following the tour assessing their recall of the facts. In addition, half of the participants were also told their recall of the location at which each fact was presented would be tested. Immediately following and two weeks after the tour, participants completed a memory test which assessed their (a) recognition of having heard the information, (b) recall of the fact, and (c) memory for the location at which each fact was presented. In both immediate and delayed recall, if participants correctly recalled the fact, the probability of correctly recalling location was high regardless of whether they were or were not instructed to remember location. The results support the notion that personal location is automatically encoded.

DEDICATION

For my mom, Judy Hendricks Neal, who always believed in me. I love you.

ACKNOWLEDGMENTS

The author wishes to thank Dr. Steven Mewaldt for his endless hours of support and assistance on this research project as well as my entire academic career. Also, thank you to all the University 101 instructors and students who participated in the study. Thank you most of all to my grandparents and biggest fans, Frosty and Lillian Hendricks, for years of encouragement, patience, and understanding.

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Introduction

It is likely that at some point in your life, you have heard a song, smelled an odor, or witnessed an event that takes you back to a time and place in your past. This recall of the past, whether it be at a high school dance, a ride in the car, or a tour of a new place, is the interest of the present study. These types of memories, memory for events and experiences in your life, are referred to as episodic memory. Episodic memory is typically divided into two types, memories that require attention or effort to encode and those memories which are encoded automatically. Hasher and Zacks (1979) suggested that both frequency and location information may be automatically encoded. The present study focused on the latter of these.

Hasher and Zacks (1979) established five distinct criteria for automatic processes: (1) they transpire without intention or awareness, (2) they are not improved with instruction, practice, or feedback, (3) they make minimal demands on central processing capacity, (4) they are not affected by alterations in attentional capacity due to stress, arousal, or mood, and (5) they are developmentally invariant across age and intelligence. In other words, automatic memories require a minimal amount of our attention, function at a constant level in all circumstances, and do not interfere with other ongoing cognitive activity.

Most previous research concerning automatic encoding of location information has focused on the location of words, letters, or numbers in a matrix, on a screen, or on a piece of paper. In a study by Rothkopf (1971), participants studied one 12-page passage of text and were subsequently tested on its substantive content as well as on the location of the text on the page on which each question was based. There was no prior mention of testing for location of the information. Results indicated that the participants did have some incidental memory for the location of the information. Also, participants who were unsuccessful in recalling the

substantive content of the passage did not correctly recall the location of the information. It was suggested that participants who fail to attend to or encode portions of the text will also unsuccessfully acquire the location information.

Ellis (1990) tested participants using picture books of objects in either their natural settings or against pastel backgrounds. Each page contained four objects, one in each quadrant. Participants were tested in one of three conditions: 1) an intentional learning condition in which participants were informed they would be tested for picture location, 2) an incidental learning condition, where participants were told to remember the pictures, and 3) a true incidental condition in which participants were told the task was a study in advertising and that they were interested in pictures used in the media. Participants were asked to select the most and least likely picture on each page that would be used in the media. Memory for location was best under the true incidental conditions. Instructions to remember either location or pictures did not produce differences in participants' location accuracy. Participant's accuracy also did not improve with practice.

In a second study by Ellis (1990), participants attempted to retain sets of digits while studying picture sets in the picture book following either intentional or true incidental instructions. After determining each participant's digit span, the participants were randomly assigned to either a light or heavy memory load condition. Participants in the light load condition attempted to retain sets of digits equal to half their digit span while participants in the heavy load condition were given sets one digit less than their digit span. Participants viewed four picture sets immediately after the researcher read the last digit of a sequence. Pictures were exposed for 20 seconds. Participants were then presented with a blank page and asked to recall the digits as well as indicate the original location of the pictures on the blank page. Location

recall was not influenced by the digit task. The only significant effect was due to instruction. Memory for location was found to be superior in the true incidental group.

Ellis (1990) presented participants with posters of four objects. The objects were depicted either by a photograph or a colored line drawing. In both the true incidental and intentional instructed conditions, participants were told to select the object on each poster they judged as the most useful in their daily lives. Participants in the intentional instructed condition were also informed of the location memory test. Study time for the intentional instructed participants was longer than for the true incidental participants, but memory for location did not improve. Ellis suggests that if the amount of time spent studying reflects the participants' use of strategies to remember the location, the strategies were unsuccessful in enhancing memory for location above that resulting from automatic encoding.

Park and James (1983), however, provide mixed results for automatic encoding. They presented first, third, and fifth graders with line drawings of simple objects. Each participant was individually presented with eight slides for study. Each picture was mounted on the left or right side of a large index card. All the children were told that they would see some pictures and were instructed to try to remember each of them. One quarter of the children were assigned to the items-only condition and were instructed to remember only the items in the pictures. The second group was instructed to remember the item as well as its position; the third group, to recall the item and its color; and the fourth group, the item, color, and spatial location. Results indicated that memory for color improved with participant’s intention to learn the information. In addition, contrary to automatic encoding predictions, position memory improved with age. Position information, even without intention, was well remembered and recall of position was unaffected by intention once participants began attending to color.

Mandler, Seegmiller, and Day (1977) presented participants with a matrix of 36 locations (6 x 6) on a table top. Sixteen easily identifiable small toys were randomly assigned to 16 locations with the restriction that no more than 4 were used in any given row and that 4 locations occur within each quadrant of the matrix. Participants studied the matrix for 40 seconds then wrote down as many of the items as they could recall. Participants then attempted to reconstruct the matrix from memory by placing the objects in the original locations. A second study was employed, identical to the first except the study time for the matrix was increased to 60 seconds. They found that location memory was affected by intention, participant age, and individual differences, suggesting that memory for location is an effortful process. However, an object was more likely to be correctly placed if it had been recalled than if it had not been recalled. The data also indicated that almost as much spatial information was retained when it was not attended to as when it has been deliberately processed. A comparison of adult performance across the two experiments showed that when study time increased, there were no overall differences in recall of the item, but there was an increase in correct placement of objects. This increase was a result of participants in the intentional condition correctly placing four more objects in the second experiment than in the first. Adults showed a significant loss in the incidental conditions relative to intentional conditions compared to the children.

Ellis, Katz, and Williams (1990) presented preschool, first, third, and sixth graders with a picture book of colored photos of common objects against their natural backgrounds. Four pictures were mounted in a two-page area, one centered in each quadrant. Participants looked through the picture book at their own pace and named each picture aloud. Half of the participants were informed they would be tested for the location of pictures on the page with no mention of having to recall names of the pictures (intentional condition). The remaining half

were told they would be asked to name as many pictures as they could with no mention of having to recall the location (incidental condition). After presenting each participant with the picture book, the participants attempted to free recall the names of the pictures for two minutes and were then tested for location memory. Results found that older children recalled more pictures and their locations than the younger children. All significant effects were created by low performance of 3- and 4-year-old children. After excluding eight of the participants who did not exceed chance performance in location recall, seven in the incidental condition and one in the intentional condition, no differences in recall were found due to instructions.

In a second experiment, Ellis et al (1990) presented second and sixth graders, college students, elderly, and mildly retarded individuals with the same picture books but with 20 additional pictures from the same source. Half of the participants (incidental condition) were instructed to name each picture and were told they would ultimately be asked to recall the names of the pictures. The remaining half of the participants (semantic incidental condition) were instructed to name each picture and the object's function. There was no mention of a memory test for the semantic incidental condition. The mean number of pictures recalled for the semantic incidental condition was 17.0 and for the incidental instructions, 15.6. Fifty pictures were correctly located following semantic incidental instructions, 47.9 for the incidental instructions. Results found a significant difference for all comparisons except between the mentally retarded and elderly groups as well as between the mentally retarded and sixth graders. Participants in the semantic incidental instructions correctly recalled and located more pictures than the incidental instructed participants.

Overall, instruction effects concerning location were present only in the 3- and 4-year old participants. Researchers suggested either these participants did not understand the instructions

or that automatic processes had not yet developed in some of the children. Researchers concluded that processing of location does not vary with age in normal persons beyond the 3- or 4-year age, nor does it vary with intelligence level. They concluded that "the encoding of location is a primitive process in the evolution of cognition, maturing early and functioning optimally throughout the life span in the normally healthy organism."

Herman, Kolker, and Shaw (1982) transformed a school gym or recreational hall into a model town with seven distinct cardboard buildings of different shapes and colors. Kindergarteners and third graders were participants and were tested individually. Each child was taken to the beginning of the road where on top of a table were each of the seven buildings. The child was asked to name each building. If the child was unable to name the buildings, the researcher named and labeled each building for the child. After the child identified each of the buildings, the child's back was turned to the town while the buildings were placed correctly in the layout of the town. Half of the children were instructed to remember the names of the buildings (incidental condition) while the other half were instructed to remember the names as well as the location of the buildings (intentional condition). Each participant either looked at the town, rode through the town in a wagon pulled by a researcher, or walked through the town with a researcher. Following this task, the buildings were removed from their locations in the town and placed on the table in random order. The participant was then asked to place the buildings at the location in which it had been in the town.

Placement accuracy improved with increasing motor activity for only the youngest children. Older children were more accurate in the stand and ride conditions than were the younger children. Also, increasing motor involvement with the environment induced older

children to recall spatial locations in the sequence in which the locations were encountered. There was no difference between the intentional and incidental memory tasks.

As we can see, researchers remain divided on this phenomenon and the data are not conclusive. Some studies support the automatic encoding of location information while others do not. It should be noted that the reported results are based on recall of the location of words, photographs, or objects in a matrix or on a piece of paper. In the present study, on the other hand, it is suggested that automatic processing might be more likely in the processing of one's own personal location. More specifically, in this study, I tested whether people automatically encode their own location while learning specific facts that were presented in different locations. Students in 21 University 101 classes at Marshall University were given a standard campus tour during which general information as well as several specific facts about Marshall were interspersed. Eleven of the classes were instructed to remember each specific fact and the locations at which they heard them, while the other ten classes were only instructed to remember the specific facts. Each class was tested both immediately following the tour and two weeks later. It was predicted that if personal location is encoded automatically, participants would recall a greater number of locations than would be predicted by chance. It was hypothesized that participants in both the informed and uninformed conditions would recall their location equally well. Furthermore, it was assumed that memory for location would be a relatively short-term phenomenon. If so, participants should perform poorly during the delayed testing of location memory.

Method

Participants

Two hundred-fifty students in 21 University 101 classes at Marshall University served

as participants. There were a total of 114 males and 136 females ranging in age from 18 to 46 in the first part of the study with most participants being under 21 years of age. There were 100 males and 112 females who completed the second part of the study. University 101 is a seminar created for new students as an introduction to college life designed to assist students in adjusting to the academic and social environment of college. Given that University 101 is an orientation seminar, a campus tour is typically a fundamental part of the course curriculum and therefore it provided a natural setting for conducting the study.

