

**THE EFFECT OF GRAPHIC DESIGN MATERIALS
ON THE RETENTION LEVEL OF VIEWERS
IN PRIME TIME TELEVISION NEWSCASTS**

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DOCTOR OF PHILOSOPHY
IN ART, DESIGN AND ARCHITECTURE**

**by
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June, 1996**

I certify that I have read his thesis and that in my opinion it is fully adequate, in scope and in quality, as a thesis for the degree of
Doctor of Philosophy



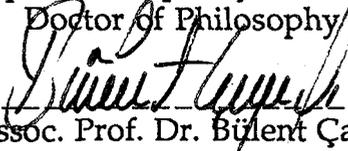
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ABSTRACT

THE EFFECT OF GRAPHIC DESIGN MATERIALS ON THE RETENTION LEVEL OF VIEWERS IN PRIME TIME TELEVISION NEWSCASTS PROGRAMS

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This study investigates the role of graphic design materials in improving the recall and retention level of television news viewers, and examines the capacity and power of these materials to shape or distort people's perception of reality. To this end, two experiments have been conducted with the aim of providing an empirical framework to the role of graphics in the construction of reality. It was found that graphics increase the recall and retention level of the viewers, and that they can alter viewers' recall of the content of the news stories.

Key Words: Television, newscasts, graphic design, typography, lower captions, maps, dominant ideology, recall, retention, visual perception.

ÖZET

GRAFİK TASARIM MALZEMELERİNİN TELEVİZYON HABER PROGRAMLARININ HATIRLANMASI ÜZERİNDEKİ ETKİLERİ

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Bu çalışma grafik tasarım malzemelerinin,televizyon izleyicilerinin çağrısım ve alımlama kapasitelerini arttırmaya yönelik rolünü, ve kişilerin gerçekliği algılamalarını oluşturma veya çarpıtma konusundaki kapasite ve gücünü incelemektedir. Bu doğrultuda, televizyon grafik malzemelerinin gerçekliğin kurgulanmasındaki rolünü ampirik bir yöntemle tespit etmek amacı ile iki deney uygulandı. Bulgular grafik tasarım malzemelerinin izleyicilerin alımlama ve hatırlama kapasitelerini arttırdıklarını, ve izleyicilerin haber içeriği ile ilgili hatırladığı bilgileri yanıtma kapasitesine sahip olduklarını gösteriyor.

Anahtar sözcükler: Televizyon, televizyon haberleri, grafik tasarım, tipografi, alt başlıklar, harita, baskın ideoloji, alımlama, görsel algılama.

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LIST OF TABLES

| Table | Page |
|---|------|
| 1 Basic set-up of the experiments..... | 51 |
| 2 Layout of participation..... | 69 |
| 3.a Frequency table of answers to Test 1A, all subjects..... | 73 |
| 3.b Frequency table of answers to Test 1B, all subjects..... | 74 |
| 4.a Frequency table of answers to Test 1A, female subjects..... | 74 |
| 4.b Frequency table of answers to Test 1B, female subjects..... | 75 |
| 5.a Frequency table of answers to Test 1A, male subjects..... | 75 |
| 5.b Frequency table of answers to Test 1B, male subjects..... | 76 |
| 6.a Frequency table of subjects to Test 1A, subjects of higher educational level..... | 76 |
| 6.b Frequency table of answers to Test 1B, subjects of higher educational level..... | 77 |
| 7.a Frequency table of answers to Test 1A, subjects of lower educational level..... | 77 |
| 7.b Frequency table of answers to Test 1B, subjects of lower educational level..... | 78 |
| 8 Results of Experiment 1..... | 79 |
| 9.a Responses to Question 1, %..... | 80 |
| 9.b Responses to Question 1 by gender, %..... | 80 |
| 9.c Responses to Question 1 by educational level, %..... | 81 |
| 10.a Responses to Question 2, %..... | 82 |
| 10.b Responses to Question 2 by gender, %..... | 82 |
| 10.c Responses to Question 2 by educational level, %..... | 83 |
| 11.a Responses to Question 3, %..... | 83 |
| 11.b Responses to Question 3 by gender, %..... | 84 |
| 11.c Responses to Question 3 by educational level, %..... | 84 |
| 12.a Responses to Question 4, %..... | 85 |
| 12.b Responses to Question 4 by gender, %..... | 87 |

| | | |
|------|---|-----|
| 12.c | Responses to Question 4 by educational level, %..... | 87 |
| 13.a | Responses to Question 5, %..... | 88 |
| 13.b | Responses to Question 5 by gender, %..... | 89 |
| 13.c | Responses to Question 5 by educational level, %..... | 90 |
| 14.a | Responses to Question 6, %..... | 91 |
| 14.b | Responses to Question 6 by gender, %..... | 93 |
| 14.c | Responses to Question 6 by educational level, %..... | 95 |
| 15.a | Responses to Question 7, %..... | 96 |
| 15.b | Responses to Question 7 by gender, %..... | 97 |
| 15.c | Responses to Question 7 by educational level, %..... | 98 |
| 16.a | Responses to Question 8, %..... | 99 |
| 16.b | Responses to Question 8 by gender, %..... | 100 |
| 16.c | Responses to Question 8 by educational level, %..... | 101 |
| 17.a | Responses to Question 9, %..... | 102 |
| 17.b | Responses to Question 9 by gender, %..... | 103 |
| 17.c | Responses to Question 9 by educational level, %..... | 104 |
| 18.a | Responses to Question 10, %..... | 106 |
| 18.b | Responses to Question 10 by gender, %..... | 106 |
| 18.c | Responses to Question 10 by educational level, %..... | 107 |
| 19.a | Responses to Question 11, %..... | 109 |
| 19.b | Responses to Question 11 by gender, %..... | 109 |
| 19.c | Responses to Question 11 by educational level, %..... | 110 |
| 20.a | Responses to Question 12, %..... | 111 |
| 20.b | Responses to Question 12 by gender, %..... | 112 |
| 20.c | Responses to Question 12 by educational level, %..... | 113 |
| 21.a | Responses to Question 13, %..... | 114 |
| 21.b | Responses to Question 13 by gender, %..... | 114 |
| 21.c | Responses to Question 13 by educational level, %..... | 115 |
| 22.a | Responses to Question 14, %..... | 116 |
| 22.b | Responses to Question 14 by gender, %..... | 117 |
| 22.c | Responses to Question 14 by educational level, %..... | 117 |
| 23 | Recall Ratios Towards Graphics in Audio-Graphic Redundancy Questions..... | 123 |
| 24 | Recall Ratios Towards Graphics in Audio-Graphic Non-Redundancy Questions..... | 123 |
| 25.a | Recall Ratios Towards Graphics in Audio-Graphic Redundancy Questions, Women..... | 123 |
| 25.b | Recall Ratios Towards Graphics in Audio-Graphic Redundancy, Men..... | 124 |

| | | |
|------|---|-----|
| 26.a | Recall Ratios Towards Graphics in Audio-Graphic Redundancy, higher educational group..... | 124 |
| 26.b | Recall Ratios Towards Graphics in Audio-Graphic Redundancy, lower educational group..... | 124 |
| 27 | Recall Ratios Towards Items Representing Not Recalling Anything in Audio-Graphic Redundancy Questions..... | 125 |
| 28 | Recall Ratios for Audio-Graphic Redundancy Questions with Captions..... | 127 |
| 29 | Recall Ratios for Audio-Graphic Redundancy Questions with Maps..... | 127 |
| 30.a | Comparison of Results for Questions Not Containing Audio- Graphic Redundancy, Question 1..... | 131 |
| 30.b | Comparison of Results for Questions Not Containing Audio- Graphic Redundancy, Question 2..... | 131 |
| 30.c | Comparison of Results for Questions Not Containing Audio- Graphic Redundancy, Question 4..... | 131 |
| 30.d | Comparison of Results for Questions Not Containing Audio- Graphic Redundancy, Question 6..... | 131 |
| 31 | Layout of Participation for All Subjects, Experiment 2..... | 144 |
| 32.a | Frequency table of answers to Test 2A, all subjects..... | 147 |
| 32.b | Frequency table of answers to Test 2B, all subjects..... | 147 |
| 33.a | Frequency table of answers to Test 2A, female subjects..... | 148 |
| 33.b | Frequency table of answers to Test 2B, female subjects..... | 148 |
| 33.c | Frequency table of answers to Test 2A, male subjects..... | 149 |
| 33.d | Frequency table of answers to Test 2B, male subjects..... | 149 |
| 34.a | Frequency table of answers to Test 2A, subjects of higher educational level..... | 150 |
| 34.b | Frequency table of answers to Test 2B, subjects of higher educational level..... | 150 |
| 35.a | Frequency table of answers to Test 2A, subjects of lower educational level..... | 151 |
| 35.b | Frequency table of answers to Test 2B, subjects of lower educational level..... | 151 |
| 36. | Results of Experiment 2..... | 152 |
| 37.a | Responses to Question 1, %..... | 153 |
| 37.b | Responses to Question 1 by gender, %..... | 153 |
| 37.c | Responses to Question 1 by educational level, %..... | 154 |
| 38.a | Responses to Question 2, %..... | 155 |
| 38.b | Responses to Question 2 by gender, %..... | 155 |

| | |
|--|-----|
| 38.c Responses to Question 2 by educational level, %..... | 156 |
| 39.a Responses to Question 3, %..... | 156 |
| 39.b Responses to Question 3 by gender, %..... | 157 |
| 39.c Responses to Question 3 by educational level, %..... | 158 |
| 40.a Responses to Question 4, %..... | 158 |
| 40.b Responses to Question 4 by gender, %..... | 159 |
| 40.c Responses to Question 4 by educational level, %..... | 160 |
| 41.a Responses to Question 5, %..... | 160 |
| 41.b Responses to Question 5 by gender, %..... | 161 |
| 41.c Responses to Question 5 by educational level, %..... | 161 |
| 42.a Responses to Question 6, %..... | 162 |
| 42.b Responses to Question 6 by gender, %..... | 163 |
| 42.c Responses to Question 6 by educational level, %..... | 163 |
| 43.a Responses to Question 7, %..... | 164 |
| 43.b Responses to Question 7 by gender, %..... | 165 |
| 43.c Responses to Question 7 by educational level, %..... | 165 |
| 44.a Responses to Question 8, %..... | 166 |
| 44.b Responses to Question 8 by gender, %..... | 167 |
| 44.c Responses to Question 8 by educational level, %..... | 169 |
| 45.a Responses to Question 9, %..... | 170 |
| 45.b Responses to Question 9 by gender, %..... | 171 |
| 45.c Responses to Question 9 by educational level, %..... | 171 |
| 46.a Responses to Question 10, %..... | 172 |
| 46.b Responses to Question 10 by gender, %..... | 173 |
| 46.c Responses to Question 10 by educational level, %..... | 173 |
| 47.a Responses to Question 11, %..... | 174 |
| 47.b Responses to Question 11 by gender, %..... | 175 |
| 47.c Responses to Question 11 by educational level, %..... | 175 |
| 48.a Responses to Question 12, %..... | 177 |
| 48.b Responses to Question 12 by gender, %..... | 178 |
| 48.c Responses to Question 12 by educational level, %..... | 179 |
| 49.a Responses to Question 13, %..... | 180 |
| 49.b Responses to Question 13 by gender, %..... | 181 |
| 49.c Responses to Question 13 by educational level, %..... | 181 |
| 50.a Responses to Question 14, %..... | 182 |
| 50.b Responses to Question 14 by gender, %..... | 183 |
| 50.c Responses to Question 14 by educational level, %..... | 184 |
| 51 Responses Towards Items Representing Audio-Verbal Information..... | 186 |

| | | |
|----|---|-----|
| 52 | Responses Towards Items Representing Graphic Design Materials..... | 186 |
| 53 | Average Response Ratios Towards Item e..... | 187 |
| 54 | Comparison of Responses for Gender Towards Items Representing Graphic Design Materials in the Edited Viewing Session..... | 188 |
| 55 | Comparison of Responses for Gender Towards Items Representing Audio-Verbal Information in the Unedited Viewing Session..... | 189 |
| 56 | Comparison of Responses Between Educational Level Groups Towards Items Representing Audio-Verbal Information in the Unedited Viewing Session..... | 190 |
| 57 | Comparison of Responses for Gender Towards Items Representing Graphic Design Materials in the Edited Viewing Session..... | 190 |

LIST OF FIGURES

| | |
|--|-----|
| Figure 1.a: The unedited version of the news, Experiment 1..... | 63 |
| Figure 1.b: The edited version of the news, Experiment 1..... | 63 |
| Figure 2.a: The unedited version of the weather report, Experiment 1..... | 64 |
| Figure 2.b: The edited version of the weather report, Experiment 1..... | 64 |
| Figure 3.a: The unedited version of the news, Experiment 2..... | 137 |
| Figure 3.b: The edited version of the news, Experiment 2..... | 137 |
| Figure 4.a: The unedited version of the weather report, Experiment 2... | 141 |
| Figure 4.b: The edited version of the weather report, Experiment 2..... | 141 |

TABLE OF CONTENTS

| | |
|---|------|
| ABSTRACT..... | iii |
| ÖZET..... | iv |
| ACKNOWLEDGEMENTS..... | v |
| LIST OF TABLES..... | vi |
| LIST OF FIGURES..... | viii |
| TABLE OF CONTENTS..... | ix |
| 1. INTRODUCTION..... | 1 |
| 1.1. Television as News..... | 1 |
| 1.2. Object and Scope of the Study..... | 7 |
| 2. RECEPTION..... | 11 |
| 2.1. Reality..... | 11 |
| 2.2. Perception..... | 13 |
| 2.3. Visual Perception..... | 15 |
| 3. THE VISUAL PRESENTATION FORMAT OF TELEVISION NEWS..... | 19 |
| 3.1. Perceived Reality of Television..... | 19 |
| 3.2. Visual Structure of Television News..... | 28 |
| 3.2.1. Factors Determining the Selection of the Visual Format...28 | |
| 3.2.2. Visual Format of Television News..... | 32 |
| 3.3. Graphic Design Materials..... | 40 |
| 3.3.1. Animation Sequences..... | 42 |
| 3.3.2. Captions..... | 43 |
| 3.3.2.1. Typography..... | 43 |
| 3.3.2.2. Color..... | 47 |
| 3.3.3. Maps..... | 47 |
| 4. EXPERIMENTAL STUDIES ON THE EFFECTS OF GRAPHIC DESIGN MATERIALS..... | 50 |
| 4.1. Introduction..... | 50 |
| 4.1.1. Hypotheses..... | 52 |
| 4.2. Selection of Stimulus Material..... | 55 |
| 4.2.1. Graphical Features of SHOW TV..... | 57 |

| | |
|--|-----|
| 4.2.1.1. Typography..... | 57 |
| 4.2.1.2. Color..... | 59 |
| 4.3. Experiment 1..... | 60 |
| 4.3.1. Viewing Material..... | 60 |
| 4.3.2. Method of Experiment..... | 66 |
| 4.3.2.1. Subjects..... | 66 |
| 4.3.2.2. Procedure..... | 68 |
| 4.3.2.3. Test of Recall..... | 71 |
| 4.3.2.4. Questionnaire of Subject Profile..... | 72 |
| 4.3.3. Results of the Experiment..... | 73 |
| 4.3.4. Analysis of the Data..... | 78 |
| 4.3.5. Discussion..... | 120 |
| 4.4. Experiment 2..... | 135 |
| 4.4.1. Viewing Material..... | 135 |
| 4.4.2. Method of Experiment..... | 142 |
| 4.4.2.1. Subjects..... | 142 |
| 4.4.2.2. Procedure..... | 144 |
| 4.4.2.3. Recall Test..... | 145 |
| 4.4.2.4. Questionnaire of Subject Profile..... | 146 |
| 4.4.3. Results of the Experiment..... | 146 |
| 4.4.4. Analysis of the Data..... | 152 |
| 4.4.5. Discussion..... | 184 |
| 5. CONCLUSION..... | 199 |
| 6. REFERENCES..... | 208 |
| 7. APPENDIX..... | 215 |

1. INTRODUCTION

1.1. Television as News

Television covers an important and major part of our lives in this period which we call the information age. We have become products of the television era, and television today plays a very important role of our lives. In some respects the age of television has turned back the clock of human learning to an earlier age when most learning was based on what the eye could observe directly. Television makes it possible to see events happen, immediately or after some delay, rather than having to rely on verbal descriptions (Graber 1990, 134). Indeed, simultaneity is a key factor which lends great power to television. Aside from its capability to relay information as it happens, television's ability to present us visual and verbal content simultaneously provides us with a basic learning format in which we believe that we are witnessing the truth.

In many countries throughout the world, television has overtaken newspapers as the main source of news, and has become the most believable medium. The 1987 Roper Report, *America Is Watching*, proclaimed that, for the first time, over fifty percent of Americans polled cited only television as their main source of news; this is double the level of twenty years ago and up from 39% in 1980 (Griffin 1992, 122). Today's television and news programs are too far from being considered what

Smith describes as "a hybrid of newsreels and radio-style reporting" of the early days of television (1989, 76).

Research shows that television has become the central medium of communication in many areas, including modern politics. The study of Masters, Frey, and Bente reveal that the way in which leaders are presented to the public on television shapes and measures their status, and their power can no longer be fully understood without reference to television coverage (1991, 373). In addition, research strongly indicates that aside from television's role as a main source of news, TV also largely determines the salience of many issues for the public. A startling study in this matter shows that the more an individual is exposed to the news media agendas and the more an individual pays attention to these agendas, the more likely he or she is to conform to the news media agenda (Lasorsa and Wanta 1990, 812). In other words, the public follows the agenda through a mechanism which intends to set up the agenda, which is also widely accepted as a main source of news for most people. These facts clearly show that television is certainly one of today's most powerful mediums in terms of its ability to inform and influence people.

The relationship between television and learning, however, is still a much contested subject for many scholars. One argument claims that we must come to realise that much of the news viewing experience may have little to do with "cognitive/rational information transfer," and may instead be effective or entertainment-oriented (Griffin 1992, 123). Contrarily, there are those who convincingly believe that television has a powerful ability to affect learning by stating that there is evidence that newspapers are more likely to influence cognitive learning while

television influences both cognition and attitudes (Drew and Weaver 1990, 740).

Almost all television programs are designed and presented in attractive, understandable and timely formats which make such programs quite appealing. Particularly, news programs carry a higher level of importance and responsibility in terms of their presentational formats. Since television is believed to be such a major and reliable source of news, the information that it presents must live up to such expectations. The association between the audio and video creates a rather bona fide-appearing sense of reality of which we must realise the importance of understanding the process through which visual and auditory stimuli interact to produce meaning (Grimes 1990, 758).

The influential power of television is undoubtedly a result of its being a primarily visual medium. Why do we seek visual reinforcement? Seeing is a direct experience and the use of visual data to report information is the closest we can get to the true nature of reality (Dondis 1973, 2). We seek visual reinforcement of our knowledge primarily for the directness of the information of the iconic mode, and its closeness to the real experience. The communication literature confirms that pictures make information transmission more rapid, realistic, and accurate than is possible in purely visual messages. Visuals also forge emotional bonds between viewers and what they view. Printed or spoken messages excel in providing story background, context, and explanation; pictures make audiences care about an issue and the people involved in it. The realism presented by television pictures enhances the credibility of news reports. People gain a sense of witnessing an event when they see it presented in

moving pictures. They trust what they see more than what they hear (Graber 1990, 152).

In television news gathering, events are not always caught and recorded as they actually happen. Very often, generic images are used to fill and symbolise the news event. Because such images are chosen or created to accommodate the narration, they naturally appear to illustrate what is being said, and they provide a visual backdrop for spoken narration. The use of representative images in news contributes to the process of our authenticating the reality of the news events. Illustrated imagery, graphic emblems and signs are types of representative images which can often be seen in television news signifying unillustrated stories as they are read. All such imagery is used as "fill" in the absence of videotaped material, intended to confirm access, to lend authenticity, to provide a form of acknowledging information or evidence, and to provide transitions and continuity (Griffin 1992, 132). Such imagery is also needed and utilised for avoiding the presumed boredom of watching a newscaster simply read the news, for relieving the newscasters of the pressure of having to spend a great deal of screen time providing entertainment remarks of visual interest and for providing video editors with option and latitude in the editing process. In this arena the weapons are powerful branding strategies and sophisticated visual diversions (Evamy 1993, 38).

Particularly in news programs, we commonly see the above-mentioned manufactured imagery due to the concern for continuity and unity of structure. Ever since the advent of television as a major news source in the 1960s, TV producers have been struggling to satisfy the expectation that television would present the news "visually." In order to produce a reliable stream of visual material they needed to rely primarily on

symbolic events. In order to meet technical and time constraints they needed to develop certain easily replicable formats for visual presentation. In order to present ongoing world events in short "bites" of time they needed to create a familiar structure into which reality could be distilled. As the technological capabilities to create and manipulate pictorial material have expanded with electronic editing and digitalized image making, it has become easier than ever to fill gaps in continuity and provide transitions from segment to segment. The structural unity of newscasts has become smoother and more coherent (Griffin 1992, 138).

The highly developed computer technology in graphics and animation has enabled television producers to create new, dynamic, fast and exciting images in television programs. This has particularly been utilised in the past ten years within television news production. The technological advancements have increased the opportunity and capability for better designs and better visual materials. However, this has also brought a tremendous capability of altering and manipulating images with the purpose of magnetising the viewers. Initially, the new technology might have been considered very playful and useful. Today, however, when we take a careful look at the practices displayed by the production staff of television channels and particularly by the production staff of news departments, we realise that the capabilities of the latest computer technology can be used as a device to deliver clear, unbiased, objective, and concise information to the public, as well as to manipulate, distort and falsify facts.

With its strong visual impact, video footage in particular, provides a more solid sense of perceived reality in television news programming due to its style and form. This form does not even force us to make a

cognitive distinction on whether the eventual material presented is real or fictitious. The concealed, but real danger in television news presentation lies in accepting the structure of the newscast as "normal." The regularity and similarity of television news programs lead us to a sense of familiarity and naturalness in presentational formats. Unless certain codes and practices are changed, conventional news formats achieve both a transparency and legitimacy that often becomes natural and normal. Conformance to the repeated structure encourages the perception that what is being presented is an unadulterated and straightforward news report which presents us the facts. The acceptance of a presentation of news implies the acceptance of accurate and unimpeded access to important information, events and people, direct and unmanipulated records of actual events; adherence to professional codes of objectivity; and interpretive expertise and authority. The structure of newscasts can be maintained in a consistent and convincing format because newscasts do not consist of unmediated records, but are constructed from sound bites and fragments of visual material that can be easily edited or arranged (Griffin 1992, 133).

When we combine these facts with the capabilities of the latest technology in television graphics and images, it becomes apparent that the opportunities and capabilities of such flexible image making places a fearful volume of invested authority as well as responsibility on the producers and broadcasters of this industry in terms of shaping our views and recreating reality. Lance Bennett in his book titled *NEWS: The Politics of Illusion* supports this premise by stating that news plays a major part in creating the reality in which we live, and even though the news might be illusory, the world it helps legitimate is not (1988, 62). Television graphics play a significant role in this legitimization process.

When the practices of the Turkish television channels are considered closely, it may appear that aside from conventional editing and audio-visual tricks, the Turkish news executives have not yet discovered the power and capabilities of graphic design materials in the recreation of reality. Interviews done by the author with several program producers reveal that almost all visual materials are created with the sole aim of making things look attractive instead of searching and developing new forms of expression. No attempt is exerted to apply any scientific, semantic, or sociological foundation in the creation of television graphics. Many of these visual materials are developed by professionals who do not have the qualifications to reach such standards. It is no surprise that the private Turkish television channels see communication only as a means to an end rather than an end to itself just like their counterparts all over the world; but unlike their counterparts, they have not yet explored and discovered the role of graphic design materials in the presentation of their news programs and how powerful of a tool these elements can be in the recreation of reality.

1.2. Object and Scope of Study

Graphic design materials are informational tools which are intended to help viewers make correct inferences about stories that they have seen. However, these materials may also be used as a tool to falsify the facts and alter people's perception of reality. By examining the impact and effects of television news graphics on the viewers, this study intends to show that aside from the video materials presented in television news, graphic design materials play a very important role in the delivery of the news as well, and the visual format presented in the news can have a

direct effect on the perceived content of the news both in positive, and negative ways.

The present study deals predominantly with the visual format and presentation style of television news and it will focus on its relationship with graphic design materials, including both verbal and non-verbal imagery. The study carries two specific purposes: 1) To find out if graphic design materials do play a major role in improving the recall and retention level of the viewers in television news, and to find out if the retention level of the viewers would vary by only showing video footage and not showing any graphically produced images within the newscast; 2) To determine the role and function of graphic design materials in the construction of reality in television news with the particular aim of finding out if graphic design materials have a positive or negative effect in helping the viewers recall the message correctly.

The study furthermore intends to investigate whether the merging of the audio with the video possesses the capability of effecting the views and beliefs of people, thus leading to the capacity and power to shape or distort people's perception of reality. In such an attempt, the issue of representation will be probed in order to show the direct relationship between visual style-setting and representing reality. Furthermore, the problem of reading and understanding verbal and visual materials, along with issues such as visual literacy, perception, and comprehension will be partially included to interpret and illustrate the role and meaning of graphic design materials in news programs.

As the subject matter encompasses examining the role of graphic design materials in improving the retention level of the viewers in television

news, elements such as maps, charts, diagrams, animations, illustrations, captions, and symbolic imagery need to be reviewed within the overall scope of the study. However, due to the wide sphere of graphic design elements, this study focuses on a partial aspect of these materials and scrutinizes the effects of print materials (captions), maps, and opening animation sequences; it does not investigate any study that might be done with altering or tampering with symbolic images such as icons, indexes or symbols.

The study does not intend to provide a theoretical framework on the journalistic practices of broadcasting and question television's role as a news source; neither does it attempt to question what elements and factors constitute as news sources. It already presumes television in an informational role, but it questions the effectiveness of prime time news programs with the inclusion of certain types of visual materials exercised in these programs. In addition, this study briefly examines some of the news making policies of television stations and discloses the effects these policies have on the overall format of news presentations as well as on the visual format of television news programs.

The second chapter of the study examines certain aspects of the subject matter of human reception. Topics such as reality, perception and visual perception are briefly investigated in order to provide a theoretical groundwork relating to reception of televisual material.

The third chapter provides an overview of the visual presentation format of today's prime time television news with insight research regarding the reality perceived through television, the visual structure of

television news, and some of the graphic design materials used in television news whose effectiveness has been tested in this study.

The fourth chapter entails the two experiments which have been conducted in order to determine the extent of the role of the graphic design materials probed in the third chapter. This chapter offers the hypotheses pertaining to the aim of the study; it also explains reasons and criteria for the selection of the particular television station as well as the conduct and procedure of the viewing materials in the experiments.

Chapter five summarizes the findings of the experiments and provides an overview of the role of graphic design materials which is suggested through the findings of the two experiments. This final chapter also intends to stress the perceived reality of television and the need for being critical viewers of television.

2. RECEPTION

2.1. REALITY

Reality is an abstract interpretation; it would be incorrect to assert that such a state exists absolutely. It would be more correct to suggest that reality can be perceived and interpreted differently by one individual and another, or by one individual as different to the mass society. Differences in lifestyles, customs, habits, ethics are some of the nuances which lead to different perceptions of this concept. Even the reality of different societies may depart from each other based on factors such as the individual, the environment or shared experiences.

In terms of the two very basic approaches towards reality, one, namely naturalism, defines reality on the basis of the degree of correspondence between the visual representation of an object and what we 'normally' see of that object with the naked eye, in a given, concrete setting. The other, namely scientific realism, on the other hand, defines reality on the basis of what things are like generally or regularly. It regards detail and individual differences as ephemeral, and does not stop at what can be observed with the naked eye; it probes beyond the visual appearance of things (Kress and van Leeuwen 1992, 113).

Myers approaches the issue in a similar manner using the term "veridical reality", which he describes as reality that can be measured and "the reality of scientists who deal with physical elements and the way in which we negotiate our world whatever we think or make of it" (1989, 2). The term "veridical" applies to things we consider objectively without reference to viewing conditions. Myers uses this definition as a contrast to metaphysical philosophy, which contends that it may never be possible to know true reality (1989, 2). Indeed, to talk about an abstract concept like reality in absolute terms does not provide much explanation in examining its scope. It would also be difficult to talk about reality as an entity in itself without considering it together with the matter of individual perception. As Fiske puts it, "reality is the product of people and not a universal object that people merely observe from the outside" (1989, 21). The notion of reality must be discussed within the framework of perception.

In examining the relationship between the concept of reality and its social dimensions, Derman explains that the individual has to learn the reality in which he or she is living, and that the learning process takes place through the experiences which one goes through in a life cycle. However, learning is formed by a preshaped and predetermined world that is presented to us starting from the moment we are born, which means that the social-cultural environment in which we will exist has already been created and prepared for us (1989, 17). Fiske makes a similar point by stating that the only way we can perceive and make sense of what is called 'reality' is by the codes of our culture. He explains that there may be an objective, empiricist reality, but there is no universal, objective way of perceiving and making sense of it, and what passes for

reality in any culture is the product of that culture's codes, so reality is always encoded, it is never raw (1989, 5).

2.2. PERCEPTION

Myers suggests that perception is "awareness of the world around us derived from data supplied by all sensory organs, of which vision is foremost, accounting for about two-thirds of everything we know" (1989, 9). Perception entails our biological and mental mechanisms which allow us to acquire information and knowledge of our world through the action and interaction of our sensory organs and our brain. O'Sullivan, Hartley, Saunders and Fiske's explanation indicates, however, that such a description would be an over-simplification in terms of explaining the process of perception. They define perception as "initial consciousness of sensory activity; a process implying awareness and interpretation of surrounding stimuli or events" and state that because perceptions vary greatly between individuals and cultures, this raises questions about the accuracy about one interpretation to another which emerges as a result of this process (1983, 169).

Perception can basically be characterized as the application of reasoning mechanisms to modelling and understanding the external world (Fischler and Firschein 1987, 206). As it is concerned with modelling the environment based on sensory data, it is the main process for humans which helps establish a sense of awareness and contact of the external world. All five of the human senses are part of this modelling and understanding process.

Perceptual processes are quite different from the objective recording mechanisms of a conventional camera or tape recorder. The human perceptual process is subjective, it is not an objective reproducer of reality as a camera or tape recorder can be; it entails perceiving and its interpretation together. The consciousness takes data supplied by the senses and interprets them as stimuli to analyze, categorize and rearrange them. This process leads the individual to form a representation of reality which nevertheless carries some important differences within itself (Derman 1989, 24). In spite of the fact that our perceptions are widely individual and subjective, the biological and mental processes by which they are formed are the same for all human beings. Every individual shares similar understandings and responses to various stimuli and occurrences.

Perception originates in the responses of the sense organs, however, it draws on further supplementary information arising from experience, and particularly from knowledge of the world (Sekuler and Blake 1990, 424). Knowledge derives from several different sources. One form of knowledge is through learned relationships which is represented in the memory from a lifetime of experiences with objects and events in our environment. For example, lifting objects of various sizes teaches us that an object's size and weight tend to be related, allowing us to anticipate the degree of effort needed to lift an object. Another form of knowledge derives from specific cues, or prompts, which immediately precede an event. These cues function to direct our attention to focus on particular objects and exclude others, so the accumulation of dark grey clouds is an external cue that warns of an impending rain storm. One final form of knowledge comes from the very act of perceiving. In this case, perceptual

information formed at a moment can direct and clarify subsequent perceptual judgements.

Knowledge shapes perceptual experience; it also equips us with the information needed to change our perceptions. The knowledge that influences perception takes many forms like uncertainty, ambiguity, redundancy, context, and familiarity, which maximize the effectiveness of the actions dictated by perception. Since perception's chief role is to guide one's actions within the world, knowledge of the world not only shapes perception but also imbues perception with value and utility (Sekuler and Blake 1990, 450).

2.3. VISUAL PERCEPTION

Visual perception is perhaps the most significant and most vital perceptory sense among all. It is the sensory process which reinforces our perception of reality the strongest, and it is the process which is mostly synonymous with reality in terms of its meaning. In explaining the process of visual perception, Myers uses the term "paradigms" and describes them as stereotypical patterns stored in the memory, and posits that paradigms of space and size, texture, line, color, and the like are fundamental mechanisms of visual perception which are biologically significant to our existence. He further explains that perception involves comparisons between a series of model shapes or forms developed from a storehouse of experiences which initially help us recognize the matching qualities of a figure, and subsequently aim to clarify or refine the initial identification by applying further paradigms to test and confirm the initial comparison (1989,13). Detecting a figure whose shape

fits our paradigm of a cat, but whose size is a tiger displays an ambiguity in the perception field that is unacceptable.

Although visual perception shapes the reception of information pertaining to reality, individual experiences contribute to establishing more accurate descriptions. A usual observer establishes a sense of reality of the world through perceiving without questioning the perceived data. As the individual is not consciously aware of the external factors affecting his/her perceptions, the perceiving process is assumed as if it is direct and momentary. This stance is known within the subject of perception as "phenomenal absolutism" (Derman 1989, 30).

Aside from the individual factors which influence perception, socialization perhaps is the most effective element shaping the perceptory process. Socialization refers to the ways in which an individual adopts the behavior and values of a group (Dominick 1990, 41). The following segments of this study will disclose the ways in which the broadcasting media presents portrayals of the society and the role it plays in affecting beliefs and values. As human beings, we develop a wide range of knowledge from our interaction with others. The experience that is gained through this interaction is a form of pre-knowledge which guides and shapes our perceptions. Hence, our social environment becomes the main determinant of our perceptions, which means that social reality is the determinant of personal reality (Derman 1989, 31).

It is obvious that perception is not the inevitable result of a set of stimulus patterns, but rather a best interpretation of sensory data based on the past experience of both the organism and its ancestors. While the

senses do not directly give us a faithful model of the world, they do however, provide evidence for checking hypotheses about the nature of our surrounding environment. From nearly our first experience of the world, we establish and arrange our needs and pleasures, preferences and dislikes, to a great degree on what we see. Seeing is perhaps the most important perceptory device among our senses. Seeing possesses much significance in the perceptual process for it enables us to experience the world in a direct way which creates a sense of recognition and knowledge; to see has come to mean understanding (Dondis 1973, 7).

In its simplest sense, we can define seeing as the physical recording of the pattern of light energy received from the world around us (Fischler and Firschein 1987, 209). The human brain is the main organ of vision which does the interpretation, not the human eye. Human vision is nearly effortless, that most people assume that the eye furnishes the brain with a copy or model of the world. The eye is merely a sensor, the visual cortex of the human brain is the primary organ of vision. From a set of distorted two-dimensional images projected onto the retinas of our eyes, we must create a world.

Sensory organs other than the eye can be thought of as providing information to the brain, but the main perceptory sense is visual perception. Curtiss states that "it is estimated that visual perception comprises 75 to 80 percent of our sensory input" (1987, 7). Seeing enables learning without experiencing through visual media, demonstrations or examples in model form. The visual mode carries advantages over the verbal mode in that it does not require intervening coded systems to facilitate understanding, nor does it require any decoding which can delay comprehension. Seeing provides us with knowledge to be able to

evaluate and understand a process. Due to its advantage of observation, seeing emerges not only as a learning device, but also as our closest link to the reality of our world; we trust our eyes and we depend on them (Dondis 1973, 14). However, the eye is not an impartial mechanism that observes or records images like a surveillance camera or a videocassette recorder. The eye does not record discrete images at all; it simply responds to the stimulus provided by waves of light with nerve impulses which it transmits along the optic nerve often to different parts of the brain. These transitory bits of sensory data are sorted, restructured, and then modified by memories of past experiences.

In addition, we tend to notice only events or details of events that we prefer to see or are used to seeing. We generally select information that agrees with how we want to see the world, and we screen out practically everything that might interfere with our constructs (Zetl 1990, 7). This is a form of selective perceiving in which we direct our attention and expose ourselves only to stimuli that we feel agreement with or become interested in. Such characteristics clearly display the selective and prejudicial approach inherent in the human perceptual process. As revealed, along with all external and internal factors, perceiving is not only a selective, but more of a subjective act.

3. THE VISUAL PRESENTATION OF TELEVISION NEWS

3.1. PERCEIVED REALITY OF TELEVISION

Television is the medium with the greatest potential for transmitting information and beliefs from one group to another. Its two powerful and unique strengths, being a primarily visual medium and its immediacy, lend such a capacity for the dissemination of information.

The issue of television's ability to effect viewers has been a much debated and contested subject matter in which researchers have found differing results. In one study, Hefzallah claims that numerous studies point to the fact that television does have cognitive, emotional and physical effects, especially on children (1987, 63). As a contradicting view, Garnham criticizes the Pilkington Report which claims that "unless and until there is unmistakable proof to the contrary, the presumption must be that television is and will be a main factor in influencing the values and moral standards of our society" (qtd. in Garnham 1980, 12) by stating that social scientists have not been able to find any hard evidence which shows that television really affects anybody profoundly (1980, 12). There is considerable disagreement about the determinants of televisual discourses; one argument tends to reinforce the idea that the source of television's power resides in its messages. It is commonly accepted that many people tend to believe what they see through television,

particularly through news programs. As Bennett states, "this belief may not be fanatical, but the legitimacy and maintenance of a political system do not require fanaticism. Passive acceptance will do" (1988, xiii). The real danger of television does not lie in its messages, but in accepting the messages without questioning them, and not being aware of the underlying structure which produces those messages.

In order to fully discuss the perceived reality of television, the issues of ideology and news presentation format both need to be examined. Ideology and presentation format are two interrelated elements which shape television's reality, for ideology shapes the presentation format, which in turn shapes the perception of reality of television. The ideological character of television primarily serves the interest of dominant groups. In other words, television programs are overwhelmingly shaped by the ideologies which serve the interest of dominant groups. Regardless of whether it be for advertising, entertainment, or for news and current affairs, television produces and reproduces a dominant ideology (Lodziak 1986, 37).

Although there is considerable disagreement within critical media theorists in terms of the meaning of dominant ideology and what kind of interests are implied when mentioned, this study will refer to the term in a restricted scope with the meaning to serve to legitimate class, gender and racial domination. Among the different types of programs which are claimed to produce dominant ideology, news programs fulfill much of this aim. Lodziak quotes Collins who asserts that "information in television news output is produced, selected, organized, structured and biased" (qtd. in Lodziak 1986, 43).

All popular culture serves the interests of the dominant ideology and minimizes the differences among different audience groups. The popular culture shapes and places the viewer as a subject of the dominant ideology; thus, any differing views or opposition regarding the mechanism is denied and dismantled by the conventionality of the structure. The main concern is the systematic nature of ideological bias in television news, and the more specific ways in which television news reflects a bias. The dominant ideology in the representation of ideas and values intend to protect and legitimate the existing order of domination. Television news fails to represent or misrepresent the ideas and values that pose an ideological threat to dominant groups, for dominant discourses are inherently incapable of accommodating the representation of radical opposition to the status quo.

When we examine the practice and outcome of the dominant discourses, certain presentation formats in news productions which shape the news content can be observed. Much debate continues among scholars and researchers discussing the clarity, objectivity and depth of the coverage of news programs. In addition, the presentation format of news programs is highly questioned in terms of the similarities that exist between them. News productions are quite similar to mass production lines in which resembling features with only different names are produced and marketed. Aside from their profitability, news productions are presented as a package to convey an image, to give off signals about the real or desired social status of those who use it. In this sense, news is just like a consumer good. The presentation of news is packaged, or rather formatted, and this format is intended to present us with a picture of the status quo in the form of reality. In order to fully discuss the perceived

reality of television, the production of the status quo needs to be examined in terms of news presentation format, and television ideology.

In examining the perceived reality of television in terms of news presentation format, Bennett proposes the effect of four biases that exist in news productions. The first bias that he mentions entails media's retreating from opportunities to explain the power structures and political processes that lie behind the issues that mysteriously come up as public agenda. He argues that the media concentrate on people rather than issues, and that stories become emotion-filled human-interest presentations in which the actors of the stories are personalized. Taking the news personally provides emotional meaning which is not shareable, critical, or analytical on behalf of the public. The personalized human-interest stories create information bias in which it becomes hard to see the big picture that lies behind the actors crowding the center stage (1988, 23).

The second bias that Bennett mentions is selecting those aspects of events of events that are most easily dramatized in short stories. He explains that news dramas emphasize crises over continuity, the present over the past or future, and the impact of scandals on personal political careers rather than on the institutions of government that harbour them. The melodrama that is created forms an information format in which opposite views are camouflaged and hidden. Seldom, if ever, are underlying problems treated and eliminated at their source (1988, 23).

Another form of bias concerns the isolation of stories from each other which allows information in the news to become fragmented and difficult to assemble as one major picture. Emphasizing persons over

story contexts, using dramatic formats which turn events into self-contained, isolated happenings, and imposing space limits for fear of boring readers and viewers with too much information creates sketchy dramatic capsules of news stories that make it difficult to see the connections between issues or to follow the development of an issue over time (1988, 24).

The last of Bennett's proposed biases entails the passing for depth and coherence in a system of personalized, dramatized, and fragmented information with the aim of normalizing news stories which are actually threatening and confusing in content. Official responses to mysterious crises and problems tell us that things will turn to normal if we trust those officials who act in our interest. The scripts of official statements and the reports of journalists in the news are filled with popular beliefs, values, and norms about what the problem concerns, what caused it, and what actions are necessary to turn the situation back to normal again (1988, 24).

Bennett's pronouncements are more of an observation about the American mass media's regulating the content of public information and communication in the U.S. political system. However, his views extend beyond the limits of the American political system and relate to the specifics of television news production as well. The above examples disclose the news media's failure to implement the enormous power for criticism and analysis, and reveal their intention to rationalize most of the established interests and policies of the day. News programs are presented in narrow, predictable terms because they reflect the values and beliefs of the social norms rather than for being useful or realistic in their approaches to understand what is really going on. The filtering of

reality created by news journalists keeps with the norms of the society which decide who ought to be given voice in the public domain and what they should be allowed to say. Masters, Frey, and Bente confirm these views by stating that "the media, and most notably TV newscasts, present a sequence of images that has been 'produced' according to cultural norms and can be managed to suit economic or political needs" (1991, 393). Consequently, the news takes us on a daily tour of the world "as it should be," dominated with mainstream social values and comforting images of authority and security. The present format of news programs prescribes a system filled with personalized, dramatized, fragmented, and normalized information. It represents the world to us in a way that naturalizes the status quo. Unless this format intends to form a perspective that is institutional, analytical, historical, and critical, the current system will continue to give daily doses of the status quo.

As indicated, the relationship between what goes on in the real world and how it is presented is not entirely consistent. There are instances when television plays a more elementary role in the signification of events, and thus a more active role in generating ideological shifts and establishing dominant discourses (Lodziak 1986, 53). In providing dominant discourses, events are made to be meaningful through the encoding of messages within preferred codes by news presentations. Perceptions of the audience enter into the selection of preferred codes which embodies the explanation as normal and acceptable. Television encodes its messages in verbal discourse, but its visual character grounds its discourse in the evidence of one's eyes. Nature, then, is produced as a kind of guarantee of its truth. The verbal and visual discourses work together; the visual confirms the verbal in all of its ideology (Lodziak, 52).

Television is a provoker and circulator of meanings of which are complexly encoded. Hartley defines meaning as "the product of the dialogic interaction that occurs between speaker (or text) and hearer (or reader/viewer). Therefore, every utterance or text is incomplete-it is a 'moment' in the continuous generative process of language" (1982, 26). Television's wide variety of codes all cohere to present a unified set of meanings that intend to maintain, legitimate, and naturalize the dominant ideology of patriarchal capitalism (Fiske 1989,13). The codes of television news act in a role and capacity to generate preferred meanings in news items which articulate and reproduce a hypothetical reality about our world. The potential meanings broadcasted by television aim at controlling and focusing the implied meaningfulness into a more singular and preferred message which performs the work of the dominant ideology; and television news works as a middle agent to contain, minimize and incorporate unanswered questions or challenges to dominant values. As Fiske correctly states, "incorporation is a powerful ideological defense mechanism" (1989, 39).

As stated before, one of the defining characteristics of television is its immediacy. This serves as a privilege for television as it is always 'live' in essence. On a general level, in comparison to film, the absence of editorial intervention in television and the role of the camera, which creates the sense that it is recording what is happening, adds to the sense of television's being live, to its sense of realisticness. The realisticness of the image directly affects its convincingness, which becomes an essential aspect of the cultural form through which the ideological discourse operates. Film presents itself as a record of what has happened, whereas, television presents itself as a medium of what is actually happening.

For many people television presents itself as an unmediated picture of external reality. In a metaphoric sense, television is seen either as a transparent window on the world or as a mirror reflecting our own reality back to us. Hefzallah asserts that television conditions the viewer's perspective to accept the unreal as real for at least the duration of the program (1987, 68). Such a statement does not carry much weight, and lacks substance in terms of the dimensions of the subject matter. Segments in television programs may appear to be realistic, not because they reproduce reality, but because they reproduce the dominant sense of reality. If television is considered to be a realistic medium, it is because of its ability to carry a socially convincing sense of the real. Realism is not a matter of any fidelity to an empirical reality, it is rather the discursive conventions by which and for which a sense of reality is constructed (Fiske 1989, 21).

Reality is the product of individuals, and not a universal entity that people merely observe from the outside. The reality that is reflected through television can only be 'our' reality, not 'the' reality. Hence, television becomes a 'producer' of reality rather than being a 'reflector' of reality (Fiske 1989, 21). Furthermore, the realism reflected through television does not only produce reality, it also makes sense of it and shapes it to become easily comprehensible. However, the decrease in the distinctions between news programs and fictional television entertainment, and the building of brief, exciting, unified and complete news narratives from various sound and picture material, have created an image of unclarity which has formed a cultural production whose relationship to reality of everyday events is, at best, far removed. The question to be asked is not, what is the relationship of news to reality, but what is the form and structure of the image that is created for us daily?

The study of TV news becomes the study of cultural production rather than the study of reporting about the world (Griffin 1992, 125).

Television's reality is a mode of representation which advocates and naturalizes the dominant ideology. Realisticness is the key word in this process which intends to make ideology appear as the product of nature. Although reality involves an entity to the physically and sensually perceived qualities of the external world as well as to the values of the dominant ideology, its roots with the society and culture are stripped off. This pulls and places ideology onto the objective world of reality. Thus, the correctness of the representation of the real serves as a validation of the ideology that is promoted. The conventions of realism develop to disguise the framework of the reality it offers and works to ground ideology in reality in order to make it appear unchallengeable and unchangeable (Fiske 1989, 36).

Television news may be considered to be a credible source of information transmission by many people. In fact, as well as the beliefs of the average viewer, it would be nearly impossible to point out a television station which does not see itself as being concerned with fairness, balance, neutrality, conciseness and the truth. However, due to its strong ties with ideology, news programs primarily serve the function of maintaining the status quo and present it as our real world. Through stereotypical patterns and ideology, the news reproduces and creates patterns of "our world" which constitute our conception of reality. The "objective reality" of television is actually only the illusory product of a deceitful cycle of news and politics. As Garnham rightfully expresses, "broadcasting is the practice of institutions and not of broadcasters, because the institution was created first and then moulded the broadcasters in its image" (1980,

31). On an individual level, Corry examines the neutrality principle of television and asserts that in journalistic terms, neutral means reporting selectively, not objectively (1991, 25). In television, news ideology and reality are inseparable; and the devices and materials used in the presentation are merely a set of tools which help build and strengthen this perception of reality. Fiske and Hartley point out that reality on television is a human construction, and that developing awareness towards understanding how a particular reality produced can enable one to avoid misconceptions about the nature of that reality (1978, 194).

Television does not cause identifiable effects on individuals, but it rather works ideologically to promote and prefer certain meanings of the world, to circulate certain meanings rather than others, and to serve some social interests better than others. Based on many social factors, this ideological work may be effective. But we need to think of the ideological work in terms of its effectivity in society at large, not of its effects upon specific individuals or groups (Fiske 1989, 20).

3.2. VISUAL STRUCTURE OF TELEVISION NEWS

3.2.1. Factors Determining the Selection of the Visual Format

Long before humans developed written languages they used signs and symbols to communicate. This can be considered as the early forms of visual communication. The advancement of civilizations has enabled each generation to further enhance communication, up to the present point where today most of what we learn reaches us through some form of visual communication.

Today, television plays an immense role in the act of communication with its strong visual, capacity. In addition to its visual dominated structure, television possesses the advantage of simultaneity which lends it much power. Advancements in telecommunication technology allowing on-location reporting, regardless of the distance between the location and the stations, give viewers the opportunity to reach locations and witness events as they occur. Such advantages have made television a powerful medium of communication.

In a broad sense, news can be described as the delivery of information that is socially and culturally produced within organizations, subject to a complex set of pressures and limits existing within our society as a whole. *The New Shorter Oxford English Dictionary* defines news as "information, esp. when published or broadcast, about important or interesting recent events; such events themselves as a subject of report or talk. Also, newly received or noteworthy information about matters of personal, local, etc., interest" (1993, 1914). However, both descriptions do not provide sufficient explanation to reveal the role and context of news within the framework of today's media. Schrank defines news as "what newspapers and newscasters decide is newsworthy" (1991, 180), which begins to disclose the relationship of dominant ideology and television news programming. As the concept of media in a contemporary context possesses connections with the idea of mass audience and intends to capture attention and response from this large group of people, further explanation needs to be provided in terms of pointing out the motives which govern the overall format as well as visual format of television news. Within the context of television news, Altheide describes formats as "organizational devices to facilitate coordination of the news process" (1985, 346).

In this section television news visuals will be explored within the scope of the factors which influence and shape their production for prime time news. Television news visuals are predominantly seen within two functional roles: (a) as a device creating a visual identity, (b) as informational material used during the actual news stories.

News programs are known to be not only the major component of a station's programs, but also the most important identification code which symbolize the worth and credibility of a particular channel. Merritt refers to the situation in the United States and indicates that for most television stations local news is the center of graphic identity and that this is the station's biggest moneymaker and its greatest opportunity to establish its image with the public (1987, 31). Visual elements play a dominant role in forming and shaping the identity of the station. Hence, forming a powerful and consistent sense of visual identity provides a base for clear and convincing visual communication as well as for an image of trust and credibility. However, a brief examination of the visual identities of most Turkish television channels do not fit with the above descriptions. Interviews conducted by the author with several TV producers revealed discouraging results in terms of how visuals are composed and applied in television news.

First of all, an overall finding of these interviews was that no channel, regardless of being privately or state owned, is considering the format of their visual materials within the framework of visual unity or visual identity. Visual imagery is composed haphazardly, particularly due to time constraints within the production phase. Furthermore, imagery is selected or changed only based on individual preferences within the top managerial section of the channel. No station carries an art director, who

is the professional staff member to be in charge of the selecting and unifying of visual materials.

Second, so far, no channel has considered its opening and closing animation sequence of the news within the framework of scientific, semiotic, sociological or investigative criteria. All such work is formed without any communication based measures, with solely the aim of creating visually appealing or eye-catching imagery. Similar to the overall approach of news presentation formats, animation sequences and other visual materials are conceived and developed with the major purpose of appealing to the public. Appeal is not a term which possesses a capacity or base to hinder the message or to undermine the interest of a program. However, as mentioned above, the lack of a professional staff, along with the lack of professional intent lead the way to a casual, disorganized, careless and somewhat chaotic production of news imagery in terms of the unity and consistency of visual format. Consequently, images which do not hold any consistency or language structure are formed. Perhaps not every single channel fits within the above descriptions; however, such descriptions lay out the general and still-continuing overall practices in today's news production.

As informational materials, visual elements intend to serve a functional and promotional role in the presentation of prime time news. Their purpose of enhancing content, presenting clear messages, drawing attention and clarifying meaning is accomplished through the combining of effective imagery with synchronized video by utilizing the conceptualization of designs through symbolic thinking, and by emphasizing simplicity and boldness (Blank and Garcia 1986, 22).

3.2.2. Visual Format of Television News

Today's broadcasting practices show that the visual mode is becoming more important than ever before. Kress and van Leeuwen attest to this fact by stating that "a profound shift is occurring in the relation between the visual and the verbal, a shift in which the visual is becoming more widely used, more systematic and conventionalized and more highly valued than it was" (1992, 104). Similarly, Altheide explains the importance of visuals in determining news formats; he submits that "news formats inform the decisions about where to look for news as well as well as what news look like, and since television news time is essentially allocated in terms of visuals, any event which can be visually represented will have a better chance of being broadcast" (1985, 349).

The term "visual elements" covers a wide range of imagery which is practiced in prime time news. This imagery includes video material, graphic design materials, framing, news studio set up and many other elements. The basic format of these visuals are described below and graphic design materials will be examined in more detail.

When television news materials are explored within the context of informational materials, a verbally dominant presentation style becomes apparent. The use of verbal materials in Turkish television news programs, overall, reveals that the basic structure of news presentations is formed on a conventional verbal discourse which intends to make sure that the message is clearly understood. Graber mentions that TV news in the US takes its basic structure from print news in which visuals are judged primarily by what they can contribute to the verbal text, and not by what they may contribute independently (1990, 135). She continues

in her explanation by stating that "audiovisual television news language works largely through stereotypical verbal and visual discourse that is designed to be easily understood, because the story must quickly convey shared meanings to vast, diverse audiences. There is no time to ponder hidden meanings or even delicate shadings of information" (1990, 136).

To prove the above point, one can take a look at the basic visual structure and the types of visuals used in Turkish television channels. The first observation is the constant use of verbal imagery, namely captions and other print materials, in the news presentation. All channels, regardless of being private or state-owned, practice the application of captions during all news stories. These captions sometimes cover up the one-third horizontal portion of the screen, leaving a much smaller area for the main imagery. Considering the short time span in which captions remain on the screen, approximately 1-4 seconds, the ease of readability and their impact in terms of memorability become debatable.

The repetition of these devices in every news story possesses a potential danger in terms of becoming conventional, usual and eventually, redundant. The examples clearly indicate that the use of captions is more of a practice of over-exaggeration; it is an institutional safeguard against illiteracy in which the channel's policy is to take no chances and guarantee that the aimed message is clearly received by the viewer. As the practice of using prevailing forms of lettering in a newscast is no longer an accepted, standard form of presentation in most Western countries' news reports, such institutions prefer the use of symbolic images in order to support the verbal material, rather than typographic material, in their news presentation. However, it is a dominant visual

characteristic which can be clearly observed in most Turkish television channels' newscasts.

A second observation within the context is one that follows and fits with the use of captions. This observation concerns the non-practice of symbolic images in Turkish television news programs. The previous assertion of verbal materials dominating and forming the basic structure of television news programs is partially due to the absence of symbolic imagery in news programming. To make the point more clear, one must observe the practice of such imagery with the examples seen mostly in Western European and American television channels.

The visual format of television news requires the display of different types of imagery, including video material, shots of the news reporters, print material and symbolic imagery as well. The absence of any one of these elements does not necessarily bring along the assumption that such a news program will not be watched, or be less understood, but it will require a correct and coherent structure for such an absent presentation language. As mentioned above, the absence of symbolic imagery creates an inherently verbal structure within the news programs.

The symbolic imagery that is referred to in this study is visual materials which are simultaneously seen along with the newscasters during the news report. Such imagery is either located in a chroma key box or on a dark background over the shoulder of the news reporter. Symbolic imagery entails the use of signs, which is basically a semiotic term. *The New Shorter Oxford English Dictionary* defines a sign as "a mark, symbol, or device used to represent something or distinguish the object on which it is put;" the same source further describes a sign as "a basic

element of communication, either linguistic (a written or spoken word) or non-linguistic (an image, article of clothing, etc.), consisting of two indivisible elements the relation between which is arbitrary (*signifiant* and *signifié*), and which derives its meaning only from its relationship to other signs within the same sign system" (1993, 2858). Hartley indicates that signs cannot be understood by reference to the objects, notions, or ideas which they seem naturally and transparently to stand for, and that the make-up of a sign and the way it relates to others are determined by the internal structure of the sign system and by the relationship which exists in use between that system and the reality it maps (1982, 16).

The symbolic imagery which are seen in television news programs can be classified based on Pierce's three categories of a sign: symbols, icons, and indexes. A symbol is a sign, object or act that stands for something other than itself, by virtue of agreement among the members of the culture that uses it (O'Sullivan et al. 1983, 234). A symbol has no physical resemblance between itself and its object. A white dove, for example, is a universally accepted symbol for peace; often in television news we observe the image of a white dove being used to symbolize peace talks taking place between two nations.

An icon is a sign which is determined by the nature of its object; an iconic sign is different than its object in terms of its arbitrary or conventional dimension (O'Sullivan et al. 106). A photograph can be an iconic sign, and an illustration of a political leader appearing during a newscast can be considered as iconic imagery. Hartley states that the resemblance of iconic signs to their referent paradoxically blinds us to their essential origin in signification, their equivalence to their object is carefully constructed, and established by convention (1982, 31). The practice of

using various forms of symbolic imagery in a newscast, particularly icons, is a prevailing practice in most Western countries' television stations.

It can be argued that a higher level of intelligence, knowledge or cultural background would be necessary to decipher iconic signs in comparison to typographic materials. However, Green and Loveluck's proposition appear to refute such a claim; they suggest that in the case of abstract or non-depictive symbols such as traffic signs, understanding may depend upon learning the relationship between form and learning, whereas, graphical properties may contribute to referential or denotational meaning (1994, 38). Even if this argument has a solid base, the reason for Turkish TV channels' not using symbolic images can more be attributed to the ease in composing typographic materials for institutional and political purposes. An explanation to this claim can be that, as symbolic images are mostly in the form of icons, and since icons resemble their actualities, there would practically be no room left for interpretation and manipulation on behalf of the television channel. For what is visually presented, is a more true and unmanipulated representation of the actual subject matter than a verbal or lexical explanation. Typography, however, allows a presentation format which can easily be formed and shaped based on the intention of the channel. The typographic mode allows endless flexibility to the news producers to create messages which can easily guide and direct the viewer. As will be seen in Chapter 4, as long as they remain within the story content of that particular news item, typographic materials can easily be used as a form of deception in the presentation of a newscast. Hence, this fact may present a more plausible explanation to the reasons of preferring typographic materials in the newscasts rather than using symbolic images.

Thirdly, an index is a sign that is casually or existentially connected to its object, which also appears to be a part of the object which it refers to (O'Sullivan et. al. 1983, 113). A stack of money bills can be a symbol of wealth, and the use of money bills as symbolic imagery on television news can be used as supplementary imagery for the financial news report.

Finally, in reviewing the visual format of television news, it should be noted that both the absence of forming a solid sense of visual identity, and the selection and production of imagery for prime time news should be viewed within the framework of television's acceptance as an entertainment medium. As the news is viewed both by television professionals, and by the public in this context, elements such as interest, entertainment, sensationalism, and even, trivia, become inherent qualities of prime time news reporting. In support of this view, Dominick claims that many executives in the print and broadcasting media subscribe to the notion that the audience prefers news events that can be told as "stories"; that is, they have drama, action, and a clear story line (1990, 329).

Time is an obvious constraint in terms of being able to provide in-depth coverage of events. However, time should not be considered as an obstacle, for the advancements in telecommunication, video, and computer technology along with archive capacity of most stations have given enormous ease in producing, editing and displaying visual imagery for news programs. In comparison with the capabilities of even ten years ago, the television industry today has reached a level which was incomprehensible at that period. In addition, the practice of television stations' compressing the prime time news within a thirty minute period

is not a forced, but a preferred choice. Many stations claim that attention and being tuned in to news programs cannot be maintained for more than thirty minutes. Mostly due to rating concerns, privately owned stations in particular, limit the length of prime time news programs within tolerable limits. Instead of searching for new formats to present the news with more informational purposes in mind, they prefer to take no chances or show no effort in presenting the news with such intentions. Thus, the thirty minute length has become an almost standard and conventional format for prime time news in many countries and many channels all over the world. Hefzallah in summing up the subject matter, states that "TV news is more of a visual summary of news headlines" (1987, 127).

In studying the news production policies of television stations, Downing, Mohammadi, and Sreberny-Mohammadi point out that because news in the United States is a business and because news production is exercised by organizations whose aims are to sell audience viewing time to advertisers for profit rather than to disseminate information to the public, news programs become a form of show business (1990, 284). They further explain that with the news programs' contribution to the stations' profit-making process through advertising or self-marketing, competition for news viewers has emerged and has led television stations to adopt traditionally accepted journalistic practices to the conventions of camera work and editing more typically associated with television entertainment (1990, 285).

Problems regarding the practice of news production is voiced by other authors as well. Wulfemeyer has examined news production in terms of ethical codes; the results of his survey with television and radio news

directors reveal that almost all of the news directors think that too often electronic journalists do not provide enough background information in news stories which may help people understand the meaning and significance of events and issues (1990, 990). Similarly, Griffin has analyzed television news as a visual presentation and has pointed out that the visuals of TV news rarely serve any informational function, but serve more of a promotional one. He further stresses that:

The pictures and graphics presented by television news most often serve to promote and legitimize the newscast itself by reinforcing the dramatic structure and attractiveness of the program and by lending confirmation and authority to verbal reports. This is accomplished through the use of visual references and symbols that advertise the news operation's power of access, by creating and assembling associated background images and cut-aways that provide an authentic backdrop for the narrative report, and by presenting informational synecdoches, "signs of information" that provide little or no information themselves but suggest a larger body of information to which the news operation is apparently privy (1992, 139).

Although the results of experiments done in the present study, yield different results than Griffin's theory, his overall observation nevertheless offers much light into the production of news programs and the selection of visual materials.

As a primarily visual presentation, television news reaches a strong sense of popularity through its visual strengths of simultaneity and personalization. However, the visual and narrative style adopted is composed of elements such as short shots, fast-moving coverage and visual variety which bring excessive action and drama to these programs. Additionally, learning from television news is made more difficult by the rapidity of the presentation, by the large number of scenes that must be processed and by the large portion of visuals which contain

comparatively little information that directly advance the story line (Graber 1990, 152). However, despite the problems in the presentation format and despite the stereotypical approaches to picture sequences, visuals do convey a great amount of information, and because the visual format of the news overcomes hurdles of literacy and verbal skills, it allows this information to be accessible to most viewers (Graber 1990, 153).

3.3. GRAPHIC DESIGN MATERIALS

In today's visual-oriented information society, consumers demand visual imagery; and news services feel the need for alternative visual material in order to break the monotony of what Larsen calls "talking heads" (1992, 139). In this regard, graphic imagery serves as a useful alternative. However, graphics serve much more of a function than being useful. Often, graphic images are displayed as the main imagery rather than being supplementary imagery, they are used as the major method of presenting a program. At this point it would be helpful to establish a basic terminology. Within the scope of visual communication, graphic communication is the dissemination of information to a large audience by the means of a mass medium, and graphic design is the process of planning and creating visual presentation for achieving predetermined objectives relating to known or predicted audiences (Crow 1986, 11). Graphic design, along with advertising, is a giant industry all over the world; though the presence and influence of graphic design in the television industry has not been felt until ten, or perhaps twenty years ago in most countries. In Turkey, the presence of graphic design has been noticed with the arrival of the private channels only several years ago.

In today's broadcasting practices, graphic design is a vital and integral part of television programs. Merritt states that "graphic design is one of the few elements of television production which is involved in every single program which is made", and he continues to state that "graphic design can extend the range and express ideas and information in forms which cannot be achieved by any other method" (1987, 11). Similarly, Crow suggests five basic functions for using graphic images: (1) To get a message noticed; (2) To give additional information and supplement the printed word; (3) To provide impact; (4) To save words by communicating visually; (5) To add beauty (1986, 75).

In television news, graphic design serves as interpretation material to translate meaning and ideas into visual terms. Merritt outlines the five main areas of graphic design contribution in television programming, which should be applied to television news programming as well, as: "(a) The design and production of graphic materials for titles and end credits. (b) The design and production of graphic materials for program credit, which covers stills, illustrations, captions, animated sequences and special graphic effects. (c) On-screen promotional material for the television station, or network. (d) The design and presentation of the station, or network, identity. (e) The design and presentation of all graphic 'props' for studio and location set dressings" (1987, 15). Graphics are all the elements used to design the appearance of a visual message (Conover 1985, 17). Thus, graphic design contribution can basically be defined as graphic design materials, and graphic design materials can be defined as all supplementary non-video imagery produced for television using electronic image generating devices with the main task of conveying information to the viewer (and serving as an aid to the overall comprehensive ability of the viewer).

The above outline of Merritt furnishes us with a basic knowledge of the production areas of graphic design materials. As briefly indicated in the introduction of this study, graphic design materials include many elements such as symbolic imagery, captions and various lettering, animated sequences and other materials. As this study only entails the use and role of animation sequences, captions, and maps, we will only examine these elements as constituting graphic design materials.

3.3.1. Animation Sequences

Animation sequences have become one of the most popular and attractive visual elements of television news programs within the past few years. The introduction of computer graphics machinery has revolutionized news program imagery with its somewhat exaggerated, but nevertheless eye-catching, captivating and abundantly expressive style.

Many channels all over the world, including the ones in Turkey, today use computer-generated animation imagery for the opening and closing sequences of their news programs. This imagery serves as a cue to mark the beginning or ending of the program. However, if examined closely, it will be seen that these animation sequences serve as a kind of ritual punctuation mark which establish a brief break in the television schedule, emphasize the transition from one type of program to another and prepare the viewers for the next program (Larsen 1992, 128). Such a punctuation mark does indeed possess an intention of creating a ritual in which the channel identity is stressed and the viewer is kindly invited to attend the news program as if it were a ceremony. Particularly, opening animation sequences serve as a reflexive sign in which the visual and

audio materials become an incorporeal entity acting on behalf of the institution with the intention of ritually renewing a contract between the institution and the audience each day. Hence, opening animation sequences should be examined within a framework of 'discourse'.

The role of opening animation sequences should be viewed apart from merely the pure visual qualities they may possess. Along with the impressive visual capabilities of today's animation sequences, viewers are magnetized by the visual imagery of such materials; opening animation sequences lead viewers to connect the idea of possessing powerful visual imagery with the idea of prestige, trust, professionalism and power in terms of corporational qualities. This is a crucial, yet undisclosed aim of any major institution.

3.3.2. Captions

Two basic aspects of captions are typography and color.

3.3.2.1. Typography

Despite the fact that lettering has been a core need for television programming, the contribution of typography to TV program production has been rather poor until fairly recently. The old fashion for composing lettering was through hand-painting captions on black studio cards and placing them in front of a studio camera. In addition, due to low line definition problems, type had to be in rather large sizes and without fine serifs. Letraset rub-on lettering and later, photo typesetting, provided some ease in production processes. Only with the arrival of the electronic character generator in the early 70s did lettering become easy to compose

and truly effective. Today, with the aid and comfort of computers, lettering has become a flexible and creative way of expression, which is what typography basically entails.

The very fundamental function and purpose of typography is to make graphic communication more effective. All typography has a dual presence of alphabetical communication, as visual form and texture. It comprises words to read and forms to see (Meggs 1992, 111). In television programming, the role of typography can be specified with four main purposes: (a) To enhance other visual information; (b) To direct the reader to a certain area of the screen; (c) To identify a person on the screen, such as a news source or a reporter; (d) To place the viewer in the geographic location where a report is taking place.

Creating ease in reading, is the most basic criteria for successful typographic communication. Legibility and readability are the two core criteria which provide ease in reading. Legibility is shaped and dictated by parameters like typeface selection, size of type, x-height of type, line length, spacing between lines, words and letters, and contrast between type and background. The term readability, on the other hand, goes beyond mere legibility and offers not only decipherable, but also pleasing, interesting and easy-to-read words to the viewer (Meggs 1992, 111).

In television news programs the screen is seldom dominated on a total scale by type. In most cases typographic elements appear as secondary elements serving as supplementary material in highlighting other visual imagery. Placement of the type on the screen is vital for clear communication. Television design professionals place type based on how the type relates to other elements appearing on the screen. Type can be

seen placed at any part of the screen; however, the most common position for the placement type is the lower portion of the screen. Dondis suggests that the eye favors the left-hand and lower area of any visual field. She provides explanation by stating that there is a primary scanning pattern of the field that responds to the vertical-horizontal referents and a secondary scanning pattern that responds to the left-lower perceptual pull. She further explains by suggesting that the favoring of the left part of the visual field could be influenced by the Western print formation and the fact that there is strong conditioning in the way we learn to read from left to right (1973, 29).

Typefaces in television programming is selectively decided on the basis of readability, impact, boldness of the typefaces, and simplicity of style (Blank and Garcia 1986, 55). The use of bold founts in comparison to medium or book versions intends to aid the ease of readability and to create an impact for typefaces in headline or subheadline form. Use of boldness in a design allows for immediate graphic impact. Boldness creates immediate clarity and recognition, and when considering the obvious limitations of designing for television such as the size of the screen and the time on the air, this quantity becomes an even more important element to the designer (Black and Garcia 1986, 27).

The consideration of using serif typefaces in television graphic design is not a common and preferred practice. Although serif typefaces, in general, provide ease of readability in text form, such typefaces do not afford the same liberty in headline and subheadline forms. Once again, we must take into consideration the shortness of time period in which such lettering normally appears on the screen. The 1-4 second period in which these words appear is not a sufficient length of time for

deciphering such imagery with ease. Since the average viewer does not usually watch the evening news as if watching a football match, it should not be expected for the average viewer to pay extra attention and concentration on the subtitles presented during such a program. Hence, as the news producers are quite aware of, caption lettering should be designed considering the time factor.

Moreover, the limitations to the size of the screen simply reveal the fact that more characters can be fit within the same amount of space with sans-serif type than with serif-type. We can give an example to illustrate the point by comparing Helvetica, which is an even more legible and widely-used sans-serif typeface than Futura, with Century Expanded, a very legible sans-serif typeface mostly used for display type. If we take 14 point Helvetica regular in upper-case form and compare it with 14 point Century Expanded upper-case, we will see that it is possible to fit 37 characters of Helvetica within a width of 11 cm., in comparison to fitting 33 characters of Century Expanded within the same amount space (Craig 1971, 69 and 79). As seen, television producers must prefer formats and applications which will provide optimum conditions for the message to be relayed as clearly and easily as possible.

Colonetti stresses the conscious, functional and proper use of lettering in graphic communication in which he states "where the contents of the message must prevail over its form as the scenic space of presentation, typographic culture and, in particular, a functional use of lettering, represent a true and proper modernity because the protagonist is, in this case, reason against a false spectacularization" (1989, 13).

3.3.2.2. Color

Colors are known to provide excitement and drama; the color red particularly may intend to serve such a purpose in many channels' applications. Warm reds and other warm colors seem to produce more excitement than cold blues or other cold colors. Assuming similar degrees of saturation and brightness, warm colors seem to us to be more active than cold colors. Highly saturated warm colors can make us feel 'up', while cold colors of less saturation can dampen our mood so we feel 'down' (Zettl 1990, 67). In providing some common affective responses for hues, Myers explains some general characteristics attached to the color red:

Red. The color of blood, passion, and aggression. A symbol of war and pestilence, red is also a warm hue associated with action, strength, zeal-ousness, and religion. Red attracts attention and is used for this purpose in traffic signs, red-pencil corrections, and clothing accessories (1989, 309).

This explanation may give us a clue not only in terms of why red is used in captions during the main news stories versus black, but also why red is used for news captions instead of a cold color. The proper application of color in television graphics may serve as a useful tool to improve viewers' comprehension by pointing out core information in each news story.

3.3.3. Maps

Maps are one of the most frequently used graphic elements in television news which intend to familiarize the viewer with the geographic specifics of a story; they intend to expand the viewer's perspective of an event in terms of its location, surrounding areas and its relation to the

viewer's situation. Maps as informational graphics create a sense of awareness and dependence on topographical information; used in an effective way, they also possess visual impact (Black and Garcia 1986, 103).

Treib points out that maps, like most pictorial information design, address two related tasks. One is to portray the structure of the idea of the subject, whether this be primarily spatial or quantitative; the second task concerns experience, which is a subject matter often neglected in cartographic circles but rampant in tourist and promotional design (qtd. in Treib 1992, 122). News and weather maps are concerned with temporal and geographic depictions. Though, geographic locations are not always central to the purpose of the image. At times, maps can be viewed as setting the scene and hence, controlling the view and becoming the real subject of the image. This is a choice of discourse in terms of the presentation style and format of the television station.

In his discussion about sign-systems, Hartley states that a map is an abstraction from reality, translating it into an autonomous system of signs and codes, proposing ways in which the various and contradictory phenomena of the land can be artificially categorized, classified and differentiated. Maps organize, select and render coherent the innumerable sense impressions we might experience on the ground (Hartley 1982, 15).

The responsibility of television news departments is to compose accurate, legible, geographically perspective, and visually effectual maps which will visually reinforce the news story as well as clarify locational knowledge for viewers. As explained in the previous chapter, even news programs are considered within the framework of entertainment in

television programming; however, maps cannot be considered within such context. Maps overwhelmingly carry informational purposes, and therefore should be prepared and treated with such frame of mind.

4. EXPERIMENTAL STUDIES ON THE EFFECTS OF GRAPHIC DESIGN MATERIALS

4.1. Introduction

Most research on the effects of television on people, has been conducted with the aim of examining the use of video imagery as stimuli for learning. Although such studies tend to examine pictures with the intent of identifying their contribution to information transmission and memory processing, they largely fail to address the role of other visual presentational features on recall and learning. Graphic design materials are informational features for which we find a lack of specific visual analysis in their role of being a learning device.

This study intends to examine the effects of graphic design materials on the retention level of viewers in television news with the direct aim of determining the role and function of those materials in the construction of reality. Although a theoretical approach alone may offer plausible suggestions to such issues, it lacks a level of substantiation which may be offered through an empirical approach. Quantifying a theoretical framework does not conflict with its theoretical base, but only enhances and solidifies its hypothetical grounds. The issue of graphic design materials and their role in comprehension is a study that can be enlightened more clearly and concretely through an empirical approach.

As done with many communication studies regarding broadcasting, this study aims at presenting a stronger discussion on the subject matter using the specific findings discovered through the results of the study.

To find out whether these queries possess any substantial ground, two experiments have been conducted. These experiments were aimed at providing an empirical framework to the role of graphics in the construction of reality. These consisted of showing independent groups edited and non-edited versions of an actual newscast and later testing the level of recall. Table 1 displays the set-up of the two experiments conducted in this study.

Table 1: Basic Set-Up of the Experiments

| | Unedited Version | Edited Version |
|--------------|------------------|----------------|
| Experiment 1 | A | B |
| Experiment 2 | A | B |

The two experiments are differentiated by the nature of the editing done. The first one intends to test whether graphics are real and effective elements which increase retention levels. In other words, it is tested whether graphics are a strong visual element that play a major role in the delivery of information in prime time news. The second experiment carries the aim of testing the influential capacity of graphics in increasing retention levels with a specific goal of displaying the core informational role, as well as the manipulative role of these materials. This experiment

specifically intends to test whether graphic design materials can play a dominant and consequential role in misinforming and misleading viewers in television news learning.

Television was assumed to have an overwhelmingly informational role and we strived to see how far viewers could be manipulated in terms of learning the informational material. Editing is a well known and widely practised technique that is used to select certain parts of the story to be shown to viewers. However, tampering with graphics is not a method that is widely used by TV channels; this is not a practice that we commonly see today in the world, for certain journalistic guidelines or ethical responsibilities may be preventing journalists from such a practice. The experiments in this study, though, intended to reveal that the merging of the audio with graphics possesses the capability of distorting and misleading people's perception of reality.

This study is concerned with the cognitive effects of television news and the role of graphic design materials in this context. It was expected that the results of both experiments would show that graphics play a dominant role in the construction of reality for television viewers. It was forecasted that results, in addition, would reveal certain traits and patterns that may exist among certain subgroups. These results will help us interpret the trends and motives of the subgroups in terms of why certain differences may exist.

4.1.1. Hypotheses

Learning is not the only effect of media attention and media exposure, but it is a cognitive and primary one. Growing numbers of studies on

learning from television newscasts indicate that viewers recall little of the content (Son, Reese and Davie 1987, 207). How much of the content of television news stories is retained and whether graphic design materials play any role in developing the retention level of the viewers is the key issue that needs to be elucidated. Studies that relate to this problem state different views. In one study, the results show that overall, redundant pictures and words enhance learning, while adding redundant print information either has no effect or detracts from learning (Reese 1984, 85). However, most other research shows contrary results in various measures. If memorability and learning are linked, ease of processing becomes a significant learning factor, and research suggests that visual themes are remembered and learned more readily than verbal themes (Graber 1990, 146); in addition, printed or spoken messages excel in providing story background, context and explanation (1990, 152). In terms of examining the role of supplementary verbal information, recaps, including either oral recaps, oral-plus-graphic recaps, or no recaps, are found to increase retention of the gist of the stories, but do not affect retention of specific details (Bernard and Coldevin 1985, 407). Another study by Large, Beheshti, Breuleux and Renaud which investigates the role of text, animation, and captions facilitating comprehension in a multimedia environment, found captioned animation to be more effective than noncaptioned animation (1995, 346). Similarly, Edwardson, Kent and McConnell found that graphics aid recall of a story's topic more than its details (1985, 367).

Based on these findings, the following hypothesis has been formulated for the first experiment of the present study:

H1: In learning from television news, graphic design materials increase the level of recall and retention of the news story content.

If graphics are proven to increase the recall and retention level of a news story content, a base should develop which opens the path for further roles and directions in terms of the communicative capabilities of graphic design materials. Within a general perspective, the news analysis of Graber reveals that the way television news stories are presented does, indeed, militate against learning (1990, 136). A more precise criticism in terms of graphics, states that the television screen does not always require type as an element to make meanings clear, and posits that other visual elements and sound become more important in communicating information; hence, in this viewpoint the purpose of type is conceived as making reading easy and making the material on the screen more meaningful (Blank and Garcia 1986, 51). However, particularly considering the role and effectiveness of today's television imagery, such an evaluation stands as being general, vague and even deficient. A contrasting and more overall approach posits that television has a form that is conducive to grasping and holding attention in a way that makes use of very fundamental perceptual systems (Condry 1989, 145). Though, Grimes warns us on the practice of such perceptual systems and posits that the video and audio have the potential for altering memory of one another (1990, 766). Berry takes the argument of Findahl and Höijer and specifies on how to make use of the fundamental perceptual system in view of the evidence that the degree and nature of audiovisual correspondence determines the level and pattern of information gain; that it seems likely that the best way to improve learning from the news lies in the more careful design of photographs, graphics and captions to support the news text and underline the viewers' grasp of the casual

structure of the story (qtd. in Berry 1983, 368). Based on the nature of the link between a news story's visual context and its information that is expected to be remembered, visual information can inhibit understanding or be misleading (Orthonoy qtd. in Woodall, Davis, and Sahin 1983, 14). Another view suggests that graphics have a unique power to enhance, or to impede understanding, depending on how well we select them (Crow 1986, 75).

Based on the above hypotheses and findings, the following hypothesis has been formulated for the second experiment of the present study:

H2: As visual retrieval cues, graphic design materials can alter viewers' recall of the content of news stories.