Materials

Two tour routes (A and B) were created, each visiting 10 different locations. General information about each building visited on the tour was obtained from the Marshall University website and is located in Appendix A. Twenty facts of varying interest about the university were selected for presentation on the tours. Ten of these were employed on each route. The 10 facts for each route were randomized into four distinct orders. Therefore, while all participants who received a particular tour route (A or B), visited the same locations in the same order, the facts presented at those locations differed for different groups. The tour routes and fact sequences are displayed in Appendix B.

The memory test instrument consisted of 20, three-part questions which satisfy APA ethical guidelines. Part A of each question tested the participants' recognition of having been told the information, Part B tested recall of the fact, and Part C tested memory for the location at which the fact was presented. For example, the following question was taken from the Day 1 Route A memory test:

a. Do you remember hearing about the year Marshall University was founded? **Y N**

b. What was the year? _____

c. Where were you when you heard this information? _____

Ten of the questions tested recall of information that was actually presented during the tour and 10 were foil items testing recall of similar plausible information which was not presented during the tour. These questions were used to determine the participants' ability to distinguish between presented and non-presented information. Complete initial and follow-up memory tests for Routes A and B are displayed in Appendix C.

While the fact sequences given during the tour were randomized, the order of the questions remained constant on the memory test. To aide in scoring consistency, an alphabetical list of 20 campus locations (located in Appendix D) was provided to the participants along with the memory test. To aide in the participants' recall, a campus map (located in Appendix D) was also provided.

Design

The experiment employed a 2 × 2 × 2 × 4 × 2 factorial design with four between-subject factors and one within-subject factor. Between-subject factors were: (1) whether participants knew or did not know they would be tested for location (Informed or Uninformed), (2) which tour route they received (A or B), (3) sex, and (4) the order in which the facts were presented (Sequences 1-4). The within-subject factor was the time of the memory test (immediately and two weeks after the tour).

Procedure

Prior to the start of the tour, all participants were given an example of the type of facts they would hear and were informed of the memory test that would be distributed immediately following the tour. Furthermore, half of the classes were told to remember the specific facts presented (Uninformed Condition) while the remaining classes were told to remember both the specific facts and the locations at which they heard each fact (Informed Condition). The detailed

instructions can be found in Appendix E. Each group spent approximately 55 minutes participating in the study. The first 15 minutes were used to explain the study and distribute consent forms. The actual tour took approximately 30 minutes, and the last 10 minutes were used to administer the memory test. Eleven of the classes were tested in the morning while the remaining ten were tested in the afternoon.

Each group of students was given a tour of the Marshall University Huntington campus. Each tour consisted of stops at a total of 10 locations. At each location, the building was identified, and the students were given general information about the particular building as well as a specific fact about Marshall University which was unrelated to the location. While outside the Morrow Library, for example, participants were told that Morrow Library is a federal depository for Government Documents with a collection of over one million items and that the university testing center is located in the basement of the library (general information). Participants were also told that the Marshall Artist Series (MAS) is the second oldest "town and gown" cultural program in the country (specific fact).

Ten of the classes were assigned to the Uninformed Condition and eleven were assigned to the Informed Condition. The Informed Condition was asked to remember the specific facts presented as well as the specific location where each fact was presented. The Uninformed Condition was only instructed to remember the specific facts. Following the tour, both the Informed and Uninformed participants were tested using the same instrument. Two weeks following each initial tour, the participants were given a follow-up memory test similar to the previous memory test, randomized with 10 new foils.

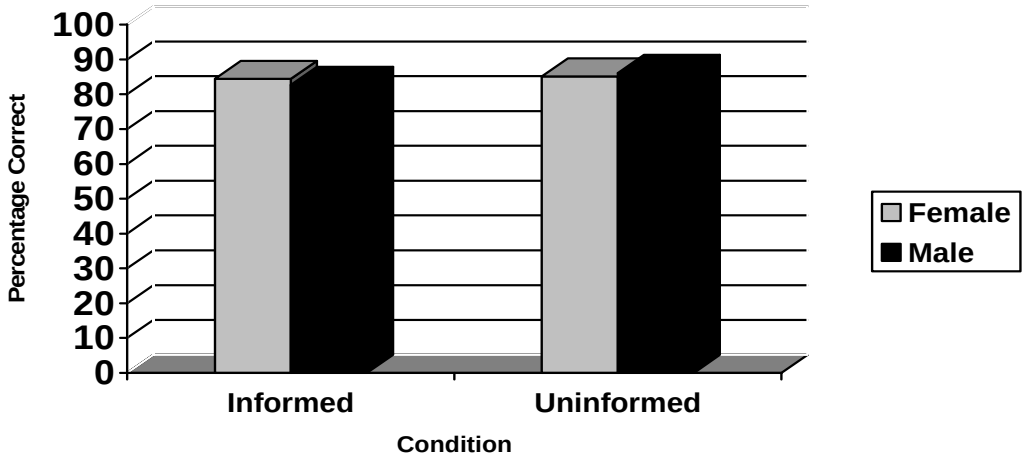
Results

The results for real items for each day and question type were analyzed with a separate 2 (Condition) × 2 (Sex) × 2 (Route) × 4 (Order) × 2 (Testing Date) univariate analysis of variance.

Day 1

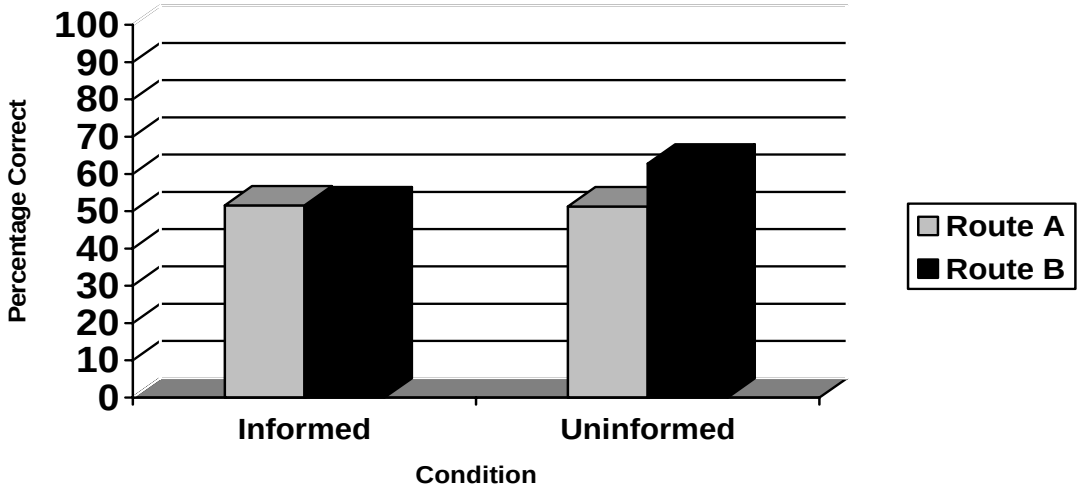
Analysis of Part A of each question, which tested each participant's recognition of having heard the fact on the tour, revealed no significant effects or interactions, $p > .1$ in all cases. Participants, on average, correctly recognized having heard 84% of the facts. These results are displayed in Figure 1.

Figure 1. Recognition of Having Heard the Fact - Day 1



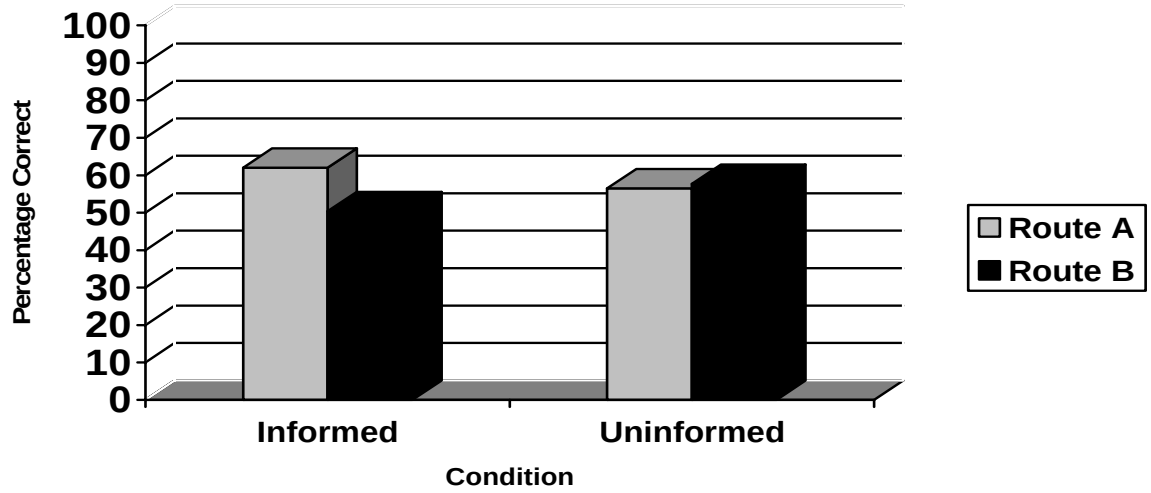
Analysis of Part B of each question which tested participant's recall of each fact, revealed a significant main effect for condition, $F(1, 249) = 5.57$, MSe = 23.6, $p < .05$. There was also a significant main effect for route, $F(1, 249) = 4.64$, MSe = 19.7, $p < .05$. However, these results must be interpreted in light of the significant interaction between condition and route, $F(1, 249) = 6.17$, MSe = 26.2, $p \leq .01$. These results are displayed in Figure 2. As is apparent in the figure, for some unknown reason, recall was better for the uninformed route B groups than for other participants.

Figure 2. Recall of Fact - Day 1



Part C of each question tested participant recall of the location at which each fact was presented. Participants, on average, correctly recalled 57% of the locations which greatly exceeds chance levels of 2%. Analysis of these items revealed a significant interaction between condition and route, $\underline{F}(1, 249) = 3.81$, $MSe = 22.3$, $\underline{p} \leq .05$. These results are displayed in Figure 3.

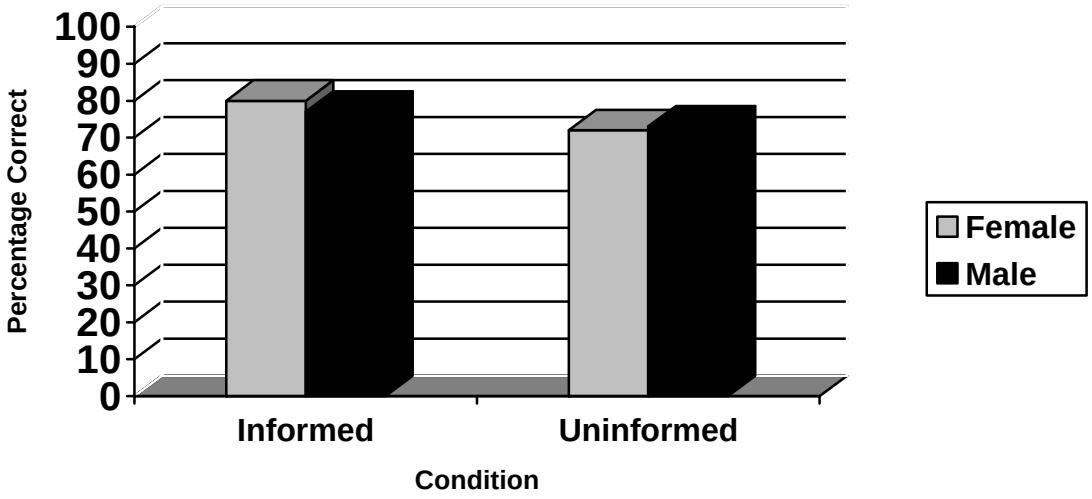
Figure 3. Recall of Location - Day 1



The percentage of time participants who correctly recalled the location (Part C) also correctly recognized having heard the fact (Part A) was computed. For both Day 1 and Day 2, as one might expect, all participants who correctly recalled the location also correctly recognized having heard the corresponding fact.