4.2. SELECTION OF STIMULUS MATERIAL

A careful observation and analysis of Turkish newscasts was done to select which channel's newscast would be used as stimulus in the experiments. The channels which were considered are the state TV channels TRT 1, TRT 2, and the private channels ATV, STAR TV, Channel D, SHOW TV, Channel 6, TGRT, and HBB TV. An attempt was made to preview all channels without political, religious, or social group concern or prejudice. The only criterion for observing channels was the basic visual presentation format of their news and how they incorporated graphic design materials in their formats. The selection of the stimulus material was based on the following basic criteria: a) simplicity and clarity in the visual format which provides ease in readability; b) use of visual devices and tricks; c) the nature and use of typography.

Following a one-month long examination of all the newscasts of these channels, SHOW TV was selected for the experiments based on its consistent, strong and bold use of graphic design materials. Unlike most other channels' interpretation, graphics are a major and functional element in the presentation of SHOW TV news. Its graphic design format does not overpour with devices and tricks in which the ultimate aim is to turn news into a pure and simple opportunity for entertainment. The basic visual format and use of typography in SHOW TV's newscast carries some resemblance to the Italian RAI-TV's TG2 (Tele Giornale Duo) news program. In the TG2 newscast two large horizontal black fillets cover up the top and bottom portions of the screen. The area in between these fillets is divided in two and appears as a double opening page where the news picture and that of the speaker are seen simultaneously; lettering becomes form, self signifying structure and is no longer simply a caption. In TG2's format, television news has thus become an illustrated newspaper where the front and back covers, the graphic scansion of sections and the historical spaces of editorial typographic culture become the main elements of the new design. The design for TG2 leads typographic form to symbolize the purpose of television information, without however forgetting the soul of a visual communication that must be capable of speaking to the heart of people listening with their eyes (Colonetti 1989, 13).

Similar to the channel TG2, SHOW TV's design format allows typographic form to symbolize the purpose of television information. Considering the overall format, SHOW TV news possesses a sense of visual identity which has been gained through its use of color and typography, forming continuity for coverage throughout its entire newscast. SHOW TV is one of the few channels which has a clear,

consistent and legible visual identity in its news presentation. The above visual elements serve as strong criteria which fulfill our expectations towards selecting the most suitable channel for the purposes of this experiment.

4.2.1 Graphical Features of SHOW TV Newscasts

4.2.1.1. Typography

SHOW TV newscasts use the typeface Futura Bold for all of its typographic news material. As is the case with most sans-serif typefaces, Futura is not a type that can be read easily in the form of the text. However, Futura creates relatively little problems in terms of readability when it is presented in headline or subheadline form. As is the case with SHOW TV newscasts, Futura is used in the form of subheadline in the lower one-fifth captions during each news story in white on a red band covering the lower one-fifth portion of the screen. Some lettering also appears in white on a black background when messages carry minor importance. These captions cover the lower one-sixth portion of the screen and usually appear for no more than 2 seconds.

Although not alike in terms of overall format, SHOW TV applies a strong sense of typography similar to TG2 in its overall practice of news reporting. This strong exercise can easily be noticed throughout the newscast as the use of typography displayed during the entire newscast is very consistent. Applying Futura Bold in different point sizes in each news story to spread out the message for the same purpose is not a practice that can be observed in SHOW TV's graphics. Copyfitting can be a major constraint in designing a page or layout, however, SHOW TV

accomplishes the fitting of the copy not through creating variances in the parameters of the type, but through limiting the length of its messages as captions. Within this principle, we do not observe long and difficult-to-read captions. Such lettering is kept short enough to fit into one line so that it relays the very basic message briefly, and follows in line with the elementary principle of news reporting which is, presenting the material briefly and not overloading the viewer's mind with excessive information.

The presentation of each story reveals a format unique to SHOW TV in comparison to other Turkish channels. In many of the news stories, the left one-third portion of the screen is divided vertically with a black background. In this area we see lettering positioned vertically in white; the lettering consists of one-word general topics to be presented. On the remaining two-third portion of the screen a close-up shot of the newscaster's face appears as she introduces each news story. This introduction to the main story is kept short, usually taking a time lapse of 4-10 seconds. This portion of the news story gives SHOW TV a uniqueness in terms of format, as no other Turkish channel displays a similar practice. Graber states that facial close-ups reveal mental states and emotions (1990, 138); the appearance of the close-up shot of the newscaster along with the display of bold vertical lettering intends to affect and captivate the attention of the audience in addition to bringing in some drama to that particular news story.

The section featuring the stock market and currency exchange rates is quite brief, but potent in terms of content. The information is given in one-line captions covering the lower one-fourth portion of the screen. Similar to the captions seen during videotaped material, all lettering is

written in Futura Bold with white lettering. However, the captions appear not on a red but a solid black background without any layering or multiple images as is often seen in other channels' monetary section presentations. This portion of the news is kept very short as it only lasts around 10-12 seconds.

4.2.1.2. Color

Color plays a major role in creating a sense of continuity in SHOW TV's graphics. The two dominant colors that are applied in almost all works are black and red. The color black appears starting with the opening animation, and continues to appear in the left one-third vertical captions along with the newscaster's close-up image, and in the brief presentation of monetary news towards the end of the newscast. In all examples, the color black appears as the background color with white lettering placed over. The black and white color contrast provides legibility in terms of ease of reading. The color red can be seen in all other accompanying captions during the newscast as the background color with white lettering on top. It would be inaccurate to assert the use of the red band in SHOW TV's prime time news solely as a property for establishing a code of identification. Many channels use the color red in their news presentations for the same expressive reasons.

Creating contrast in the figure-ground relationship in order to provide visibility and readability to the message is a deciding factor in the selection of color. The visibility of any image or object may be reduced, camouflaged, or hidden by levelling the contrast between the figure and the ground; red is a preferred color which intends to stand out from the ground and attract attention, and enhance the visibility of the message.

Hence it would not be correct to identify the application of the color factor purely as a visual identification code, but more as a signification code.

4.3. EXPERIMENT 1

In the first experiment subjects were chosen from college environments and randomly divided into two groups. Each group was shown a different version of the same news, but both were asked the same items of questions in testing recall. The first group, A, was shown the original version, which had no editing done on it other than being shortened in length. The second group, B, was shown the edited version of the same news which meant that all visual informative materials, including captions, maps, opening animations were completely deleted through editing. Hence, we had two versions of the same newscast: version A, the original/unedited video material which was shown to the first Group A, and version B, the edited/graphically deleted version which was shown to the second Group B.

4.3.1. Viewing Material

The regular news program of the SHOW TV channel normally lasts about thirty minutes. A usual prime time news program of SHOW TV contains an average of 20-25 news stories, many of which are trivial news. Included in this period are the commentary section and the weather report. This is an excessive amount of information to be remembered by the subjects, hence it would not be appropriate to use the whole period for the experiment. Thus in Experiment 1, SHOW TV's

nightly news of April 3, 1995 was selected and shortened down to the length of about fourteen minutes.

An important criterion that was applied in selecting the April 3rd newscast as the most suitable evening's news was in terms of the story content. A careful examination was exerted not to select a particular evening's newscast which would have been remembered easily by the subjects. Actual events which would not have allowed us to make clear and correct evaluations, for the responses given to such questions possessed the potential danger of being known in advance and therefore becoming biased answers, were disregarded.

The news sequence used in the experiment had fourteen news items which were presented in the same order as they appeared in the newscast. These consisted of the following:

- 1- The German government (the negative stance of the German government against the military operation of the Turkish Armed Forces in Northern Iraq) .
- 2- The financial support (the financial support of the German Democratic Socialist Party to a fundamentalist Islamic group).
- 3- İnönü's visit (Turkish Minister of Foreign Affairs, Erdal İnönü, visiting German Foreign Minister Klaus Kinkel in Germany regarding the same military operation).
- 4- The two diplomats (the changing of duties of two Turkish diplomats).
- 5- The 20 kilometer move (Turkish Armed Forces moving 20 kilometers more into Northern Iraq).

- 6- Mesut Yılmaz's opposition (the negative stance of the opposition leader Mesut Yılmaz regarding the government's actions on the military operation in Northern Iraq).
- 7- The handball game in Cyprus (the handball game that Turkey has played with the Greek side in Cyprus and the unusual route that has been followed in order to arrive there).
- 8- The handball game in Turkey (the return match in Turkey between the same teams and the unusual route that the Greek Cypriots followed in order to get there).
- 9- Hikmet Çetin's position (the steady rise of the leader of the Republican People's Party, Hikmet Çetin).
- 10- The court decision (the court decision of life sentence in prison on the killing of a famous mafia leader's daughter).
- 11- The 1995 beauty pageant (Miss Turkey 1995 beauty pageant this year being held in a famous hotel).
- 12- The stock market (the growth in the İstanbul Stock Market).
- 13- The US\$ (the currency rate of the US\$).
- 14- The weather report (the evening's and next day's weather report).

Details of the content of the stories are given in Appendix 7.1.

In thirteen of the stories above, the subjects from the two groups saw the video materials in slightly different size, because graphic design materials were left out in the edited version. The deletion of such materials created a difference in the basic visual format between the editions of the news; however, the most significant difference occurred in the visual presentation of the final news item, the weather report. Subjects in Group A were shown the original version of weather report; whereas, subjects in Group B were not shown any maps, numbers or iconic



Figure 1.a: The Unedited Version of the News, Experiment 1



Figure 1.b: The Edited Version of the News, Experiment 1



Figure 2.a: The Unedited Version of the Weather Report, Experiment 1



Figure 2.b: The Edited Version of the Weather Report, Experiment 1.

symbols which normally appear in such a news, but were only shown a video footage of the sponsoring firm's advertising normally seen in the regular weather report every evening. Hence they only heard the weather report. Figure 1.a displays the unedited version of the news report, and Figure 1.b displays the edited version of the news report. Figure 2.a displays the unedited version of the weather report, and Figure 2.a displays the edited version of the weather report.

The elimination of all graphic design materials in version B caused a change in the size of images shown during the newscast. This change resulted from enlarging the main recorded image approximately by 20% in linear size. The necessary tampering of such visual material lead to a slight structural change in the framing and presentation of the two-dimensional image in which certain visual features within the main imagery had to be forsaken. However, if it would be a safe assumption to state that the main body of visual information is usually formed and positioned within the center of a frame, then it could be concluded that not much loss of information has occurred as a result of such an enlargement process. Although the increase in the image ratio creates a lower-definition image, such an increase does not curtail details of the picture where interference in the comprehension of the story might occur.

No editing or interruption was made on the audio track of either of the two versions. During all viewings, no mechanical or environmental noise problems which could interfere with the viewing process occurred. Also, the April 3rd original newscast did not contain any semantic noise, which is an interrupting element that can occur when different people

have different meanings for different words and phrases (Dominick 1990, 10).

4.3.2. Method of Experiment

4.3.2.1. Subjects

A constraint of the testing methodology in terms of having to show subjects video material and then collect response data forced us to conduct the experimentation process with certain limitations. As the test could only be conducted in videotape equipped rooms, we were mostly confined to conduct such an experiment in college environments where such facilities were available. In addition, the difficulty of forming groups from various parts of the community who would be willing to participate in an experiment, finding places where the video material could be shown and setting up these materials, created extra potential difficulties which prevented us from conducting such an experiment outside college environments. Due to these restrictions, the selection of the subjects was determined by finding groups of individuals from university surroundings who would be willing to become subjects for the purposes of the experiment.

Two hundred and sixty nine adults have participated in the first experiment; of these, 126 subjects were shown the unedited version, A, whereas 143 subjects watched the edited version, B. However, only 256 of these subjects' results were considered valid for tabulation, for the answers of thirteen subjects' were either incomplete, or inadequate in the responses of the questionnaire. Within these groups, 117 subjects have fully or adequately participated in the unedited viewing version, A, and

138 have participated in the edited version, B. The distribution ratio of the students and other university personnel in the experiment was very similar. Out of the total of 256, one-hundred and nineteen female and 137 male subjects, ranging between the ages 17 to 51 and above have fully or adequately participated in the experiments and were allocated at random to one of the two groups. All subjects came from college environments; the ones who fully or adequately participated in the experiments included 184 students and 72 workers. Students were mostly undergraduates from various departments, including Fine Arts and Design, Business, Economics, Engineering, Social Sciences, Communication. The workers were among the cleaning personnel, security people, and auxiliary services people of three universities: Bilkent, Middle East Technical, and Ankara.

Minor variations existed among some of the viewing sessions. All Bilkent University subjects who participated in the experiment were shown the video material in three large size classrooms in the Faculty of Fine Arts, Design and Architecture. All classrooms had a capacity of 60 seating. Most viewing sessions were conducted with small groups ranging between 4 and 15 subjects in each session. In only two of these viewings, there were more than 15 subjects: 27 subjects in one of the Group A viewings, and 36 subjects in one of the Group B viewings, which all consisted of workers. Hence, most of the subjects were provided with an optimum seating distance of 2,5-4 meters for better viewing conditions. In the two groups with 27 and 36 subjects, the seating distance extended up to 7 meters.

22 graduate students from the Middle East Technical University and 12 undergraduate students from Ankara University participated in the

experiment. The viewing session at the Middle East Technical University was conducted in a small size classroom designed to seat up to 12 people; two sessions were conducted with 11 students in each viewing with a seating distance of 2-3 meters. It can be asserted that these subjects were provided with optimum viewing conditions. On the other hand, 12 students from Ankara University have participated in the experiment and were shown the video materials in a very small room designed for private viewing. The room was designed to seat only a maximum of 7 people. However, the very small room with the small size television set provided very good viewing conditions for the two groups which participated in the viewing session.

4.3.2.2. Procedure

Subjects were taken into viewing sessions in groups by counting their total numbers and splitting them up in half. In this division process, special care was taken to distribute each homogeneous group evenly in terms of gender as well. As all viewings had to take place in video equipped university classrooms, the showing of the test material was contingent on available time periods for these rooms. Each of the divided groups was taken into the video viewing room separately; while the first half was watching the news, the other half was asked to wait some place away from the testing room until the end of the first group's testing. Following the completion of the first group's testing, the group that had been waiting would be taken into the video viewing room. In a few instances, more than one classroom was available for testing. Here, each group was taken into separate viewing rooms and simultaneously shown one of the two different versions of the videotape material. Such viewings were conducted with the assistance of fellow teaching staff who

were very carefully instructed about the method of testing, including all procedures. The unedited, A, and edited, B, versions of the news were shown to a total of 24 different viewing groups (Table 2), and each testing session lasted between 20 and 40 minutes.

Table 2: Layout of Participation for All Subjects, Experiment 1.

| EXPERIMENT 1 | METU Undergraduate Students | Bilkent Graduate Students | Bilkent Workers | Graphic Design First Year Undergraduates | Graphic Design Second Year Undergraduates | Graphic Design Third Year Undergraduates | Interior Design Third Year Undergraduates | Landscape Architecture First Year Undergraduates | METU Graduate Students | Bilkent Workers | Economics Fourth Year Undergraduates | Ankara University Undergraduates | TOTAL |
|----------------------------|-----------------------------|---------------------------|-----------------|--|---|--|---|--|------------------------|-----------------|--------------------------------------|----------------------------------|-------|
| Unedited Version (Group A) | 2 | 3 | 4 | 12 | 11 | 11 | 15 | 19 | 11 | 27 | 6 | 5 | 126 |
| Edited Version (Group B) | 5 | 4 | 4 | 14 | 12 | 11 | 16 | 18 | 11 | 36 | 5 | 7 | 143 |

Subjects in all 26 groups were given the same instructions about the answering procedure, and were treated in the exact same manner. No different procedures were implemented in the method of administration of the test. Subjects were provided with proper viewing conditions. All viewings took place in rooms with dim lighting in order to attain total concentration on the program. Internal and external light sources that could impair the viewing process were minimized. The relatively silent environments and special lighting conditions of the rooms have given a certain advantage to the viewers, for the psychology of being tested has forced at least part of the subjects to view the broadcast more attentively than they normally would do in their own living rooms.

At the start of each viewing session subjects were given brief information about what they were about to see. They were told that a study on television news was being conducted and that they were about to see a 14 minute version of SHOW TV news from April 3rd, 1995. However, they were not given any further explanation regarding what kind of an experiment they were participating in, and they were not told about the intentions and motives of this study. Viewers had no prior knowledge about the aim or the content of this experiment.

Subjects in both groups were asked to carefully view the news and later answer the questions regarding the news stories. Subjects first answered the questions about the news that they had just seen, then they filled out a questionnaire aimed at shaping a general profile of the viewers in terms of their television viewing habits and their social status. The fourteen questions about the news were presented in a leaflet in the original order of the actual newscast.

One problem faced during the analysis was the discovery of items left blank in the answer sheets of some of the subjects. This situation created a minor problem of variations in the total number of responses for almost each question. As can be seen in the tables given in the appendices, the tabulation of the total numbers in Group A always do not add up to the total number of 117, and the total numbers in Group B always do not add up to the total number of 138. However, this problem did not occur at levels which could impair the results of the experiment.

4.3.2.3. Test of Recall

The questionnaire has been designed with the aim of measuring retention rather than analysis of story content. Specific facts of the news stories have been used in the questions and have been repeated with the exact phrasing expressed in most of the stories. For this purpose, the experiment has been structured on aided recall measures, using graphic design materials as episodic retrieval cues intending to tap memory; such cues which prompt retrieval of story interpretations, can be linked to learning. As Woodall, Davis, and Sahin suggest, the items of multiple choice questions are sensitive to different levels of inference making, and thus are one of the main ways of measuring depth of processing and learning. In addition, multiple choice questions whose phrasing includes episodic retrieval cues, and whose items focus on news event details can be a more precise method to measure memory (1983, 22). Hence, a multiple choice test, comprising of 14 questions, was used to measure aided recall in assessing levels of learning.

The test of recall included questions about each news item, and in some items, there were several questions about each item. Respondents were given five different alternatives to choose from in each of the fourteen questions. The questions offered five possible answers: one correct answer which would be related with the graphic material shown, three other answers that were relevant to the content of the news story but not related to the content of the graphics. The last choice in all questions was always "I don't recall". All fourteen items shown to the subjects carried one correct answer, for what was given on the audio channel was repeated through graphic design materials. Graphics were used as a device to authenticate the information presented on the audio. However,

in four of the news items shown, questions appeared to contain more than one correct answer due to the difference in the oral and graphic presentations. In these examples, the oral information was repeated through graphics as well, however, some of the other oral information presented in these news stories was introduced as possible answers in the multiple choices. Initially, this situation appeared to be a flaw in the design of experiment; however, it was intended to create flexibility and to allow us to measure attention towards audio-verbal materials versus graphic design materials more specifically. As will be seen in the analysis, this extra measure provided us with the type of information expected particularly in some subgroups.

Although this study was conducted with individuals from university environments, results are tabulated with some consideration to demographic variables. Aside from the overall results, responses of subjects are also examined in terms of two subgroups: (a) gender, (b) educational level. This type of a specified examination intends to offer possible explanations regarding variance of memory performance among certain subgroups. The test of recall used in Experiment 1 is given in Appendix 7.3.

4.3.2.4. Questionnaire of Subject Profile

In addition to the questions asked to measure recall of television news, a second group of questions were asked to the subjects with the aim of establishing a framework of the television viewing tendencies of the subject groups. Questions ranged from social group items such as age, sex, profession, educational level, income level, to subjects relating to television viewing habits such as how often and for which reasons

subjects watch television, how closely they follow events developing in Turkey and in the world, which medium they use most for news, how much trust they invest in television news, which channels they prefer to watch the news and their reasons for such preferences. The above profile questions were intended to serve as a guide for interpreting test results. In fact, the results have aided us in diagnosing and clarifying some issues, particularly among subgroups. The questionnaire of subject profile used in Experiment 1 is given in Appendix 7.5.

4.3.3. Results of the Experiment

The results obtained in Experiment 1 are provided in Tables 3.a to 7.b.

Table 3.a: Frequency Table of Answers to Test 1A, All Subjects

| Question | a | b | c | d | e | Total |
|----------|----|-----|-----|----|----|-------|
| 1 | 39 | 14 | 56 | 2 | 5 | 116 |
| 2 | 27 | 40 | 15 | 12 | 22 | 116 |
| 3 | 8 | 6 | 1 | 89 | 11 | 115 |
| 4 | 7 | 11 | 32 | 49 | 15 | 114 |
| 5 | 5 | 91 | 7 | 9 | 5 | 117 |
| 6 | 9 | 25 | 15 | 23 | 37 | 117* |
| 7 | 2 | 4 | 17 | 80 | 12 | 115 |
| 8 | 6 | 6 | 89 | 7 | 9 | 117 |
| 9 | 14 | 3 | 11 | 54 | 35 | 117 |
| 10 | 1 | 103 | 3 | 8 | 2 | 117 |
| 11 | - | 3 | 111 | 1 | 2 | 117 |
| 12 | 10 | 68 | 16 | 4 | 19 | 117 |
| 13 | 6 | 11 | 87 | 1 | 12 | 117 |
| 14 | 1 | 68 | 10 | 10 | 28 | 117 |

* There is also part (f) here, answered by 8 subjects.

Table: 3.b: Frequency Table of Answers to Test 1B, All Subjects

| Question | a | b | c | d | e | Total |
|----------|----|-----|-----|----|----|-------|
| 1 | 70 | 18 | 32 | 2 | 12 | 134 |
| 2 | 11 | 56 | 16 | 27 | 23 | 133 |
| 3 | 8 | 14 | 3 | 80 | 28 | 133 |
| 4 | 7 | 10 | 52 | 30 | 33 | 132 |
| 5 | 15 | 63 | 5 | 19 | 35 | 137 |
| 6 | 9 | 22 | 11 | 41 | 42 | 133* |
| 7 | 7 | 13 | 15 | 71 | 26 | 132 |
| 8 | 6 | 12 | 59 | 10 | 46 | 133 |
| 9 | 24 | 5 | 18 | 60 | 29 | 136 |
| 10 | 2 | 109 | 3 | 13 | 7 | 134 |
| 11 | 4 | 4 | 107 | 4 | 18 | 137 |
| 12 | 19 | 64 | 11 | 5 | 39 | 138 |
| 13 | 7 | 27 | 52 | 2 | 49 | 137 |
| 14 | 4 | 38 | 15 | 9 | 71 | 137 |

* There is also part (f) here, answered by 8 subjects.

Table 4.a: Frequency Table of Answers to Test 1A, Female Subjects

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|----|-------|
| 1 | 14 | 5 | 30 | 1 | 1 | 51 |
| 2 | 12 | 15 | 6 | 6 | 12 | 51 |
| 3 | 2 | 3 | 1 | 39 | 5 | 50 |
| 4 | 2 | 5 | 14 | 21 | 8 | 50 |
| 5 | 3 | 36 | 4 | 4 | 4 | 51 |
| 6 | 4 | 9 | 4 | 14 | 17 | 51* |
| 7 | 1 | 1 | 9 | 34 | 6 | 51 |
| 8 | 4 | 1 | 39 | 3 | 4 | 51 |
| 9 | 4 | 1 | 6 | 23 | 17 | 51 |
| 10 | - | 47 | 1 | 1 | 2 | 51 |
| 11 | - | - | 51 | - | - | 51 |
| 12 | 2 | 27 | 6 | 2 | 14 | 51 |
| 13 | 3 | 3 | 39 | - | 6 | 51 |
| 14 | 1 | 33 | 1 | 5 | 11 | 51 |

* There is also part (f) here, answered by 3 subjects.

Table 4.b: Frequency Table of Answers to Test 1B, Female Subjects

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|----|-------|
| 1 | 30 | 6 | 25 | - | 4 | 65 |
| 2 | 5 | 30 | 5 | 10 | 14 | 64 |
| 3 | 2 | 7 | 1 | 40 | 14 | 64 |
| 4 | 3 | 8 | 27 | 13 | 14 | 65 |
| 5 | 6 | 29 | 2 | 10 | 20 | 67 |
| 6 | 3 | 8 | 6 | 26 | 16 | 66* |
| 7 | 4 | 7 | 8 | 31 | 15 | 65 |
| 8 | 2 | 8 | 25 | 5 | 24 | 64 |
| 9 | 13 | - | 10 | 26 | 16 | 65 |
| 10 | 1 | 52 | - | 8 | 5 | 66 |
| 11 | 2 | 1 | 55 | 3 | 6 | 67 |
| 12 | 7 | 28 | 6 | 5 | 22 | 68 |
| 13 | 5 | 1 | 25 | 2 | 25 | 68 |
| 14 | 3 | 17 | 8 | 6 | 34 | 68 |

* There is also part (f) here, answered by 7 subjects.

Table 5.a: Frequency Table of Answers to Test 1A, Male Subjects

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|----|-------|
| 1 | 25 | 9 | 26 | 1 | 4 | 65 |
| 2 | 15 | 25 | 9 | 6 | 10 | 65 |
| 3 | 6 | 3 | - | 50 | 6 | 65 |
| 4 | 5 | 6 | 18 | 28 | 7 | 64 |
| 5 | 2 | 55 | 3 | 5 | 1 | 66 |
| 6 | 5 | 16 | 1 | 9 | 20 | 66* |
| 7 | 1 | 3 | 8 | 46 | 6 | 64 |
| 8 | 2 | 5 | 50 | 4 | 5 | 66 |
| 9 | 10 | 2 | 5 | 31 | 18 | 66 |
| 10 | 1 | 56 | 2 | 7 | - | 66 |
| 11 | - | 3 | 60 | 1 | 2 | 66 |
| 12 | 8 | 41 | 10 | 2 | 5 | 66 |
| 13 | 3 | 8 | 48 | 1 | 6 | 66 |
| 14 | - | 35 | 9 | 5 | 17 | 66 |

* There is also part (f) here, answered by 5 subjects.

Table 5.b: Frequency Table of Answers to Test 1B, Male Subjects

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|----|-------|
| 1 | 40 | 12 | 7 | 2 | 8 | 69 |
| 2 | 6 | 26 | 11 | 17 | 9 | 69 |
| 3 | 6 | 7 | 2 | 40 | 14 | 69 |
| 4 | 4 | 2 | 25 | 17 | 19 | 67 |
| 5 | 9 | 34 | 3 | 9 | 15 | 70 |
| 6 | 6 | 14 | 5 | 15 | 26 | 67* |
| 7 | 3 | 6 | 7 | 40 | 11 | 67 |
| 8 | 4 | 4 | 34 | 5 | 22 | 69 |
| 9 | 11 | 5 | 8 | 34 | 13 | 71 |
| 10 | 1 | 57 | 3 | 5 | 2 | 68 |
| 11 | 2 | 3 | 52 | 1 | 12 | 70 |
| 12 | 12 | 36 | 5 | - | 17 | 70 |
| 13 | 2 | 16 | 27 | - | 24 | 69 |
| 14 | 1 | 21 | 7 | 3 | 37 | 69 |

* There is also part (f) here, answered by 1 subject.

Table 6.a: Frequency Table of Answers to Test 1A, Subjects of Higher Educational Level

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|----|-------|
| 1 | 28 | 6 | 50 | 1 | 4 | 89 |
| 2 | 25 | 29 | 10 | 8 | 17 | 89 |
| 3 | 3 | 2 | 1 | 74 | 8 | 88 |
| 4 | 3 | 5 | 24 | 44 | 11 | 87 |
| 5 | 3 | 74 | 3 | 5 | 4 | 89 |
| 6 | 3 | 17 | 8 | 20 | 33 | 89* |
| 7 | 1 | - | 1 | 68 | 9 | 89 |
| 8 | 2 | 1 | 74 | 5 | 7 | 89 |
| 9 | 5 | 1 | 7 | 45 | 31 | 89 |
| 10 | - | 81 | 2 | 4 | 2 | 89 |
| 11 | - | - | 88 | - | 1 | 89 |
| 12 | 7 | 52 | 9 | 3 | 18 | 89 |
| 13 | 3 | 9 | 65 | - | 12 | 89 |
| 14 | 1 | 47 | 6 | 8 | 27 | 89 |

* There is also part (f) here, answered by 8 subjects.

Table 6.b: Frequency Table of Answers to Test 1B, Subjects of Higher Educational Level

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|----|-------|
| 1 | 56 | 11 | 26 | - | 9 | 102 |
| 2 | 7 | 47 | 13 | 19 | 15 | 101 |
| 3 | 6 | 10 | 1 | 66 | 18 | 101 |
| 4 | 4 | 7 | 41 | 26 | 25 | 103 |
| 5 | 8 | 48 | 4 | 16 | 27 | 103 |
| 6 | 3 | 15 | 5 | 37 | 39 | 103* |
| 7 | 3 | 7 | 11 | 64 | 17 | 102 |
| 8 | 3 | 11 | 48 | 8 | 32 | 102 |
| 9 | 11 | 3 | 11 | 54 | 21 | 100 |
| 10 | - | 86 | 2 | 10 | 4 | 102 |
| 11 | 2 | 1 | 90 | - | 10 | 103 |
| 12 | 13 | 50 | 8 | 2 | 29 | 102 |
| 13 | 2 | 18 | 41 | 2 | 39 | 102 |
| 14 | 1 | 23 | 10 | 3 | 65 | 102 |

* There is also part (f) here, answered by 4 subjects.

Table 7.a: Frequency Table of Answers to Test 1A, Subjects of Lower Educational Level

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|---|-------|
| 1 | 11 | 8 | 6 | 1 | 1 | 27 |
| 2 | 2 | 1 | 5 | 4 | 5 | 27 |
| 3 | 5 | 4 | - | 15 | 3 | 27 |
| 4 | 4 | 6 | 8 | 5 | 4 | 27 |
| 5 | 2 | 17 | 4 | 4 | 1 | 28 |
| 6 | 6 | 8 | 7 | 3 | 4 | 28* |
| 7 | 1 | 4 | 6 | 12 | 3 | 26 |
| 8 | 4 | 5 | 15 | 2 | 2 | 28 |
| 9 | 9 | 2 | 4 | 9 | 4 | 28 |
| 10 | 1 | 22 | 1 | 4 | - | 28 |
| 11 | - | 3 | 23 | 1 | 1 | 28 |
| 12 | 3 | 16 | 7 | 1 | 1 | 28 |
| 13 | 3 | 2 | 22 | 1 | - | 28 |
| 14 | - | 21 | 4 | 2 | 1 | 28 |

Table 7.b: Frequency Table of Answers to Test 1B, Subjects of Lower Educational Level

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|----|-------|
| 1 | 14 | 7 | 6 | 2 | 3 | 32 |
| 2 | 4 | 9 | 3 | 8 | 8 | 32 |
| 3 | 2 | 4 | 2 | 14 | 10 | 32 |
| 4 | 3 | 3 | 11 | 4 | 8 | 29 |
| 5 | 7 | 15 | 1 | 3 | 8 | 34 |
| 6 | 6 | 7 | 6 | 4 | 3 | 30* |
| 7 | 4 | 6 | 4 | 7 | 9 | 30 |
| 8 | 3 | 1 | 11 | 2 | 14 | 31 |
| 9 | 13 | 2 | 7 | 6 | 8 | 36 |
| 10 | 2 | 23 | 1 | 3 | 3 | 32 |
| 11 | 2 | 3 | 17 | 4 | 8 | 34 |
| 12 | 6 | 14 | 3 | 3 | 10 | 36 |
| 13 | 5 | 9 | 11 | - | 10 | 35 |
| 14 | 3 | 15 | 5 | 6 | 6 | 35 |

* There is also part (f) here, answered by 4 subjects.

4.3.4. Analysis of Data

Since we have frequency data, the proper statistical technique to test the hypothesis would be the Chi-square test of homogeneity. The hypothesis was tested in the answers of all fourteen questions (see Table 8).

Table 8: Results of Experiment 1

| Q | EXPECTED RESULTS | FINDINGS | χ^2 | DF | PROBABILITY |
|----|---|--|----------|----|-------------|
| 1 | $P_{Bc} < P_{Ac}$ $P_{Ba} > P_{Aa}$ ** | $P_{Bc} < P_{Ac}$ (23.9 < 48.3) $P_{Ba} > P_{Aa}$ (52.2 > 33.6) | 17.53924 | 4 | .00152 |
| 2 | $P_{Ba} < P_{Aa}$ $P_{Bb} > P_{Ab}$ * | $P_{Ba} < P_{Aa}$ (8.3 < 23.3) $P_{Bb} > P_{Ab}$ (42.1 > 34.5) | 14.13245 | 4 | .00688 |
| 3 | $P_{Bd} < P_{Ad}$ $P_{Be} > P_{Ae}$ * | $P_{Bd} < P_{Ad}$ (60.2 < 77.4) $P_{Be} > P_{Ae}$ (21.1 > 9.6) | 10.84020 | 4 | .02842 |
| 4 | $P_{Bb} < P_{Ab}$ $P_{Bc} > P_{Ac}$ * | $P_{Bb} < P_{Ab}$ (7.0 < 9.6) $P_{Bc} > P_{Ac}$ (39.4 > 28.1) | 14.89180 | 4 | .00493 |
| 5 | $P_{Bb} < P_{Ab}$ $P_{Be} > P_{Ae}$ * | $P_{Bb} < P_{Ab}$ (46.0 < 77.8) $P_{Be} > P_{Ae}$ (25.5 > 4.3) | 35.13873 | 4 | .00000 |
| 6 | $P_{Bc} < P_{Ac}$ $P_{Bb} > P_{Ab}$ * | $P_{Bc} < P_{Ac}$ (8.3 < 12.8) $P_{Bb} > P_{Ab}$ (16.5 > 21.4) | 5.18306 | 5 | *.39395 |
| 7 | $P_{Bd} < P_{Ad}$ $P_{Be} > P_{Ae}$ * | $P_{Bd} < P_{Ad}$ (53.8 < 69.6) $P_{Be} > P_{Ae}$ (19.7 > 10.4) | 12.24979 | 4 | .01559 |
| 8 | $P_{Bc} < P_{Ac}$ $P_{Be} > P_{Ae}$ * | $P_{Bc} < P_{Ac}$ (44.4 < 76.1) $P_{Be} > P_{Ae}$ (34.6 > 7.7) | 32.61098 | 4 | .00000 |
| 9 | $P_{Bd} < P_{Ad}$ $P_{Be} > P_{Ae}$ * | $P_{Bd} < P_{Ad}$ (44.1 < 46.2) $P_{Be} > P_{Ae}$ (21.3 < 29.9) | 4.29688 | 4 | *.36732 |
| 10 | $P_{Bb} < P_{Ab}$ $P_{Be} > P_{Ae}$ * | $P_{Bb} < P_{Ab}$ (81.3 < 88.0) $P_{Be} > P_{Ae}$ (5.2 > 1.7) | 3.33530 | 4 | *.50336 |
| 11 | $P_{Bc} < P_{Ac}$ $P_{Be} > P_{Ae}$ * | $P_{Bc} < P_{Ac}$ (78.1 < 94.9) $P_{Be} > P_{Ae}$ (13.1 > 1.7) | 17.34901 | 4 | .00165 |
| 12 | $P_{Bb} < P_{Ab}$ $P_{Be} > P_{Ae}$ * | $P_{Bb} < P_{Ab}$ (46.4 < 58.1) $P_{Be} > P_{Ae}$ (28.3 > 16.2) | 9.18076 | 4 | .05674 |
| 13 | $P_{Bc} < P_{Ac}$ $P_{Be} > P_{Ae}$ * | $P_{Bc} < P_{Ac}$ (38.0 < 74.4) $P_{Be} > P_{Ae}$ (35.8 > 10.3) | 37.05763 | 4 | .00000 |
| 14 | $P_{Bb} < P_{Ab}$ $P_{Be} > P_{Ae}$ * | $P_{Bb} < P_{Ab}$ (27.3 < 58.1) $P_{Be} > P_{Ae}$ (51.8 > 23.9) | 29.33156 | 4 | .00001 |

* Not statistically significant

** P_{Ba} is the proportion of subjects in Group B marking answer a

Question 1:

In this question, item *a* is the answer representing the audio-verbal material, and item *c* was the answer signifying the lower captions. According to the hypothesis H1, we expect response ratios for item *c* to decrease from Group A to Group B, and the ratios for item *a* to increase from Group A to Group B. In addition, a slight increase in the responses towards item *e*, the item signifying not recalling anything, is expected. Significance of the Chi-square statistic is less than 0.01.

Table 9.a: Responses to Question 1, %

| Row Pct | QUESTION 1 | | | | | Total |
|---------|------------|------|------|-----|-----|-------|
| | a | b | c | d | e | |
| 1A | 33.6 | 12.1 | 48.3 | 1.7 | 4.3 | 46.4 |
| 1B | 52.2 | 13.4 | 23.9 | 1.5 | 9.0 | 53.6 |
| Total | 43.6 | 12.8 | 35.2 | 1.6 | 6.8 | 100.0 |

Controlling for gender we see similar findings among women and men's responses. In Group A women favored answer item *c* over *a*; in Group B women mostly answered *a* in comparison to *c*. Men's responses dropped in answering item *c* between tests A and B; likewise, their responses increased toward the oral mode in Test B, in comparison to Test A. Results reveal a similar pattern in responses between men and women. The significance of the Chi-square statistic is less than 0.11 for women and 0.01 for men.

Table 9.b: Responses to Question 1 by Gender, %

| Row Pct | QUESTION 1 | | | | | Total |
|---------|------------|-----|------|-----|-----|-------|
| | a | b | c | d | e | |
| FEMALES | | | | | | |
| 1A | 27.5 | 9.8 | 58.8 | 2.0 | 2.0 | 44.0 |
| 1B | 46.2 | 9.2 | 38.5 | | 6.2 | 56.0 |
| Total | 37.9 | 9.5 | 47.4 | .9 | 4.3 | 100.0 |

| Row Pct | QUESTION 1 | | | | | Total |
|---------|------------|------|------|-----|------|-------|
| | a | b | c | d | e | |
| MALES | | | | | | |
| 1A | 38.5 | 13.8 | 40.0 | 1.5 | 6.2 | 48.5 |
| 1B | 58.0 | 17.4 | 10.1 | 2.9 | 11.6 | 51.5 |
| Total | 48.5 | 15.7 | 24.6 | 2.2 | 9.0 | 100.0 |

In terms of educational level, question number 1 reveals greater differences among subjects. Subjects in the higher educational level group marked item *c* by 56.2% in Group A; however, this rate dropped to

25.5% in Group B and the majority switched to the audio-verbal item, *a*, by a 54.9 percent rate. Subjects with lower educational levels, on the contrary, preferred the audio-verbal answer delivered on the audio channel the most in both tests, 40.7% in Group A, and 43.8% in Group B. Subjects in this subgroup have not been affected by the absence of graphics, as they have marked item *a* in Group A by 22.2% and 18.8% in Group B. Significance of the Chi-square statistic in Group A is less than 0.01 in Group A, and less than 0.05 in Group B.

Table 9.c: Responses to Question 1 by Educational Level, %

| | | QUESTION 1 | | | | | |
|-----------|-------|------------|------|------|-----|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER | | | | | | | |
| EDUCATION | | | | | | | |
| | 1A | 31.5 | 6.7 | 56.2 | 1.1 | 4.5 | 46.6 |
| | 1B | 54.9 | 10.8 | 25.5 | | 8.8 | 53.4 |
| | Total | 44.0 | 8.9 | 39.8 | .5 | 6.8 | 100.0 |

| | | QUESTION 1 | | | | | |
|-----------|-------|------------|------|------|-----|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER | | | | | | | |
| EDUCATION | | | | | | | |
| | 1A | 40.7 | 29.6 | 22.2 | 3.7 | 3.7 | 45.8 |
| | 1B | 43.8 | 21.9 | 18.8 | 6.3 | 9.4 | 54.2 |
| | Total | 42.4 | 25.4 | 20.3 | 5.1 | 6.8 | 100.0 |

Question 2:

As in question 1, here, there is a slight difference between the graphic and audio-verbal contents, and we have included both contents in our answers (*a* and *b* respectively) and measured attention toward both items. According to the hypothesis, we expect response ratios for item *a* to decrease from Group A to Group B, and the ratios for item *b* to increase from Group A to Group B.

In this question subjects appear to have paid more attention toward audio-verbal materials than graphics. A significant variation can be observed towards graphics between responses in Group A, and in Group B. Although this difference between seeing and not seeing graphics is

rather large, the corresponding difference that would be expected to be seen between the answers representing the audio-verbal mode was relatively small: subjects preferred the audio-verbal mode in Group B, but the subjects in Group A also responded to the audio-verbal mode as their first choice despite seeing graphics. Significance of the Chi-square statistic is less than 0.01.

Table 10. a: Responses to Question 2, %

| Row Pct | QUESTION 2 | | | | | Total |
|---------|------------|------|------|------|------|-------|
| | a | b | c | d | e | |
| 1A | 23.3 | 34.5 | 12.9 | 10.3 | 19.0 | 46.6 |
| 1B | 8.3 | 42.1 | 12.0 | 20.3 | 17.3 | 53.4 |
| Total | 15.3 | 38.6 | 12.4 | 15.7 | 18.1 | 100.0 |

Similar results are seen in responses between men and women, but the results are insignificant, but the results are insignificant. The significance of the Chi-square statistic is less than 0.11 for women and 0.06 for men.

Table 10. b: Responses to Question 2 by Gender, %

| Row Pct | QUESTION 2 | | | | | Total |
|---------|------------|------|------|------|------|-------|
| | a | b | c | d | e | |
| FEMALES | | | | | | |
| 1A | 23.5 | 29.4 | 11.8 | 11.8 | 23.5 | 44.3 |
| 1B | 7.8 | 46.9 | 7.8 | 15.6 | 21.9 | 55.7 |
| Total | 14.8 | 39.1 | 9.6 | 13.9 | 22.6 | 100.0 |

| Row Pct | QUESTION 2 | | | | | Total |
|---------|------------|------|------|------|------|-------|
| | a | b | c | d | e | |
| MALES | | | | | | |
| 1A | 23.1 | 38.5 | 13.8 | 9.2 | 15.4 | 48.5 |
| 1B | 8.7 | 37.7 | 15.9 | 24.6 | 13.0 | 51.5 |
| Total | 15.7 | 38.1 | 14.9 | 17.2 | 14.2 | 100.0 |

The comparison of the two groups does not reveal major differences in terms of educational level. The significance of the Chi-square statistic is less than 0.22 in Group A, and less than 0.29 in Group B.

Table 10.c: Responses to Question 2 by Educational Level, %

| | | QUESTION 2 | | | | | |
|---------|------------------|------------|------|------|------|------|-------|
| Row Pct | HIGHER EDUCATION | a | b | c | d | e | Total |
| | 1A | 28.1 | 32.6 | 11.2 | 9.0 | 19.1 | 46.8 |
| | 1B | 6.9 | 46.5 | 12.9 | 18.8 | 14.9 | 53.2 |
| | Total | 16.8 | 40.0 | 12.1 | 14.2 | 16.8 | 100.0 |

| | | QUESTION 2 | | | | | |
|---------|-----------------|------------|------|------|------|------|-------|
| Row Pct | LOWER EDUCATION | a | b | c | d | e | Total |
| | 1A | 7.4 | 40.7 | 18.5 | 14.8 | 18.5 | 45.8 |
| | 1B | 12.5 | 28.1 | 9.4 | 25.0 | 25.0 | 54.2 |
| | Total | 10.2 | 33.9 | 13.6 | 20.3 | 22.0 | 100.0 |

Question 3:

Answer item *d* is our single learning measurement in this news item. We expect the response ratio for item *d* to decrease from Group A to Group B and the responses towards item *e*, the item signifying not recalling anything, to increase. Results show us a slight drop in the answers for item *d* in Group B; the ratio for selecting item *d* as the correct

Table 11. a: Responses to Question 3, %

| | | QUESTION 3 | | | | | |
|---------|-------|------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| | 1A | 7.0 | 5.2 | .9 | 77.4 | 9.6 | 46.4 |
| | 1B | 6.0 | 10.5 | 2.3 | 60.2 | 21.1 | 53.6 |
| | Total | 6.5 | 8.1 | 1.6 | 68.1 | 15.7 | 100.0 |

answer went down after deleting the graphics in Group B, from Group A.
 The significance of the Chi-square statistic is less than 0.03.

In comparing the findings among male and female subjects, we see nearly identical results, but the results are not significant. The significance of the Chi-square statistic is less than 0.38 for women and 0.10 for men.

Table 11.b: Responses to Question 3 by Gender, %

| | | QUESTION 3 | | | | | |
|---------|-------|------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 1A | 4.0 | 6.0 | 2.0 | 78.0 | 10.0 | 43.9 |
| | 1B | 3.1 | 10.9 | 1.6 | 62.5 | 21.9 | 56.1 |
| | Total | 3.5 | 8.8 | 1.8 | 69.3 | 16.7 | 100.0 |

| | | QUESTION 3 | | | | | |
|---------|-------|------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 1A | 9.2 | 4.6 | | 76.9 | 9.2 | 48.5 |
| | 1B | 8.7 | 10.1 | 2.9 | 58.0 | 20.3 | 51.5 |
| | Total | 9.0 | 7.5 | 1.5 | 67.2 | 14.9 | 100.0 |

The findings of question 3 in terms of educational level show us relatively similar results between these subgroups. Both groups have recalled less of the information presented after deleting graphics. The

Table 11.c: Responses to Question 3 by Educational Level, %

| | | QUESTION 3 | | | | | |
|------------------|-------|------------|-----|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER EDUCATION | | | | | | | |
| | 1A | 3.5 | 2.3 | 1.1 | 84.1 | 9.1 | 46.6 |
| | 1B | 5.9 | 9.9 | 1.0 | 65.3 | 17.8 | 53.4 |
| | Total | 4.8 | 6.3 | 1.1 | 74.1 | 13.7 | 100.0 |

| | | QUESTION 3 | | | | | |
|-----------------|-------|------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER EDUCATION | | | | | | | |
| | 1A | 18.5 | 14.8 | | 55.6 | 11.1 | 45.8 |
| | 1B | 6.3 | 12.5 | 6.3 | 43.8 | 31.3 | 54.2 |
| | Total | 11.9 | 13.6 | 3.4 | 49.2 | 22.0 | 100.0 |

significance of the Chi-square statistic is less than 0.01 in Group A, and less than 0.14 in Group B.

Question 4:

The content of the orals and the graphics say the same thing in terms of meaning, though they do not state the exact same information. In our answer sheet, item *b* signifies the graphics, item *c* signifies the audio-verbal information, and item *d* represents both graphics and the audio-verbals. It is expected for the response ratios in items *b* and *d* to decrease from Group A to Group B, and the ratios in item *c* to increase from Group A to Group B.

Results may initially appear as if graphics have not been very influential in this news story. In Group A a very small portion of the subjects have indicated the item signifying graphics as the correct answer, and in Group B an even less number of the subjects have indicated this item as the correct answer despite the fact that they have not seen any graphics. The difference between the results of the two experiments is very minor. The significance of the Chi-square statistic is less than 0.01.

Table 12.a: Responses to Question 4, %

| | | QUESTION 4 | | | | | |
|---------|--|------------|-----|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| 1A | | 6.1 | 9.6 | 28.1 | 43.0 | 13.2 | 46.3 |
| 1B | | 5.3 | 7.6 | 39.4 | 22.7 | 25.0 | 53.7 |
| Total | | 5.7 | 8.5 | 34.1 | 32.1 | 19.5 | 100.0 |

If we examine results towards the audio-verbal item in our answers, we will observe a greater rate of response. The increase in the answers of the two experiments can be evaluated together with the answers towards the graphics item in both experiments. The increase in the audio-verbal item and the slight decrease in the graphics item in the results of Group B implies the shifting of the responses from the graphics mode to the audio mode. This may allow us to claim that such a shift is the result of the deletion of the graphics in Group B.

Another sign which supports this premise is the difference in the results of item *d*, which is the answer that represents both the audio-verbal and graphic materials. Initially, this result may appear as being illogical since it would be expected for the answering rate to go up in Group B. Though, as mentioned above, the reason for the low rate of answers in this item can be explained by observing the replies in items *c* and *e* in Group B. In other words, in the second test where viewers did not see any graphics, a total of 64.4% of the replies accumulated in items *c* and *e*. Since item *d* included audio-verbal and graphic materials and that there were no graphics, it would be incorrect to choose this item as the correct answer in Group B. These findings may serve as an explanation for the patterns viewed in the answers in Group B, and particularly for the unusual rate of low replies in the graphics item, *b*.

Replies among men and women reveal similar results between two tests. The only significance in the differences of results appear in items *b* and *e*. Significance of the Chi-square statistic is less than 0.16 for women and 0.03 for men. Responses toward the graphics item, *b*, shows an unusual rise from Group A to Group B among women. The responses suggest that men have viewed this newscast more attentively than women have.

Table 12.b: Responses to Question 4 by Gender, %

| | | QUESTION 4 | | | | | |
|---------|-------|------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 1A | 4.0 | 10.0 | 28.0 | 42.0 | 16.0 | 43.5 |
| | 1B | 4.6 | 12.3 | 41.5 | 20.0 | 21.5 | 56.5 |
| | Total | 4.3 | 11.3 | 35.7 | 29.6 | 19.1 | 100.0 |

| | | QUESTION 4 | | | | | |
|---------|-------|------------|-----|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 1A | 7.8 | 9.4 | 28.1 | 43.8 | 10.9 | 48.9 |
| | 1B | 6.0 | 3.0 | 37.3 | 25.4 | 28.4 | 51.1 |
| | Total | 6.9 | 6.1 | 32.8 | 34.4 | 19.8 | 100.0 |

Another finding that supports this theory is the difference in the results in item *e* between the two groups. Results show that men have been affected by the deletion of the graphics a degree more than women. This fact may also support the finding that men have viewed this news story more attentively than women, and may allow us to form a general theory about viewing tendencies among men and women.

The results of question 4 in terms of educational level display both, similarities, and some remarkable differences between the two groups. The higher educational group has selected the incorrect answer by a higher percentage than the below university level group. Significance of the Chi-square statistic is less than 0.01 in Test A, and 0.47 in Test B.

Table 12.c: Responses to Question 4 by Educational Level, %

| | | QUESTION 4 | | | | | |
|------------------|-------|------------|-----|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER EDUCATION | | | | | | | |
| | 1A | 3.4 | 5.7 | 27.6 | 50.6 | 12.6 | 45.8 |
| | 1B | 3.9 | 6.8 | 39.8 | 25.2 | 24.3 | 54.2 |
| | Total | 3.7 | 6.3 | 34.2 | 36.8 | 18.9 | 100.0 |

| | | QUESTION 4 | | | | | |
|-----------------|-------|------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER EDUCATION | | | | | | | |
| | 1A | 14.8 | 22.2 | 29.6 | 18.5 | 14.8 | 48.2 |
| | 1B | 10.3 | 10.3 | 37.9 | 13.8 | 27.6 | 51.8 |
| | Total | 12.5 | 16.1 | 33.9 | 16.1 | 21.4 | 100.0 |

The answers in question number 4 do not reveal any particular patterns, neither do they provide us with any consistent finding that would allow us to support any hypothesis. We observe results that appear to form concrete findings for one group, but then we also observe contrasting results which indicate otherwise, and lend the same characteristic to the other group. The only evidence that we can display is, both groups have been affected by the absence of graphics. We can notice this fact due to the findings above and due to the increase in item *e* for both groups in Group B. The growth rate is double the amount in both groups. Such a result may serve as a finding to prove that the absence of graphic design materials negatively affects the presentation format of the news, and leads to less retention levels among viewers.

Question 5:

In the answers, item *b* is our learning measurement; we expect the response ratio for item *b* to decrease from Group A to Group B and the responses towards item *e*, the item signifying not recalling anything, to increase.

The results show an important level of decline in the answers between the two tests. The significance of the Chi-square statistic is less than 0.01.

Table 13.a: Responses to Question 5, %

| QUESTION 5 | | | | | | |
|------------|------|------|-----|------|------|-------|
| Row Pct | a | b | c | d | e | Total |
| 1A | 4.3 | 77.8 | 6.0 | 7.7 | 4.3 | 46.1 |
| 1B | 10.9 | 46.0 | 3.6 | 13.9 | 25.5 | 53.9 |
| Total | 7.9 | 60.6 | 4.7 | 11.0 | 15.7 | 100.0 |

The results revealed similar findings among men and women as well. The findings show us that men recalled more information in both tests, and the deletion of the graphics affected female subjects more. This deduction may allow us to suggest that men recall information more in

Table 13.b: Responses to Question 5 by Gender, %

| | | QUESTION 5 | | | | | |
|---------|-------|------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 1A | 5.9 | 70.6 | 7.8 | 7.8 | 7.8 | 43.2 |
| | 1B | 9.0 | 43.3 | 3.0 | 14.9 | 29.9 | 56.8 |
| | Total | 7.6 | 55.1 | 5.1 | 11.9 | 20.3 | 100.0 |

| | | QUESTION 5 | | | | | |
|---------|-------|------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 1A | 3.0 | 83.3 | 4.5 | 7.6 | 1.5 | 48.5 |
| | 1B | 12.9 | 48.6 | 4.3 | 12.9 | 21.4 | 51.5 |
| | Total | 8.1 | 65.4 | 4.4 | 10.3 | 11.8 | 100.0 |

television news than women do, and that women are more susceptible to recalling less information when the normal presentation format is altered. The significance of the Chi-square statistic is less than 0.01 for both women and men.

The results of question 5 in terms of educational level reveal similar yet striking results. The significance of the Chi-square statistic is less than 0.08 in Group A and less than 0.31 in Group B.

These results clearly indicate that both groups have dramatically been affected by the deletion of the graphic design materials. In both groups most of the subjects were able to find the correct answer when the audio-verbal and graphic materials were presented together. However, when the graphics were taken out in the second test, the retention level decreased tremendously for both groups. Further evidence can be

Table 13.c: Responses to Question 5 by Educational Level, %

| | | QUESTION 5 | | | | | |
|---------------------|-------|------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER EDUCATION | | | | | | | |
| | 1A | 3.4 | 83.1 | 3.4 | 5.6 | 4.5 | 46.4 |
| | 1B | 7.8 | 46.6 | 3.9 | 15.5 | 26.2 | 53.6 |
| | Total | 5.7 | 63.5 | 3.6 | 10.9 | 16.1 | 100.0 |

| | | QUESTION 5 | | | | | |
|--------------------|-------|------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER EDUCATION | | | | | | | |
| | 1A | 7.1 | 60.7 | 14.3 | 14.3 | 3.6 | 45.2 |
| | 1B | 20.6 | 44.1 | 2.9 | 8.8 | 23.5 | 54.8 |
| | Total | 14.5 | 51.6 | 8.1 | 11.3 | 14.5 | 100.0 |

obtained by observing the ratios of the subjects who couldn't recall anything in both groups. While this rate was extremely low for both groups in Group A, it increased almost sixfold among the higher educational group, and more than sixfold among the lower educational group when the graphics were left out in Group B. These results also show us that the higher educational group has been negatively affected by the absence of graphics more than the lower educational group.

All findings reveal that graphic design materials do serve a functional role in the presentation of a newscast, and that their absence may not only disrupt the basic presentation format, but may also impede the flow of information. As a result, we observe a noteworthy decline in the levels of comprehension among viewers. Although this negative outcome may be seen in the form of viewers with higher educational levels being influenced more as suggested above, it nevertheless possesses the power and capability to alter the process of recalling for viewers, regardless of educational level. Such facts provide us with the base of restating the overall hypothesis that graphic design materials are an important device which increase the level of retention among viewers in television news learning.

Question 6:

In contrast to the answers in the other questions, there are 6 answer items in this question, rather than 5. In our answer sheet, item *b* represents the audio-verbal material, item *c* signifies the graphics; item *e* is the answer which indicates that both item *b* and *c* are correct responses. It is expected for the response ratios in item *c* to decrease from Test A to Test B, and the ratios in item *b* to increase from Group A to Group B. In addition, an increase in the responses towards item *f*, the item signifying not recalling anything, is expected from Group A to Group B.

The overall pattern of the results are rather similar to those of question 4. The initial observation may be misleading in the sense of graphics not appearing to be very influential; particularly, the percentages in items *c* may appear to support this premise. The significance of the Chi-square statistic is less than 0.40.

Table 14.a: Responses to Question 6, %

| Row Pct | QUESTION 6 | | | | | | Total |
|---------|------------|------|------|------|------|-----|-------|
| | a | b | c | d | e | f | |
| 1A | 7.7 | 21.4 | 12.8 | 19.7 | 31.6 | 6.8 | 46.8 |
| 1B | 6.8 | 16.5 | 8.3 | 30.8 | 31.6 | 6.0 | 53.2 |
| Total | 7.2 | 18.8 | 10.4 | 25.6 | 31.6 | 6.4 | 100.0 |

Responses toward the audio-verbal item *b*, shows a somewhat unusual drop in the answers of the two tests. A plausible explanation for the results of items *b* and *c* can be provided by observing the results of item *e*. This item, which signifies answers *b* and *c* together, has been the most

selected answer in both tests. The response rate in Group A indicates that most of the subjects have correctly understood the news story and thus have marked this item. However, in Group B as there are no graphic design materials, it would be incorrect to select an item which includes graphics.

A rational explanation for this inconsistency can be provided by reiterating the short length of this news item and the orally emphasized presentation. In this 47 second-long news item, we mostly see Mesut Yılmaz talking; his words contain criticism towards the government's action and he articulates his complaints clearly. A careful observer can easily recollect the audio-verbal information given in this brief news story to come up with the final evaluation of Mesut Yılmaz criticising the government without having to literally hear those words. The content of answer item *b* is articulated once by the newscaster, and once by Mesut Yılmaz; item *e* is a culmination of all verbal information presented. This means that it is possible for any one of items, *b*, *c*, or *e*, to be indicated as the correct answer depending on how well subjects have watched the news story, regardless of the graphics existing or not.

Due to the very basic presentation format of this news item, it is difficult to assert that graphic design materials have served a positive role in a comprehensive capacity. The ratio in the answers towards item *e* did not drop from Group A to Group B. If graphics had served any role in improving the comprehension level of the subjects, there should have been a difference in the answering ratios of this item between two tests. However, the ratio remaining the same in Group B leads us to think that graphics have not played a major role in this capacity. Theoretically, there exists the possibility that in Group A subjects have not selected

item *e* because of being influenced by graphics due to the same level of response in Group B. The responses towards item *c*, on the contrary, implies that graphics design materials have affected comprehension from Group A to Group B. The results of question 6 do not allow us to specify a particular pattern within the targeted aims of this survey.

Replies among men and women show inconsistencies between the two tests. We are not able to determine the true value of graphic design materials by examining the responses of women in both tests. The significance of the Chi-square statistic is less than 0.56 for women and 0.20 for men.

Table 14.b: Responses to Question 6 by Gender, %

| | | QUESTION 6 | | | | | | |
|---------|-------|------------|------|-----|------|------|------|-------|
| Row Pct | | a | b | c | d | e | f | Total |
| FEMALES | | | | | | | | |
| | 1A | 7.8 | 17.6 | 7.8 | 27.5 | 33.3 | 5.9 | 43.6 |
| | 1B | 4.5 | 12.1 | 9.1 | 39.4 | 24.2 | 10.6 | 56.4 |
| | Total | 6.0 | 14.5 | 8.5 | 34.2 | 28.2 | 8.5 | 100.0 |

| | | QUESTION 6 | | | | | | |
|---------|-------|------------|------|------|------|------|-----|-------|
| Row Pct | | a | b | c | d | e | f | Total |
| MALES | | | | | | | | |
| | 1A | 7.6 | 24.2 | 16.7 | 13.6 | 30.3 | 7.6 | 49.6 |
| | 1B | 9.0 | 20.9 | 7.5 | 22.4 | 38.8 | 1.5 | 50.4 |
| | Total | 8.3 | 22.6 | 12.0 | 18.0 | 34.6 | 4.5 | 100.0 |

Responses towards the audio-verbal item reveal surprising results as well. The replies towards the audio-verbals have declined in percentage from Group A to Group B in both men and women. The results were rather unexpected in the sense that the unusual drop in the audio-verbal items from Group A to Group B create a contrasting situation in comparison to audio-verbal results in most other questions.

The answers for item *e*, also, do not help us in providing an explanation for the results towards the audio-verbal item. This answer which implies that both the orals and the graphics are correct, shows inconsistent results among men and women. Initially, this drop may be linked to the deletion of graphics; however, the increase in the ratios of item *c*, as indicated above, does not support such a claim. In addition, the fact that most of the responses, 39.4%, have been given to item *d*, which is the only absolute incorrect answer, shows that the female subjects have not viewed the news very carefully. The results reveal somewhat more consistent findings in item *e* for men in Group A. This rise in item *e* and the drop in item *c* implies that the male subjects have been negatively influenced by the deletion of graphics, and have concentrated on the oral presentation in Group B.

The results of men and women's answers do not provide us with any clear patterns for interpretation. Based on the above findings, we may only claim that men have viewed the news more carefully than women have. Another aspect which supports this statement is the difference in the results of men and women who have not been able to recall anything, item *f*. The ratio of men who have marked item *f* is lower than the ratio of women in Group B. These findings support the notion that men have had less of a problem in recalling the presented information, and this notion may support our previous claim that male subjects have viewed the news more carefully than the female subjects. The second notion is that, in comparing the results among male and female subjects, we may suggest that men have been affected by the absence of graphic design materials more than women have.

The answers in question 6 reveal both variations and similarities in terms of educational level analysis. The results show us that the lower educational level subjects have paid more attention to the oral presentation in both tests, whereas the higher educational level group has paid attention to both the orals and graphics in Group A. In Group B it is not clear why the higher educational subjects have selected item *e* with the highest percentage; however, a plausible explanation would be that as indicated in the previous initial evaluation, subjects may have listened to the oral presentation and come up with the final assessment believing that Mesut Yılmaz has criticised the government. If such an assessment is made, we are then able to determine the true role of graphic design materials in this question. Significance of the Chi-square statistic is less than 0.01 in both Groups A and B.

Table 14.c: Responses to Question 6 by Educational Level, %

| | | QUESTION 6 | | | | | | |
|-----------|-------|------------|------|-----|------|------|-----|-------|
| Row Pct | | a | b | c | d | e | f | Total |
| HIGHER | | | | | | | | |
| EDUCATION | | | | | | | | |
| | 1A | 3.4 | 19.1 | 9.0 | 22.5 | 37.1 | 9.0 | 46.4 |
| | 1B | 2.9 | 14.6 | 4.9 | 35.9 | 37.9 | 3.9 | 53.6 |
| | Total | 3.1 | 16.7 | 6.8 | 29.7 | 37.5 | 6.3 | 100.0 |

| | | QUESTION 6 | | | | | | |
|-----------|-------|------------|------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | f | Total |
| LOWER | | | | | | | | |
| EDUCATION | | | | | | | | |
| | 1A | 21.4 | 28.6 | 25.0 | 10.7 | 14.3 | | 48.3 |
| | 1B | 20.0 | 23.3 | 20.0 | 13.3 | 10.0 | 13.3 | 51.7 |
| | Total | 20.7 | 25.9 | 22.4 | 12.1 | 12.1 | 6.9 | 100.0 |

Results towards the graphics item, *c*, show similarities in terms of overall pattern, though they show differences in the answering percentages. The results indicate that both subgroups have been slightly affected by the absence of graphic design materials. Another finding is that the lower educational subjects have noticed and responded to graphics more than the higher educational subjects in Group A.

In summation, the results of question 6 do not allow us to form any particular patterns for interpretation. We observe slight decreases in the ratios towards the graphics item among the two tests. On the other hand, we find results which repudiate these findings. A positive explanation for the unclarity of the results can be that, since Mesut Yılmaz is an opposition leader, he will naturally oppose and criticise. This natural stance takes away the reason to watch and listen to him. A second explanation can be that the content of this news item does not disclose any information which is new, enlightening or interesting. This story lacks novelty and thus misses the chance of being carefully observed. However, the slight decrease in the graphics item from Group A to Group B allows us to reiterate our overall hypothesis that graphic design materials are an important device which increase the level of retention among viewers in television news learning.

Question 7:

Question number 7 is the first of the two queries which intend to measure the effects of maps in particular in a news presentation. In our questionnaire we asked which route the Turkish team has had to take in order to get there, and item *d* has been determined as the single learning measurement item. In the answers, we expect the response ratio for item *d* to decrease from Group A to Group B and the responses towards item *e*, the item signifying not recalling anything, to increase.

The results of this question indicate that the map has played an important role in terms of increasing the comprehensive capacity of the viewers. The difference between the responses in the two tests are not major, however, they are still noteworthy. The significance of the Chi-square statistic is less than 0.02.

Table 15.a: Responses to Question 7, %

| Row Pct | QUESTION 7 | | | | | Total |
|---------|------------|-----|------|------|------|-------|
| | a | b | c | d | e | |
| 1A | 1.7 | 3.5 | 14.8 | 69.6 | 10.4 | 46.6 |
| 1B | 5.3 | 9.8 | 11.4 | 53.8 | 19.7 | 53.4 |
| Total | 3.6 | 6.9 | 13.0 | 61.1 | 15.4 | 100.0 |

When we further examine the results of question 7 on the base of gender, we see similar results between men and women. The results indicate that both groups have been affected on a relatively equal scale by the deletion of the map. However, the larger gap in between the two tests for women imply that the female subjects have been affected more by the absence of the map in comparison to men. Taking into consideration the ratios for not recalling in item *e*, men have recalled more of the news story in both tests. This may allow us to suggest that men have understood the informational materials better in both groups. Significance of the Chi-square statistic is less than 0.07 for women and 0.43 for men.

Table 15.b: Responses to Question 7 by Gender, %

| Row Pct | QUESTION 7 | | | | | Total |
|---------|------------|------|------|------|------|-------|
| | a | b | c | d | e | |
| FEMALES | | | | | | |
| 1A | 2.0 | 2.0 | 17.6 | 66.7 | 11.8 | 44.0 |
| 1B | 6.2 | 10.8 | 12.3 | 47.7 | 23.1 | 56.0 |
| Total | 4.3 | 6.9 | 14.7 | 56.0 | 18.1 | 100.0 |

| Row Pct | QUESTION 7 | | | | | Total |
|---------|------------|-----|------|------|------|-------|
| | a | b | c | d | e | |
| MALES | | | | | | |
| 1A | 1.6 | 4.7 | 12.5 | 71.9 | 9.4 | 48.9 |
| 1B | 4.5 | 9.0 | 10.4 | 59.7 | 16.4 | 51.1 |
| Total | 3.1 | 6.9 | 11.5 | 65.6 | 13.0 | 100.0 |

Responses among educational level groups reveal major differences. The significance of the Chi-square statistic is less than 0.01 for both Groups, A and B.

Table 15.c: Responses to Question 7 by Educational Level, %

| | | QUESTION 7 | | | | | |
|-----------|-------|------------|-----|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER | | | | | | | |
| EDUCATION | | | | | | | |
| | 1A | 1.1 | | 12.4 | 76.4 | 10.1 | 46.6 |
| | 1B | 2.9 | 6.9 | 10.8 | 62.7 | 16.7 | 53.4 |
| | Total | 2.1 | 3.7 | 11.5 | 69.1 | 13.6 | 100.0 |

| | | QUESTION 7 | | | | | |
|-----------|-------|------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER | | | | | | | |
| EDUCATION | | | | | | | |
| | 1A | 3.8 | 15.4 | 23.1 | 46.2 | 11.5 | 46.4 |
| | 1B | 13.3 | 20.0 | 13.3 | 23.3 | 30.0 | 53.6 |
| | Total | 8.9 | 17.9 | 17.9 | 33.9 | 21.4 | 100.0 |

The results clearly indicate that the higher educational level group has recalled more of the news information in both tests and has been less affected by the absence of the map. The low recall level among the lower educational level subjects indicate that this group has not utilised graphic design materials very much, and they have not utilised these elements as much as the higher educational level subjects; however, they have been affected by the deletion of the graphics more than the higher educational group.

In the overall evaluation of the results of question number 7, the effect of graphic design materials is clearly seen in all subgroup levels. Subjects have indicated the correct answer by high percentages in Group A, and the ratios towards the same answer have dropped considerably within every subgroup in Group B. A greater rate of decrease was observed in the responses of women and lower educational level subjects, which implies that these groups have been affected more by the absence of

graphic design materials. Nevertheless, all results indicate a major influence created by graphic design materials in an audio-verbal and graphic redundancy situation. This finding supports our hypothesis which states that graphic design materials increase the comprehension level of viewers in television news learning.

Question 8:

Question number 8 is the second of the two questions which attempt to measure the effects of maps in the role of comprehension. In our questionnaire, we asked which route the Greek team has to take in order to arrive at the city where the game is going to be played; answer *c* has been selected as the learning measurement item. In the answers, we expect the response ratio for item *c* to decrease from Test A to Test B and the responses towards item *e*, the item signifying not recalling anything, to increase.

Results imply a greater level of influence for this question in comparison to question 7. The higher recall ratio in Group A and the lower recall ratio in Group B indicate a greater level of influence for graphic design

Table 16.a: Responses to Question 8, %

| Row Pct | QUESTION 8 | | | | | Total |
|---------|------------|-----|------|-----|------|-------|
| | a | b | c | d | e | |
| 1A | 5.1 | 5.1 | 76.1 | 6.0 | 7.7 | 46.8 |
| 1B | 4.5 | 9.0 | 44.4 | 7.5 | 34.6 | 53.2 |
| Total | 4.8 | 7.2 | 59.2 | 6.8 | 22.0 | 100.0 |

materials in comparison to the results of question 7. The high percentage among those who could not recall anything in Group B is another proof which substantiates our finding. The significance of the Chi-square statistic is less than 0.01.

The replies among male and female subjects show similarities except for the percentages in Group B. These results imply a similar level of recall for both sexes, but the results in Group B imply a higher degree of influence among female subjects. Women have recalled less of the information after the deletion of graphics in Group B, in comparison to men. The below findings lead us to the theory that, women are more affected by the deletion of graphic design materials in television news viewing. Significance of the Chi-square statistic is less than 0.01 for both women and men.

Table 16.b: Responses to Question 8 by Gender, %

| Row Pct | QUESTION 8 | | | | | Total |
|---------|------------|------|------|-----|------|-------|
| | a | b | c | d | e | |
| FEMALES | | | | | | |
| 1A | 7.8 | 2.0 | 76.5 | 5.9 | 7.8 | 44.3 |
| 1B | 3.1 | 12.5 | 39.1 | 7.8 | 37.5 | 55.7 |
| Total | 5.2 | 7.8 | 55.7 | 7.0 | 24.3 | 100.0 |

| Row Pct | QUESTION 8 | | | | | Total |
|---------|------------|-----|------|-----|------|-------|
| | a | b | c | d | e | |
| MALES | | | | | | |
| 1A | 3.0 | 7.6 | 75.8 | 6.1 | 7.6 | 48.9 |
| 1B | 5.8 | 5.8 | 49.3 | 7.2 | 31.9 | 51.1 |
| Total | 4.4 | 6.7 | 62.2 | 6.7 | 20.0 | 100.0 |

The further examination of the results on the basis of educational levels, reveals major differences as seen in question 7. Particularly, the decrease ratio between Group A and Group B indicate that the higher educational level group have been affected by the absence of graphics more than the lower educational level group. The nearly half ratio between the two

tests strengthens this supposition. However, although the decrease ratio between Group A and Group B is not as wide as the higher educational subjects' results, the low level of recall in Group A and the very high level of the marks towards item *e* in Group B indicate that the lower educational group has been negatively affected by the absence of graphic design materials just as much as the higher educational group. Significance of the Chi-square statistic is less than 0.01 in Group A and less than 0.21 in Group B.

Table 16.c: Responses to Question 8 by Educational Level, %

| | | QUESTION 8 | | | | | |
|-----------|-------|------------|------|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER | | | | | | | |
| EDUCATION | 1A | 2.2 | 1.1 | 83.1 | 5.6 | 7.9 | 46.6 |
| | 1B | 2.9 | 10.8 | 47.1 | 7.8 | 31.4 | 53.4 |
| | Total | 2.6 | 6.3 | 63.9 | 6.8 | 20.4 | 100.0 |

| | | QUESTION 8 | | | | | |
|-----------|-------|------------|------|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER | | | | | | | |
| EDUCATION | 1A | 14.3 | 17.9 | 53.6 | 7.1 | 7.1 | 47.5 |
| | 1B | 9.7 | 3.2 | 35.5 | 6.5 | 45.2 | 52.5 |
| | Total | 11.9 | 10.2 | 44.1 | 6.8 | 27.1 | 100.0 |

The results of question 8 indicate similar overall findings to those observed in question 7. Subjects have selected the correct answer by high percentages in Group A, and the ratios towards the same answer have dropped tremendously, much more than the ratio observed in question 7 of Group B. Our results also reveal that women, in comparison to men, have fallen into trouble recalling the news material after the deletion of graphics. The only difference in the findings is that, in question 8 we see all educational level subgroups being vastly affected by the absence of graphics, rather than only observing the lower educational level group being affected significantly. All results clearly indicate a major influence created by graphic design materials in the audio-graphic redundancy

presentation which support our hypothesis that graphic design materials increase the comprehension level of viewers in television news learning.

Question 9:

In the answers, item *d* has been selected as our learning measurement; we expect the response ratio for item *d* to decrease from Group A to Group B and the responses towards item *e*, the item signifying not recalling anything, to increase.

Results show unusual similarities between the two tests. The results indicate a very low level of influence on the subjects between the two tests. A plausible answer for these findings can be offered by asserting that the timing of the viewing sessions may have confused most subjects. Although Hikmet Çetin was the leader of the Republican People's Party during the period the videotape material was recorded, he was no longer the leader of the party at the time the viewing sessions took place. Our subjects may have misapprehended Mr. Çetin's position and simply have considered the party's declining popularity status in the days in

Table 17.a: Responses to Question 9, %

| Row Pct | QUESTION 9 | | | | | Total |
|---------|------------|-----|------|------|------|-------|
| | a | b | c | d | e | |
| 1A | 12.0 | 2.6 | 9.4 | 46.2 | 29.9 | 46.2 |
| 1B | 17.6 | 3.7 | 13.2 | 44.1 | 21.3 | 53.8 |
| Total | 15.0 | 3.2 | 11.5 | 45.1 | 25.3 | 100.0 |

which the viewings took place. A finding which supports this theory can be found in the results of Group B; in this test, item *a*, which claims that Mr. Çetin is losing support, was the third highest marked answer after items *d* and *e*. This means that a total of 38.9% of the subjects either conceived Mr. Çetin's position as losing support or as not being sure of his stance. The significance of the Chi-square statistic is less than 0.37.

The responses among male and female subjects show a contrast. A decline in the responses of item *e* can signify an ease in comprehending the oral presentation better. Likewise, an increase in the responses towards item *e* in Group B would imply the difficulty in comprehending the news material without graphics. However, in both groups other results do not help us support such possible findings. The only clear finding is that women seem to have been affected by the deletion of graphics while men do not. Responses among male subjects do not provide us the grounds to make an objective evaluation of the results. The significance of the Chi-square statistic is less than 0.26 for women and 0.60 for men.

Table 17.b: Responses to Question 9 by Gender, %

| | | QUESTION 9 | | | | | |
|---------|-------|------------|-----|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 1A | 7.8 | 2.0 | 11.8 | 45.1 | 33.3 | 44.0 |
| | 1B | 20.0 | | 15.4 | 40.0 | 24.6 | 56.0 |
| | Total | 14.7 | .9 | 13.8 | 42.2 | 28.4 | 100.0 |

| | | QUESTION 9 | | | | | |
|---------|-------|------------|-----|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 1A | 15.2 | 3.0 | 7.6 | 47.0 | 27.3 | 48.2 |
| | 1B | 15.5 | 7.0 | 11.3 | 47.9 | 18.3 | 51.8 |
| | Total | 15.3 | 5.1 | 9.5 | 47.4 | 22.6 | 100.0 |

In terms of the educational level findings we see contrasting results between the two basic subgroups. These findings appear as usual and expected; however, the results in item *e* imply that the lower educational level subjects have not observed the news report very carefully. Item *a* is the answer which claims that Mr. Çetin is losing support; this item has been marked as the most selected item in both tests, along with item *d* in Group A and in Group B. These results initially appear as if graphics have been influential in the lower educational level group; on the other hand, the high ratio of results in item *a* in both tests indicate otherwise. Graphics have been influential on subjects, but not to a great degree.

Among the higher educational level subjects we do not observe such contrasting findings, though the results in item *d* do not give us an idea on how much graphics have affected this group. We do not observe any sign of influence on the subjects towards graphic design materials in this group. Significance of the Chi-square statistic is less than 0.01 for both tests, A and B.

Table 17.c: Responses to Question 9 by Educational Level, %

| | | QUESTION 9 | | | | | |
|-----------|-------|------------|-----|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER | | | | | | | |
| EDUCATION | 1A | 5.6 | 1.1 | 7.9 | 50.6 | 34.8 | 47.1 |
| | 1B | 11.0 | 3.0 | 11.0 | 54.0 | 21.0 | 52.9 |
| | Total | 8.5 | 2.1 | 9.5 | 52.4 | 27.5 | 100.0 |

| | | QUESTION 9 | | | | | |
|-----------|-------|------------|-----|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER | | | | | | | |
| EDUCATION | 1A | 32.1 | 7.1 | 14.3 | 32.1 | 14.3 | 43.8 |
| | 1B | 36.1 | 5.6 | 19.4 | 16.7 | 22.2 | 56.3 |
| | Total | 34.4 | 6.3 | 17.2 | 23.4 | 18.8 | 100.0 |

All above results indicate a very low level of influence towards graphic design materials for question 9 which displays audio-graphic redundancy.

This influence can be slightly detected among women and the lower educational level subjects. Among men and higher educational level subjects we see no sign of influence at all. The likely theory on the differences of Hikmet Çetin's position at the time the program was videotaped and the period the tests were conducted, provides a persuasive explanation for the differences and inconsistencies of the results in question 9. The high level of preferences towards item *e* in both tests indicate a consistent lack of understanding towards the informational material regardless of the classification of the subgroups. This may be explained by suggesting that the lack of specific information in this news item may have operated as rather ambiguous input which did not clarify or instruct the viewers in any particular sense or direction. The lack of novelty and uniqueness in the story of Hikmet Çetin's political position served as an unattractive and unconvincing piece of information for many viewers which led to such inconsistent and unexpected results. Nevertheless, the findings of the overall results and some of the subgroups' results support our hypothesis that graphic design materials increase the comprehension level of viewers in television news learning.

Question 10:

In our questionnaire we asked the penalty that the court decided to give to the gunman, and *b* has been selected as our learning measurement item. We expect the response ratio for item *b* to decrease from Group A to Group B and the responses towards item *e*, the item signifying not recalling anything, to increase.

Results for this question show high levels of recall but low levels of influence in the test results. The slight decrease in ratios toward Group B

indicate a minor level of influence on the subjects for graphic design materials. The significance of the Chi-square statistic is less than 0.51.

Table 18.a: Responses to Question 10, %

| | | QUESTION 10 | | | | | |
|---------|--|-------------|------|-----|-----|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| 1A | | .9 | 88.0 | 2.6 | 6.8 | 1.7 | 46.6 |
| 1B | | 1.5 | 81.3 | 2.2 | 9.7 | 5.2 | 53.4 |
| Total | | 1.2 | 84.5 | 2.4 | 8.4 | 3.6 | 100.0 |

The analysis of the results in terms of gender reveal a disparity in terms of ratios. The above results reveal a greater level of influence on women than men among the two tests. Significance of the Chi-square statistic is less than 0.13 for women, and less than 0.65 for men.