We also asked, when the location was correctly recalled, what percentage of the time did the participant also correctly recall the fact. In other words, what percentage of times did participants who correctly recalled the location (Part C) also correctly recall the corresponding fact (Part B). On average, 70% of the times participants correctly recalled the location, they also correctly recalled the corresponding fact. See Figure 4 for more details.

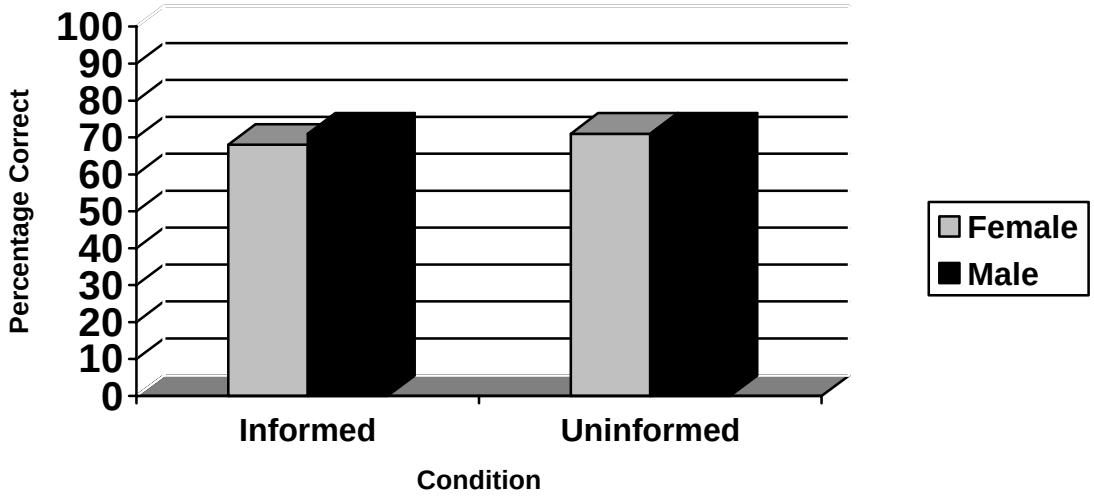
Figure 4. Percent Recall of Fact Occurs with Correct Recall of Location - Day 1



A slightly different question was when the fact was correctly recalled, what percentage of the time did the participant also correctly recall the location. In other words, we calculated the percentage of times participants correctly recalled the fact (Part B) that they also correctly recalled the location at which the fact was presented (Part C). Overall, 76% of the time that

participants correctly recalled the fact, they also correctly recalled the location. These data, separated by condition and sex, are presented in Figure 5.

Figure 5. Percent Recall of Location Occurs with Correct Recall of Fact - Day 1



To evaluate the relationship between location order and recall, we calculated performance as a function of serial position for Routes A and B collapsed across the different fact sequences. As can be seen in Figures 6 and 7, recall of facts and locations follow the same pattern and produced a basically flat serial position curve with no primacy or recency effect. Finally, we looked at the relationship between specific facts and recall of the corresponding locations collapsed across sequences. The data for Day 1 is presented in Figures 8 and 10, where it can be seen that, in general, the level of recall of location corresponds strongly with the level of recall of the related fact.

Figure 6. Serial Position - Day 1 - Route A

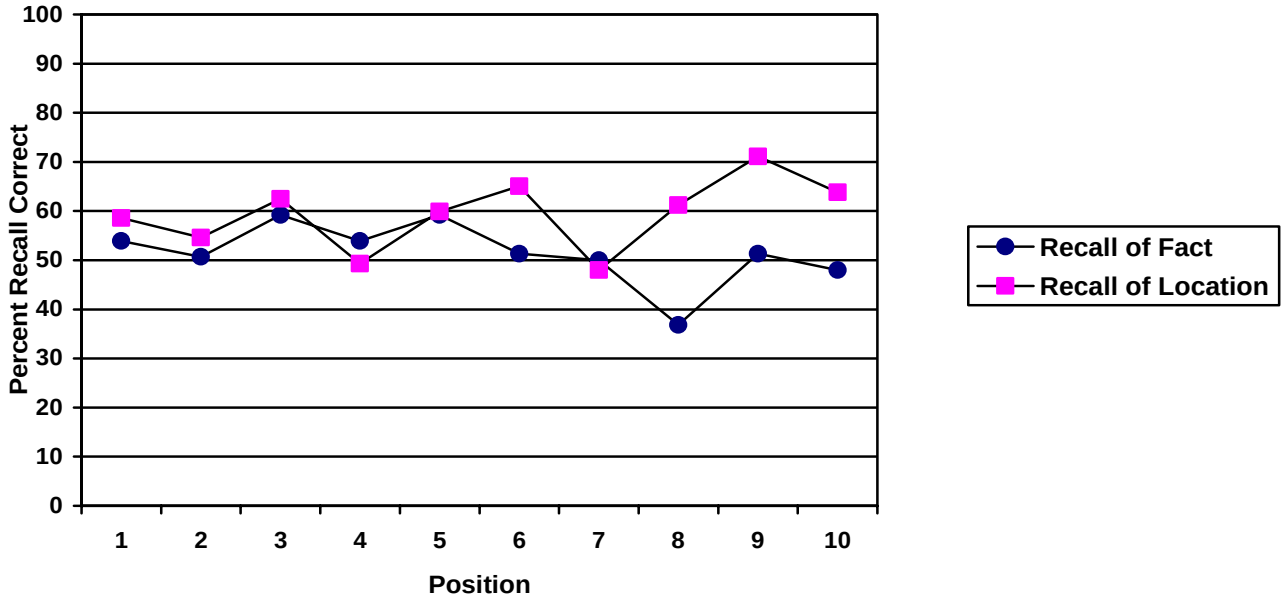


Figure 7. Serial Position - Day 1 - Route B

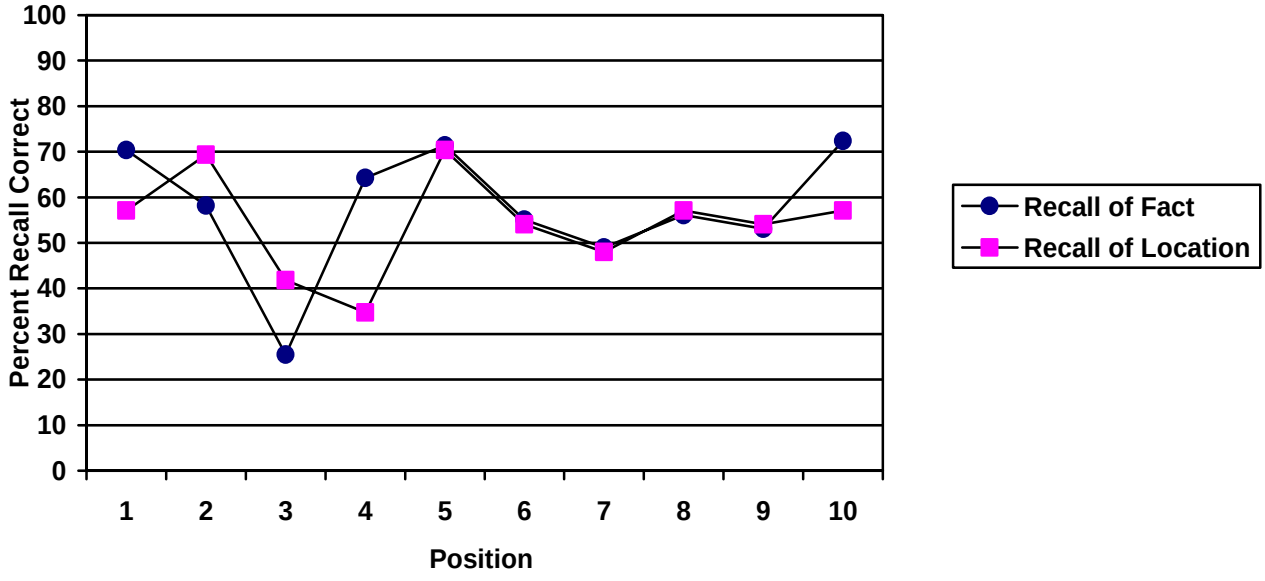


Figure 8. Percent Correct Recall of Fact and Location
Day 1 - Route A

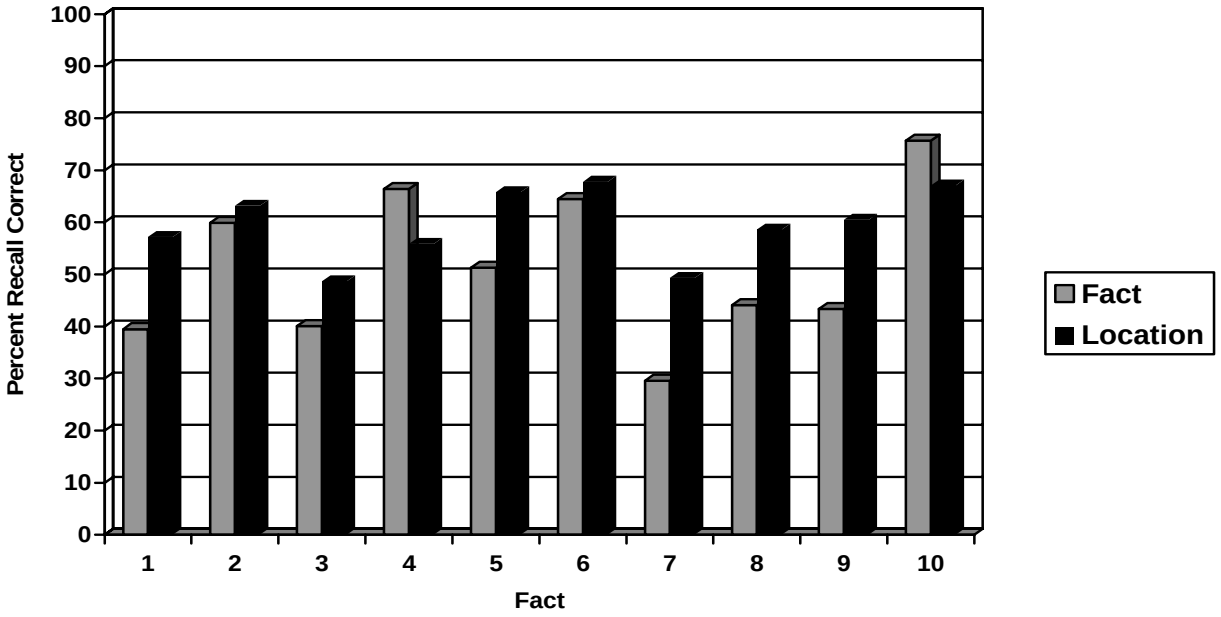


Figure 9. Percent Correct Recall of Fact and Location
Day 2 - Route A

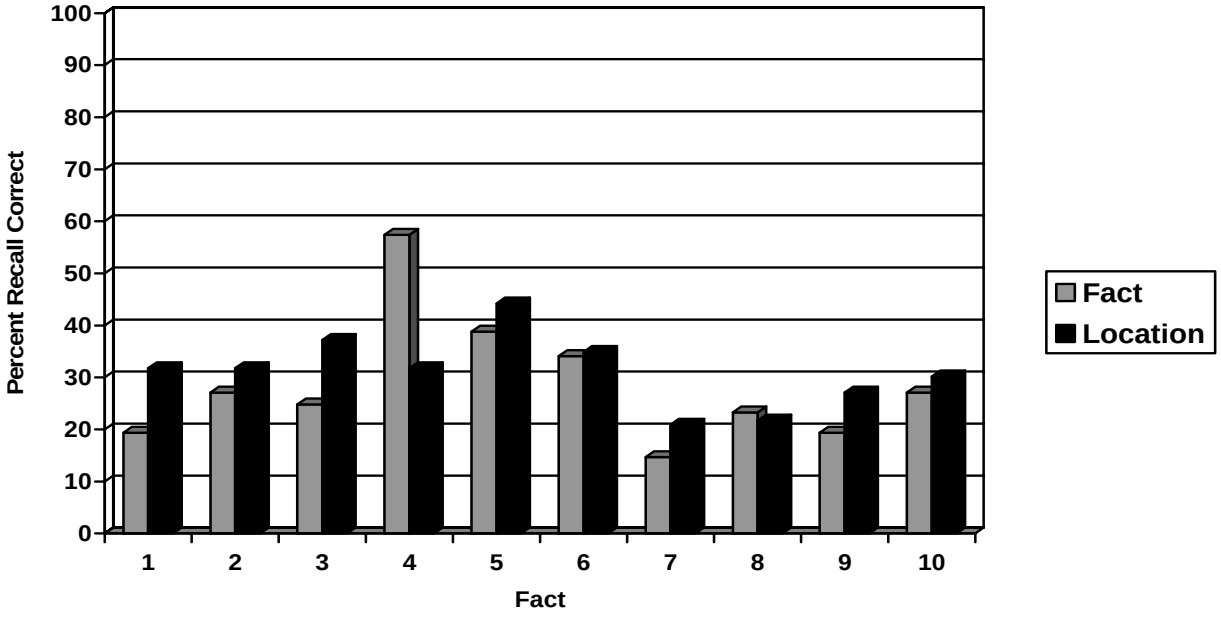


Figure 10. Percent Correct Recall of Fact and Location
Day 1 - Route B

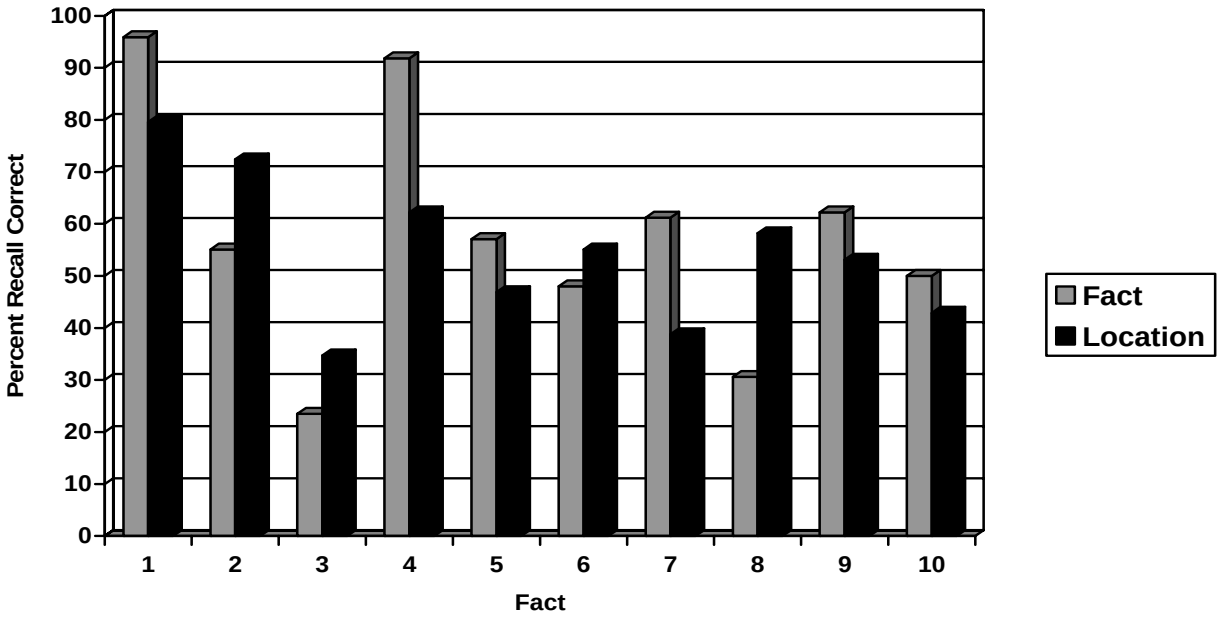
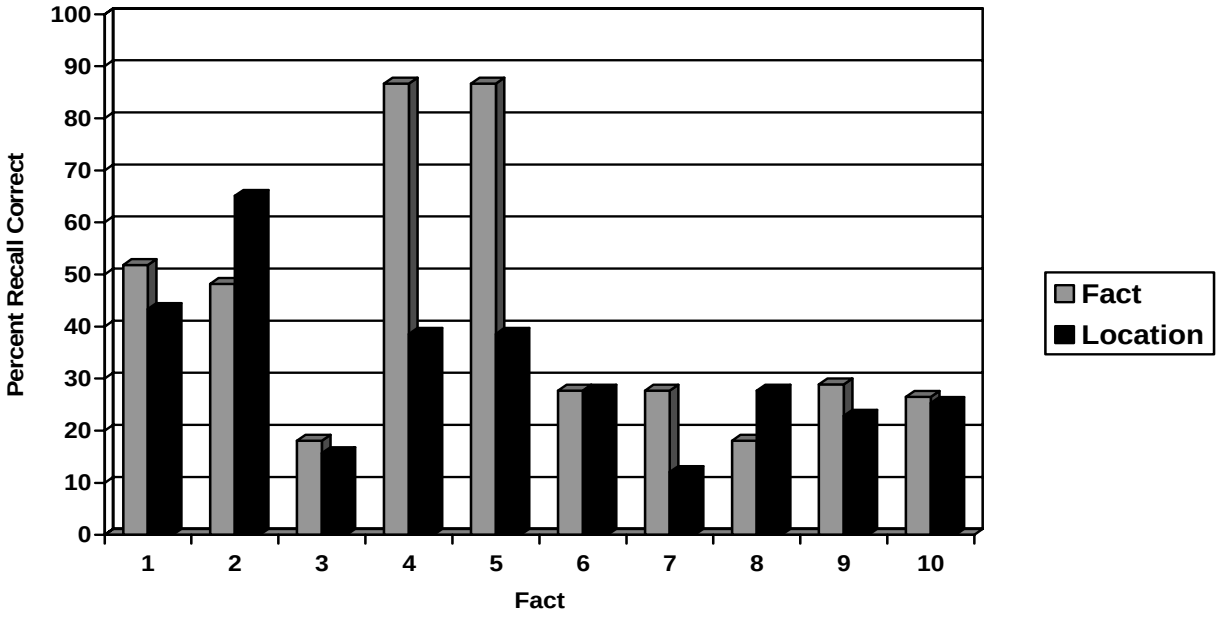


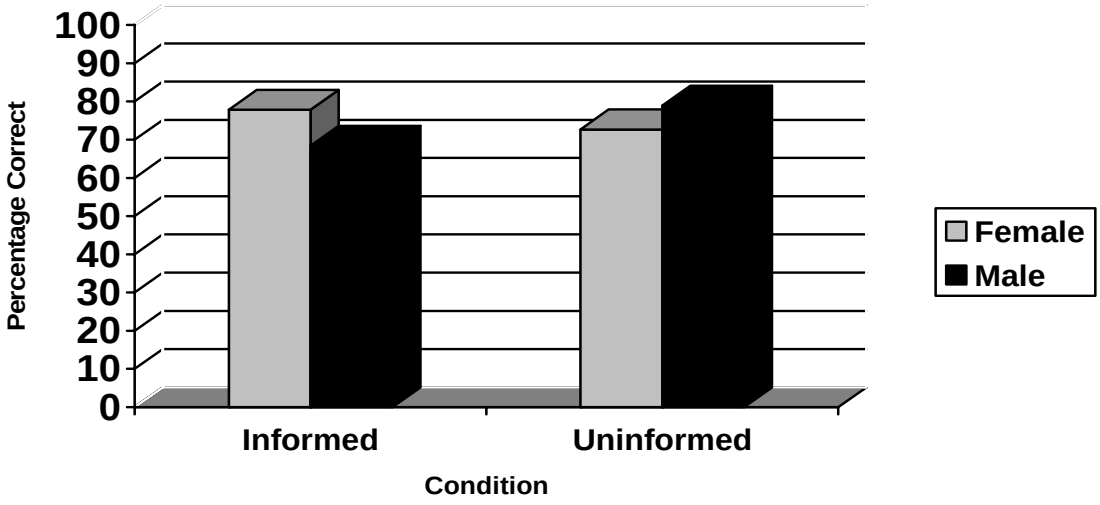
Figure 11. Percent Correct Recall of Fact and Location
Day 2 - Route B



Day 2

Analysis of performance on Part A of each question revealed a significant interaction between condition and sex, $\underline{F}(1, 211) = 6.38$, MSe = 24.6, $\underline{p} < .05$. This interaction is displayed in Figure 12. There was also a significant interaction between route and sex in recognition of the fact, $\underline{F}(1, 211) = 7.75$, MSe = 29.8, $\underline{p} < .01$. Of the participants receiving Route A, females correctly recognized an average of 7.69 facts while males recognized an average of 6.88 facts correctly. Of the participants receiving Route B, females correctly recognized having heard an average of 7.10 facts while males correctly recognized having heard an average of 7.94 facts.