Table 18.b: Responses to Question 10 by Gender, %

| | | QUESTION 10 | | | | | |
|---------|--|-------------|------|-----|------|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| 1A | | | 92.2 | 2.0 | 2.0 | 3.9 | 43.6 |
| 1B | | 1.5 | 78.8 | | 12.1 | 7.6 | 56.4 |
| Total | | .9 | 84.6 | .9 | 7.7 | 6.0 | 100.0 |

| | | QUESTION 10 | | | | | |
|---------|--|-------------|------|-----|------|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| 1A | | 1.5 | 84.8 | 3.0 | 10.6 | | 49.3 |
| 1B | | 1.5 | 83.8 | 4.4 | 7.4 | 2.9 | 50.7 |
| Total | | 1.5 | 84.3 | 3.7 | 9.0 | 1.5 | 100.0 |

Responses among educational level groups show similarities in terms of the decrease ratios between the results of the two tests. The results display a similarity in the rate of influence between the two different subgroups.

Though, based on the above results, the recall rate is greater among the higher educational level subgroup than the lower educational level group. Significance of the Chi-square statistic is less than 0.13 in Test A and 0.08 in Test B.

Table 18.c: Responses to Question 10 by Educational Level, %

| | | QUESTION 10 | | | | |
|---------|------------------|-------------|-----|-----|-----|-------|
| Row Pct | HIGHER EDUCATION | b | c | d | e | Total |
| | 1A | 91.0 | 2.2 | 4.5 | 2.2 | 46.6 |
| | 1B | 84.3 | 2.0 | 9.8 | 3.9 | 53.4 |
| | Total | 87.4 | 2.1 | 7.3 | 3.1 | 100.0 |

| | | QUESTION 10 | | | | | |
|---------|-----------------|-------------|------|-----|------|-----|-------|
| Row Pct | LOWER EDUCATION | a | b | c | d | e | Total |
| | 1A | 3.6 | 78.6 | 3.6 | 14.3 | | 46.7 |
| | 1B | 6.3 | 71.9 | 3.1 | 9.4 | 9.4 | 53.3 |
| | Total | 5.0 | 75.0 | 3.3 | 11.7 | 5.0 | 100.0 |

Overall, the results of question 10 show relatively low levels of influence towards graphic design materials based on gender. Male subjects displayed a very low level of influence, while female subjects showed a higher degree of susceptibility towards graphics. The differences in the responses of educational level subgroups, on the other hand, imply that the increase in educational level provides a greater ability for recall. A final point that needs to be inserted is an additional explanation for the high recall rates in this question in comparison to the low recall rates in question 9. Two possible theories were exerted in the previous news story which may have explained the low recall percentages. Among these, the explanation on the ambiguity and unattractiveness in the story of Hikmet Çetin's political position was asserted as a motive for the low recall rates in the question. Question 10, on the contrary, is a news story which contains clear, compelling and new information, thus leading to higher levels of interest and higher levels of recall. The above finding

may allow us to suggest that the levels of influence for graphic design materials correlate with the level of ambiguity and uniqueness of a news story. A news item displaying higher levels of interest and novelty may allow more attention towards the news material, thus leading to higher levels of recall. This finding, along with the overall results, once again support our hypothesis which states that graphic design materials increase the retention level of viewers in television news learning.

Question 11:

This is a story in which there is no videotape material, but there is a split-screen effect in which the screen is framed and divided in half on a blue background. In our questionnaire we asked where the event was being held and we indicated item *c* as our learning measurement. The expectancy is the response ratio for item *c* to decrease from Group A to Group B and the responses towards item *e*, the item signifying not recalling anything, to increase.

Results of question 11 indicate very high levels of recall and moderate levels of influence for graphic design materials. The lengthy appearance of the lower captions along with the oral repetition of the location of the beauty pageant, appear to be providing greater levels of exposure for the audio-verbal materials and for the graphics, thus providing increased levels of recall in both tests compared to previous tests. The significance of the Chi-square statistic is less than 0.01.

Table 19.a: Responses to Question 11, %

| | | QUESTION 11 | | | | | |
|---------|--|-------------|-----|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| 1A | | | 2.6 | 94.9 | .9 | 1.7 | 46.1 |
| 1B | | 2.9 | 2.9 | 78.1 | 2.9 | 13.1 | 53.9 |
| Total | | 1.6 | 2.8 | 85.8 | 2.0 | 7.9 | 100.0 |

Responses among men and women show similarities in general. When the responses towards the item signifying not recalling anything is examined, we see dissimilar results among the two subgroups. The responses indicate similar levels of influences on both subgroups with a slight lean towards the male group. The results also indicate that female subjects have been more responsive towards graphic design materials than male subjects. Significance of the Chi-square statistic is less than 0.04 for women and less than 0.05 for men.

Table 19.b: Responses to Question 11 by Gender, %

| | | QUESTION 11 | | | | | |
|---------|--|-------------|-----|-------|-----|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| 1A | | | | 100.0 | | | 43.2 |
| 1B | | 3.0 | 1.5 | 82.1 | 4.5 | 9.0 | 56.8 |
| Total | | 1.7 | .8 | 89.8 | 2.5 | 5.1 | 100.0 |

| | | QUESTION 11 | | | | | |
|---------|--|-------------|-----|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| 1A | | | 4.5 | 90.9 | 1.5 | 3.0 | 48.5 |
| 1B | | 2.9 | 4.3 | 74.3 | 1.4 | 17.1 | 51.5 |
| Total | | 1.5 | 4.4 | 82.4 | 1.5 | 10.3 | 100.0 |

The analysis of question 11 reveals differences between educational subgroups. These results show us that the lower educational group has been influenced more by the absence of graphics than the higher educational group. In addition, the higher educational group has recalled more of the information presented in both tests. The above findings indicate that recall rates decline with the decrease in educational level. Significance of the Chi-square statistic is less than 0.01 in both, Group A and Group B.

Table 19.c: Responses to Question 11 by Educational Level, %

| | | QUESTION 11 | | | | |
|-----------|-------|-------------|-----|------|-----|-------|
| Row Pct | | a | b | c | e | Total |
| HIGHER | | | | | | |
| EDUCATION | | | | | | |
| | 1A | | | 98.9 | 1.1 | 46.4 |
| | 1B | 1.9 | 1.0 | 87.4 | 9.7 | 53.6 |
| | Total | 1.0 | .5 | 92.7 | 5.7 | 100.0 |

| | | QUESTION 11 | | | | | |
|-----------|-------|-------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER | | | | | | | |
| EDUCATION | | | | | | | |
| | 1A | | 10.7 | 82.1 | 3.6 | 3.6 | 45.2 |
| | 1B | 5.9 | 8.8 | 50.0 | 11.8 | 23.5 | 54.8 |
| | Total | 3.2 | 9.7 | 64.5 | 8.1 | 14.5 | 100.0 |

Results of question 11 indicate that all subgroups have been affected by the deletion of graphics. Particularly, the relationship between educational level and recall rates is clearly seen in the results of these tests. The findings indicate that the amount of recalling has a direct correlation with the educational level of a viewer. The very high ratios, particularly in Group A, can be attributed to the repetition of the audio-verbal message with the unusual long exposure of the lower captions, as well as the uniqueness and attractiveness of the story content. A pleasing result, though, is that, despite the high level of interest in the news story and the reiteration of the audio-verbal content, subjects could not recall the informational material as much as those who saw graphics. In other

terms, audio-verbal materials are not a sufficient mode alone to deliver information: recall levels increase with the use of graphic design materials, which is a confirmation once again, of our hypothesis on the role of graphics in comprehension.

Question 12:

In our questionnaire we asked subjects what point-mark the market index had passed, and we determined item *b* as our learning measurement. It is expected that the response ratio for item *b* will decrease from Group A to Group B and the responses towards item *e*, the item signifying not recalling anything, will increase.

Initial responses show a decrease in the recall levels after the deletion of the graphics. Results indicate a minor but clear decline in the ratios between the two tests which suggest the effect of graphic design materials in the capacity of comprehension. The significance of the Chi-square statistic is less than 0.06.

Table 20.a: Responses to Question 12, %

| Row Pct | QUESTION 12 | | | | | Total |
|---------|-------------|------|------|-----|------|-------|
| | a | b | c | d | e | |
| 1A | 8.5 | 58.1 | 13.7 | 3.4 | 16.2 | 45.9 |
| 1B | 13.8 | 46.4 | 8.0 | 3.6 | 28.3 | 54.1 |
| Total | 11.4 | 51.8 | 10.6 | 3.5 | 22.7 | 100.0 |

The examination of the results based on gender, reveal almost identical decline ratios. All results verify the previous findings about minor but clear decline ratios which suggest the explicit influence of graphic design materials in the role of comprehension. Significance of the Chi-square statistic is less than 0.47 for women and 0.03 for men.

Table 20.b: Responses to Question 12 by Gender, %

| Row Pct | QUESTION 12 | | | | | Total |
|---------|-------------|------|------|-----|------|-------|
| | a | b | c | d | e | |
| FEMALES | | | | | | |
| 1A | 3.9 | 52.9 | 11.8 | 3.9 | 27.5 | 42.9 |
| 1B | 10.3 | 41.2 | 8.8 | 7.4 | 32.4 | 57.1 |
| Total | 7.6 | 46.2 | 10.1 | 5.9 | 30.3 | 100.0 |

| Row Pct | QUESTION 12 | | | | | Total |
|---------|-------------|------|------|-----|------|-------|
| | a | b | c | d | e | |
| MALES | | | | | | |
| 1A | 12.1 | 62.1 | 15.2 | 3.0 | 7.6 | 48.5 |
| 1B | 17.1 | 51.4 | 7.1 | | 24.3 | 51.5 |
| Total | 14.7 | 56.6 | 11.0 | 1.5 | 16.2 | 100.0 |

The analysis of the educational level data display results which support our previous findings. The results clearly indicate that both groups have been negatively affected by the absence of graphics in Group B. In addition, the results show that the university level and above group has been influenced less by this absence in comparison to the below university group. These findings allow us, once again, to suggest that the increase in educational level provides a greater ability for recall in the viewing process of television news. The significance of the Chi-square statistic is less than 0.13 in Group A and 0.43 in Group B.

Table 20.c: Responses to Question 12 by Educational Level, %

| QUESTION 12 | | | | | | |
|------------------|------|------|------|-----|------|-------|
| Row Pct | a | b | c | d | e | Total |
| HIGHER EDUCATION | | | | | | |
| 1A | 7.9 | 58.4 | 10.1 | 3.4 | 20.2 | 46.6 |
| 1B | 12.7 | 49.0 | 7.8 | 2.0 | 28.4 | 53.4 |
| Total | 10.5 | 53.4 | 8.9 | 2.6 | 24.6 | 100.0 |

| QUESTION 12 | | | | | | |
|-----------------|------|------|------|-----|------|-------|
| Row Pct | a | b | c | d | e | Total |
| LOWER EDUCATION | | | | | | |
| 1A | 10.7 | 57.1 | 25.0 | 3.6 | 3.6 | 43.8 |
| 1B | 16.7 | 38.9 | 8.3 | 8.3 | 27.8 | 56.3 |
| Total | 14.1 | 46.9 | 15.6 | 6.3 | 17.2 | 100.0 |

The overall findings in question 12 indicate the clear effect of graphic design materials in all subgroups. Response ratios show us that men, in comparison to women, and higher educational groups, in comparison to lower educational groups, have recalled more of the informational material presented. The audio-graphic redundancy was supplanted in the presentation by giving information about the exact market index for the day. This allowed subjects to verify the previous information about the 41000 index mark, or to be able to understand this information through hearing the exact figures. The recall ratios, overall, were not so high as were in some of the previous questions 2 answers; however, the drop in the response rates clearly indicate the influence of graphics in the presentation of news, thus confirming our main hypothesis on the function of graphic design materials in the role of comprehension.

Question 13:

In our questionnaire item *c* has been selected as our learning measurement. We expect the response ratio for item *c* to decrease from Group A to Group B and the responses towards item *e*, the item signifying not recalling anything, to increase. Results of this question indicate a strong level of influence for graphic design materials. The

figures clearly show the powerful effect and use of graphics in a news presentation. Significance of the Chi-square statistic is less than 0.01.

Table 21.a: Responses to Question 13, %

| | | QUESTION 13 | | | | | |
|---------|--|-------------|------|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| 1A | | 5.1 | 9.4 | 74.4 | .9 | 10.3 | 46.1 |
| 1B | | 5.1 | 19.7 | 38.0 | 1.5 | 35.8 | 53.9 |
| Total | | 5.1 | 15.0 | 54.7 | 1.2 | 24.0 | 100.0 |

The analysis in terms of gender reveal similar findings among the two groups. The results show a high and close level of influence on both groups by graphic design materials. The greater gap in the recall levels of women, versus men, may allow us to suggest that women have been negatively affected by the deletion of graphics somewhat more in comparison to men. The significance of the Chi-square statistic is less than 0.01 for both women and men.

Table 21.b: Responses to Question 13 by Gender, %

| | | QUESTION 13 | | | | | |
|---------|--|-------------|------|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| 1A | | 5.9 | 5.9 | 76.5 | | 11.8 | 42.9 |
| 1B | | 7.4 | 16.2 | 36.8 | 2.9 | 36.8 | 57.1 |
| Total | | 6.7 | 11.8 | 53.8 | 1.7 | 26.1 | 100.0 |

| | | QUESTION 13 | | | | | |
|---------|--|-------------|------|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| 1A | | 4.5 | 12.1 | 72.7 | 1.5 | 9.1 | 48.9 |
| 1B | | 2.9 | 23.2 | 39.1 | | 34.8 | 51.1 |
| Total | | 3.7 | 17.8 | 55.6 | .7 | 22.2 | 100.0 |

Educational level responses reveal similar findings among the two subgroups as well. The results not only reveal a major drop in the recall rates after the deletion of graphics, but also reveal a higher level of influence among the below university level subjects than the higher level ones. This finding reveals a similar pattern about some of the previous findings which link increases in recall rates with increases in educational levels. Significance of the Chi-square statistic is less than 0.06 in Test A and 0.04 in Test B.

Table 21.c: Responses to Question 13 by Educational Level, %

| | | QUESTION 13 | | | | | |
|-----------|-------|-------------|------|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER | | | | | | | |
| EDUCATION | 1A | 3.4 | 10.1 | 73.0 | | 13.5 | 46.6 |
| | 1B | 2.0 | 17.6 | 40.2 | 2.0 | 38.2 | 53.4 |
| | Total | 2.6 | 14.1 | 55.5 | 1.0 | 26.7 | 100.0 |

| | | QUESTION 13 | | | | | |
|-----------|-------|-------------|------|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER | | | | | | | |
| EDUCATION | 1A | 10.7 | 7.1 | 78.6 | 3.6 | | 44.4 |
| | 1B | 14.3 | 25.7 | 31.4 | | 28.6 | 55.6 |
| | Total | 12.7 | 17.5 | 52.4 | 1.6 | 15.9 | 100.0 |

Overall, results show a great difference in the recall rates between subjects with exposure to graphics and subjects with no exposure to graphics. The analysis of the responses towards both tests indicate a high level of influence for the use of graphic design materials in question 13. As in the findings of question 12, the results of question 13 also show us that men, in comparison to women, and higher educational groups, in comparison to lower educational groups, have recalled more of the informational material presented. All above findings substantiate, once again, the power and influence of graphics in the presentation of news, and thus confirm our main hypothesis on the function of graphic design materials in the role of comprehension.

Question 14:

The final question in the experiment, number 14, concerns the weather report of the next day. Since the experiment was conducted in the city of Ankara, we have decided to ask subjects the highest expected temperature of Ankara for the next day. Item *b* was selected as our learning measurement. We expect the response ratio for item *b* to decrease from Group A to Group B and the responses towards item *e*, the item signifying not recalling anything, to increase.

The results for question 14 indicate important levels of influence for graphic design materials. The reverse patterns along with the major gaps in the answers substantiate our finding that graphics are a very effective tool in increasing recall levels among viewers. The significance of the Chi-square statistic is less than 0.01.

Table 22.a: Responses to Question 14, %

| | | QUESTION 14 | | | | | |
|---------|-----|-------------|------|-----|------|-------|--|
| Row Pct | a | b | c | d | e | Total | |
| 1A | .9 | 58.1 | 8.5 | 8.5 | 23.9 | 46.1 | |
| 1B | 2.9 | 27.7 | 10.9 | 6.6 | 51.8 | 53.9 | |
| Total | 2.0 | 41.7 | 9.8 | 7.5 | 39.0 | 100.0 | |

The comparison of responses among male and female subjects reveal similar patterns with somewhat different results. The above results indicate a high level of influence on both groups by graphic design materials. However, the greater gap in the recall levels of female subjects versus men, may allow us to suggest once again that women have been

negatively affected by the deletion of graphics more, in comparison to men. The significance of the Chi-square statistic is less than 0.01 for women and 0.02 for men.

Table 22.b: Responses to Question 14 by Gender, %

| | | QUESTION 14 | | | | | |
|---------|-------|-------------|------|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 1A | 2.0 | 64.7 | 2.0 | 9.8 | 21.6 | 42.9 |
| | 1B | 4.4 | 25.0 | 11.8 | 8.8 | 50.0 | 57.1 |
| | Total | 3.4 | 42.0 | 7.6 | 9.2 | 37.8 | 100.0 |

| | | QUESTION 14 | | | | | |
|---------|-------|-------------|------|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 1A | | 53.0 | 13.6 | 7.6 | 25.8 | 48.9 |
| | 1B | 1.4 | 30.4 | 10.1 | 4.3 | 53.6 | 51.1 |
| | Total | .7 | 41.5 | 11.9 | 5.9 | 40.0 | 100.0 |

Educational level responses reveal similar patterns with somewhat different results as well. Both groups have been affected by the absence of graphics. The significance of the Chi-square statistic is less than 0.05 in Group A and 0.01 in Group B.

Table 22.c: Responses to Question 14 by Educational Level, %

| | | QUESTION 14 | | | | | |
|------------------|-------|-------------|------|-----|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER EDUCATION | | | | | | | |
| | 1A | 1.1 | 52.8 | 6.7 | 9.0 | 30.3 | 46.6 |
| | 1B | 1.0 | 22.5 | 9.8 | 2.9 | 63.7 | 53.4 |
| | Total | 1.0 | 36.6 | 8.4 | 5.8 | 48.2 | 100.0 |

| | | QUESTION 14 | | | | | |
|-----------------|-------|-------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER EDUCATION | | | | | | | |
| | 1A | | 75.0 | 14.3 | 7.1 | 3.6 | 44.4 |
| | 1B | 8.6 | 42.9 | 14.3 | 17.1 | 17.1 | 55.6 |
| | Total | 4.6 | 57.2 | 14.3 | 12.7 | 11.1 | 100.0 |

Although the decline ratios in the answers towards the correct item appear to be rather close between the two groups, the very high no-recall

ratio for item e among the university level and above subjects in Group B indicates a major problem in the ability to recall the informational material after eliminating all graphic design materials. This unusual high ratio alone reveals that the higher educational level group has been negatively affected by the deletion of graphics more than the lower educational group. Another sign which helps substantiate this finding can be observed in the overall results of the lower educational level group in Group B. The relatively close responses towards the items aside from the correct answer imply a more aural comprehension attitude for this group. Particularly, the relatively low level of preference for item e in Group B implies that subjects in this group have felt convinced that they knew the correct answer without the help of graphics, and thus have not marked item e in high ratios. Although this group has scored a very similar decline ratio to the higher educational group in Group B, the response rates towards the other answer items may allow us to suggest that the lower educational level group relies more on the audio-verbal mode, rather than the graphic-visual mode, to view and comprehend the information presented.

In summation, assuming that the above finding is correct, the elimination of graphic design materials should not affect the comprehension level of the group to a great extent. From this analysis, we may be able to conclude that the deletion of graphic design materials can have a more negative influence on the higher educational level group than the lower one. Such a theory can be linked to reading tendencies and reading levels for both groups.

A final remark should be made on the possible reasons for the low level of preference towards the correct answer among the higher educational

level group in Group B. The 52.8% rate among this group, particularly in comparison to the high rate of 75.0% among the lower educational group, may appear to be a surprising and perhaps illogical result. Though, it should be inserted that many of the higher educational level subjects have not viewed the weather report with the same level of attention which they have paid to the rest of the news. Part of those subjects have displayed signs of fatigue or loss of interest towards the end of the screening session which may have resulted in reduced levels of attention towards this portion of the news.

A second factor concerns the presentational format of the weather report; this part of the news starts with a separate opening animation following the end of the main news report. It has been observed that because the news report was presented as a separate identity on its own and not as a part of the main body of the news, many subjects have mistakenly accepted this portion following the financial section as the end of the entire newscast, and thus have not paid the desired levels of attention towards the presentation. This finding reveals the importance and significance of continuity and visual syntax in a news presentation. Interruptions in continuity may lead to interruptions in the viewing process, resulting in less attention towards the newscast and therefore, reduced levels in comprehension skills.

Overall, results show a major difference in the recall levels between subjects with exposure to graphics and subjects with no exposure to graphics. As in the result of the previous question, responses towards both tests indicate a high level of influence for graphic design materials. This influence can be observed particularly among the female subjects; however, the results of question 14 have shown that contrary to the

findings in question 13, subjects in the lower educational group have recalled more of the informational material presented. All above findings once again confirm the role and function of graphics in the presentation of news, and thus confirm our main hypothesis which states that graphic design materials help increase the recall and retention level of viewers in television news learning.

4.3.5. Discussion

The testing of the fourteen questions reveal that our hypothesis regarding the role of graphic design materials is supported. Based on the gender, educational level and overall results, graphics have increased the comprehensional levels of our viewers in the experiment. The overall results show a 17.6% decrease in the total average recall ratio following the deletion of graphic design materials. The lowest decrease ratio is 2.0% in question number 4, the news story on the two Turkish diplomats; and the highest decrease ratio occurred in question number 13, 36.4%, the story on the currency rate of the US\$. Further examination will reveal more specific findings in the following sentences.

Question number 3 was the first news item in our survey which presented audio and graphic redundancy and intended to measure the function of graphics. The answering ratio to item *d* among both experiments gives us a clear indication of the influence of graphics. As the recall ratio in Group A was higher than the ratio in Group B, we may propose that the absence of graphics in a newscast can negatively affect comprehension toward the information presented; therefore, graphic design materials function as a major learning device in the delivery of information in a newscast.

If redundancy between information channels is a key factor in learning, the relationship between the audio, graphics and non-verbal pictorial channels need to be explored. Examining the results on the basis of audio-graphic redundancy versus no redundancy displays more detailed information. As was mentioned in the introductory portions of the answers, most news stories carried audio-graphic redundancy, while some did not. Important differences exist between the results of the ten stories with audio-graphic redundancy and the four stories without such redundancy. As seen in Table 23 and Table 24, the decrease ratios for the answers of the news items containing audio-graphic redundancy, on the average, are higher than the ratios for the items not containing this redundancy. The total average of the decrease ratios is 20.0% for redundancy answers; whereas, the average decrease ratio is 11.7% for non-redundancy answers. This means that the retention level has dropped from Group A to Group B by a 20.0% rate after the deletion of the graphics in questions containing audio-graphic redundancy. The same situation has occurred only by an 11.7% rate in questions not containing audio-graphic redundancy.

The comparison of the two results indicate that comprehension increases when the audio and graphic information are redundant. This appears to be contradicting Reese's finding which asserts that learning improves when the pictorial and audio channels are redundant and reinforce each other, but adding redundant captions appear to impede learning (1984, 79). Reese explains his hypothesis by stating that viewers can process redundant information through the audio and pictorial channels, but when they also must process print information, learning drops are found. He connects his findings with Broadbent's single-channel theory which states that humans can only attend to one source of information at

a time (qtd. in Reese 1984, 81). Reese concludes by pointing out that splitting attention between two language channels results in information loss.

The results of this study show otherwise. Contrary to Reese's study, adding redundant captions did not impede learning, it supported and improved learning. The total average of responses towards the correct answer, which is also the answer items representing all three channels (audio, visual-graphic design materials, and non-verbal pictorial material), is 72% in Group A for audio-graphic redundancy questions. As seen in Tables 23 and 24, after deleting the graphics in Group B, the recall rate drops to 52.0%.

In the first news item, results show us that although there was no audio-verbal and graphic redundancy in the presentation, the mere fact is that subjects preferred the answer indicating graphics in the original version of the news, and that they chose the answer indicating the audio-verbal material in the edited version, implies that in a regular newscast where both audio-verbal and graphic materials are presented, graphic design materials are noticed more than the audio-verbal materials. This outcome may suggest that the absence of such a preferential element may lead to reduced levels of recall in television news learning. The 20.0% decline ratio is a clear indication of the effects of graphics when they are left out.-

Table 23: Recall Ratios Towards Graphics in Audio-Graphic
Redundancy Questions

| Question | 3 | 5 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Total Avg. |
|------------|------|------|------|------|------|------|------|------|------|------|------------|
| Group A(%) | 77.4 | 77.8 | 69.6 | 76.1 | 46.2 | 88.0 | 94.9 | 58.1 | 74.4 | 58.1 | 72.0 |
| Group B(%) | 60.2 | 46.0 | 53.8 | 44.4 | 44.1 | 81.3 | 78.1 | 46.4 | 38.0 | 27.7 | 52.0 |
| Difference | 17.2 | 31.8 | 15.1 | 31.7 | 2.1 | 6.7 | 16.8 | 11.7 | 36.4 | 30.4 | 20.0 |

Table 24: Recall Ratios Towards Graphics in Audio-Graphic
Non-Redundancy Questions

| Question | 1 | 2 | 4 | 6 | Total Avg. |
|------------|------|------|-----|------|------------|
| Group A(%) | 48.3 | 23.3 | 9.6 | 12.8 | 23.5 |
| Group B(%) | 23.9 | 8.3 | 7.6 | 8.3 | 12.0 |
| Difference | 24.4 | 15.0 | 2.0 | 5.5 | 11.5 |

Similar patterns are observed among subgroups; women display a slightly higher ratio than the overall average, 22.7%, whereas men display a lower ratio than the overall average, 17.6% (see Tables 25.a and 25.b).

Table 25.a: Recall Ratios Towards Graphics in Audio-Graphic
Redundancy Questions, Women

| Question | 3 | 5 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Total |
|------------|------|------|------|------|------|------|-------|------|------|------|-------|
| Group A(%) | 78.0 | 70.6 | 66.7 | 76.5 | 45.1 | 92.2 | 100.0 | 52.9 | 76.5 | 64.7 | 72.3 |
| Group B(%) | 62.5 | 43.3 | 47.7 | 39.1 | 40.0 | 78.8 | 82.1 | 41.2 | 36.8 | 25.0 | 49.6 |
| Difference | 15.5 | 27.3 | 19.0 | 37.4 | 5.1 | 13.4 | 17.9 | 11.7 | 39.7 | 39.7 | 22.7 |

Table 25.b: Recall Ratios Towards Graphics in Audio-Graphic Redundancy Questions, Men

| Question | 3 | 5 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Total |
|------------|------|------|------|------|------|------|------|------|------|------|-------|
| Group A(%) | 76.9 | 83.3 | 71.9 | 75.8 | 47.0 | 84.8 | 90.9 | 62.1 | 72.7 | 53.0 | 71.8 |
| Group B(%) | 58.0 | 48.6 | 59.7 | 49.3 | 47.3 | 83.8 | 74.3 | 51.4 | 39.1 | 30.4 | 54.2 |
| Difference | 18.9 | 34.7 | 12.2 | 26.5 | 0.9 | 1.0 | 16.6 | 10.7 | 33.6 | 22.6 | 17.6 |

In terms of educational subgroups, we see a 19.2% average decline ratio among the higher educational groups and a 22.1% average ratio among the lower educational groups (Tables 26.a and 26.b).

Table 26.a: Recall Ratios Towards Graphics in Audio-Graphic Redundancy Questions, Higher Educational Group

| Question | 3 | 5 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Total |
|------------|------|------|------|------|------|------|------|------|------|------|-------|
| Group A(%) | 84.1 | 83.1 | 76.4 | 83.1 | 50.6 | 91.0 | 98.9 | 58.4 | 73.0 | 52.8 | 75.1 |
| Group B(%) | 65.3 | 46.6 | 62.7 | 47.1 | 54.0 | 84.3 | 87.4 | 49.0 | 40.2 | 22.5 | 55.9 |
| Difference | | | | | | | | | | | 19.2 |

Table 26.b: Recall Ratios Towards Graphics in Audio-Graphic Redundancy Questions, Lower Educational Group

| Question | 3 | 5 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Total |
|------------|------|------|------|------|------|------|------|------|------|------|-------|
| Group A(%) | 55.6 | 60.7 | 46.2 | 53.6 | 32.1 | 78.6 | 82.1 | 57.1 | 78.6 | 75.0 | 61.9 |
| Group B(%) | 43.8 | 44.1 | 23.3 | 35.5 | 16.7 | 71.9 | 50.0 | 38.9 | 31.4 | 42.9 | 39.8 |
| Difference | | | | | | | | | | | 22.1 |

If a higher decrease ratio signifies a higher level of influence, these figures would indicate that women, in comparison to men; and lower educational groups, in comparison to higher educational groups have been affected slightly more by the absence of graphics in audio-graphic redundancy presentations.

The recall ratios towards the graphic items among male and female subjects in Group A show great resemblance, which implies no major differences in terms of recall ability between men and women. However, the recall ratios towards the graphic items among higher and lower educational subgroups in Group A indicate a more noteworthy difference with the higher educational groups recalling more.

A different level of examination of the educational subgroups initially appear to be contradicting this finding. The answers towards the final item in each question, *e*, which represent not recalling anything show that the lower educational groups have marked these items by a lesser percentage than the higher educational groups in Group A (Table 27). It may be suggested that the captions which appear on a black background, such as the one shown for question 2, do not serve its function as effectively as the major captions which appear on a red background.

Table 27: Recall Ratios Towards Items Representing Not Recalling Anything in Audio-Graphic Redundancy Questions

| Group | Higher Educ.Group | Lower Educ. Group |
|------------|-------------------|-------------------|
| Group A(%) | 13.3 | 5.8 |
| Group B(%) | 25.7 | 25.8 |

Among some of the reasons may be that, black color may be less effective than red; the captions appearing in black are thinner in weight and therefore carry smaller size lettering, which makes it more difficult to read; and the number of black captions shown are usually more than one, which makes these messages appear repetitious and therefore, difficult to absorb. As a result, we may suggest that in contrast to red captions, black captions are not very effective in SHOW TV's news and do not serve the purpose they normally intend to.

Although these results may appear as if the lower educational groups have had less of a difficulty in recalling the correct answers, the previous results of the recall ratios towards the correct answers indicate that the lower educational groups simply make more errors in recalling the correct answers. The distribution of responses towards incorrect answer items in Group A is higher in lower educational groups than it is in higher educational groups. All above findings show that the higher educational groups observe the informational material more carefully than the lower educational groups, which may allow us to suggest that recall levels increase with the increase in educational levels. As the responses include the graphics mode, this finding further allows us to suggest that the increase in the educational level provides greater ability for recall towards graphic design materials.

A different level of analysis yields more specific findings regarding the influential capacity of graphic design materials within the comparison of maps versus captions. The results and findings of this study has so far assumed graphic design materials as one single channel with a visual mode. However, the visual channel of graphic design materials contains a visual-verbal print mode, namely captions and other textual

information, and a nonverbal pictorial mode including certain animations, symbolic illustrations and images, and cartographic materials (maps). The results of our study reveal that cartographic materials have a stronger function of affecting viewers in comparison to the visual-verbal print mode.

In comparing the results of the ten questions with audio-graphic redundancy based on captions versus maps, we will see that maps possess the capacity of influencing viewers more than purely visual-textual information, captions. The recall ratios for audio-graphic redundancy questions with captions averaged to a total of 17.5% after deleting graphics (Table 28). When we review the results of the three questions using maps as graphics, we will see that the recall ratios for audio-graphic redundancy questions with maps has dropped by an average of 26.0% after deleting graphics (Table 29).

Table 28: Recall Ratios for Audio-Graphic Redundancy Questions with Captions

| Question | 3 | 5 | 9 | 10 | 11 | 12 | 13 | Total |
|------------|------|------|------|------|------|------|------|-------|
| Group A(%) | 77.4 | 77.3 | 46.2 | 88.0 | 94.9 | 58.1 | 74.4 | 73.8 |
| Group B(%) | 60.2 | 46.0 | 44.1 | 81.3 | 78.1 | 46.4 | 38.0 | 56.3 |
| Difference | 17.2 | 31.8 | 2.1 | 6.7 | 16.8 | 11.7 | 36.4 | 17.5 |

Table 29: Recall Ratios for Audio-Graphic Redundancy Questions with Maps

| Question | 7 | 8 | 14 | Total |
|------------|------|------|------|-------|
| Group A(%) | 69.6 | 76.1 | 58.1 | 67.9 |
| Group B(%) | 53.8 | 44.4 | 27.7 | 41.9 |
| Difference | 15.8 | 31.7 | 30.4 | 25.9 |

The comparison of the recall ratios among the two different graphic modes in Group A initially lead us to think that captions have been more influential in terms of increasing recall levels. However, the 73.8% ratio in the captions versus the 67.9% ratio in maps derive from the influence of the audio channel. If captions had indeed increased recall levels significantly, the absence of these materials should have yielded a greater decline ratio in the overall results after leaving these materials out; whereas, the recall ratios for questions with captions versus maps indicate a lower recall level for maps, 41.9% versus 56.3%.

In their article reviewing how geographic maps influence the recall of associated text, Kulhavy, Stock and Kealy present a theoretical model which supports the findings of our study (1993, 48). In their model, Kulhavy et al., reiterate the findings of Abel and Kulhavy (1989), and Reynolds (1968), by stating that in a study where students view a geographic map and then either read or listen to a text containing facts related to features on the map, students who see a map are able to recall more text facts than those who see the same map in fragments, a list of map features, or no map at all (qtd. in Kulhavy et al. 1993, 48). Kulhavy et. al. include the findings of Perrig and Kintsch (1985), which point out that the same level of text recall does not occur if the map relations are presented as a detailed verbal description rather than depicted visually (qtd. in Kulhavy et al. 1993, 48).

Kulhavy et. al. provide a model to describe the effects of maps on memory by describing a model explaining how geographic maps improve memory for related text. The model is a version of dual-coding theory, and its general constructs are in close agreement with Paivio's version of dual coding, that viewers encode maps into a nonverbal

memory store in the form of images which retain both feature and structural information from the actual copy of a map. On the other hand, verbal information is encoded sequentially into a verbal store in the form of linguistic proportions. The nonverbal and verbal memory codes are functionally distinct from each other in the sense that they can operate independently during cognitive activity (qtd. in Kulhavy et al. 1993, 52).

Using the above studies as a basis, the results of our experiment show that improvements in map-text recall are greater when the map is presented as a visual depiction. When geographic relations are presented verbally, as is done by deleting the visual information in Group B, the informational material fails to achieve the facilitative effect that is found with visual maps. The results of our study further indicate that the absence of cartographic materials negatively affect levels more than the absence of visual-verbal print materials.

In reviewing the results and findings of the four questions not containing audio-graphic redundancy, similar patterns showing the effects of graphic design materials prevail. The audio-verbal and graphic informational materials in the four questions show great resemblance to each other and display correlating meanings; however, the informational materials of these two channels are not precisely redundant as were the ten questions examined before. Though, due to the closeness of the meanings in the answers of the two channels, we see the items representing graphics being marked even after deletions in Group B. The duality in the meanings of the answers have led our subjects to believe that they have comprehended the informational material correctly, and thus have indicated these items as the correct answers. Such responses

will be considered as correct answers as well in order to provide accurate measures to this study.

The initial examination of the results show a 11.5% average decline in recall ratios for the answers representing graphics after their deletion in Group B (see Table 24). However, there is no audio-graphic redundancy in these questions, both the audio-verbal and the graphic materials presented are correct answers. Hence, the answering ratios towards the audio-verbal material need to be taken into account as well in order to assess comprehension levels and decreases in such levels. For this purpose, we shall also include the two items in questions 4 and 6 which signify that both the verbals, and the graphics, are correct answers.

The summation of all answers reveals a more accurate and legitimate total figure of the levels of comprehension. In all of the questions not containing audio-graphic redundancy, subjects have comprehended the informational material more when they saw the news with graphics than they did without seeing graphics (see Tables 30.b - d).

Despite considering all semantically-matching verbal answers correct, total recall levels decreased in Group B after leaving out graphic design materials. The decrease levels were 5.8% in question 1, 7.4% in question 2, 11.0% in question 3, and 9.4% in question 4, yielding an average of 8.4% for all four questions. If we accept the audio material as the only correct mode of answer in Group B, which is technically the only accurate answer, we will then observe an even larger decrease in the comprehension levels of the subjects in Group B, a total average of 34.0%. In both cases, the above figures manifest graphic design materials' role and influence in the capacity of comprehension. Even accepting all

Table 30.a: Comparison of Results for Questions Not Containing Audio-Graphic Redundancy, Question 1

| Q.1 | Graphics | Verbal Ans. | Total Correct A. |
|------------|----------|-------------|------------------|
| Group A(%) | 48.3 | 33.6 | 81.9 |
| Group B(%) | 23.9 | 52.2 | 76.1 |
| Difference | 24.4 | 18.6 | 5.8 |

Table 30.b: Comparison of Results for Questions Not Containing Audio-Graphic Redundancy, Question 2

| Q.2 | Graphics | Verbal Ans. | Tot. Cor. A. |
|------------|----------|-------------|--------------|
| Group A(%) | 23.3 | 34.5 | 57.8 |
| Group B(%) | 8.3 | 42.1 | 50.4 |
| Difference | 15.0 | 7.6 | 7.4 |

Table 30.c: Comparison of Results for Questions Not Containing Audio-Graphic Redundancy, Question 4

| Q.4 | Graphics | Verbal Ans. | Both | Tot. Cor. A. |
|------------|----------|-------------|------|--------------|
| Group A(%) | 9.6 | 28.1 | 43.0 | 80.7 |
| Group B(%) | 7.6 | 39.4 | 22.7 | 69.7 |
| Difference | 2.0 | 11.3 | 20.3 | 11.0 |

Table 30.d: Comparison of Results for Questions Not Containing Audio-Graphic Redundancy, Question 6

| Q.6 | Graphics | Verbal Ans. | Both | Tot. Cor.A. |
|------------|----------|-------------|------|-------------|
| Group A(%) | 12.8 | 21.4 | 31.6 | 65.8 |
| Group B(%) | 8.3 | 16.5 | 31.6 | 56.4 |
| Difference | 4.5 | 4.9 | 0 | 9.4 |

possible solutions as correct answers, recall levels do not match those in which graphics are shown. The findings of the above results indicate that although not significantly, graphic design materials increase comprehension of viewers in audio-graphic non-redundancy presentations as well.

These findings also confirm the findings of Paivio (1971) and Brooks (1968), who both investigated images versus words in the cognitive process. Paivio posited that memory consists of both verbal and imagery codes in which concrete words and pictures are redundantly stored by an image code as well as a verbal code, in comparison to abstract words which are stored by a verbal code alone; hence, due to its presumed links with perception, the image code favors concrete materials and processes in parallel, in contrast to the more abstract verbal code which processes sequentially. Similarly, Brooks asserted that in working memory, and in long term memory, there are separate systems for thinking in images compared to thinking in words, and that there is at least a visual-spatial system and an auditory-linguistic system which are the two separate and modality-specific systems in working memory (qtd. in McGuinness 1989, 191). The studies of Paivio and Brooks provide some explanation in terms of why graphic design elements possess more potential for being stored in memory and retrieved later.