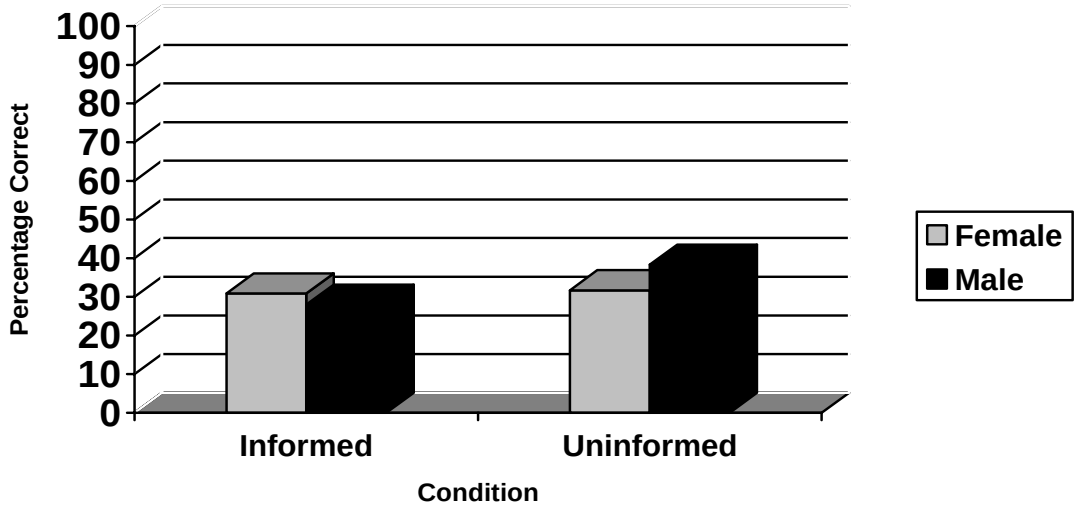
Figure 12. Recognition of Having Heard the Fact - Day 2



As on Day 1 of testing, recall of the fact (Part B) on Day 2 of testing produced a significant main effect for route, $\underline{F}(1, 211) = 7.73$, MSe = 30.7, $\underline{p} < .01$. Participants who received Route A correctly recalled an average of 2.86 of the ten facts while participants who received Route B recalled an average of 3.65 facts correctly. Furthermore, the effect of condition approached significance and deserves to be mentioned, $\underline{F}(1, 211) = 3.70$, MSe = 14.7,

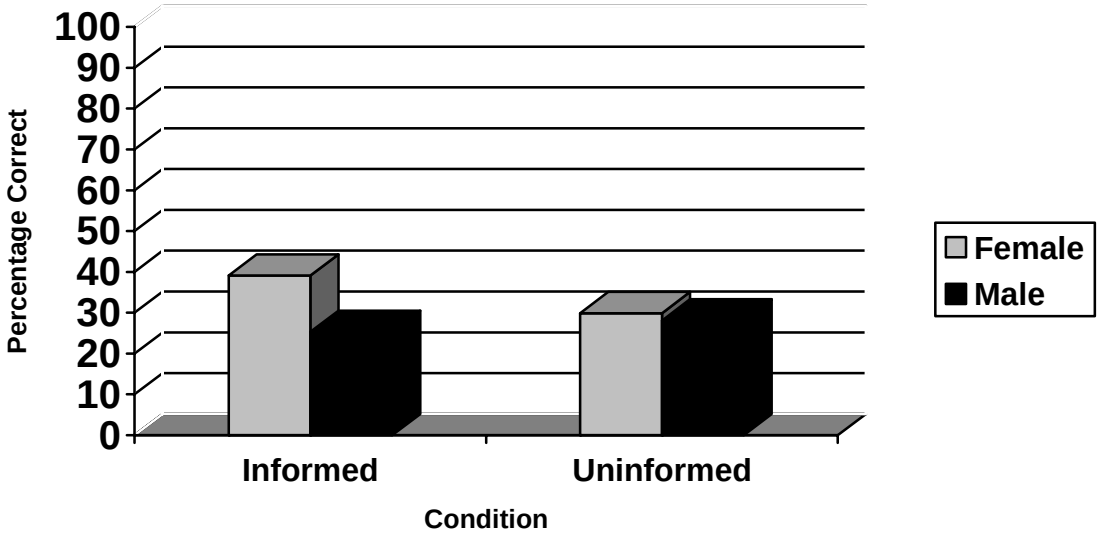
$p < .06$. Participants in the uninformed condition correctly recalled a mean of 3.39 facts while the informed condition recalled an average of only 2.93 facts correctly (see Figure 13).

Figure 13. Recall of Fact - Day 2



Analysis of Part C revealed a significant main effect for sex, $F(1, 211) = 6.22$, MSe = 31.7, $p \leq .01$. Females correctly recalled a mean of 3.39 locations while males correctly recalled a mean of 2.64 locations. These results are displayed in Figure 14.

Figure 14. Recall of Location - Day 2



As with the Day 1 data, we calculated the percentage of times participants who correctly recalled the location (Part C) also correctly recalled the corresponding fact (Part B). In the informed condition, 54% of the time when participants correctly recalled the location, they also correctly recalled the corresponding fact. In the uninformed condition, 57% of the time participants correctly recalled the location, they also correctly recalled the corresponding fact.

We also calculated the percentage of times participants who correctly recalled the fact (Part B) also correctly recalled the corresponding location at which the fact was presented. In the informed condition, 58% of the time participants correctly recalled the fact, they also correctly recalled the location while in the uninformed condition, 48% of the time participants correctly recalled the fact, they also correctly recalled the location.

Finally, as with the Day 1 data, we examined recall of facts and location as a function of serial position and found flat curves similar to those presented in Figures 6 and 7, and we examined recall of facts and locations as a function of the specific facts. These data for this

second relationship are presented in Figures 9 and 11 which were placed on pages 17 and 18 with the Day 1 data to make comparison easier.

Discussion

On Day 1 and Day 2 testing, both the informed and uninformed condition participants recalled location information well above chance levels. In addition, on both days, there was no significant difference between the informed and uninformed conditions for recall of location. These results meet two of Hasher and Zacks' (1979) criteria for automaticity: (1) Automatic memories transpire without intention or awareness. The uninformed participants encoded location information without intention to do so. (2) Automatic memories are not improved with instruction, practice, or feedback. In the present study, the informed participants, with intention to encode location information, did not perform significantly better than the uninformed participants.

The data further provides some support for Hasher and Zacks' (1979) third criteria for automaticity: (3) Automatic processes make minimal demands on central processing capacity. On Day 1, uninformed participants performed significantly better than the informed participants on recall of the fact. It is possible that the uninformed participants were consciously attending more closely to the facts thereby increasing recall of the facts, but this did not impair their recall of location. The informed and uninformed participants performed equally well on recall of location. In other words, even if the uninformed participants were using strategies to encode the facts, they still recalled location information equally well as the informed participants.

Participants in both the informed and uninformed conditions who correctly recalled location (Part C) also correctly recalled the fact (Part B) 72% of the time on Day 1 and 56% of the time on Day 2. Participants in both the informed and uninformed conditions who correctly

recalled the fact (Part B) also correctly recalled the location (Part C) 78% of the time on Day 1 and 73% of the time on Day 2. These results do not suggest whether correctly recalling the facts contributed to recalling the location or whether correctly recalling the location contributed to recall of the facts. However, the fact that the serial position curves were basically flat suggests that no location was remembered particularly differently from the others and the corresponding recall of facts is similarly flat. On the other hand, as Figures 8-11 indicate, when a fact was well recalled, the corresponding location was also generally well remembered and vice versa. These data suggest that it is the fact that triggers recall of location and not the reverse. Future research could examine this further by employing a post-test questionnaire to distribute after completion of Day 2 testing. This questionnaire should address each participant's strategy or process (if any) in answering each question. For example, participants could be asked to indicate whether having recalled the fact assisted in recalling location and vice versa. Another question might ask whether or not the participant attempted to use strategies to encode the information, and if so, what kind of strategies did they use and were they ultimately helpful. In any case, these results do indicate that the likelihood of correctly recalling the location increased with correct recall of the fact and vice versa.

As one might expect, 100% of the time, recall of the location at which a fact was presented depended on recognition of having heard the fact. In addition, on Day 1, approximately 75% of the time, if the participant correctly recalled the answer to a factual question, they also recalled where they learned the information. This means that approximately 25% of the time, when a participant could recall having heard a fact, but could not recall the information, they could still recall where the information was presented. It is appears that even when participants were unable to recall a fact because they were not actively processing or

encoding details of the information, they were still automatically encoding the location information.

In terms of route assignment, it was found that, on average, participants receiving Route B consistently recalled more facts than Route A participants. It is worth noting that regardless of route assignment, the most highly recalled facts on Day 1 testing were also generally the most highly recalled on Day 2 testing. Likewise, in general, the most poorly recalled facts on Day 1 of testing remained so on Day 2 of testing. It is suggested that the facts assigned to Route B were more interesting than the facts assigned to Route A. For example, one fact assigned to Route B was that the average freshman score on the ACT is 21.7. This was well recalled on both Day 1 and Day 2 testing. See item 1 in Figures 9 and 11. It is likely that the participants, who were all freshmen, consciously thought about their own ACT score in relation to the average ACT score, making the fact more meaningful and thereby more memorable to participants. Another fact, assigned to Route B, which was highly recalled on both Day 1 and Day 2 of testing was that Bilbo and Frodo are the names of Marshall's main computers. See item 2 in Figures 9 and 11. This is most likely do to an association to the movie, *The Lord of the Rings*, which portrayed two characters named Bilbo and Frodo. At the time of the study, this movie was quite popular and familiar to many people. It is likely that participants who correctly recalled the names on Day 1 retained the information as a result of the association to the movie for recall in Day 2 testing. In contrast, Route A participants heard facts concerning the number of Marshall University graduates and the name of the former student union. Ultimately, it seems as though the facts assigned to Route A were less personally meaningful to the participants than were the facts Route B participants received. These differences may account for the recall differences

between Route A and B participants. To control for this in future studies, the items could be pre-tested for memorability.

In conclusion, participants recalled a greater number of locations than was predicted by chance regardless of instruction. Efforts by the informed participants to encode location information was ultimately ineffective in increasing recall of the information, i.e., informed and uninformed participants recalled location equally well suggesting that encoding of personal location information is an automatic process. Furthermore, contrary to earlier predictions, because the same pattern of results was observed in testing immediately and two-weeks following the tour, it would appear that the effect of the automatic processing of location was not a short-term effect.

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Appendix A

Chronological list of general facts paired with Route A locations.

1. Community and Technical College
   - This building has three laboratory classrooms on the first floor and houses the University's Academic Support Center.

2. Harris Hall
   - This four-story building houses the departments of classical studies, geography, history, religious studies, philosophy, psychology, counseling and rehabilitation, adult and technical education, and administrative education.

3. Science Building
   - The Science Building includes animal quarters, a greenhouse, and a chemical storage building on the east side.

4. Morrow Library
   - Morrow Library is a federal depository for Government Documents with a collection of over one million items. The University Testing Center is located in the basement of the library.

5. Smith Hall
   - Classes in this building include art, math, criminal justice, communication disorders, sociology, anthropology, and journalism. The WPBY satellite antenna sits atop the building.

6. Old Main
   - This is the oldest building at Marshall University. Old Main is actually five buildings joined together in a series of additions constructed between the years 1868 and 1908. Its towers have become the symbol of the university to alumni.

7. Drinko Library
   - There is a 24-hour reading room/computer lab with computer consultation stations and assistive technology. The Drinko Library has study rooms, conference collaboration rooms, and an auditorium.

8. MSC Plaza
   - This fountain was designed with 75 points at the top, each representing a life taken in the 1970 Marshall Football plane crash.

9. Twin Towers
   - Twin Towers West for women and East for men. Some floors are designated No Tobacco living units as well as floors designated Quiet areas. A cafeteria, which connects the Towers, is located on the first floor.

10. Cam Henderson Center
    - Special features include a 10,000+-seat basketball arena, four secondary basketball courts, racquetball courts, training rooms, weight rooms, locker rooms, and meeting rooms.

Chronological list of general facts paired with Route B locations.

1. Buskirk Hall
    - Buskirk Hall, a six-story women's residence with a capacity of approximately 250 women, is accessible to people with disabilities, and the ground level floor offers additional special facilities for physically challenged residents.

2. Center for Academic Excellence
    - In this building is Marshall University's Honors program offering challenging Honors courses in a small class setting, personalized advising, travel opportunities, and social and cultural activities.

3. Birke Art Gallery
    - The Birke Art Gallery is located on the first floor of Smith Hall. The gallery is free for students and the public. It is open from 10 a.m. to 4 p.m. Monday through Friday and Monday night from 7 to 9 p.m. Exhibits run for three-week periods.

4. Music Library
    - The Music Library provides resources and information services to support the University's programs in music and music education, as well as serving music reference and research needs for the University and local community.

5. Ashland Commons
    - Ashland Inc. donated $100,000 to redesign the university's central plaza, and in 2000, it was renamed Ashland Commons as part of the Celebration of Academics and Drinko Honors Convocation.

6. Bookstore
    - The bookstore sells textbooks, snacks, cards, Marshall University merchandise and a variety of other items to the campus. Visitors can also purchase items online through the Bookstore's web site.

7. Campus Christian Center
    - The building contains a chapel, conference rooms, fellowship hall and kitchen, lounge, office space for campus ministers, workshop rooms, and the Stewart H. Smith religious library.

8. Holderby Hall
    - The eighth floor is a special Academic Community Environment which helps students maintain or improve their academic performance. Living areas on the ground level floor offer additional special facilities for physically challenged male residents. A cafeteria is located on the first floor.

9. Gullikson Hall
    - This three-story facility contains classrooms, offices, a gymnasium seating 250, a health center, dance studio, rifle range, steam room, and first-aid laboratory.

10. Fitness Center
    - The center contains: cardiovascular equipment, including treadmills, stair climbers, and cycles; selectorized weight machines and an extensive selection of free weights, racks, and benches.

Appendix B

Chronological list of specific fact sequences paired with Route A locations.

Table 1. Tour Route A Locations.

Locations A
1. Community and Technical College
2. Harris Hall
3. Science Building
4. Morrow Library
5. Smith Hall
6. Old Main
7. Drinko Library
8. MSC Plaza
9. Twin Towers
10. Cam Henderson Center

Fact Sequence Al

1. Leann Parsley, Olympic silver medalist, was a MU attendee and basketball player.
2. MU gained university status in 1961.
3. The Marshall Artist Series (MAS) is the second oldest "town and gown" cultural program in the country.
4. MU has a nationally recognized program for learning disabled students called HELP.
5. Dustin Hoffman studied for his role in *Rainman* at Marshall University.
6. 55% of all four-year undergraduate students are female.
7. The old student union was called Shawkey.
8. ODK, a national leadership honorary, funded a plaque commemorating the beech tree in 1957.
9. Joe Johns, NBC White House Correspondent, is an MU graduate.
10. MU currently has over 80,000 graduates.

Fact Sequence A2

1. Joe Johns, NBC White House Correspondent, is an MU graduate.
2. Dustin Hoffman studied for his role in *Rainman* at Marshall University.
3. ODK, a national leadership honorary, funded a plaque commemorating the beech tree in 1957.
4. The Marshall Artist Series (MAS) is the second oldest "town and gown" cultural program in the country.
5. 55% *of* all four-year undergraduate students are female.
6. Leann Parsley, Olympic silver medalist, was a MU attendee and basketball player.
7. MU has a nationally recognized program for learning disabled students called HELP.
8. MU gained university status in 1961.
9. MU currently has over 80,000 graduates.
10. The old student union was called Shawkey.

Fact Sequence A3

1. 55% of all four-year undergraduate students are female.
2. The Marshall Artist Series (MAS) is the second oldest "town and gown" cultural program in the country.
3. MU gained university status in 1961.
4. Joe Johns, NBC White House Correspondent, is an MU graduate.
5. Leann Parsley, Olympic silver medallist, was a MU attendee and basketball player.
6. MU has a nationally recognized program for learning disabled students called HELP.
7. MU currently has over 80,000 graduates.
8. The old student union was called Shawkey.
9. Dustin Hoffman studied for his role in *Rainman* at Marshall University.
10. ODK, a national leadership honorary, funded a plaque commemorating the beech tree in 1957.

Fact Sequence A4

1. 55% of all four-year undergraduate students are female.
2. The old student union was called Shawkey.
3. MU currently has over 80,000 graduates.
4. The Marshall Artist Series (MAS) is the second oldest "town and gown" cultural program in the country.
5. MU has a nationally recognized program for learning disabled students called HELP.
6. Dustin Hoffman studied for his role in *Rainman* at Marshall University.
7. ODK, a national leadership honorary, funded a plaque commemorating the beech tree in 1957.
8. Leann Parsley, Olympic silver medallist, was a MU attendee and basketball player.
9. MU gained university status in 1961.
10. Joe Johns, NBC White House Correspondent, is an MU graduate.

Chronological list of specific fact sequences paired with Route B locations.

Table 2. Tour Route B locations.

Locations B
1. Buskirk Hall
2. Center for Academic Excellence
3. Birke Art Gallery
4. Music Library
5. Ashland Commons
6. Bookstore
7. Campus Christian Center
8. Holderby Hall
9. Gullikson Hall
10. Fitness Center

Fact Sequence B1

1. The average freshman score on the ACT is a 21.7.
2. The Marshall main computers are named Bilbo and Frodo and they make up Hobbit.
3. The MU Student Activities Programming Board was rated the second best in the nation by the March 2002 Campus Activities Magazine.
4. A 1937 flood covered the entire campus except for Old Main.
5. Marshall University was founded in 1837.
6. WMUL, our radio station, operates from 6 am to 3 am daily.
7. Marshall is the most handicap accessible campus in the state.
8. Professor Jean E. Smith was a Pulitzer Prize Finalist in the Biography Division.
9. Minorities comprise 6% of the MU student body.
10. A computer science degree is offered in four different colleges.

Fact Sequence B2

1. A 1937 flood covered the entire campus except for Old Main.
2. The Marshall main computers are named Bilbo and Frodo and they make up Hobbit.
3. The MU Student Activities Programming Board was rated the second best in the nation by the March 2002 Campus Activities Magazine.
4. Marshall is the most handicap accessible campus in the state.
5. WMUL, our radio station, operates from 6 am to 3 am daily.
6. A computer science degree is offered in four different colleges.
7. Marshall University was founded in 1837.
8. Minorities comprise 6% of the MU student body.
9. Professor Jean E. Smith was a Pulitzer Prize Finalist in the Biography Division.
10. The average freshman score on the ACT is a 21.7.

Fact Sequence B3

1. Minorities comprise 6% of the MU student body.
2. WMUL, our radio station, operates from 6 am to 3 am daily.
3. Professor Jean E. Smith was a Pulitzer Prize Finalist in the Biography Division.
4. Marshall University was founded in 1837.
5. A computer science degree is offered in four different colleges.
6. The Marshall main computers are named Bilbo and Frodo and they make up Hobbit.
7. The MU Student Activities Programming Board was rated the second best in the nation by the March 2002 Campus Activities Magazine.
8. The average freshman score on the ACT is a 21.7.
9. Marshall is the most handicap accessible campus in the state.
10. A 1937 flood covered the entire campus except for Old Main.

Fact Sequence B4

1. The MU Student Activities Programming Board was rated the second best in the nation by the March 2002 Campus Activities Magazine.
2. The Marshall main computers are named Bilbo and Frodo and they make up Hobbit.
3. A computer science degree is offered in four different colleges.
4. Marshall University was founded in 1837.
5. The average freshman score on the ACT is a 21.7.
6. A 1937 flood covered the entire campus except for Old Main.
7. Professor Jean E. Smith was a Pulitzer Prize Finalist in the Biography Division.
8. WMUL, our radio station, operates from 6 am to 3 am daily.
9. Marshall is the most handicap accessible campus in the state.
10. Minorities comprise 6% of the MU student body

Appendix C

Memory Test 1: Instrument used to test memory for Day 1, Route A. **1-LocA_____**

Memory Test **Date:_____**

Thank you for agreeing to fill out this memory test. Each question consists of three parts. For Part A, please circle **Y** for yes and **N** for no. Parts B and C require a written response. Try your best to fill-in every possible blank and leave the surveys with your tour guide on the way out.

Age: _____ **Gender:_____** **Number Sequence:_____**

1. a. Do you remember hearing about the year Marshall gained university status? **Y N**
   b. What was that year? _____
   c. Where were you when you heard about this information?_____

2. a. Do you remember hearing the statistics about alcohol consumption by males on MU's campus? **Y N**
   b. What is the average number of drinks consumed per week? _____
   c. Where were you when you heard this information? _____

3. a. Do you remember hearing about Marshall's famous "town and gown" cultural program? **Y N**
   b. What is this program called? _____
   c. Where were you when you heard this information? _____

4. a. Do you remember hearing about an Olympic silver medalist that played basketball here at Marshall? **Y N**
   b. What is this athlete's name? _____
   c. Where were you when you heard this information? _____

5. a. Do you remember why 5th Ave. is in the Guinness Book of World Records? **Y N**
   b. What is this reason?_____
   c. Where were you when you heard this information? _____

6. a. Do you remember hearing about an NBC national news correspondent that was a Marshall alumnus? **Y N**
   b. What was this person's name? _____
   c. Where were you when you heard about this information?_____

7. a. Do you remember hearing about the 1982 Marshall University quiz team? **Y N**
   b. What award did they receive? _____
   c. Where were you when you heard this information? _____

8. a. Do you remember talking about Marshall University's first football game at the new stadium? **Y N**
   b. What team did we play? _____
   c. Where were you when you heard about this information?_____

9. a. Do you remember talking about a plaque the student organization ODK funded commemorating a specific plant in 1957? **Y N**
   b. What specific type of plant was this?_____
   c. Where were you when you heard this information? _____

10. a, Do you remember hearing that last year's SGA election were marred by scandal? **Y N**
   b. What was this scandal? _____
   c. Where were you when you heard this information? _____

11. a. Do you remember hearing about the quantity of flowers on campus? **Y N**
   b. How many are planted annually?_____
   c. Where were you when you heard this information? _____

12. a. Do you remember hearing about an actor who studied for his role in *Rainman* at Marshall? **Y N**
   b. What was this actor's name?_____
   c. Where were you when you heard this information?