Many studies have been carried out to examine the visual format of television news and the role visuals play in conveying information. One of the views in this regard asserts that despite certain transmission problems created by the current format of news presentation and the stereotypical approaches to picture sequences, visuals do convey a great deal of information (Graber 1990, 153). A contrasting view suggests that

the visuals of TV news rarely serve any informational function and, in fact, serve primarily a promotional one. The pictures and graphics presented by television news serve more of a role of promoting and legitimizing the newscast itself by reinforcing the dramatic structure and attractiveness of the program and by lending confirmation and authority to verbal reports (Griffin 1992, 139).

The conventional visual format of today's prime time news presentations does indeed appear to be functioning in a more promotional and confirmational role rather than a functional and directing one. However, the findings of our study refute Griffin's overall theory and indicate that graphics, if not pictures, serve an informational function in the presentation of news. This goes along with the above findings of Graber. Although it appears that Graber's findings do not specifically encompass graphic design materials, we can develop her theory by inserting graphics into the scope of visuals and assert that graphic design materials do convey information, and along with pictures, they play an important role in forming the visual format which makes information accessible to most viewers. The findings of the study confirm Brosius' theory which states that "other than audience variables and situational factors, the effects of television news on learning information are primarily influenced by characteristics of the news items themselves and the formal features of their presentations" (1989, 1).

A similar and more encompassing view to this finding is expressed by Woodall, Davis and Sahin; their theory suggests that providing distinctive features for news stories is important, and that unless distinctive features, which may be used as retrieval cues at recall, are present in stories, misremembering news items may be likely (1983, 21).

The absence of graphics not only disrupts the conventionality of the visual format, but also causes losses in recall levels of the overall informational materials.

It should be finally indicated that due to our previous findings which reveal the relationship between educational levels and recall levels, the information conveying capacity of graphics is not limited to, but displays better results with higher educational groups. As our study suggests, the increase in educational levels provide greater ability for comprehension towards graphic design materials.

All above findings developed from the results of Experiment 1 show a much more solid and functional role for graphic design materials than any previously assumed notion or study developed or related before. Particularly, the results of our experiment should be pointed out, that in all fourteen questions decreases in comprehension levels have been observed. These decreases have varied within the subgroups and have not consistently been in significant levels, but nevertheless, they have been observed at certain levels in every single question of our study.

All indications and factors display a cognitive-based relationship between graphics and comprehension, and reveal that graphic design materials are an inherent convention of television's prime time news whose absence can undermine comprehension. Even despite high levels of interest in a news story and reiteration of the verbal content in the audio channel, comprehension decreases in the absence of graphic design materials. The verbals in the audio channel and pictures in the visual channel, can be sufficient modes individually, or together, to deliver information and provide greater levels of comprehension. Graphic

design materials have justified their role as a main information device in relaying information to viewers and in helping them comprehend the message, and thus have confirmed our main hypothesis which claims that in learning from television news, graphic design materials increase the level of recall and retention of the news story content.

4.4. EXPERIMENT 2

In a manner similar to the first experiment, subjects for Experiment 2 were chosen from college environments and randomly divided into two groups. Each group was shown a different version of the same news, but both were asked the same items of questions. The first group, A, was shown the original version, which had no editing done on it other than being shortened in length. The second group, B, was shown an edited version of the same news with the visual text informative materials, namely captions and maps, entirely altered in terms of their messages in comparison to the original version. Hence, similar to the first experiment, we had two versions of the same newscast; the original/unedited video material, version A, which was shown to the first group; and version B, the graphically edited version, which was shown to the second group, B.

4.4.1. Viewing Material

The viewing material of Experiment 2 contained certain similarities to, as well as differences from Experiment 1. Regarding similarities, a regular news program of the SHOW TV channel was selected as viewing material. The original thirty minute version was shortened down to the length of fourteen and a half minutes due to the same concerns for

providing ease in comprehension for subjects. Similarly, careful examination was conducted not to select a particular evening's newscast which would have been remembered easily, and which would not have allowed us to make clear and correct evaluations on the responses given to the questions.

Regarding differences, SHOW TV's nightly news of April 21st, 1995 was selected as the viewing material instead of the April 3rd newscast shown to the groups in Experiment 1. It was believed that the story contents in the April 21st newscast would allow more flexibility and convenience in terms of changing the visual text of the story material within the goals of this particular experiment.

Due to the specific aim of the experiment, the visual format of Experiment 2 was not altered in the same way as it was done in Experiment 1. In this experiment all visual text, namely captions and other typographic material, were changed. The graphic design materials used in Experiment 2 were all fictitious in terms of the content of the material, for the aim of this experiment was to test the effects of misguiding and defaulting viewers using graphics. With this goal in mind all graphics have been altered and reproduced through a special editing session (see Figures 3.a and 3.b).

No changes were exerted on either the audio track, or the video imagery of either one of the news versions. Also, the April 21st original newscast did not contain any semantic noise.

As SHOW TV uses Futura Bold in its newscasts for its captions, it was intended to use the same typeface in the reproduction phase for the



Figure 3.a: The Unedited Version of the News, Experiment 2



Figure 3.b: The Edited Version of the News, Experiment 2

visual text. However, due to certain problems in finding and transferring Futura Bold to the computer system, another sans serif typeface was preferred for subjects in Group B. This typeface called Arial, carries more similarities to the Helvetica typeface. However, the differences in the details of these two typefaces can only be noticed by individuals with particular knowledge in the subject matter. It was assumed that most viewers would not be able to recognize the slight difference in the showing of the typeface, and therefore the variation in the typeface selection process was followed through.

In terms of the color of the lower one-third captions used in the news programs, SHOW TV displays all captions on a red background band. No changes in the color of the captions have occurred and all such elements were reproduced for subjects in Group B in the exact same color as seen in the original broadcast of SHOW TV's nightly prime time news. In addition, special attention was paid to replicating the duration of these captions appearing on the screen, which is approximately 2-4 seconds for each message. The time length in which each caption appeared in the original news broadcast has been strictly adhered to and repeated in the edited version for Group B. No effort was exerted to provide extra viewing time to create comprehension advantages for subjects in Group B by exposing captions in longer time periods than their original displays in the original version of the news.

One dissimilarity which emerged in the production process was the minor variations in size and visual forms of the sentences used in the captions. Certain captions needed to be long in terms of the number of words, hence, the visual form of the words were condensed in order to fit a sentence in a one line caption. The degree of condensing varied, but

never came to a point where legibility and the ease of readability were disrupted. Similarly, a minor change in the size of the letters occurred between some stories' captions. However, it was believed that such minor variations would not be noticed by the subjects, presumably, within the conditions of joining an experiment and being tested. As will be expounded in the results of the survey, none of the subjects indicated any detection or suspicion of the slight inconsistencies of the visual text material during or after the viewing sessions.

The sequence used in this experiment had fourteen news items which were presented in the same order as they appeared in the newscast. These consisted of the following:

- 1- The car bomb incident (the explosion of a car bomb occurring in Istanbul).
- 2- The car brand (the brand of the car taking place in the incident).
- 3- The explosive type (the type of explosive used in the car bomb incident).
- 4- The removal of the car (the motives for removing the car before the explosion taking place).
- 5- The comparison of bombs (the comparison of the bombs used in this incident versus the one used in the killing of Uğur Mumcu).
- 6- The Tanju Çolak court case (the new court case of the famous football player, Tanju Çolak).
- 7- The shooting of Sarp Kuray (the shooting of Sarp Kuray, one of the board members in the investment firm TurkInvest).
- 8- The number of bullets (The number of bullets recovered from Sarp Kuray's body).
- 9- The DEP senators (senators from the ousted party DEP still taking advantages of special housing privileges).

- 10- The hashish cooperation (the US assisting Turkey in the production and distribution of hashish).
- 11- The presidential elections (the presidential elections which will take place in the Turkish Republic of Northern Cyprus).
- 12- The stock market (the daily developments in the İstanbul Stock Exchange).
- 13- Pirelli's advertising film (the latest advertising film of Pirelli tires introducing Carl Lewis).
- 14- The weather report.

In this experiment, the weather report portion of the newscast has not gone through the same type of exclusive editing as was done in Experiment 1. In the edited version of Experiment 1 no graphic images were displayed for this particular viewing group, and only the promotional video material of the sponsoring firm was shown. However, in Experiment 2 the graphic map regularly displayed on SHOW TV's weather report has been shown to both viewing groups; the only difference in the content of the two groups' editions has been the difference in the temperature displayed for the city of Ankara (see Figures 4.a and 4.b).

No other editing has been applied on either the audio or visual channel of this particular experiment. In addition, no attempt was exerted to disrupt any aspects of early visual information processing in word recognition for the original version of the April 3rd newscast. Details regarding the content of the stories are given in Appendix 7.2.



Figure 4.a: The Unedited Version of the Weather Report, Experiment 2



Figure 4.b: The Edited Version of the Weather Report, Experiment 2

4.4.2. Method of Experiment

4.4.2.1. Subjects

The same constraints faced during Experiment 1 in the testing methodology in terms of conducting an experiment using television and video players created similar limitations and lead to the confinement of the experiment to be conducted in college environments where such

facilities were highly available. In addition, the difficulty of forming groups from various parts of the community who would be willing to participate in an experiment, finding places where the video material could be shown and setting up these materials, created extra potential difficulties which prevented us from conducting such an experiment outside of college environments. Due to the above conditions and restrictions, the selection of the subjects was determined by finding groups of individuals from university surroundings who would be willing to become subjects for the purposes of the experiment.

Three-hundred and seventeen adults participated in Experiment 2. Of these, 143 subjects were shown the unedited version, A, and 174 subjects watched the edited version, B. However, 314 of these subjects' results were considered valid for tabulation due to some incomplete responses in the questionnaire. The distribution ratio of the students and other university personnel in the groups was very similar. Within these groups, one-hundred and fifty-four female and 160 male subjects, ranging between the ages 17 to 51 and above were allocated at random to one of the two groups. All subjects came from college environments, including 250 students and 64 workers. These amounts also reflect the total number

of subjects who have fully participated in both editions of the viewing sessions. Students were mostly undergraduates from various departments, including Fine Arts and Design, Business, Economics, Engineering, Social Sciences, Communication. The workers were among the cleaning personnel, security people, and auxiliary services people of the three universities.

47 undergraduate level students from Ankara University have also participated in the experiment. This viewing session was conducted using a 72 centimeter screen television set in a small size auditorium designed to seat up to 100 people; two sessions were conducted with 24 students during one viewing for the unedited version, and 23 students during the other viewing for the edited version with a seating distance of 3-7 meters. It can be asserted that these subjects were provided with optimum viewing conditions considering the large size of the television screen.

Minor variations existed among some of the viewing sessions. All Bilkent University subjects who participated in the experiment were shown the video material in three large size classrooms in the faculty of Fine Arts, Design and Architecture. One of the classrooms had a capacity of 80 seating, the others a capacity of 50 seating. Most viewing sessions were conducted with small groups, ranging between 4 and 13 subjects in each session. In only two of these viewings, there were more than 13 subjects: 36 subjects in one of the Test A viewings, and 44 subjects in one of the Test B viewings, which all consisted of students. Another viewing which took place among workers composed of 19 subjects in Test A, and 21 subjects in Test B. Most of the subjects were provided with an optimum seating distance of 2,5-4 meters for better viewing conditions.

In the two groups with 36 and 44 subjects, the seating distance extended up to 7 meters.

4.4.2.2. Procedure

The experiment was carried out with a procedure similar to the procedures applied in Experiment 1. The unedited (A) and edited (B) versions of the news were shown to a total of 21 different viewing groups and each testing session lasted between 20 and 40 minutes. During all viewings, no mechanical or environmental noise problems which could interfere with the viewing process occurred. Table 31 displays the layout of participation for subjects in Experiment 2.

Table 31: Layout of Participation for Subjects, Experiment 2

| EXPERIMENT 2 | METU Undergraduate Students | Bilkent Graduate Students | Bilkent Workers | Graphic Design Second Year Undergraduates | Graphic Design Fourth Year Undergraduates | Interior Design First Year Undergraduates | Landscape Architecture Second Year Undergraduates | Bilkent Workers | Bilkent Workers | Economics Third Year Undergraduates | Ankara University Undergraduates | TOTAL |
|----------------------------|-----------------------------|---------------------------|-----------------|---|---|---|---|-----------------|-----------------|-------------------------------------|----------------------------------|-------|
| Unedited Version (Group A) | 5 | 7 | 4 | 13 | 8 | 36 | 10 | 19 | 11 | 6 | 24 | 143 |
| Edited Version (Group B) | - | 3 | 5 | 12 | 12 | 44 | 12 | 21 | 11 | 31 | 23 | 174 |

The problem that was faced in Experiment 1 was experienced during the analysis of Experiment 2 as well; certain items were left blank in the answer sheets of some of the subjects. This situation created a minor problem of variations in the total number of responses for almost each question. As can be seen in the tables displayed in the appendices, the tabulation of the total numbers in Test A always do not add up to the total number of 141, and the total numbers in Test B always do not add up to the total number of 173. However, this problem did not occur at levels which could impair the results of the experiment.

4.4.2.3. Test of Recall

Due to the same concerns expressed in Experiment 1 regarding depth of processing and preciseness in measuring memory, a multiple choice answering system was used to measure levels of learning. The test of recall included questions about each news item, and in some items, several questions about each item. Respondents were given five different alternatives to choose from in each of the fourteen questions. The questions offered five possible answers: one correct answer which would signify the graphic material shown, three other answers that were relevant to the content of the news story but not signifying the graphics. The final item offered in the answers, *e*, always signified "I don't recall". All fourteen news items shown to the subjects carried two possible correct answers each, for what was given on the original track of the audio channel was a correct answer as well as the altered captions shown on the visual channel. In Experiment 2, graphic design materials were used as a device to lead subjects to make incorrect inferences about the news stories that they had seen, along with the role of authenticating the audio and video materials.

Although this study was conducted with individuals from university environments, results are tabulated with some consideration to demographic variables. Aside from the overall results, responses of subjects are also examined in terms of two subgroups: (a) gender, (b) educational level. This type of a specified examination intends to offer possible explanations regarding variance of memory performance among certain subgroups. The test of recall used in Experiment 2 is given in Appendix 7.4.

4.4.2.4. Questionnaire of Subject Profile

The same questionnaire of subject profile was used as in Experiment 1.

4.4.3. Results of the Experiment

The contents of the newscast used in Experiment 2 are given in Appendix 2, and the results of the experiment are provided in Tables 32.a to 36.b.

Table 32.a: Frequency Table of Answers to Test 2 A, All Subjects

| Question | a | b | c | d | e | Total |
|----------|-----|-----|-----|-----|----|-------|
| 1 | 7 | 43 | 3 | 73 | 15 | 141 |
| 2 | - | 1 | 1 | 132 | 7 | 141 |
| 3 | 97 | 13 | 8 | 6 | 17 | 141 |
| 4 | 16 | 6 | 3 | 83 | 31 | 139 |
| 5 | 107 | 13 | 14 | 1 | 5 | 140 |
| 6 | 58 | 35 | 4 | 6 | 38 | 141 |
| 7 | 2 | 4 | 114 | 9 | 12 | 141 |
| 8 | 4 | 40 | 4 | 47 | 45 | 140 |
| 9 | 12 | 5 | 2 | 85 | 35 | 139 |
| 10 | 7 | 75 | 8 | 17 | 31 | 138 |
| 11 | 10 | 4 | 62 | 14 | 49 | 139 |
| 12 | 12 | 5 | 3 | 14 | 17 | 51 |
| 13 | 3 | 77 | 9 | 13 | 37 | 139 |
| 14 | 11 | 101 | 9 | 2 | 18 | 141 |

Table 32.b: Frequency Table of Answers to Test 2 B, All Subjects

| Question | a | b | c | d | e | Total |
|----------|----|-----|-----|-----|----|-------|
| 1 | 7 | 113 | 1 | 37 | 13 | 171 |
| 2 | 1 | 2 | 2 | 165 | 3 | 173 |
| 3 | 36 | 111 | 22 | 1 | 3 | 173 |
| 4 | 93 | 4 | 1 | 56 | 18 | 172 |
| 5 | 87 | 44 | 32 | 2 | 8 | 173 |
| 6 | 74 | 40 | 9 | 11 | 39 | 173 |
| 7 | 3 | 21 | 122 | 14 | 11 | 171 |
| 8 | - | 29 | 100 | 13 | 31 | 173 |
| 9 | 12 | 76 | 2 | 43 | 39 | 172 |
| 10 | 33 | 56 | 7 | 50 | 25 | 171 |
| 11 | 68 | 3 | 40 | 5 | 54 | 170 |
| 12 | 13 | 36 | 3 | 22 | 15 | 89 |
| 13 | 5 | 82 | 42 | 31 | 12 | 172 |
| 14 | 90 | 22 | 9 | 19 | 30 | 170 |

Table 33.a: Frequency Table of Answers to Test 2 A, Female Subjects

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|----|-------|
| 1 | 3 | 17 | 1 | 41 | 8 | 70 |
| 2 | - | 1 | 1 | 64 | 4 | 70 |
| 3 | 50 | 4 | 4 | 2 | 10 | 70 |
| 4 | 2 | 4 | 2 | 42 | 19 | 69 |
| 5 | 52 | 5 | 9 | 1 | 2 | 69 |
| 6 | 28 | 15 | - | 4 | 23 | 70 |
| 7 | 1 | 1 | 56 | 6 | 6 | 70 |
| 8 | 2 | 19 | 1 | 20 | 27 | 69 |
| 9 | 5 | 4 | 1 | 35 | 24 | 69 |
| 10 | 4 | 35 | 5 | 7 | 18 | 69 |
| 11 | 4 | - | 25 | 10 | 29 | 68 |
| 12 | 4 | 3 | 2 | 7 | 12 | 28 |
| 13 | 3 | 37 | 6 | 7 | 22 | 75 |
| 14 | 5 | 53 | 5 | 1 | 11 | 75 |

Table 33.b: Frequency Table of Answers to Test 2 B, Female Subjects

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|----|-------|
| 1 | 1 | 52 | - | 15 | 8 | 76 |
| 2 | - | 1 | - | 75 | 2 | 78 |
| 3 | 18 | 47 | 11 | - | 2 | 78 |
| 4 | 44 | - | 1 | 23 | 9 | 77 |
| 5 | 40 | 23 | 11 | 1 | 3 | 78 |
| 6 | 35 | 14 | 3 | 7 | 19 | 78 |
| 7 | - | 11 | 56 | 7 | 3 | 77 |
| 8 | - | 13 | 45 | 4 | 16 | 78 |
| 9 | 6 | 37 | - | 14 | 20 | 77 |
| 10 | 15 | 21 | 1 | 27 | 13 | 77 |
| 11 | 29 | - | 17 | 1 | 29 | 76 |
| 12 | 7 | 23 | - | 13 | 6 | 49 |
| 13 | 1 | 27 | 28 | 15 | 8 | 79 |
| 14 | 42 | 10 | 2 | 12 | 12 | 79* |

* There is also one subject who has marked more than one item as an answer

Table 33.c: Frequency Table of Answers to Test 2 A, Male Subjects

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|----|-------|
| 1 | 4 | 24 | 1 | 31 | 6 | 66 |
| 2 | - | - | - | 64 | 2 | 66 |
| 3 | 43 | 9 | 4 | 4 | 6 | 66 |
| 4 | 13 | 2 | 1 | 39 | 10 | 65 |
| 5 | 53 | 7 | 4 | - | 2 | 66 |
| 6 | 29 | 18 | 3 | 2 | 14 | 66 |
| 7 | 1 | 2 | 54 | 3 | 6 | 66 |
| 8 | 2 | 19 | 1 | 20 | 27 | 69 |
| 9 | 7 | 1 | 1 | 45 | 11 | 65 |
| 10 | 3 | 36 | 3 | 10 | 12 | 64 |
| 11 | 5 | 4 | 36 | 3 | 18 | 66 |
| 12 | 8 | 2 | 1 | 7 | 5 | 23 |
| 13 | - | 40 | 3 | 6 | 15 | 64 |
| 14 | 6 | 48 | 4 | 1 | 7 | 66 |

Table 33.d: Frequency Table of Answers to Test 2 B, Male Subjects

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|----|-------|
| 1 | 6 | 60 | 1 | 22 | 5 | 94 |
| 2 | 1 | 1 | 2 | 89 | 1 | 94 |
| 3 | 18 | 63 | 11 | 1 | 1 | 94 |
| 4 | 48 | 4 | - | 33 | 9 | 94 |
| 5 | 47 | 20 | 21 | 1 | 5 | 94 |
| 6 | 38 | 26 | 6 | 4 | 20 | 94 |
| 7 | 3 | 9 | 66 | 7 | 8 | 93 |
| 8 | - | 16 | 54 | 9 | 15 | 94 |
| 9 | 6 | 38 | 2 | 29 | 19 | 94 |
| 10 | 17 | 35 | 6 | 23 | 12 | 93 |
| 11 | 39 | 3 | 22 | 4 | 25 | 93 |
| 12 | 6 | 13 | 3 | 9 | 9 | 40 |
| 13 | 4 | 55 | 14 | 16 | 4 | 93 |
| 14 | 48 | 12 | 7 | 7 | 18 | 94* |

* There is also one subject who has marked more than one item as an answer

Table 34.a: Frequency Table of Answers to Test 2 A, Subjects of Higher Educational Level

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|----|-------|
| 1 | 2 | 23 | 1 | 66 | 15 | 107 |
| 2 | - | 1 | 1 | 98 | 7 | 107 |
| 3 | 74 | 8 | 7 | 5 | 13 | 107 |
| 4 | 5 | 3 | 1 | 71 | 26 | 106 |
| 5 | 83 | 6 | 12 | 1 | 5 | 107 |
| 6 | 39 | 25 | - | 6 | 37 | 107 |
| 7 | - | 2 | 88 | 9 | 8 | 107 |
| 8 | 2 | 25 | 1 | 40 | 39 | 107 |
| 9 | 5 | 2 | - | 67 | 33 | 107 |
| 10 | 2 | 61 | 6 | 11 | 26 | 106 |
| 11 | 5 | - | 44 | 11 | 46 | 106 |
| 12 | 7 | 3 | 2 | 12 | 17 | 41 |
| 13 | 3 | 65 | 5 | 6 | 29 | 108 |
| 14 | 6 | 78 | 6 | 1 | 17 | 108 |

Table 34.b: Frequency Table of Answers to Test 2 B, Subjects of Higher Educational Level

| Question | a | b | c | d | e | Total |
|----------|----|----|-----|-----|----|-------|
| 1 | 3 | 90 | 1 | 35 | 12 | 141 |
| 2 | - | 1 | 1 | 138 | 3 | 143 |
| 3 | 25 | 97 | 18 | - | 3 | 143 |
| 4 | 81 | 1 | 1 | 45 | 14 | 142 |
| 5 | 75 | 33 | 27 | 1 | 7 | 143 |
| 6 | 57 | 32 | 7 | 10 | 37 | 143 |
| 7 | - | 21 | 100 | 10 | 11 | 142 |
| 8 | - | 23 | 83 | 9 | 28 | 143 |
| 9 | 8 | 63 | 1 | 34 | 36 | 142 |
| 10 | 26 | 50 | 1 | 43 | 22 | 142 |
| 11 | 57 | - | 31 | 2 | 51 | 141 |
| 12 | 8 | 35 | 2 | 20 | 14 | 79 |
| 13 | 1 | 68 | 41 | 23 | 9 | 142 |
| 14 | 81 | 12 | 3 | 17 | 27 | 140 |

Table 35.a: Frequency Table of Answers to Test 2 A, Subjects of Lower Educational Level

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|---|-------|
| 1 | 5 | 20 | 2 | 7 | - | 34 |
| 2 | - | - | - | 34 | - | 34 |
| 3 | 23 | 5 | 1 | 1 | 4 | 34 |
| 4 | 11 | 3 | 2 | 12 | 5 | 33 |
| 5 | 24 | 7 | 2 | - | - | 33 |
| 6 | 19 | 10 | 4 | - | 1 | 34 |
| 7 | 2 | 2 | 26 | - | 4 | 34 |
| 8 | 2 | 15 | 3 | 7 | 6 | 34 |
| 9 | 7 | 3 | 2 | 18 | 2 | 32 |
| 10 | 5 | 14 | 2 | 6 | 5 | 32 |
| 11 | 5 | 4 | 18 | 3 | 3 | 33 |
| 12 | 5 | 2 | 1 | 2 | - | 10 |
| 13 | - | 12 | 4 | 7 | 8 | 31 |
| 14 | 5 | 23 | 3 | 1 | 1 | 33 |

Table 35.b: Frequency Table of Answers to Test 2 B, Subjects of Lower Educational Level

| Question | a | b | c | d | e | Total |
|----------|----|----|----|----|---|-------|
| 1 | 4 | 23 | - | 2 | 1 | 30 |
| 2 | 1 | 1 | 1 | 27 | - | 30 |
| 3 | 11 | 14 | 4 | 1 | - | 30 |
| 4 | 12 | 3 | - | 11 | 4 | 30 |
| 5 | 12 | 11 | 5 | 1 | 1 | 30 |
| 6 | 17 | 8 | 2 | 1 | 2 | 30 |
| 7 | 3 | - | 22 | 4 | - | 29 |
| 8 | - | 6 | 17 | 4 | 3 | 30 |
| 9 | 4 | 13 | 1 | 9 | 3 | 30 |
| 10 | 7 | 6 | 6 | 7 | 3 | 29 |
| 11 | 11 | 3 | 9 | 3 | 3 | 29 |
| 12 | 5 | 1 | 1 | 2 | 1 | 10 |
| 13 | 4 | 14 | 1 | 8 | 3 | 30 |
| 14 | 9 | 10 | 6 | 2 | 3 | 30 |

4.4.4. Analysis of the Data

As we have frequency data in the results of Experiment 2 as well, the proper statistical technique to test the hypothesis would be the Chi-square test of homogeneity. The hypothesis was tested in the answers of all fourteen questions.

Table 36: Results of Experiment 2

| Q | EXPECTED RESULTS | FINDINGS | χ^2 | DF | PROBABILITY |
|----|--|--|------------|----|-------------|
| 1 | $P_{Bb} > P_{Ab}$ $P_{Bd} < P_{Ad}$ ** | $P_{Bb} > P_{Ab}$ (66.1 > 30.5) $P_{Bd} < P_{Ad}$ (21.6 < 51.8) | 41.83712 | 4 | .00000 |
| 2 | $P_{Ba} = P_{Aa}$ | $P_{Bd} > P_{Ad}$ (95.4 > 93.6) | 88.8023238 | 4 | .44657 |
| 3 | $P_{Bb} > P_{Ab}$ $P_{Ba} < P_{Aa}$ * | $P_{Bb} > P_{Ab}$ (64.2 > 9.2) $P_{Ba} < P_{Aa}$ (20.8 < 68.8) | 123.35380 | 4 | .00000 |
| 4 | $P_{Ba} > P_{Aa}$ * $P_{Bd} < P_{Ad}$ * | $P_{Ba} > P_{Aa}$ (54.1 > 11.5) $P_{Bd} < P_{Ad}$ (32.6 < 59.7) | 61.68095 | 4 | .00000 |
| 5 | $P_{Bb} > P_{Ab}$ * $P_{Ba} < P_{Aa}$ * | $P_{Bb} > P_{Ab}$ (25.4 > 9.3) $P_{Ba} < P_{Aa}$ (50.3 < 76.4) | 23.77567 | 4 | .00009 |
| 6 | $P_{Ba} > P_{Aa}$ * $P_{Bb} < P_{Ab}$ * | $P_{Ba} > P_{Aa}$ (42.8 > 41.1) $P_{Bb} < P_{Ab}$ (23.1 < 24.8) | 2.44361 | 4 | *.65476 |
| 7 | $P_{Bb} > P_{Ab}$ * $P_{Bc} < P_{Ac}$ * | $P_{Bb} > P_{Ab}$ (121.3 > 2.8) $P_{Bc} < P_{Ac}$ (71.3 < 80.9) | 10.37291 | 4 | .03459 |
| 8 | $P_{Bc} > P_{Ac}$ * $P_{Bd} < P_{Ad}$ * | $P_{Bc} > P_{Ac}$ (57.8 > 2.9) $P_{Bd} < P_{Ad}$ (7.5 < 33.6) | 114.00261 | 4 | .00000 |
| 9 | $P_{Bb} > P_{Ab}$ * $P_{Bd} < P_{Ad}$ * | $P_{Bb} > P_{Ab}$ (44.2 > 3.6) $P_{Bd} < P_{Ad}$ (25.0 < 61.2) | 73.55864 | 4 | .00000 |
| 10 | $P_{Ba} > P_{Aa}$ * $P_{Bb} < P_{Ab}$ * | $P_{Ba} > P_{Aa}$ (19.3 > 5.1) $P_{Bb} < P_{Ab}$ (32.7 < 54.3) | 33.47652 | 4 | .00000 |
| 11 | $P_{Ba} > P_{Aa}$ * $P_{Bc} < P_{Ac}$ * | $P_{Ba} > P_{Aa}$ (40.0 > 7.2) $P_{Bc} < P_{Ac}$ (23.5 < 44.6) | 49.91439 | 4 | .00000 |
| 12 | $P_{Bb} > P_{Ab}$ * $P_{Bd} < P_{Ad}$ * | $P_{Bb} > P_{Ab}$ (46.4 < 58.1) $P_{Bd} < P_{Ad}$ (24.7 < 27.5) | 16.26588 | 4 | .00268 |
| 13 | $P_{Bc} > P_{Ac}$ * $P_{Bb} < P_{Ab}$ * | $P_{Bc} > P_{Ac}$ (24.4 > 6.5) $P_{Bb} < P_{Ab}$ (47.7 < 55.4) | 39.06717 | 4 | .00000 |
| 14 | $P_{Ba} > P_{Aa}$ * $P_{Bb} < P_{Ab}$ * | $P_{Ba} > P_{Aa}$ (52.9 > 7.8) $P_{Bb} < P_{Ab}$ (12.9 < 71.6) | 127.70001 | 4 | .00000 |

* Not statistically significant

** P_{Ad} is the proportion of subjects in Group B marking answer d

Question 1:

In Question 1, the two answer items associated with the story content are, item *b*, and item *d*. Our hypothesis leads us to expect the response ratio for item *b* to increase and the responses towards item *d* to decrease from Group A to Group B. As seen in Table 37.a, results show us a major increase in the answers for item *b* from Group A to Group B after seeing the misleading graphics. As expected, the ratios for selecting item *d* dropped considerably from Group A to Group B. The significance of the Chi-square statistic is less than 0.01.

Table 37.a: Responses to Question 1, %

| | | QUESTION 1 | | | | | |
|---------|--|------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| 2A | | 5.0 | 30.5 | 2.1 | 51.8 | 10.6 | 45.2 |
| 2B | | 4.1 | 66.1 | .6 | 21.6 | 7.6 | 54.8 |
| Total | | 4.5 | 50.0 | 1.3 | 35.3 | 9.0 | 100.0 |

Table 37.b: Responses to Question 1 by Gender, %

| | | QUESTION 1 | | | | | |
|---------|--|------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| 2A | | 4.3 | 24.3 | 1.4 | 58.6 | 11.4 | 47.9 |
| 2B | | 1.3 | 68.4 | | 19.7 | 10.5 | 52.1 |
| Total | | 2.7 | 47.3 | .7 | 38.4 | 11.0 | 100.0 |

| | | QUESTION 1 | | | | | |
|---------|--|------------|------|-----|------|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| 2A | | 6.1 | 36.4 | 1.5 | 47.0 | 9.1 | 41.3 |
| 2B | | 6.4 | 63.8 | 1.1 | 23.4 | 5.3 | 58.8 |
| Total | | 6.3 | 52.5 | 1.3 | 33.1 | 6.9 | 100.0 |

In comparing the findings among male and female subjects, we see similar results, though the results are not significant for men. The significance of the Chi-square statistic is less than 0.01 for women and 0.12 for men.

The findings of question 1 in terms of educational level comparison show us quite dissimilar results between the subgroups. The results reveal a major influence on the higher educational group, but do not provide us with clear findings for the lower educational group. The significance of the Chi-square statistic is less than 0.01 in the test for Group A and 0.02 in the test for Group B.

Table 37.c: Responses to Question 1 by Educational Level,%

| | | QUESTION 1 | | | | | |
|-----------|-------|------------|------|----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER | | | | | | | |
| EDUCATION | 2A | 1.9 | 21.5 | .9 | 61.7 | 14.0 | 43.4 |
| | 2B | 2.1 | 63.8 | .7 | 24.8 | 8.5 | 56.6 |
| | Total | 2.0 | 45.4 | .8 | 41.0 | 10.8 | 100.0 |

| | | QUESTION 1 | | | | | |
|-----------|-------|------------|------|-----|------|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER | | | | | | | |
| EDUCATION | 2A | 14.7 | 58.8 | 5.9 | 20.6 | | 52.4 |
| | 2B | 13.3 | 76.7 | | 6.7 | 3.3 | 47.6 |
| | Total | 14.3 | 68.3 | 3.2 | 12.7 | 1.6 | 100.0 |

Question 2:

As explained in the section describing the viewing material, no editing or tampering has been done on the audio channel of either versions of the newscasts. In this question, the car's brand was repeated three times on the audio channel of both versions of the newscasts, which allowed subjects to clearly hear and recall this information, as well as to provide us with the opportunity to detect and measure any dissimilarities within the comprehensive abilities of either one of the subject groups.

In the answers, item *d* was the correct answer which would measure both groups' recall levels. The closeness of the results between the two groups allows an interpretation of both groups' comprehensive abilities to be at the same levels, and therefore provides an objective basis in terms of measuring results. The significance of the Chi-square statistic is less than 0.01 (Table 38.a displays the overall responses to question 1; Table 38.b displays the responses to question 1 by gender; and Table 38.c displays the responses to the same question by educational level).

Table 38.a: Responses to Question 2, %

| | | QUESTION 2 | | | | | |
|---------|--|------------|-----|-----|------|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| 2A | | | .7 | .7 | 93.6 | 5.0 | 44.9 |
| 2B | | .6 | 1.2 | 1.2 | 95.4 | 1.7 | 55.1 |
| Total | | .3 | 1.0 | 1.0 | 94.6 | 3.2 | 100.0 |

Table 38.b: Responses to Question 2 by gender, %

| | | QUESTION 2 | | | | |
|----------------|--|------------|-----|------|-----|-------|
| Row Pct | | b | c | d | e | Total |
| FEMALES | | | | | | |
| 2A | | 1.4 | 1.4 | 91.4 | 5.7 | 47.3 |
| 2B | | 1.3 | | 96.2 | 2.6 | 52.7 |
| Total | | 1.4 | .7 | 93.9 | 4.1 | 100.0 |

| | | QUESTION 2 | | | | | |
|--------------|--|------------|-----|-----|------|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| 2A | | | | | 97.0 | 3.0 | 41.3 |
| 2B | | 1.1 | 1.1 | 2.1 | 94.7 | 1.1 | 58.8 |
| Total | | .6 | .6 | 1.3 | 95.6 | 1.9 | 100.0 |

Table 38.c: Responses to Question 2 by educational level, %

| | | QUESTION 2 | | | | |
|------------------|-------|------------|----|------|-----|-------|
| Row Pct | | b | c | d | e | Total |
| HIGHER EDUCATION | | | | | | |
| | 2A | .9 | .9 | 91.7 | 6.5 | 43.0 |
| | 2B | .7 | .7 | 96.5 | 2.1 | 57.0 |
| | Total | .8 | .8 | 94.4 | 4.0 | 100.0 |

| | | QUESTION 2 | | | | |
|-----------------|-------|------------|-----|-----|-------|-------|
| Row Pct | | a | b | c | d | Total |
| LOWER EDUCATION | | | | | | |
| | 2A | | | | 100.0 | 52.4 |
| | 2B | 3.3 | 3.3 | 3.3 | 90.0 | 47.6 |
| | Total | 1.6 | 1.6 | 1.6 | 95.2 | 100.0 |

Question 3:

The two answer items linked with the story content in this question are item *a*, and item *b*. We expect the response ratio for item *b* to increase and the responses towards item *a* to decrease from Group A to Group B. Results show us a significant increase in the answers for item *b* from Group A to Group B. The ratio towards item *b* as the correct answer, increased more than seven times from after seeing the misleading captions. On the other hand, the ratios for selecting item *a* dropped threefold in Group B. As in the results of the first question, because the original version of the news did not contain any visual information which could direct subjects, item *a*, was marked as the highest preferred

Table 39.a: Responses to Question 3, %

| | | QUESTION 3 | | | | | |
|---------|-------|------------|------|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| | 2A | 68.8 | 9.2 | 5.7 | 4.3 | 12.1 | 44.9 |
| | 2B | 20.8 | 64.2 | 12.7 | .6 | 1.7 | 55.1 |
| | Total | 42.4 | 39.5 | 9.6 | 2.2 | 6.4 | 100.0 |

answer item *b* by Group A. Though, after seeing the altered captions, the subjects in Group B have been affected by these captions and have marked item *b* with the highest percentage. The significance of the Chi-square statistic is less than 0.01.

The findings among male and female subjects, once again, reveal similar results. Women's results indicate an almost threefold decrease in the answers towards item *a*, and a more than tenfold increase in the answers towards item *b* after seeing the misleading captions. Men's results reveal a more than threefold decrease in the answers towards item *a*, and a fivefold increase in the answers towards item *b*. As expected, responses towards item *e*, the item signifying not recalling anything, was at low levels for both groups. Significance of the Chi-square statistic is less than 0.01 for both women and men.

Table 39.b: Responses to Question 3 by gender, %

| | | QUESTION 3 | | | | | |
|---------|-------|------------|------|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 2A | 71.4 | 5.7 | 5.7 | 2.9 | 14.3 | 47.3 |
| | 2B | 23.1 | 60.3 | 14.1 | | 2.6 | 52.7 |
| | Total | 45.9 | 34.5 | 10.1 | 1.4 | 8.1 | 100.0 |

| | | QUESTION 3 | | | | | |
|---------|-------|------------|------|------|-----|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 2A | 65.2 | 13.6 | 6.1 | 6.1 | 9.1 | 41.3 |
| | 2B | 19.1 | 67.0 | 11.7 | 1.1 | 1.1 | 58.8 |
| | Total | 38.1 | 45.0 | 9.4 | 3.1 | 4.4 | 100.0 |

The educational level results of question 3 once again show some dissimilarities between the subgroups. Findings reveal sharper contrasting results among higher educational level subjects which can be associated with certain reading habits of this group. Significance of the

Table 39.c: Responses to Question 3 by educational level, %

| | | QUESTION 3 | | | | | |
|---------|------------------|------------|------|------|-----|------|-------|
| Row Pct | HIGHER EDUCATION | a | b | c | d | e | Total |
| | 2A | 69.2 | 7.5 | 6.5 | 4.7 | 12.1 | 43.0 |
| | 2B | 17.5 | 67.8 | 12.6 | | 2.1 | 57.0 |
| | Total | 39.8 | 41.8 | 10.0 | 2.0 | 6.4 | 100.0 |

| | | QUESTION 3 | | | | | |
|---------|-----------------|------------|------|------|-----|------|-------|
| Row Pct | LOWER EDUCATION | a | b | c | d | e | Total |
| | 2A | 67.6 | 14.7 | 2.9 | 2.9 | 11.8 | 52.4 |
| | 2B | 36.7 | 46.7 | 13.3 | 3.3 | | 47.6 |
| | Total | 52.4 | 30.2 | 7.9 | 3.2 | 6.3 | 100.0 |

Chi-square statistic is less than 0.70 in the test for Group A and 0.03 in the test for Group B.