13. a. Do you remember talking about the Center for International Programs? **Y N**
   b. What faculty member supports this program? _____
   c. Where were you when you heard this information?_____

14. a. Do you remember hearing about the state-champion speech and debate team? **Y N**
   b. Where is their office on campus?_____
   c. Where were you when you heard this information? _____

15. a. Do you remember hearing that Marshall has a significant number of graduates? **Y N**
   b. What was this number?_____
   c. Where were you when you heard about this information? _____

16. a. Do you remember hearing about a famous concert cellist who attended MU? **Y N**
   b. What was this person's name?_____
   c. Where were you when you heard this information? _____

17. a. Do you remember hearing the name for the old student union? **Y N**
   b. What was that name?_____
   c. Where were you when you heard this information?_____

18. a. Do you remember hearing that a certain percentage of the undergraduate population is female? **Y N**
    b. What percentage of the undergraduate population is female? _____
    c. Where were you when you heard this information? _____

19. a. Do you remember hearing about the MU Newman Center? **Y N**
    b. What does the center house?_____
    c. Where were you when you heard this information? _____

20. a. Do you remember hearing that MU has a nationally recognized program for learning disabled students? **Y N**
    b. What is this program called? _____
    c. Where were you when you heard this information? _____

Memory Test 2: Instrument used to test memory for Day 2, Route A. **2-LocA____**

Memory Test **Date:_____**

Thank you for agreeing to fill out this memory test. Each question consists of three parts. For Part A, please circle Y for yes and N for no. Parts B and C require a written response. Try your best to fill-in every possible blank and leave the surveys with your tour guide on the way out.

Age:_____ Gender: _____ Number Sequence:_____

1. a. MU has a nationally recognized program for learning disabled students? **Y N**
   b. What is this program called? _____
   c. Where were you when you heard this information? _____

2. a. Do you remember hearing about an NBC national news correspondent that was a Marshall alumnus? **Y N**
   b. What was this person's name? _____
   c. Where were you when you heard about this information? _____

3. a. Do you remember hearing about the MU Newman Center? **Y N**
   b. What does the center house? _____
   c. Where were you when you heard this information? _____

4. a. Do you remember hearing that a certain percentage of the undergraduate population is female? **Y N**
   b. What percentage of the undergraduate population is female? _____
   c. Where were you when you heard this information?_____

5. a. Do you remember hearing about the 1982 Marshall University quiz team? **Y N**
   b. What award did they receive? _____
   c. Where were you when you heard this information? _____

6. a. Do you remember why 5^{h} Avenue is in the Guinness Book of World Records? **Y N**
   b. What is this reason? _____
   c. Where-were you when you heard this information? _____

7. a. Do you remember hearing about Marshall's famous "town and gown" cultural program? **Y N**
   b. What is this program called? _____
   c. Where were you when you heard this information? _____

8. a. Do you remember hearing that last year's SGA election was marred by scandal? **Y N**
   b. What was this scandal? _____
   c. Where were you when you heard this information? _____

9. a. Do you remember hearing about an actor who studied for his role in *Rainman* at Marshall? **Y N**
   b. What was this actor's name? _____
   c. Where were you when you heard this information? _____

10. a. Do you remember talking about the Center for International Programs? **Y N**
    b. What faculty member supports this program? _____
    c. Where were you when you heard this information?_____

11. a. Do you remember hearing that Marshall has a significant number of graduates? **Y N**
    b. What was this number? _____
    c. Where were you when you heard about this information?_____

12. a. Do you remember talking about a plaque the student organization ODK funded commemorating a specific plant in 1957? **Y N**
    b. What specific type of plant was this? _____
    c. Where were you when you heard this information? _____

13. a. Do you remember hearing about the state-champion speech and debate team? **Y N**
    b. Where is their office on campus? _____
    c. Where were you when you heard this information?_____

14. a. Do you remember hearing about the year Marshall gained university status? **Y N**
    b. What was that year? _____
    c. Where were you when you heard about this information?_____

15. a. Do you remember hearing the statistics about alcohol consumption by males on MU s campus? **Y N**
    b. What is the average number of drinks consumed per week?_____
    c. Where were you when you heard this information? _____

16. a. Do you remember hearing the name for the old student union? **Y N**
    b. What was that name?_____
    c. Where were you when you heard this information?_____

17. a. Do you remember hearing about a famous concert cellist who attended MU? **Y N**
    b. What was this person's name?_____
    c. Where were you when you heard this information?_____

18. a. Do you remember hearing about an Olympic silver medalist that played basketball here at Marshall? **Y N**
    b. What is this athlete's name?_____
    c. Where were you when you heard this information? _____

19. a. Do you remember hearing about the quantity of flowers on campus? **Y N**
    b. How many are planted annually? _____
    c. Where were you when you heard this information? _____

20. a. Do you remember talking about Marshall University's first football game at the new stadium? **Y N**
    b. What team did we play? _____
    c. Where were you when you heard about this information? _____

Memory Test 1: Instrument used to test memory for Day 1, Route B. **1-LocB_____**

Memory Test **Date: _____**

Thank you for agreeing to fill out this memory test. Each question consists of three parts. For Part A, please circle Y for yes and N for no. Parts B and C require a written response. Try your best to fill-in every available blank and leave the surveys with the tour guide on your way out.

Age:_____ Gender: _____ Number Sequence: _____

1. a. Do you remember hearing that a professor here at MU was a Pulitzer Prize Finalist in the Biography Division? **Y N**
   b. What is this professor's name? _____
   c. Where were you when you heard this information? _____

2. a. Do you remember hearing the year Marshall University was founded? **Y N**
   b. What was this year? _____
   c. Where were you when you heard this information?_____
   _____

3. a. Do you remember hearing how many accidents were on 3rd and 5th Avenues in the 2001-2002 school year? **Y N**
   b. What was this number? _____
   c. Where were you when you heard this information? _____

4. a. Do you remember hearing that Marshall's chemical building has a special safety feature? **Y N**
   b. What is this safety feature?
   c. Where were you when you heard this information? _____

5. a. Do you remember hearing WMUL's hours of operation? **Y N**
   b. What are those hours? _____
   c. Where were you when you heard this information? _____

6. a. Do you remember hearing that a MU Theater production was cancelled due to a power outage? **Y N**
   b. What was the name of this production?
   c. Where were you when you heard this information? _____

7. a. Do you remember hearing the average freshman score on the ACT? **Y N**
   b. What is the average score? _____
   c. Where were you when you heard this information? _____

8. a. Do you remember hearing about a 1937 natural event that affected nearly all of campus?
Y N
b. What was this event? _____
c. Where were you when you heard this information? _____

9. a. Do you remember hearing that the College of Science was recently given a grant to study a disease? **Y N**
b. What was this disease? _____
c. Where were you when you heard this information? _____

10. a. Do you remember hearing that Bill Cosby performed in the Huntington area?
Y N
b. What was the name of the building at which he performed? _____ _____
c. Where were you when you heard this information? _____

11. a. Do you remember hearing that a MU student organization was ranked second in the nation by the March 2002 Campus Activities Magazine? **Y N**
b. What is this student organization?
c. Where were you when you heard this information?

12. a. Do you remember hearing about the names for Marshall's main computers? **Y N**
b. What were their names? _____
c. Where were you when you heard this information? _____

13. a. Do you remember hearing that the Marshall Artist Series is chiefly divided into two different sub-series? **Y N**
b. What are these sub-series? _____
c. Where were you when you heard this information? _____

14. a. Do you remember hearing that a certain degree is offered in four different colleges? **Y N**
b. What is this degree? _____
c. Where were you when you heard this information? _____

15. a. Do you remember hearing where the next MU sponsored blood drive will be held?
Y N
b. Where will this even be held? _____
c. Where were you when you heard this information? _____

16. a. Do you remember hearing the amount of time the average MU student spends watching TV? **Y N**
b. What is the amount of time spent watching television?_____
c. Where were you when you heard this information? _____ _____

17. a. Do you remember hearing that Marshall's campus was ranked best among state higher educational institutions on a certain characteristic? **Y N**
    b. What was this characteristic? _____
    c. Where were you when you heard this information? _____

18. a. Do you remember hearing whom the Student Senate named December Teacher of the Month? **Y N**
    b. What was this teacher's name? _____
    c. Where were you when you heard this information? _____

19. a. Do you remember hearing that a certain percentage of the student body is comprised of minority students? **Y N**
    b. What is this percentage?_____
    c. Where were you when you heard this information? _____

20. a. Do you remember hearing how many Yeager Scholars are on campus? **Y N**
    b. What is this number? _____
    c. Where were you when you heard this information? _____

Memory Test 2: Instrument used to test memory for Day 2, Route B. **2-LocB____**

Memory Test **Date: _____**

Thank you for agreeing to fill out this memory test. Each question consists of three parts. For Part A, please circle Y for yes and N for no. Parts B and C require a written response. Try your best to fill-in every available blank and leave the surveys with the tour guide on your way out.

Age:_____ Gender:_____ Number Sequence: _____

1. a. Do you remember hearing that Marshall's campus was ranked best among state higher educational institutions on a certain characteristic? **Y N**
   b. What was this characteristic? _____
   c. Where were you when you heard this information? _____

2. a. Do you remember hearing about the names for Marshall's main computers? **Y N**
   b. What were their names? _____
   c. Where were you when you heard this information? _____

3. a. Do you remember hearing how many Yeager Scholars are on campus? **Y N**
   b. What is this number?_____
   c. Where were you when you heard this information? _____

4. a. Do you remember hearing that a MU Theater production was cancelled due to a power outage? **Y N**
   b. What was the name of this production? _____
   c. Where were you when you heard this information? _____

5. a. Do you remember hearing that a certain percentage of the student body is comprised of minority students? **Y N**
   b. What is this percentage? _____
   c. Where were you when you heard this information? _____

6. a. Do you remember hearing that Marshall's chemical building has a special safety feature? **Y N**
   b. What is this safety feature? _____
   c. Where were you when you heard this information? _____

7. a. Do you remember hearing that a MU student organization was ranked second in the nation by the March 2002 Campus Activities Magazine? **Y N**
   b. What is this student organization? _____
   c. Where were you when you heard this information? _____

8. a. Do you remember hearing that a certain degree is offered in four different colleges?
Y N
b. What is this degree? _____
c. Where were you when you heard this information? _____

9. a. Do you remember hearing that the Marshall Artist Series is chiefly divided into two different sub-series? **Y N**
b. What are these sub-series? _____
c. Where were you when you heard this information?_____

10. a. Do you remember hearing whom the Student Senate named December Teacher of the Month? **Y N**
b. What was this teacher's name? _____
c. Where were you when you heard this information?_____

11. a. Do you remember hearing the average freshman score on the ACT? **Y N**
b. What is the average score? _____
c. Where were you when you heard this information? _____

12. a. Do you remember hearing the year Marshall University was founded? **Y N**
b. What was this year?_____
c. Where were you when you heard this information? _____

13. a. Do you remember hearing that the College of Science was recently given a grant to study a disease? **Y N**
b. What was this disease?_____
c. Where were you when you heard this information? _____

14. a. Do you remember hearing about a 1937 natural event that affected nearly all of campus? **Y N**
b. What was this event? _____
c. Where were you when you heard this information?_____

15. a. Do you remember hearing the amount of time the average MU student spends watching TV? **Y N**
b. What is the amount of time spent watching television? _____
c. Where were you when you heard this information? _____

16. a. Do you remember hearing where the next MU sponsored blood drive will be held? **Y N**
b. Where will this even be held?
c. Where were you when you heard this information?

17. a. Do you remember hearing that a professor here at MU was a Pulitzer Prize Finalist in the Biography Division? **Y N**
b. What is this professor's name? _____
c. Where were you when you heard this information? _____

18. a. Do you remember hearing that Bill Cosby performed in the Huntington area? **Y N**
    b. What was the name of the building at which he performed? _____
    c. Where were you when you heard this information? _____

19. a. Do you remember hearing WMUL's hours of operation? **Y N**
    b. What are those hours? _____
    c. Where were you when you heard this information? _____

20. a. Do you remember hearing how many accidents were on 3rd and 5th Avenues in the 2001-2002 school year? **Y N**
    b. What was this number? _____
    c. Where were you when you heard this information? _____

Appendix D

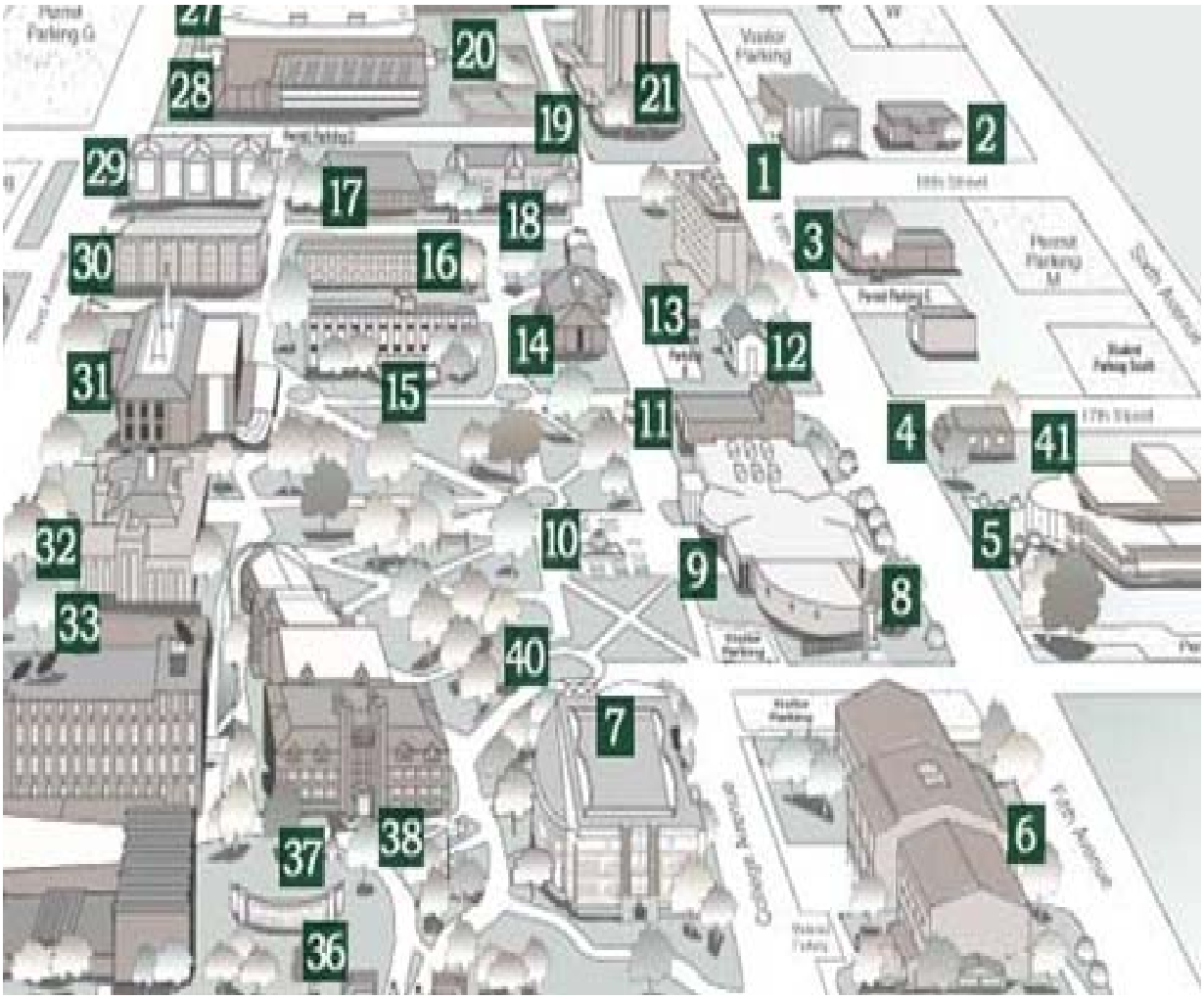
Answer Choice Sheet

Memory Test Answer Choices

This alphabetical list of areas at which we stopped during the tour is being provided to help you label the areas at which we stopped. These place names will only be used once and some may not be used at all.

1. Ashland Commons
2. Birke Art Gallery
3. Buskirk Hall
4. Cam Henderson Center
5. Campus Christian Center
6. Community and Technical College
7. Drinko Library
8. Fitness Center
9. Gullikson Hall-Entrance
10. Harris Hall
11. Holderby Hall
12. John R. Hall Center of Academic Excellence
13. MSC-Bookstore
14. MSC-Plaza
15. Morrow Library
16. Music Library
17. Old Main-4th Ave Entrance
18. Science Building
19. Smith Hall
20. Twin Towers

Map of campus given to students:



Appendix E

Introduction and Instructions for Day 1 - Uninformed Condition:

Hello, everyone. My name is Kristen Neal and I am a graduate student in Psychology working on my thesis requirement. The tour and subsequent survey I will give you today will help me fulfill this requirement. The tour itself will help you better navigate Marshall's campus as you make your way to classes, on errands, or to events on campus.

While I am giving you this campus tour, I will be presenting some potentially interesting facts about Marshall University and about the Huntington area in general. The study, in part, will assess how a change in context affects memory for the information. Although a number of facts will be presented, only some of the facts will actually be tested in the ending survey. Because the timing of this information is vital to the study itself, the information will appear quite haphazard in its organization. After we are finished, we will return to this room and fill out a relatively short survey concerning your memory. I would ask that you please do your best to remember the special facts I give you during the tour.

Here are the informed consent forms that I need you to fill out if you are willing to help me by choosing to participate in this study. Please note that your name will never be paired with your survey for privacy reasons and you will be able to obtain the results of this study after its completion by contacting me. My e-mail address and phone number will be provided to those who fill out the survey.

INFORMED CONSENT

Before we start this testing of memory, I want to make sure we are clear on everything. You simply need to relax and enjoy your tour. Do your best to remember as much of the information presented as possible (as most everything you learn today will help you in your careers at Marshall) especially the specific facts. For example, I'll tell you important

information about Marshall such as the scholarships we offer and I will tell you interesting trivia like that Billy Crystal played basketball here for a while. Later, during the survey, I might ask if you remember my telling you about Billy Crystal. Don't forget that the most important part for my project is when we return here to take the surveys.

Introduction and Instructions for Day 1 - Informed Condition:

Hello, everyone. My name is Kristen Neal and I am a graduate student in Psychology working on my thesis requirement. The tour and subsequent survey I will give you today will help me fulfill this requirement. The tour itself will help you better navigate Marshall's campus as you make your way to classes, on errands, or to events on campus.

While I am giving you this campus tour, I will be presenting some potentially interesting facts about Marshall University and about the Huntington area in general. The study, in part, will assess how a change in context affects memory for the information. Although a number of facts will be presented, only some of the facts will actually be tested in the ending survey. Because the timing of this information is vital to the study itself, the information will appear quite haphazard in its organization. After we are finished, we will return to this room and fill out a relatively short survey concerning your memory. I would ask that you please do your best to remember the special facts I give you during the tour.

Here are the informed consent forms that I need you to fill out if you are willing to help me by choosing to participate in this study. Please note that your name will never be paired with your survey for privacy reasons and you will be able to obtain the results of this study after its completion by contacting me. My e-mail address and phone number will be provided to those who fill out the survey.

INFORMED CONSENT

Before we start this testing of memory, I want to make sure we are clear on everything. You simply need to relax and enjoy your tour. Do your best to remember as much of the information presented as possible (as most everything you learn today will help you in your careers at Marshall) especially the specific facts. For example, I'll tell you important information

about Marshall such as the scholarships we offer and I will tell you interesting trivia like that Billy Crystal played baseball here for a while. Later, during the survey, I might ask if you remember me telling you about Billy Crystal. Additionally, I would like you to try to remember were you were when I told you the specific facts. So, I'll not only ask you if you remember about Mr. Crystal, but I will also ask where we were when you heard this fact. Don't forget that the most important part for my project is when we return here to take the surveys.

Instructions for Day 1 Testing Informed and Uninformed Conditions:

On your survey, please fill in your age and gender. On the line which says number sequence, please make up a four digit number sequence that you will remember. For example, you might choose the month and day of your birthday, the last four digits of your or a friend's phone number. Please make sure it is a number you will remember.

The survey consists of twenty, three part questions. Part A will ask you to circle Y for yes and N for no, indicating whether or not your remember hearing a certain fact. Part B, which requires a written answer, will examine whether or not you recall certain details about that given fact. And finally, Part C, which is of most importance to my study, will require a written response as to where you were when you heard this information. I ask you to please do you best to fill in every blank. The locations for Part C are listed on the Answer Choice sheet. Please select you answers for Part C from this list. I will also be passing out a map to aide your recall. Again, please attempt to answer each question.

Thanks again for your participation.

Instructions for Day 2 Testing Informed and Uninformed Conditions:

Hello, again! Let me remind you of who I am and what I am doing here today. My name is Kristen Neal and I am a graduate student in Psychology working on my thesis requirement. The survey you filled out two weeks ago plus the 10-minute one you are filling out today will assist me in my research. Only those who have completed a prior survey and an informed consent need to participate.

The format of today's survey is identical to the one you filled out two weeks ago. Part A will ask you to circle Y for yes and N for no, indicating whether or not your remember hearing a certain fact. Part B, which requires a written answer, will examine whether or not you recall certain details about that given fact. And finally, Part C, which is of most importance to my study, will require a written response as to where you were when you heard this information. I ask you to please do you best to fill in every blank. Just like before, all the answers for Part C are listed on the Answer Choice sheet. Please select you answers for Part C from this list. I will also be passing out a map to aide your recall. Again, please attempt to answer each question.

Thanks again for your participation.