Question 4:

In our answers, the two answer items connected with the story content are, item *a*, which states that the bank clerk warned the police, and item *d*, which states that the police removed the car only because it was parked illegally. It is expected for the response ratio for item *a* to increase and the response ratio for item *d* to decrease from Group A to Group B. The results of question number 4 show less of contrast in the ratios, compared

Table 40.a: Responses to Question 4, %

| | | QUESTION 4 | | | | | |
|---------|-------|------------|-----|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| | 2A | 11.5 | 4.3 | 2.2 | 59.7 | 22.3 | 44.7 |
| | 2B | 54.1 | 2.3 | .6 | 32.6 | 10.5 | 55.3 |
| | Total | 35.0 | 3.2 | 1.3 | 44.7 | 15.8 | 100.0 |

with previous ones. The significance of the Chi-square statistic is less than 0.01.

In comparing the results based on gender, we see a similar pattern overall. Among women, results show us an increase of more than twentyfold in the answers towards item *a* from Group A to Group B after seeing the misleading captions. Likewise, the preference towards item *d* has dropped among women's Group B. Results show no major differences among the sexes, and are within the same pattern as the general overall results. Significance of the Chi-square statistic is less than 0.01 for both women and men.

Table 40.b: Responses to Question 4 by gender, %

| | | QUESTION 4 | | | | | |
|---------|-------|------------|-----|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 2A | 2.9 | 5.8 | 2.9 | 60.9 | 27.5 | 47.3 |
| | 2B | 57.1 | | 1.3 | 29.9 | 11.7 | 52.7 |
| | Total | 31.5 | 2.7 | 2.1 | 44.5 | 19.2 | 100.0 |

| | | QUESTION 4 | | | | | |
|---------|-------|------------|-----|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 2A | 20.0 | 3.1 | 1.5 | 60.0 | 15.4 | 40.9 |
| | 2B | 51.1 | 4.3 | | 35.1 | 9.6 | 59.1 |
| | Total | 38.4 | 3.8 | .6 | 45.3 | 11.9 | 100.0 |

In terms of the educational level results of question 4, it appears that the lower educational groups have not paid much attention to the graphics, but have preferred to concentrate on the audio channel of the news more in general. Results indicate an important level of influence on the higher educational level group, whereas, no such effect can be detected on the lower educational group. The significance of the Chi-square statistic is less than 0.01 in the test for Group A and 0.03 in the test for Group B.

Table 40.c: Responses to Question 4 by educational level, %

| | | QUESTION 4 | | | | | |
|---------|-----------|------------|-----|----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER | EDUCATION | | | | | | |
| | 2A | 4.7 | 2.8 | .9 | 67.3 | 24.3 | 43.0 |
| | 2B | 57.0 | .7 | .7 | 31.7 | 9.9 | 57.0 |
| Total | | 34.5 | 1.6 | .8 | 47.0 | 16.1 | 100.0 |

| | | QUESTION 4 | | | | | |
|---------|-----------|------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER | EDUCATION | | | | | | |
| | 2A | 33.3 | 9.1 | 6.1 | 36.4 | 15.2 | 51.6 |
| | 2B | 40.0 | 10.0 | | 36.7 | 13.3 | 48.4 |
| Total | | 37.1 | 9.7 | 3.2 | 35.5 | 14.5 | 100.0 |

Question 5:

Within our answers, the two items associated with the story content are, item *a*, which states that the explosive power of the bomb used in this incident was stronger than the one used in the Uğur Mumcu incident, and item *b*, which claims that the bomb used in İstanbul was the same type used in the Uğur Mumcu incident several years ago. It is expected of the response ratio for item *a* to decrease and the response ratio for item *b* to increase from Group A to Group B. The results of question number 5 show less of a contrast in the ratios, compared with previous ones. Although the misleading graphics have not been as effective as they have in the previous questions, results indicate a considerable decrease

Table 41.a: Responses to Question 5, %

| | | QUESTION 5 | | | | | |
|---------|----|------------|------|------|-----|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| | 2A | 76.4 | 9.3 | 10.0 | .7 | 3.6 | 44.7 |
| | 2B | 50.3 | 25.4 | 18.5 | 1.2 | 4.6 | 55.3 |
| Total | | 62.0 | 18.2 | 14.7 | 1.0 | 4.2 | 100.0 |

in the answers towards item *a* and a considerable increase in the answers towards item *b*. In addition, the ratios towards item *e* has been at extremely low levels for both groups. The significance of the Chi-square statistic is less than 0.01.

In comparing the findings based on gender, we observe very similar results. The significance of the Chi-square statistic is less than 0.02 for women, and 0.01 for men.

Table 41.b: Responses to Question 5 by gender, %

| | | QUESTION 5 | | | | | |
|---------|-------|------------|------|------|-----|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 2A | 75.4 | 7.2 | 13.0 | 1.4 | 2.9 | 46.9 |
| | 2B | 51.3 | 29.5 | 14.1 | 1.3 | 3.8 | 53.1 |
| | Total | 62.6 | 19.0 | 13.6 | 1.4 | 3.4 | 100.0 |

| | | QUESTION 5 | | | | | |
|---------|-------|------------|------|------|-----|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 2A | 80.3 | 10.6 | 6.1 | | 3.0 | 41.3 |
| | 2B | 50.0 | 21.3 | 22.3 | 1.1 | 5.3 | 58.8 |
| | Total | 62.5 | 16.9 | 15.6 | .6 | 4.4 | 100.0 |

Table 41.c: Responses to Question 5 by educational level, %

| | | QUESTION 5 | | | | | |
|------------------|-------|------------|------|------|----|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER EDUCATION | | | | | | | |
| | 2A | 77.6 | 5.6 | 11.2 | .9 | 4.7 | 43.0 |
| | 2B | 52.4 | 23.1 | 18.9 | .7 | 4.9 | 57.0 |
| | Total | 62.9 | 15.9 | 15.5 | .8 | 4.8 | 100.0 |

| | | QUESTION 5 | | | | | |
|-----------------|-------|------------|------|------|-----|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER EDUCATION | | | | | | | |
| | 2A | 72.7 | 21.2 | 6.1 | | | 51.6 |
| | 2B | 40.0 | 36.7 | 16.7 | 3.3 | 3.3 | 48.4 |
| | Total | 58.1 | 27.4 | 11.3 | 1.6 | 1.6 | 100.0 |

The comparison of the educational level results reveal similar levels of influences for both groups. Significance of the Chi-square statistic is less

than 0.06 for the first group viewing the unedited news version, A, and less than 0.38 for the second group viewing the edited news version, B.

Question 6:

The two answer items linked with the story content are item *a*, the answer representing the visual-textual information which misinforms subjects about the case being examined by the Supreme Court, and item *b*, which pronounces that the case might be handled by the İstanbul Criminal Court. We expect the responses towards item *a* to increase and the responses towards item *b* to decrease from Group A to Group B. Results show us rather insignificant differences in the answers for both items from Group A to Group B. The very low level of differences in the answers may stem from the popularity of this news item in general, for Tanju Çolak is a very well-known personality in Turkey, and his court

Table 42.a: Responses to Question 6, %

| Row Pct | QUESTION 6 | | | | | Total |
|---------|------------|------|-----|-----|------|-------|
| | a | b | c | d | e | |
| 2A | 41.1 | 24.8 | 2.8 | 4.3 | 27.0 | 44.9 |
| 2B | 42.8 | 23.1 | 5.2 | 6.4 | 22.5 | 55.1 |
| Total | 42.0 | 23.9 | 4.1 | 5.4 | 24.5 | 100.0 |

case has been widely covered by the national press and television stations. The significance of the Chi-square statistic is less than 0.66.

The analysis of results based on gender yield somewhat different findings for both groups. The notoriety of the Tanju Çolak case may have

hindered subjects' attention towards the new story item in a negative way, and thus may have affected the results. Significance of the Chi-square statistic is less than 0.04 for women, and less than 0.40 for men.

Table 42.b: Responses to Question 6 by gender, %

| | | QUESTION 6 | | | | | |
|---------|-------|------------|------|-----|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 2A | 40.0 | 21.4 | | 5.7 | 32.9 | 47.3 |
| | 2B | 44.9 | 17.9 | 3.8 | 9.0 | 24.4 | 52.7 |
| | Total | 42.6 | 19.6 | 2.0 | 7.4 | 28.4 | 100.0 |

| | | QUESTION 6 | | | | | |
|---------|-------|------------|------|-----|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 2A | 43.9 | 27.3 | 4.5 | 3.0 | 21.2 | 41.3 |
| | 2B | 40.4 | 27.7 | 6.4 | 4.3 | 21.3 | 58.8 |
| | Total | 41.9 | 27.5 | 5.6 | 3.8 | 21.3 | 100.0 |

The educational level results of question 6 show some dissimilarities in terms of ratios, but similarities in terms of the overall pattern between the subgroups. Once again, the low level of differences in the ratios despite seeing the altered graphics indicate that the familiarity of the story content to most subjects has prevented them from viewing the news item more carefully. The significance of the Chi-square statistic is less than 0.01 in the test for Group A and 0.17 in the test for Group B.

Table 42.c: Responses to Question 6 by educational level, %

| | | QUESTION 6 | | | | | |
|------------------|-------|------------|------|-----|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER EDUCATION | | | | | | | |
| | 2A | 36.4 | 23.4 | | 5.6 | 34.6 | 43.0 |
| | 2B | 39.9 | 22.4 | 4.9 | 7.0 | 25.9 | 57.0 |
| | Total | 38.2 | 23.1 | 2.8 | 6.4 | 29.5 | 100.0 |

| | | QUESTION 6 | | | | | |
|-----------------|-------|------------|------|------|-----|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER EDUCATION | | | | | | | |
| | 2A | 55.9 | 29.4 | 11.8 | | 2.9 | 52.4 |
| | 2B | 56.7 | 26.7 | 6.7 | 3.3 | 6.7 | 47.6 |
| | Total | 57.1 | 27.0 | 9.5 | 1.6 | 4.8 | 100.0 |

Question 7:

We expect the responses towards item *b* to increase and the responses towards item *c* to decrease from Group A to Group B. The preference in the results towards item *c* reveal, overall, that most subjects in both of the groups have relied on the information presented on the audio channel much more than the information presented on the visual channel. The decline and incline in the overall ratios appear to be minimal; nevertheless, the patterns are within the same direction as expected, and therefore signify an influence created by the graphics. Significance of the Chi-square statistic is less than 0.04.

Table 43.a: Responses to Question 7, %

| Row Pct | QUESTION 7 | | | | | Total |
|---------|------------|------|------|-----|-----|-------|
| | a | b | c | d | e | |
| 2A | 1.4 | 2.8 | 80.9 | 6.4 | 8.5 | 45.2 |
| 2B | 1.8 | 12.3 | 71.3 | 8.2 | 6.4 | 54.8 |
| Total | 1.6 | 8.0 | 75.6 | 7.4 | 7.4 | 100.0 |

The findings among male and female subjects, once again reveal effects which are minimal, but yield patterns that are within the course as initially expected. The results show no major differences among the sexes, and are within the same pattern as the general overall results. The significance of the Chi-square statistic is less than 0.04 for women and 0.40 for men.

Table 43.b: Responses to Question 7 by gender, %

| | | QUESTION 7 | | | | | |
|---------|----|------------|------|------|-----|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 2A | 1.4 | 1.4 | 80.0 | 8.6 | 8.6 | 47.6 |
| | 2B | | 14.3 | 72.7 | 9.1 | 3.9 | 52.4 |
| Total | | .7 | 8.2 | 76.2 | 8.8 | 6.1 | 100.0 |

| | | QUESTION 7 | | | | | |
|---------|----|------------|-----|------|-----|-----|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 2A | 1.5 | 3.0 | 81.8 | 4.5 | 9.1 | 41.5 |
| | 2B | 3.2 | 9.7 | 71.0 | 7.5 | 8.6 | 58.5 |
| Total | | 2.5 | 6.9 | 75.5 | 6.3 | 8.8 | 100.0 |

Responses among educational level groups show contrasting results between the two subgroups. The lower educational group has not responded favorably towards the graphics; responses towards item *c* have decreased from Group A to Group B. However, the responses towards item *b* have decreased as well instead of increasing, from Group A to Group B. Among the higher educational level group, responses towards item *c* have decreased, and the responses towards item *b* have increased from Group A to Group B in line with our initial expectation. Preliminary findings indicate that the lower educational level groups in either viewing sessions have not viewed the newscasts vary attentively, whereas the higher educational level groups have observed the details

Table 43.c: Responses to Question 7 by educational level, %

| | | QUESTION 7 | | | | | |
|------------------|----|------------|------|-----|-----|-------|--|
| Row Pct | | b | c | d | e | Total | |
| HIGHER EDUCATION | | | | | | | |
| | 2A | 1.9 | 82.2 | 8.4 | 7.5 | 43.2 | |
| | 2B | 14.8 | 70.4 | 7.0 | 7.7 | 56.8 | |
| Total | | 9.2 | 75.6 | 7.6 | 7.6 | 100.0 | |

| | | QUESTION 7 | | | | | |
|-----------------|----|------------|-----|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER EDUCATION | | | | | | | |
| | 2A | 5.9 | 5.9 | 76.5 | | 11.8 | 53.2 |
| | 2B | 10.3 | | 75.9 | 13.8 | | 46.8 |
| Total | | 8.1 | 3.2 | 75.8 | 6.5 | 6.5 | 100.0 |

somewhat more carefully and have been affected by the lower captions to a certain degree. Significance of the Chi-square statistic is less than 0.03 for the unedited viewing group, A, and 0.1 for the unedited viewing group, B.

Question 8:

In question number 8, it is expected for the response ratios to increase in answer item *c* and the ratios in item *d* to decrease from Group A to Group B. In addition, it is expected for a certain percentage of the responses to accumulate in item *b* among Group A's answers.

Results show a significant increase in the answers for item *c* from Group A to Group B and a major influence achieved by the lower captions. In the unedited viewing session, responses have spread out almost evenly among three answer items, *b*, *d*, and *e*. The response ratio towards item *c* has been almost nil in the unedited viewing session's answers. However, the responses have reversed in the answers of Group B, which is the group that viewed the edited version of the news story. In this group, the response ratios for items *b*, *d*, and *e* have dropped and the ratio towards

Table 44.a: Responses to Question 8, %

| Row Pct | QUESTION 8 | | | | | Total |
|---------|------------|------|------|------|------|-------|
| | a | b | c | d | e | |
| 2A | 2.9 | 28.6 | 2.9 | 33.6 | 32.1 | 44.7 |
| 2B | | 16.8 | 57.8 | 7.5 | 17.9 | 55.3 |
| Total | 1.3 | 22.0 | 33.2 | 19.2 | 24.3 | 100.0 |

item *c* has increased tremendously. The sharp difference in the results before and after seeing captions directly indicate the effect that graphic design materials have created on the subjects. The significance of the Chi-square statistic is less than 0.01.

The analysis of the results based on gender reveal similar findings between the two sexes. In the unedited viewing session, responses among women have dispersed rather evenly among the three answer items pointed out above, *b*, *d*, and *e*. The response ratio towards item *c* has been almost nil for women's Group A. Similar to the overall results, the responses have completely reversed in women's Group B answers. In this group, which saw the edited version of the newscast, the response ratios for items *b*, *d*, and *e* have fallen; and the ratio towards item *c* has increased significantly. In terms of men's results, responses in the unedited viewing session have spread out once again among the three answer items, *b*, *d*, and *e*. The response ratio towards item *c* has been at a very low level in the unedited viewing session's answers. However, the responses have reversed in women's results in the answers of Group B. In this group, the response ratios for items *b*, *d*, and *e* have dropped; and

Table 44.b: Responses to Question 8 by gender, %

| | | QUESTION 8 | | | | | |
|---------|-------|------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 2A | 2.9 | 27.5 | 1.4 | 29.0 | 39.1 | 46.9 |
| | 2B | | 16.7 | 57.7 | 5.1 | 20.5 | 53.1 |
| | Total | 1.4 | 21.8 | 31.3 | 16.3 | 29.3 | 100.0 |

| | | QUESTION 8 | | | | | |
|---------|-------|------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 2A | 3.0 | 30.3 | 4.5 | 37.9 | 24.2 | 41.3 |
| | 2B | | 17.0 | 57.4 | 9.6 | 16.0 | 58.8 |
| | Total | 1.3 | 22.5 | 35.6 | 21.3 | 19.4 | 100.0 |

the ratio towards item *c* has increased considerably. As observed in the overall results the sharp difference in the results before and after seeing captions clearly indicate the effect of graphic design materials on the subjects. The significance of the Chi-square statistic is less than 0.01 for both women and men.

The comparison of educational level results proclaim uniform findings among the two subgroups, at different ratios. In the unedited viewing session of the lower educational level group, responses have spread out unevenly among the answer items, *b*, *d*, and *e* in comparison to previous findings. The responses in this viewing group have accumulated in answer item *b*. The response ratio towards item *c* has been quite low in this group's answers. As experienced in the results of the previous comparisons, the responses have reversed in the answers of the lower educational level group which viewed the edited version of the newscast. In this group, the response ratios for items *b*, *d*, and *e* have declined considerably, and the ratio towards item *c* has increased significantly.

In terms of the results of the higher educational level group, we observe responses in the same dispersal pattern as previewed in other groups. In the unedited viewing session, Group A, answers have gathered in three answer items, *b*, *d*, and *e*.

The response ratio towards item *c* has been almost nil in this group's answers. However, the responses have completely reversed in the answers of Group B as in all previous level results. In this group, the response ratios for items *b*, *d*, and *e* have dropped and the ratio towards item *c* has increased significantly. The results of both educational levels

yield findings in consistency with all other question 8 results. The clear difference in the results before and after seeing captions distinctively exhibit the effect of graphic design materials on the subjects. The significance of the Chi-square statistic is less than 0.01 for viewing session A, and 0.40 for viewing session B.

Table 44.c: Responses to Question 8 by educational level, %

| | | QUESTION 8 | | | | | |
|---------|------------------|------------|------|------|------|------|-------|
| Row Pct | HIGHER EDUCATION | a | b | c | d | e | Total |
| | 2A | 1.9 | 23.4 | .9 | 37.4 | 36.4 | 43.0 |
| | 2B | | 16.1 | 58.0 | 6.3 | 19.6 | 57.0 |
| | Total | .8 | 19.1 | 33.5 | 19.9 | 26.7 | 100.0 |

| | | QUESTION 8 | | | | | |
|---------|-----------------|------------|------|------|------|------|-------|
| Row Pct | LOWER EDUCATION | a | b | c | d | e | Total |
| | 2A | 6.1 | 45.5 | 9.1 | 21.2 | 18.2 | 51.6 |
| | 2B | | 20.0 | 56.7 | 13.3 | 10.0 | 48.4 |
| | Total | 3.2 | 33.9 | 32.3 | 16.1 | 14.5 | 100.0 |

Question 9:

There are two answer items linked with the story content. One is item *d*, which is the correct answer; the other item is *b*, which is the answer misinforming subjects. It is expected for the response ratios to increase in answer item *b* and the ratios in item *d* to decrease from Group A to Group B

The ratios gathered in the results of this question indicate a significant difference in the viewers' responses between seeing and not seeing graphic design materials. The ratios for selecting item *d* dropped significantly, and the ratios towards item *b* increased considerably. Item *d* was the highest marked answer item among the viewing group which saw the original edition of the newscast, A, whereas for the group which saw the edited version of the newscast, B, item *b* was the highest marked

answer item among all others. Results clearly show the effect of the lower captions inserted during the edited version of the news. The significance of the Chi-square statistic is less than 0.01.

Table 45.a: Responses to Question 9, %

| Row Pct | QUESTION 9 | | | | | Total |
|---------|------------|------|-----|------|------|-------|
| | a | b | c | d | e | |
| 2A | 8.6 | 3.6 | 1.4 | 61.2 | 25.2 | 44.7 |
| 2B | 7.0 | 44.2 | 1.2 | 25.0 | 22.7 | 55.3 |
| Total | 7.7 | 26.0 | 1.3 | 41.2 | 23.8 | 100.0 |

Although the results display differing numbers in the answer ratios, overall results reveal a similar pattern in terms of the analysis regarding gender. In the unedited viewing session, the results among women show us a sixfold increase in the answers towards item *b* from Group A to Group B after seeing the misleading captions. Likewise, the preference towards item *d* has dropped among women's Group B. Men's results in the unedited viewing session show similar sharp contrasting results except for the responses towards item *d*; answers towards item *b* rose in Group B from Group A, and the answers towards item *d* fell in Group B from Group A. Results show no major differences among the sexes, and are within the same pattern as the general overall results. Significance of the Chi-square statistic is less than 0.01 for both women and men.

Table 45.b: Responses to Question 9 by gender, %

| | | QUESTION 9 | | | | | |
|---------|-------|------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 2A | 7.2 | 5.8 | 1.4 | 50.7 | 34.8 | 47.3 |
| | 2B | 7.8 | 48.1 | | 18.2 | 26.0 | 52.7 |
| | Total | 7.5 | 28.1 | .7 | 33.6 | 30.1 | 100.0 |

| | | QUESTION 9 | | | | | |
|---------|-------|------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 2A | 10.8 | 1.5 | 1.5 | 69.2 | 16.9 | 40.9 |
| | 2B | 6.4 | 40.4 | 2.1 | 30.9 | 20.2 | 59.1 |
| | Total | 8.2 | 24.5 | 1.9 | 46.5 | 18.9 | 100.0 |

The findings of question 9 in terms of educational level comparison show us quite similar results between the two subgroups. The results reveal a major influence on both educational level groups, with a slight more effect on the higher educational level group. The significance of the Chi-square statistic is less than 0.01 in the test for Group A and 0.17 in the test for Group B.

Table 45.c: Responses to Question 9 by educational level, %

| | | QUESTION 9 | | | | | |
|------------------|-------|------------|------|----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER EDUCATION | | | | | | | |
| | 2A | 4.7 | 1.9 | | 62.6 | 30.8 | 43.2 |
| | 2B | 5.6 | 44.4 | .7 | 23.9 | 25.4 | 56.8 |
| | Total | 5.2 | 26.0 | .4 | 40.8 | 27.6 | 100.0 |

| | | QUESTION 9 | | | | | |
|-----------------|-------|------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER EDUCATION | | | | | | | |
| | 2A | 21.9 | 9.4 | 6.3 | 56.3 | 6.3 | 50.8 |
| | 2B | 13.3 | 43.3 | 3.3 | 30.0 | 10.0 | 49.2 |
| | Total | 18.0 | 26.2 | 4.9 | 42.6 | 8.2 | 100.0 |

Question 10:

The two answer items linked with the story content are item *b*, the answer signifying the information presented through the audio channel; and item *a*, the item representing the visual-textual information which actually misinforms subjects about the method of cooperation. It is

expected for the response ratios to increase in answer item *a* and the ratios to decrease in item *b* from Group A to Group B.

The overall results reveal somewhat of a less effect in the answers of this particular question. Responses do not show significant differences in the answers of the two viewing groups. The difference in the results before and after seeing captions do not signify a strong effect created by graphic design materials. Particularly the responses towards item *a* may appear to have created a sharp contrast among Group A and Group B's answers; however, the total amount of item *a* responses in Group B's answers indicate a low level of influence created by graphic design materials. Item *a* being marked as the third highest preferred answer and not the first, signifies the insignificant level of influence created by captions in comparison to most other news items' answers. The significance of the Chi-square statistic is less than 0.01.

Table 46.a: Responses to Question 10, %

| Row Pct | QUESTION 10 | | | | | Total |
|---------|-------------|------|-----|------|------|-------|
| | a | b | c | d | e | |
| 2A | 5.1 | 54.3 | 5.8 | 12.3 | 22.5 | 44.7 |
| 2B | 19.3 | 32.7 | 4.1 | 29.2 | 14.6 | 55.3 |
| Total | 12.9 | 42.4 | 4.9 | 21.7 | 18.1 | 100.0 |

The comparison of the results based on gender reveal rather similar findings between the two sexes. Results show no major differences among the sexes with a slightly more influence created in women's

group. Significance of the Chi-square statistic is less than 0.01 for women and 0.03 for men.

Table 46.b: Responses to Question 10 by gender, %

| | | QUESTION 10 | | | | | |
|---------|-------|-------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 2A | 5.8 | 50.7 | 7.2 | 10.1 | 26.1 | 47.3 |
| | 2B | 19.5 | 27.3 | 1.3 | 35.1 | 16.9 | 52.7 |
| | Total | 13.0 | 38.4 | 4.1 | 23.3 | 21.2 | 100.0 |

| | | QUESTION 10 | | | | | |
|---------|-------|-------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 2A | 4.7 | 56.3 | 4.7 | 15.6 | 18.8 | 40.8 |
| | 2B | 18.3 | 37.6 | 6.5 | 24.7 | 12.9 | 59.2 |
| | Total | 12.7 | 45.2 | 5.7 | 21.0 | 15.3 | 100.0 |

The comparison of the educational level results reveal different levels of responses, but similar levels of influences for both groups. Significance of the Chi-square statistic is less than 0.02 for the first group viewing the unedited news version, A, and less than 0.01 for the second group viewing the edited news version, B.

Table 46.c: Responses to Question 10 by educational level, %

| | | QUESTION 10 | | | | | |
|------------------|-------|-------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER EDUCATION | | | | | | | |
| | 2A | 1.9 | 57.5 | 5.7 | 10.4 | 24.5 | 43.0 |
| | 2B | 18.3 | 35.2 | .7 | 30.3 | 15.5 | 57.0 |
| | Total | 11.2 | 45.0 | 2.8 | 21.7 | 19.3 | 100.0 |

| | | QUESTION 10 | | | | | |
|-----------------|-------|-------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER EDUCATION | | | | | | | |
| | 2A | 15.6 | 43.8 | 6.3 | 18.8 | 15.6 | 51.7 |
| | 2B | 24.1 | 20.7 | 20.7 | 24.1 | 10.3 | 48.3 |
| | Total | 20.0 | 31.7 | 13.3 | 21.7 | 13.3 | 100.0 |

Question 11:

The two answer items which are connected with the story content are item *a*, which is the answer representing the altered captions, and item *c*, which is the answer signifying the information given on the audio channel. It is expected for the response ratio for item *a* to increase and the response ratio for item *c* to decrease from viewing Group A to viewing Group B.

Overall results show a major difference in the responses of the two viewing groups. In the responses of viewing Group A the highest marked answer item has been the one signifying the information provided by the audio channel, *c*, which is the correct answer as well. In viewing Group B the highest marked answer item has been the one representing the altered lower captions, *a*. The major difference in the preference of the subjects in the two viewing groups clearly indicate the influence of graphic design materials once they are included. The rather high percentages in the responses towards item *e* in both viewing group imply a large portion within both viewing groups not understanding the story content. However, the percentages of these responses do not

Table 47.a: Responses to Question 11, %

| Row Pct | QUESTION 11 | | | | | Total |
|---------|-------------|-----|------|------|------|-------|
| | a | b | c | d | e | |
| 2A | 7.2 | 2.9 | 44.6 | 10.1 | 35.3 | 45.0 |
| 2B | 40.0 | 1.8 | 23.5 | 2.9 | 31.8 | 55.0 |
| Total | 25.2 | 2.3 | 33.0 | 6.1 | 33.3 | 100.0 |

constitute as a hindrance to the overall findings. The significance of the Chi-square statistic is less than 0.01.

The analysis of the results in terms of gender indicate a degree more of an influence towards men among the two sexes. Results show no major differences among the sexes, but indicate only a slight level more effect among men. Significance of the Chi-square statistic is less than 0.01 for both women and men.

Table 47.b: Responses to Question 11 by gender, %

| | | QUESTION 11 | | | | |
|---------|-------|-------------|------|------|------|-------|
| Row Pct | | a | c | d | e | Total |
| FEMALES | | | | | | |
| | 2A | 5.9 | 36.8 | 14.7 | 42.6 | 47.2 |
| | 2B | 38.2 | 22.4 | 1.3 | 38.2 | 52.8 |
| | Total | 22.9 | 29.2 | 7.6 | 40.3 | 100.0 |

| | | QUESTION 11 | | | | | |
|---------|-------|-------------|-----|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 2A | 7.6 | 6.1 | 54.5 | 4.5 | 27.3 | 41.5 |
| | 2B | 41.9 | 3.2 | 23.7 | 4.3 | 26.9 | 58.5 |
| | Total | 27.7 | 4.4 | 36.5 | 4.4 | 27.0 | 100.0 |

The educational level results of question 11 indicate similar findings, but different levels of influence for the two subgroups. The results imply an

Table 47.c: Responses to Question 11 by educational level, %

| | | QUESTION 11 | | | | | |
|------------------|-------|-------------|-----|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER EDUCATION | | | | | | | |
| | 2A | 4.7 | | 41.5 | 10.4 | 43.4 | 43.1 |
| | 2B | 40.4 | | 22.0 | 1.4 | 36.2 | 56.9 |
| | Total | 25.0 | 0.0 | 30.6 | 5.2 | 39.1 | 100.0 |

| | | QUESTION 11 | | | | | |
|-----------------|-------|-------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER EDUCATION | | | | | | | |
| | 2A | 15.2 | 12.1 | 54.5 | 9.1 | 9.1 | 52.5 |
| | 2B | 37.9 | 10.3 | 31.0 | 10.3 | 10.3 | 47.5 |
| | Total | 26.2 | 11.5 | 42.6 | 9.8 | 9.8 | 100.0 |

apparent difference in the results of both educational groups between the two viewing sessions, but indicate a further degree of influence on the higher educational groups. The significance of the Chi-square statistic is less than 0.01 for both viewing groups A and B.

Question 12:

This particular question carries a difference in comparison to all previous ones in that, all answer items provided to the subjects are pronounced on the audio channel. In other words, there are four possibly correct answers in this story item as a result of the information provided by the audio channel rather than only one as in all previous news items. The difference in the questionnaire format of this news item is, one of the details verbalized by the audio channel is visually stated in captions as well in the edited version of the newscast shown to Group B. The lower captions displayed during the edited version of the newscast is not a fictitious statement that has nothing to do with the story content as was in all previous examples; contrarily, they are composed from a detail of the story content. It is anticipated for the subjects in this group to respond to these lower captions and mark this particular answer item more than the other correct ones, therefore providing us with a measure in terms of the effectiveness of graphic design materials.

The specific aspect of the story which concerns the experiment is the index mark that has been passed during that day, which is the question asked to subjects in both viewing groups. In this question all answer items carry a significance; however, the two major answer items which will help measure the impact of the lower captions are item *b*, and item *d*. It is expected for the response ratio for item *b* to increase and the

response ratio for item *d* to decrease from viewing Group A to viewing Group B.

A sign which indicates that graphics have been influential is the comparison of the highest marked items in both viewing groups. In Group A item *e*, the item signifying that most of the subjects have not been able to recall the correct answer, has been marked with the highest percentage; whereas in Group B subjects have responded to item *b* with the highest percentage due to seeing the lower captions. Overall responses for question number 12 indicate a major influence created by the lower captions despite the complexity of the questionnaire format of this particular news item. Significance of the Chi-square statistic is less than 0.01.

Table 48.a: Responses to Question 12, %

| Row Pct | QUESTION 12 | | | | | Total |
|---------|-------------|------|-----|------|------|-------|
| | a | b | c | d | e | |
| 2A | 23.5 | 9.8 | 5.9 | 27.5 | 33.3 | 36.4 |
| 2B | 14.6 | 40.4 | 3.4 | 24.7 | 16.9 | 63.6 |
| Total | 17.9 | 29.3 | 4.3 | 25.7 | 22.9 | 100.0 |

The comparison of the results based on gender reveal differing response ratios, but nevertheless yield the same findings. The only unexpected result has been the slight increase in the responses towards item *c*; nevertheless, the very low level of responses towards this answer item implies an insignificant mark within the overall responses. Similarly, the preference towards item *a* in both viewing groups' answers does not

signify an effect created by the graphics. Nevertheless, the responses towards item *c* between the two viewing groups signifies a minor influence achieved by the graphics. Significance of the Chi-square statistic is less than 0.01 for women responses and less than 0.16 for men's.

Table 48.b: Responses to Question 12 by gender, %

| | | QUESTION 12 | | | | | |
|---------|-------|-------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 2A | 5.7 | 31.4 | 8.6 | 15.7 | 38.6 | 47.3 |
| | 2B | 10.3 | 38.5 | 14.1 | 24.4 | 12.8 | 52.7 |
| | Total | 8.1 | 35.1 | 11.5 | 20.3 | 25.0 | 100.0 |

| | | QUESTION 12 | | | | | |
|---------|-------|-------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 2A | 12.7 | 39.7 | 6.3 | 15.9 | 25.4 | 40.4 |
| | 2B | 10.8 | 50.5 | 7.5 | 17.2 | 14.0 | 59.6 |
| | Total | 11.5 | 46.2 | 7.1 | 16.7 | 18.6 | 100.0 |

Educational level comparisons reveal contrasting results between the two subgroups. In the responses of the higher educational level group a sign which indicates the effectiveness of the graphics is the comparison of the highest marked items in both viewing groups; in Group A item *e* has been marked with the highest percentage, whereas in Group B item *b* has been preferred most as the correct answer as a result of seeing the lower captions.

Responses of the lower educational level group, however, show contrasting results which do not provide us with clear findings in terms of measuring the effects of graphics. An indication of the ineffectiveness of the lower captions for this group can be measured through the comparison of the highest marked items in both viewing groups; both groups, A and B, have marked item *a* with the highest percentage. The

significance of the Chi-square statistic is less than 0.05 for viewing Group A and less than 0.01 for Group B.

Table 48.c: Responses to Question 12 by educational level, %

| | | QUESTION 12 | | | | | |
|---------|------------------|-------------|------|-----|------|------|-------|
| Row Pct | HIGHER EDUCATION | a | b | c | d | e | Total |
| | 2A | 17.1 | 7.3 | 4.9 | 29.3 | 41.5 | 34.2 |
| | 2B | 10.1 | 44.3 | 2.5 | 25.3 | 17.7 | 65.8 |
| | Total | 12.5 | 31.7 | 3.3 | 26.7 | 25.8 | 100.0 |

| | | QUESTION 12 | | | | | |
|---------|-----------------|-------------|------|------|------|------|-------|
| Row Pct | LOWER EDUCATION | a | b | c | d | e | Total |
| | 2A | 50.0 | 20.0 | 10.0 | 20.0 | | 50.0 |
| | 2B | 50.0 | 10.0 | 10.0 | 20.0 | 10.0 | 50.0 |
| | Total | 50.0 | 15.0 | 10.0 | 20.0 | 5.0 | 100.0 |

Question 13:

The answer items which are closely connected with measuring learning are item *b*, which signifies the information given on the audio channel, and item *c*, which is the visual text material. It is expected for responses in item *b* to decrease and responses in item *c* to increase from viewing Group A to B.

The results of this question do not show a significant difference in the viewers' responses between seeing and not seeing graphic design materials. One aspect in the results which minimizes the effect of graphics is the results in the highest marked answer items among the two viewing groups. It would be expected for the answer signifying the audio channel information to be marked with the highest percentage in the results of Group A, which saw the unedited version of the newscast, and the for the answer signifying the visual text information to be marked with the highest percentage in the results of Group B, which saw the edited version of the newscast. However, the highest marked answer in Group B's answers has been item *b* once again instead of item *c*.

Results do not indicate a strong effect created by the misleading lower captions, but nevertheless show some degree of influence. The significance of the Chi-square statistic is less than 0.01.

Table 49.a: Responses to Question 13, %

| | | QUESTION 13 | | | | | |
|---------|--|-------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| 2A | | 2.2 | 55.4 | 6.5 | 9.4 | 26.6 | 44.7 |
| 2B | | 2.9 | 47.7 | 24.4 | 18.0 | 7.0 | 55.3 |
| Total | | 2.6 | 51.1 | 16.4 | 14.1 | 15.8 | 100.0 |

The comparison of the results based on gender yield different levels of responses, but also a similar overall pattern between the two sexes. Women's results show a major increase in the answers towards item *c* from Group A to Group B after seeing the misleading captions. Although not as significant as the women's gap, answers among men towards item *c* rose in Group B from Group A, and answers towards item *b* fell in Group B from Group A. Responses are within the same overall pattern as the general results; however, the percentages of the responses towards item *b* in both viewing groups of men imply that this gender group has responded more favorably towards the audio material than the lower captions provided on the visual channel. Thus, results show less of an influence among men's viewing groups. Significance of the Chi-square statistic is less than 0.01 for both women and men.

Table 49.b: Responses to Question 13 by gender, %

| | | QUESTION 13 | | | | | |
|---------|-------|-------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| FEMALES | | | | | | | |
| | 2A | 5.7 | 70.0 | 7.1 | 4.3 | 12.9 | 47.6 |
| | 2B | 19.5 | 29.9 | 24.7 | 13.0 | 13.0 | 52.4 |
| | Total | 12.9 | 49.0 | 16.3 | 8.8 | 12.9 | 100.0 |

| | | QUESTION 13 | | | | | |
|---------|-------|-------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 2A | 4.5 | 72.7 | 6.1 | 4.5 | 12.1 | 41.8 |
| | 2B | 30.4 | 31.5 | 15.2 | 13.0 | 9.8 | 58.2 |
| | Total | 19.6 | 48.7 | 11.4 | 9.5 | 10.8 | 100.0 |

The educational level responses of question 13 do not reveal very similar results in terms of the overall pattern between the two subgroups. In the responses of the higher educational level group the difference in the ratios of the responses towards items *b* and *c* clearly displays the influence of the lower captions before and after graphic design materials. The significance of the Chi-square statistic is less than 0.02 for viewing Group A and 0.01 for viewing Group B.

Table 49.c: Responses to Question 13 by educational level, %

| | | QUESTION 13 | | | | | |
|------------------|-------|-------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER EDUCATION | | | | | | | |
| | 2A | 2.8 | 60.2 | 4.6 | 5.6 | 26.9 | 43.2 |
| | 2B | .7 | 47.9 | 28.9 | 16.2 | 6.3 | 56.8 |
| | Total | 1.6 | 53.2 | 18.4 | 11.6 | 15.2 | 100.0 |

| | | QUESTION 13 | | | | | |
|-----------------|-------|-------------|------|------|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER EDUCATION | | | | | | | |
| | 2A | | 38.7 | 12.9 | 22.6 | 25.8 | 50.8 |
| | 2B | 13.3 | 46.7 | 3.3 | 26.7 | 10.0 | 49.2 |
| | Total | 6.6 | 42.6 | 8.2 | 24.6 | 18.0 | 100.0 |

Question 14:

The final question in the experiment concerns the weather report of the next day. There are three answer items connected with the story content. One is item *a*, the answer representing the visual-textual information

which actually misinforms subjects about the temperature of the next day; the second one is item *b*, the answer signifying the information presented on the audio channel; and the third one is item *d*, which suggests that there is unclarity in the presentation of this particular news item. It is expected for the response ratios in answer item *a* to increase, and for the ratios in item *b* to decrease from Group A to Group B. The results for item *d* will be observed during the analysis of the edited version responses of the various subgroups, for these results will disclose the ratio of the subjects which have viewed the weather report carefully.

Overall responses for question number 14 indicate a very high degree of influence in the responses of the two viewing groups created by graphics. The major difference in the preference of the subjects in the two viewing groups clearly reveal the role and effectiveness of graphic design materials. On the other hand, the rather low percentage in the responses towards item *d* in Group B's answers indicate that subjects in this group have not noticed the inconsistency in the presentation of the story content. Significance of the Chi-square statistic is less than 0.01.

Table 50.a: Responses to Question 14, %

| Row Pct | QUESTION 14 | | | | | Total |
|---------|-------------|------|-----|------|------|-------|
| | a | b | c | d | e | |
| 2A | 7.8 | 71.6 | 6.4 | 1.4 | 12.8 | 45.3 |
| 2B | 52.9 | 12.9 | 5.3 | 11.2 | 17.6 | 54.7 |
| Total | 32.5 | 39.5 | 5.8 | 6.8 | 15.4 | 100.0 |

The analysis of responses based on gender yield almost identical results between the two groups indicating very high levels of influence. Responses towards item *d* in the edited news version of both gender groups show a slight difference in terms of ratios, which indicate that male subjects more than women, have not noticed the inconsistency in the presentation of the story content. Significance of the Chi-square statistic is less than 0.01 for both women and men's groups.

Table 50.b: Responses to Question 14 by gender, %

| | | QUESTION 14 | | | | |
|---------|-------|-------------|------|------|------|-------|
| Row Pct | | a | b | d | e | Total |
| FEMALES | | | | | | |
| | 2A | 10.7 | 60.7 | 3.6 | 25.0 | 36.4 |
| | 2B | 53.1 | 12.2 | 22.4 | 12.2 | 63.6 |
| | Total | 37.7 | 29.9 | 15.6 | 16.9 | 100.0 |

| | | QUESTION 14 | | | | | |
|---------|-------|-------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| MALES | | | | | | | |
| | 2A | 12.5 | 70.8 | | 4.2 | 12.5 | 37.5 |
| | 2B | 50.0 | 10.0 | 7.5 | 10.0 | 22.5 | 62.5 |
| | Total | 35.9 | 32.8 | 4.7 | 7.8 | 18.8 | 100.0 |

Educational level results reveal similar findings with different levels of influence observed between the two subgroups. The answers towards item *d* among the two educational level groups which saw the edited version of the news, show relatively low levels of responses signifying once again subjects' not being able to notice the inconsistency in the presentation of the news item. Based on the results, it can be concluded that the higher educational level group has responded to the graphics more favorably than the lower educational level group. Nevertheless, both groups have been affected by the graphics of this particular news item. The significance of the Chi-square statistic is less than 0.12 in the test for Group A and 0.01 in the test for Group B.

Table 50.c: Responses to Question 14 by educational level, %

| | | QUESTION 14 | | | | | |
|-----------|-------|-------------|------|-----|------|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| HIGHER | | | | | | | |
| EDUCATION | | | | | | | |
| | 2A | 5.6 | 72.2 | 5.6 | .9 | 15.7 | 43.5 |
| | 2B | 57.9 | 8.6 | 2.1 | 12.1 | 19.3 | 56.5 |
| | Total | 35.1 | 36.3 | 3.6 | 7.3 | 17.7 | 100.0 |

| | | QUESTION 14 | | | | | |
|-----------|-------|-------------|------|------|-----|------|-------|
| Row Pct | | a | b | c | d | e | Total |
| LOWER | | | | | | | |
| EDUCATION | | | | | | | |
| | 2A | 15.2 | 69.7 | 9.1 | 3.0 | 3.0 | 52.4 |
| | 2B | 30.0 | 33.3 | 20.0 | 6.7 | 10.0 | 47.6 |
| | Total | 22.2 | 52.4 | 14.3 | 4.8 | 6.3 | 100.0 |

4.4.5. Discussion

From the results of the thirteen questions in Experiment 2, a major difference in the answers of the two viewing groups has emerged which supports our second hypothesis on the role of graphic design materials. Based on gender, educational level, and overall results, a major amount of evidence has emerged which reveals the effectiveness of graphic design materials not only in an informational, but in a directional role.

In the second experiment, graphic design materials existed in both the unedited and edited versions of the newscast. However, the graphics used in the unedited edition contained lower captions which appeared to be far from directing and even informing the viewers. These captions which were rather generic in terms of their informational content did not actually serve any real purpose in terms of providing new material which could improve the knowledge level of viewers. On the other hand, captions used in the edited version were highly directional in terms of content, and extreme in terms of intention. Such a magnitude allowed us to extend the limits of the meaning and potency of the captions applied in this edition of the news.

Studies conducted by Berry, Robinson and Levy; and Brosius indicate that free recall measures have often been found to have low correlations with question-prompted recall of news information, and give unreliable indications of what is learned (qtd. in Berry and Brosius 1989, 520). Brosius states that in order to research the full scope of the understanding and comprehension processes, a deeper analysis of watchers' reproductions and more sophisticated cued recall questions have to be developed (1989, 10). Hence, the cued recall measures used in both of our experiments provide high correlations with question-prompted recall of news information.

The comparison of the responses towards the items signifying the graphics and the audio channel lay out a clear picture in terms of the effect of graphic design materials. Except for question 2, which was the control group question for both groups, in all of the answers to the thirteen questions, response ratios towards items signifying the visual text material have increased from Group A to Group B, and significantly in many answers, after seeing the altered version of the newscast. Along with this finding, answer items representing the verbal answers on the audio channel have decreased by important levels. The ratios in tables 51 and 52 indicate the preferences of subjects towards both items modes and reveal that they have been affected and guided by observing the graphic design materials.

The high response ratios towards the audio-verbal answers in the unedited version of the news, show that subjects have believed these materials presented on the audio channel, to be the correct answers; whereas the same subjects have mostly marked the answer item signifying the visual text materials with the highest percentage in the

Table 51: Responses Towards Items Representing Audio-Verbal Information

| Question | 1 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Total Av. |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| Group A | 51.8 | 68.8 | 59.7 | 76.4 | 24.8 | 80.9 | 33.6 | 61.2 | 54.3 | 44.6 | 27.5 | 55.4 | 71.6 | 54.6 |
| Group B | 21.6 | 20.8 | 32.6 | 50.3 | 23.1 | 71.3 | 7.5 | 32.7 | 32.7 | 23.5 | 24.7 | 47.7 | 12.9 | 30.8 |

Table 52: Responses Towards Items Representing Graphic Design Materials

| Question | 1 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Total Av. |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| Group A | 30.5 | 9.2 | 11.5 | 9.3 | 41.1 | 2.8 | 2.9 | 3.6 | 5.1 | 7.2 | 9.8 | 6.5 | 7.8 | 11.3 |
| Group B | 66.1 | 64.2 | 54.1 | 25.4 | 42.8 | 12.3 | 57.8 | 44.2 | 19.3 | 40.0 | 40.4 | 24.4 | 52.9 | 41.8 |

edited version of the newscast. Subjects' favoring the audio-verbal material answers in the original news version, and their favoring the answers signifying visual text materials in the edited version of the newscast with highest percentages among all other answers, clearly display the relationship between type of stimulus, and response.

In addition, the switch in the preferences for type of stimuli implies that graphic design materials can take precedence over audio-verbal materials. Considering that the unedited viewing edition of the news contained the same type of graphic design materials as did the edited viewing edition in terms of visual form, the above proposition may arouse some questions. However the difference in the clarity, preciseness, and potency of the graphics in the two viewing editions in terms of informational content has created an advantage towards the graphics used in the edited viewing version. The comparison of the preferences towards type of stimuli in the viewing sessions, constitutes as clear evidence of effectiveness and precedence for graphic design materials.

Such a comparison also reveals the necessity for unambiguous, expressive, and informational visual stimuli in comparison to generic stimuli in news presentations.

Another result which supports and strengthens the hypothesis of the experiment is the findings in the comparison of the responses towards item *e* signifying not recalling anything.

Table 53: Average Response Ratios Towards Item *e*

| | |
|--------------|------|
| Test/Group A | 20.9 |
| Test/Group B | 10.7 |
| Difference | 10.2 |

The average of the response ratios towards item *e* has been 20.9% in viewing Group A. However, the ratio towards the same item has only averaged 10.7% among viewing Group B. A more interpretative definition of this finding would be that, the responses towards item *e* have decreased from the viewing group which saw the unedited version of the news to the group which saw the edited version of the news as a result of viewing the altered graphics. Initially, such a finding may not appear to be significant, and may seem as a surprise. However, the decline in the ratios between the viewing groups is a result of seeing expressive, directional, and informative graphics versus viewing generic graphics. Subjects in the edited viewing group have marked item *e* in less percentages, for they have been convinced that they have been informed about the news stories which they had seen. Consequently, less of a reason had been left to mark this item; whereas, the subjects in the unedited viewing group have not been able to recall enough information

of the news items with only the audio stimuli. Because the original graphic materials were not found to be informative and helpful, either, subjects in this viewing group have indicated higher preferences towards item *e*. The difference in the responses of the two viewing groups stands as supporting evidence in terms of the function and capability of graphic design materials. In addition, it once again displays the need for unambiguous, expressive, and knowledge-based informational materials in the dissemination of news.

The comparison of the results based on gender yields similar findings, with a minor difference towards women in terms of being affected by graphic materials. Women have selected the items representing graphic design materials by an average of 44.1% in the edited version of viewing, whereas men have selected the same item by an average of 39.2% (see Table 54).

Table 54: Comparison of Responses for Gender Towards Items Representing Graphic Design Materials in the Edited Viewing Session

| Question | 1 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Total Av. |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| Women | 68.4 | 60.3 | 57.1 | 29.5 | 44.9 | 14.3 | 57.7 | 48.1 | 19.5 | 38.2 | 46.9 | 35.4 | 53.2 | 44.1 |
| Men | 63.8 | 67.0 | 51.1 | 21.3 | 40.4 | 9.7 | 57.4 | 40.4 | 18.3 | 41.9 | 32.5 | 15.1 | 51.1 | 39.2 |

Observing the low level of responses towards items representing graphics in the unedited viewing session between the same two groups, 9.6% average for women's group and 12.9% average for men's group, it can be asserted that women have responded somewhat more favorably towards graphic design materials. The lower level of responses among women towards the items representing graphics in the unedited viewing session

in comparison to men suggests that women have attended to both the audio channel and the visual channel of the news presentation, and have concluded that the graphic design materials displayed on the visual channel did not contain any specific informative material. Thus, this group has selected answer items signifying information presented on the audio channel by a majority in the unedited session (see Table 55).

Table 55: Comparison of Responses for Gender Towards Items Respresenting Audio-Verbal Information in the Unedited Viewing Session

| Question | 1 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Total Av. |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| Women | 58.6 | 71.4 | 60.9 | 75.4 | 21.4 | 80.0 | 29.0 | 50.7 | 50.7 | 36.8 | 25.0 | 49.3 | 70.7 | 52.7 |
| Men | 47.0 | 65.2 | 60.0 | 80.3 | 27.3 | 81.8 | 37.9 | 69.2 | 56.3 | 54.5 | 30.4 | 62.5 | 72.7 | 57.3 |

When the informative graphics were presented in the edited viewing session, the female group has changed its preference from the audio-verbal answers to the graphic answers. The same pattern repeats in the answers of men, though the difference in the results of the two viewing groups is not as wide as in the women's viewing group.

The responses of the female and the male groups' answers towards items representing audio-verbal information show much similarity (see Table 55). These results do not reveal any significant differences which may allow for specific analysis towards either one of the groups. However, the results display the same overall pattern of answers which support our previous finding in terms of women's being slightly more affected by graphic materials.

The results of the educational level responses display minor differences between the two subgroups. The comparison of responses between

educational level groups towards items representing audio-verbal information in the unedited viewing session shows that the higher educational level group has viewed the original version of the news somewhat better than the lower educational level group, 56.5% versus 49.8% (see Table 56). Similarly, the higher educational level group has scored a higher ratio in the answers towards graphic design materials in the edited version of the news, 42.9% versus 35.5% (see Table 57). These results signify a relationship between comprehension and educational level. Responses towards the two different types of stimuli appear as higher in ratio in favor of the higher educational level group.

Table 56: Comparison of Responses Between Educational Level Groups Towards Items Representing Audio-Verbal Information in the Unedited Viewing Session

| Question | 1 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Total Av. |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| High. Ed.Gr. | 61.7 | 69.2 | 67.0 | 77.6 | 23.4 | 82.2 | 37.4 | 62.6 | 57.5 | 41.5 | 29.3 | 60.2 | 72.2 | 56.5 |
| Low. Ed.Gr. | 20.6 | 67.6 | 36.4 | 72.7 | 29.4 | 76.5 | 21.2 | 56.3 | 43.8 | 54.5 | 20.0 | 38.7 | 69.7 | 49.8 |

Table 57: Comparison of Responses Between Educational Level Groups Towards Items Representing Graphic Design Materials in the Edited Viewing Session

| Question | 1 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Total Av. |
|--------------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| High. Ed.Gr. | 63.8 | 67.8 | 57.0 | 23.1 | 39.9 | 14.8 | 58.0 | 44.4 | 18.3 | 40.4 | 44.3 | 28.9 | 57.9 | 42.9 |
| Low. Ed.Gr. | 76.7 | 46.7 | 40.0 | 36.7 | 56.7 | - | 56.7 | 43.3 | 24.1 | 37.9 | 10.0 | 3.3 | 30.0 | 35.5 |

Another level of matching which supports this finding is the comparison of the total number of highest ratios between the two educational level groups. In the unedited viewing session, the higher educational level group has scored a higher ratio in thirteen of the

thirteen questions' answers than the lower educational level group (see Table 56). Similarly, in the edited viewing session, the higher educational level group has scored higher marks in nine of the fourteen questions' answers. The lower educational level group has scored higher marks in only four of the answers (see Table 57). The difference in the levels of the ratios vary from being significant to being minor; however, the overwhelming favor in the total amount being towards the higher educational level group provides us with grounds to suggest that there is a relationship between educational level and comprehension, and that comprehension levels increase with the increase in educational level. This is in contrast to the study of Graber which assumed that the information retention and gain would be enhanced by expertise in learning, particularly with the increase in academic level, but found out that people seemed to possess or lack a capacity for retaining and learning from television news irrespective of the nature of the stories or their interest in a particular topic (Graber 1990, 141). Another study by Greenberg and Reeves suggests that individuals with little experience and information are more likely to accept fictional information as truth on television (qtd. in Condry 1989, 166). Although their study has been conducted to test the perceived reality of television among children and adults rather than educational level groups, the potential parallelness of informational levels between children and lower educational level individuals may allow us to apply their theory to the findings of our experiment.

Further findings in Experiment 2 are discovered as a result of more specific inquiry. One of the questions in this experiment posed certain danger in terms of not being able to lend clear results. Question number 6, which was the question about the famous Turkish ex-football player

Tanju Çolak, was the only item which showed almost no difference in either version of the viewing materials' results

In observing the responses towards items representing audio-verbal information in the two viewing groups, the responses for question 6 show striking similarity. Among the group which saw the edited version of the news, 24.8% of the subjects marked item *b*, the answer item offering that Tanju Çolak might be prosecuted by the İstanbul Criminal Court, which is also the correct answer. As a surprise, 23.1% of the subjects which saw the edited version of the news disregarded the lower captions and marked item *b* as well (see Table 51). This very low level of decrease reciprocated in the answers towards item *a*, which is the item suggesting that Tanju Çolak is to be prosecuted by the Supreme Court, which also happens to be incorrect. Although the group which viewed the unedited version of the news received no information clearly stating the possibility of the Supreme Court situation, 41.1% of the subjects in this viewing group indicated their preference for item *a*, and the increase level towards this answer item was very low among the group which saw the edited version with lower captions, 42.8% (see Table 52).

It can be hardly proposed that subjects have been affected by the lower captions used in this question, for there is no clear difference in the level of responses regarding seeing and not seeing the altered graphic materials. The study of Stauffer, Frost, and Rybolt compared literate and illiterate adults' recall and understanding of news. Their results indicate significantly higher scores for the literate viewers on the unaided recall, as well as higher scores on the recall of number, visual, and inference-related questions (qtd. in Woodall, Davis, and Sahin 1983, 12). Based on this evidence which places emphasis on pre-existing knowledge,

Woodall, Davis, and Sahin propose that it would be expected for stories dealing with matters familiar to most viewers to be well understood because of the reliance of the viewers on a well represented network of nodes acquired through daily experience (1983, 12). Although this proposition is well established, it does not explain the reasons for the results of question 6. The story of Tanju Çolak is a case which not only proves the above theory, but it reveals that the abundance of pre-existing knowledge that is relevant to the news story's content becomes a significant factor in preventing and inhibiting the viewers' understanding of new pieces of information pertaining to the story item.

In their study examining the relationship between exposure and attention, Drew and Weaver establish a strong tie between knowledge and strength of opinion, and suggest that those more informed about issues are likely to have stronger opinions about them. Their study further suggests that measures of amount of attention are needed in addition to measures of frequency of exposure, for one can be exposed without paying much attention to content (1990, 748). The notoreity of Tanju Çolak, and the familiarity of the public with the event about his smuggling a luxurious car into Turkey, does not seem to allow much room for many people to intake new bits of information regarding this particular subject matter. Thus, the fact about his possibly being prosecuted by the İstanbul Criminal Court was almost totally ignored, because the case had been handled previously by the Supreme Court. This finding is in total agreement with Drew and Weaver's posit and shows that measures of frequency of exposure are simply not enough to improve levels of learning, but measures of amount of attention are needed as well.

Another level of study in this experiment concerns the comparison of results based on the types of information better recalled. In the thirteen news items of Experiment 2, story contents vary in terms of the specificness and vividness of information as well as the form of information. The events presented contain various bits of knowledge, such as names or identifications, types, amounts, causes and consequences. However, the recall ratios have varied significantly among these classifications. A study conducted by Findahl and Höijer on vividness of news information and information processing, shows that viewers are likely to recall certain concrete details of news programs such as the who, what and wheres; however, concrete details regarding the causes and consequences of news stories are often not recalled (qtd. in Woodall, Davis, and Sahin 1983, 16).

The types of information presented in our experiment do not precisely fit within the definition of Findahl and Höijer. Nevertheless, in terms of separating the contents based on the kind of vividness, and examining them as graphic information devices, it can be stated that graphics containing detail information about names, identifications, specifications, and amounts have been identified and recalled in greater numbers than detail information regarding causes, consequences and inference-necessitating pieces of information. Based on the results displayed in Table 52, responses towards news items 1, 3, 4, 8, 9, 11, 12, 13 and 14 containing detail information of names, identifications, and amounts show greater levels of influence achieved by graphic design materials, in comparison to news items 5, 6, 7 and 10, which contain detail information regarding causes, consequences or inference-necessitating bits. In the answers of the viewing group which saw the edited version of the news, the highest response ratio towards graphics is

66.1%, and the lowest response ratio is 24.4% among the group of news items regarding names, identifications and amounts. However, the highest response ratio among the group of news items regarding causes and consequences is 42.8%, and the lowest ratio is 12.3%. The apparent level of difference in the results of the two types of detail information carry similar traits with the findings of Findahl and Höijer and provide us with the grounds to suggest once again that viewers are likely to recall concrete graphic design details of news programs concerning names, specifications, identifications and amounts better than concrete graphic details of causes, consequences and inference-necessitating stories.

The above finding displays the depth at which information is processed, and shows that the concreteness as well as the vividness of information are attributes that result in deeper processing in semantic terms. In providing a definition for concreteness and vividness, Nisbett and Ross suggest that concreteness is the degree of detail and specificity about actors, actions and situational context; and vividness is information that compels attention and encourages the creation of powerful images which can be used to interpret the information (qtd. in Woodall, Davis, and Sahin 1983, 16). The comparison of the graphic design materials used in the two different viewing sessions of Experiment 2 displays the importance and role of vividness and concreteness in the use of these materials. The recall ratios towards answers signifying the graphic items were at very low rates in the unedited viewing session. However, following the insertion of informative, vivid and concrete graphic materials in the second viewing edition, the recall ratios have significantly increased and these materials have then possessed a true role and function in terms of informational purposes (see Table 52).

Concrete and vivid information in news stories may prompt deeper levels of processing because such detailed information can activate extensive and personally relevant sets of nodes within a semantic network (Woodall, Davis, and Sahin 1983, 16). The difference in the two sets of graphics used Experiment 2 provides us with some clues in terms of the actual capacity of graphic design materials in television news programs.

As stated previously, the nature of most graphics, lower captions in particular, on Turkish television channels is rather generic and far from being truly informative. Considering the purpose of television in terms of its profit-making role, and the entertainment-oriented overall format that is established to meet such needs, the current use of graphic design materials in today's television programs is no surprise to many. Most Turkish television stations do not prefer to produce these materials every single night which require detail and thoroughness mostly due to the reasons stated above. However, the concreteness, vividness and potency of graphics do not pose a threat to the desired overall format of news programs. On the contrary, these elements bring preciseness and more dynamism to the overall presentation format as well as providing more detailed information regarding the content of events. Hence, the descriptions and suggestions provided for the terms concreteness and vividness should not be considered only within the framework of video imagery or audio channel information, and should be included in the practice of graphic design materials as well. The results of Experiment 2 show the necessity for using concrete and vivid information graphics in terms of creating the structure for their more functional use in television's prime time news programs.

A final conclusion to be drawn from the results of Experiment 2 concerns television graphics' potential ability to mislead, rather than to inform viewers. Television stations' misinforming the viewers is a fairly common practice, which is disguised through the various editing techniques and presentation formats applied in daily presentations. However, the action of misdirecting viewers through the practice of graphic design materials is not a commonly observed method for most stations. As stated before, the use of graphics is mostly confined to a generic role in terms of informational purposes, which lends a rather innocent identity for these materials. This experiment, on the other hand, intentionally tested television graphics' ability to mislead viewers and falsify their perception of reality through changing the original visual text information with new incorrect information.

In order to achieve such an effect, informational cues which were not a part of the actual story, but which were logically and contextually related to the original story content were formulated and inserted as graphic design elements. The link between story content and visual context information is a subject matter examined by Woodall, Davis, and Sahin. Their study asserts that visual context information that is loosely linked or not linked to news story content can mislead viewers to engage in a series of erroneous inferences, and that misunderstanding that is caused by vivid information can lead to more serious and long-term consequences (1983, 20). Furthermore, they refer to Nisbett and Ross' conclusions which point out that vivid information may have a dual effect by influencing not only initial references, but future references as well, and thus, once a story is misunderstood, those inferences can provide a basis for future misunderstanding (qtd. in Woodall, Davis, and Sahin 1983, 21).

The results of our experiment reveal findings which are parallel to the above theories. Subjects in the edited version of the experiment have overwhelmingly accepted all visual and verbal material to be true in terms of content, and real in terms of authenticity. Thus, none of the subjects in this viewing group has expressed any doubt or sign of flaw in the presentation during or after the newscast. Particularly, the slight difference in the typefaces used in the text, and the minor size changes applied due to some lengthy sentences in the lower captions, have not affected any of the subjects in a negative manner. Almost all subjects have accepted this version of the newscast as a bonafide edition and have intaken all the information presented without any sense of peculiarity or suspicion. As Condry states, "apparently once one has accepted the premise that a broadcast is real, we do not continue to question its validity, or pay careful attention for inconsistencies" (1989, 165).

In this particular experiment, graphic design materials have been used with the intention of functioning as the salient formal presentation feature. Furthermore, these materials have been employed with the task of veritably conveying information, and with the task of pointing out the central content of the story by signaling what is more important and highlighting the central aspects of the stories viewed. However, graphic design materials have also been used as informational cue disguises, with the real purpose of testing their ability to mislead and establish an incorrect sense of perception among viewers. The results of the experiment have thus displayed the potential ability of graphic design materials in this regard, and revealed the responsibility placed on news producers and all other production personnel in television news departments.

5. CONCLUSION

Learning from television is a topic that has been questioned and investigated in broadcasting and electronic journalism for a long time. Studies conducted to measure levels of learning and various factors which effect, or do not effect learning have been able to provide conclusive findings in this subject matter so far. In addition, studies which have researched the role of formal features in influencing learning levels have mostly focused on the use of video imagery. Very few studies have examined visual text materials as the main presentational feature, and no study has specifically researched graphic design materials and their effects of improving knowledge gain. This study intended to provide some information and suggestions regarding at least some of the prevailing forms of graphic design materials seen in today's prime time news programs.

The present study has specifically attempted to examine the role and function of some graphic design materials, mainly visual text materials and maps, in their capacity as informational devices in increasing comprehension in the presentation of television's prime time news; cued recall measures rather than free recall measures have been applied in finding out knowledge gain levels. The findings of this study yield results which indicate that graphic design materials increase the comprehension of the news story content, and further, they can function

in a role which alters and misleads viewers' perception of the facts regarding the news story content viewed.

Two experiments have been conducted to test the hypotheses of the study. In both experiments, graphic design materials have been used as the primary perceptually salient formal feature in terms of serving as an information device and an aid to comprehension. This is a more direct and purposeful approach in utilizing graphic design materials, for the general use of these elements in most of today's news programs is mostly within the capacity to help viewers make inferences to understand the story content. Within this overall format, graphics have been tested as visual retrieval cues in aided recall measurements. In other terms, the capacity of graphic design materials in affecting the viewer and being retained as the core piece of informational material has been the elementary issue of investigation and diagnosis in this study.

The findings of the first experiment indicated that, despite the rather generic nature of visual text materials used in television news programs, television graphics, and particularly maps, increase the comprehensional level of viewers and serve as core informational devices. The most significant finding of this experiment has been the in the difference of the influence levels of lower captions versus maps, with maps showing a greater ability to aid recall levels than lower captions.

After confirming the relationship between television graphics and their comprehensional role, the second experiment shows that the overall content and use of the prevailing forms of television graphics is rather general, and that more vivid, concrete, and knowledge-based graphics can serve as more functional devices. This experiment furthermore

reveals that graphic design materials can not only serve to inform viewers, but they can mislead and misinform viewers as well if used more specifically and deliberately. Thus, graphics have served in a rather unique capacity as informational cues helping viewers make incorrect inferences about the story contents viewed. This displays a much more significant role for these materials than most prevailing practice, namely promotional and supplementary ones, for graphics have mostly been entrenched in a secondary role in television news programming. The endless possibilities in producing creative, visually appealing, yet informative and entertaining graphic design materials should not be confined to promotional programs and sequences, but they must also be explored and applied to news programs as well. As Billinger states, "graphics can keep pace with writers' leaps of imagination in a way that live action often cannot" (qtd. in Platt 1991, 38). Edwardson, Kent, and McConnell express their approval for news directors and videotext executives who are investing large amounts of money for graphics and stress that a still graphic accompanying a news story can provide a conceptual peg that aids retention of the story topic (1985, 375).

Graphic design materials are one of the widely used formal features of television news all over the world. Their function varies from being used as 'fill' material to serving as elementary informational units. Platt mentions of the role of graphics on television and indicates that they traditionally mean title sequences, trailers, and little else; she further explains that due to budgetary concerns and timidity in new visual forms, television graphics remain firmly entrenched in a traditional role of program packaging, providing title sequences and so on (1991, 38). Although Platt's views appear to be totally disregarding the use of television graphics in news programs, her point is valid. Many of the

graphic design elements in news programs carry a supplementary function as a part of program packaging, rather than main informational tasks. Particularly, the opening and closing animation sequences, and lower captions are far from serving any content-based function. Even sequences such as split-screen images, maps, and news accompanying animations disguise behind the role of being irreplaceable information units, but actually performing as technological wonders of the era, mesmerizing our senses and captivating our attention without paying too much attention on the content of the news story.

Among all graphic design materials, perhaps it is weather maps that are the only solid informational units which primarily intend to provide any knowledge-based data. However, the decorative and overdressed visual format brought to most weather report sequences takes the attention away from learning about weather conditions, and places it on how impressive the weather map looks like. Once again, appearance-oriented concerns relating to the image of the program and the television channel supersede all priorities relating to communication. The use and purpose of graphic design materials should be considered as part of a large package that considers television primarily as an entertainment medium in which all visual materials, including graphics, must have strong visual appeal in order to attain concentration and retained-viewing, which means "rating."

News programs are a very prestigious feature of this "package" which claim to provide us with a rendition of everyday facts. In providing a framework for the role of television news, Philo states that "news accounts offer perspectives and exist within specific ways of understanding the world, but it does not follow that they all have an

equal claim to accuracy" (1990, 195). Tuchman provides a more specific explanation and suggests that news sells itself as a window on the world and encourages the impression that ongoing events of importance are "captured" and offered to the viewer, and furthermore, the news operation's mediating role in constructing and presenting visual packages to an audience is submerged beneath a facade of "objective" recording, with anchors and reporters ostensibly delivering actual scenes of newsworthy occurrences to the TV news audience (qtd. in Griffin 1992, 127).

Similar to Tuchman's suggestions, Philo once again offers some views on the role of television news and defines it as "a relatively legitimate provider of information about what has apparently occurred in the world;" moreover, he stresses that television audiences have to decide how information relates to expectations and values, and crucially whether the news account can be integrated into viewers' beliefs or if it is to be dismissed as false, partial, or simply irrelevant (1990, 199). The results of our experiments have clearly displayed the validity of Philo's views; in both experiments, subjects have not questioned the authenticity, reality or content of the presented news formats. In the first experiment subjects have not displayed any form of discontentment or inconvenience about the lack of graphic design materials in the edited viewing session, which is a highly unusual presentational format in today's news programs. A formal measurement which was to be considered as a form of discontentment would have been observing high response ratios in the answers signifying 'not recalling anything' in the edited viewing version of the news. However, despite the increase in the ratios towards these items in the second experiment, such levels were not high enough to be interpreted as a sign of inconvenience or

disturbance. Similarly, subjects did not pay enough attention to the inconsistencies between the audio and visual channels in the edited version of the newscast in the second experiment. Consequently, the altered and contently-incorrect graphics inserted to this version of the newscast have succeeded in misinforming and misleading an important portion of the subjects who took part in the experiment.

A more discouraging result is that, most of the subjects who have taken part in both experiments and thus have been affected were college students, who are individuals theoretically to be more alert, observant, and knowledgeable than lower educational level groups. However, the results of both experiments did not reveal significant levels of differences between these two groups. Hence, the detection of flaws, inconsistencies, errors or falsifications become a problem of all groups regardless of educational level differences. This problem is related to the wider picture of not viewing television in a critical framework and accepting its format as being realistic.

One overriding lesson to be considered as a result of this study, overall, is the need for being critical viewers of television and not accepting its presentation format as a package of reality. Altheide has pointed out that visual formats, which he calls "the grammar of visual imagery" unavoidably alter the spatial and temporal dimensions of reality, creating mediated versions of people, places and events that are fundamentally different from unmediated experience (qtd. in Griffin 1992, 127). Television and its news programs must be examined in terms of its presentation structure and visual format in order to better understand the hidden and implied relationship between television news programming and reality. As Hefzallah rightfully asserts, developing

people's ability to intelligently view news programs and to become vocal about the advantages and shortcomings of television news is a safeguard which will enhance networks' efforts to present accurate, relevant, and unbiased news (1987, 129).

The limitations of this study have primarily been in the number of demographic variables tested. Due to the technical and logistic difficulties in gathering potential subjects, finding viewing rooms with television and video player sets has prevented the study from being conducted on a much wider demographic scale, and thus has limited it to the potential subjects to be found in university environments. In addition, difficulties in arranging viewing sessions during fellow academicians class periods has been a similar obstacle which was encountered. These factors have limited the study to be conducted primarily in the Faculty of Fine Arts, Design and Architecture of Bilkent University. Therefore, the results of this study cannot be considered in a conclusive context encompassing a very wide portion of the society.

A second major factor to be considered during the evaluation of the study's results is the difference in the viewing conditions provided for the subjects in comparison to normal viewing circumstances and environments. Subjects in the two experiments have been asked to view the new materials in specially selected, silent, dim-lit rooms where no external distractions occurred. This has provided subjects an environment similar to laboratory conditions in which maximum levels of attention were provided. Most news viewing does not take place under laboratory conditions where maximum concentration is possible, but rather in less than optimum environments where distractions are frequent (Son, Reese, and Davie 1987, 214). In addition, careful

experimental research indicates that the viewers' eyes remain on the set only 65% of the time while the viewer is in the room; one-third of the time, viewers are engaged in other activities while viewing (Neuman and Sola Pool 1986, 84). Thus measuring the effects of the study may have yielded results at ratios which normally could not be collected in 'normal' viewing conditions.

A final aspect which may be considered as a limitation within the scope of this study is the focus of the research in terms of not encompassing all graphic design materials. As indicated in the introduction section of the study, this work has not explored the use of graphic design materials in a comprehensive manner, for such a study requires a very thorough and extensive level of examination of the many different types of graphics, and shifts away from concentrating on any explicit aspect of these materials. Particularly, the use of symbolic graphic imagery, namely icons and indexes as informational material, and alterations in the visual form of such imagery leading to potential differences in their meanings is a subject matter that is yet to be explored by researchers, which requires extensive levels of semantic, semiotic and sociological groundwork. Such level of work may not only provide a fuller examination of the different types of graphic design materials, but it may also contribute to the investigation of the various types of graphics in terms of their potential variances in aiding and improving comprehension as well as in misinforming viewers.

Television is an immense subject matter which has been studied and will be continued to be studied for many years to come. The multitude of issues involving television requires all studies within this subject heading to be focused in a certain aspect of this medium. This research

has focused on the news delivery aspect of television and has attempted to provide some theories and explanations regarding television news program graphics and their role in improving the recall and retention level of viewers. The findings of this study must be regarded as meriting further study, rather than justifying the role of graphic design materials in a conclusive manner.

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7. APPENDICES

7.1. Appendix 1: The April 3rd News of SHOW TV

| <u>Audio Channel and Story Content</u> | <u>Visual Text on Visual Channel</u> |
|---|---|
| | (All visual text indicated on the visual channel has been deleted in the edited viewing session) |
| (00.00) The opening animation sequence and music | |
| (00.16) (Fade to the studio) Gülgun Feyman in the studio | Gülgun Feyman in the Lower captions: 3 APRIL 1995 |
| (00.18) (Cut to Gülgun Feyman) The negative and one-sided stance of the German government regarding the military operation of the Turkish Army in northern Iraq (with examples). | Lower captions: MULTIPLE FACADE POLITICS Lower captions: FINANCIAL SUPPORT TO FUNDAMENTALISTS |
| (03.10) Turkish Minister of Foreign Affairs, Erdal İnönü, visiting German Foreign Minister Klaus Kinkel to provide | Vertical one-third story headline caption: DIPLOMACY |

information regarding the military operation in northern Iraq.

Lower captions:
HE MET WITH KINKEL

(04.52) Two Turkish diplomats exchanging places of duty; the Ambassador to Germany, Onur Öymen, being assigned to Ankara as the Undersecretary of Foreign Affairs, and the former Undersecretary of Foreign Affairs, Volkan Vural, being moved to the open post in Germany.

Lower captions:
EXCHANGE OF DUTIES

(05.37) Report on the fifteenth day of the 20 kilometer advancement of the Turkish Armed Forces operation in northern Iraq against the terrorist organization PKK.

Vertical one-third story headline
caption: OPERATION

Lower captions:
20 MORE KILOMETERS

(06.42) The leader of the main opposition party, Mesut Yılmaz, proclaiming his negative stance about the military operation in northern Iraq and asserting that disarming several hundred terrorists does not justify the aim of the entire military operation.

Vertical one-third story headline
caption: POLITICS

Lower captions:
HE CRITICIZED THE
GOVERNMENT

- (07.42) The handball game played between the Turkish National Team and the Greek Cypriot team in Cyprus, and particularly, the unusual route that the Turkish team has had to follow in order to reach Larnaka, the capital of Cyprus due to the awkwardness stemming from the cut-off of diplomatic relations between Turkey and the Greek Cypriots.
- Vertical one-third story headline captions: SPORTS
- Lower captions:
THE RETURN GAME IS ON THURSDAY
- A second animated map:
THE ROUTE THEY WILL FOLLOW
- (08.36) The story about the political rise of the Republican People's Party's then leader, Hikmet Çetin whose political stance is described as 'constantly strengthening' since his becoming the party leader several months ago.
- Lower captions:
ÇETİN IS GAINING POWER
- (09.18) The court decision on the killing of a famous mafia leader's daughter who is known to be a key witness in a very controversial bribe trial, who was also killed by a gunman loyal to a rival mafia leader.
- Vertical one-third story headline captions: COURT CASE
- Lower captions:
LIFE SENTENCE IN PRISON

- (10.09) The 1995 Miss Turkey beauty pageant event with a 1 minute-long interview conducted between the newscaster, Gülgün Feyman, and the reporter, Tarık Tarcan. Split-screen image with the text: İSTANBUL, and SWISS HOTEL
- (11.41) The latest financial developments in the Istanbul Stock Exchange Market including the market index passing the 41000 point-mark, which is an important piece of information because of the US dollar equalling 42000 Turkish Liras at the time. Vertical one-third story headline captions: ECONOMY
Lower captions: 41 TIMES MAGNIFICENT
- (13.05) The day's financial developments covering some basic data on the stock markets rates, plus the rates for some major foreign currencies using both orals and graphics. Lower captions: DOLLAR 42000 UP 50
- (13.37) The weather report for the evening and the next day which states that the highest expected temperature in Ankara for the next day will be 12 degrees Celcius. The map of Turkey showing the highest expected temperatures for the next day including the temperature of ANKARA, 12.

7.2. Appendix 2: The April 21st News of SHOW TV

| <u>Audio Channel and Story Content</u> | <u>Visual Text on Visual Channel</u> |
|--|---|
| | *(The altered visual text material used in the edited viewing session) |
| (00.00) The opening animation sequence and music | |
| (00.11) Precap of the news | Lower captions: PRECAPS |
| (00.32) (Fade to the studio) Gülgun Feyman in the background | Lower captions: 21 APRIL 1995 |
| (00.38) (Cut to Gülgun Feyman) The car bomb explosion occurring in İstanbul regarding a bomb planted in a Tempura brand car which was illegally parked and towed to the Sarayburnu area. | Lower captions: NEAR MISS FROM A DISASTER *PKK IS BEING SUSPECTED Lower captions: MURAT IDE- SARAYBURNU *C4 TYPE EXPLOSIVE |
| (03.29) A narration regarding the same subject matter explaining what would have happened if the bomb had exploded, not in Sarayburnu, where the car was towed to, but in Sultanahmet, where the car was originally parked and discovered. | Lower captions: WHAT IF IT WEREN'T REMOVED!... *A BANK CLERK WARNED *THE SAME TYPE USED IN THE MUMCU INCIDENT |

- (04.49) The new decision of the Supreme Court regarding the famous ex-football player Tanju Çolak, in which the court canceled the previous decision of Çolak's innocence declared by the İstanbul Criminal Court, and decided to send the case back to the this court to be handled once again.
- Vertical one-third story headline caption: JUSTICE
- Lower captions:
 SARAY PRISON ONCE AGAIN
 *TO BE REVIEWED BY THE SUPREME COURT
- (06.26) The shooting of Sarp Kuray, who is one of the board members of the recently bankrupt firm TurkInvest, due to a discrepancy between Sarp Kuray and one of the firm's bodyguards.
- Lower captions:
 DISCREPANCY REGARDING SHARES
 *REVENGE OF A BODYGUARD
 *3 BULLETS HAVE BEEN RECOVERED
- (08.14) The parliament members of the recently ousted party DEP insisting about not vacating the housing facilities which had been offered to them during their parliamentary statuses.
- Lower captions:
 WHAT KIND OF A REACTION IS THIS
 *7 FAMILIES ARE STILL RESIDING
- (09.26) The cooperation taking place between the United States and Turkey regarding the selling of hashish and control of narcotics worldwide.
- Vertical one-third story headline caption: DIPLOMACY
- Lower captions:
 NARCOTICS COOPERATION
 *THE USA IS BUYING THE HASHISH

- (10.57) The second round of the presidential elections taking place in the Turkish Republic of Northern Cyprus, in which a majority of the votes is enough to win the elections.
- Vertical one-third story headline
caption: CYPRUS
***50 PERCENT OF THE VOTES IS A MUST**
- (12.10) The daily developments in the money markets, including the weekly gain of the stock exchange being higher than the gain of the US dollar or the German mark the stock market exceeding the 55000 index in the stock exchange, and the minor level of receding in the foreign currency rates.
- Vertical one-third story headline
caption: ECONOMY
- Lower captions
A RISE IN THE STOCK MARKET MARKET
***THE INDEX HAS PASSED THE 55000 MARK**
- (13.01) The latest advertising commercial of Pirelli tires with Carl Lewis, which indicates that the film cost one-million US dollars.
- Lower Captions:
THE RUBBER MAN IS COMING
***CARL LEWIS RECEIVED 1000000 DOLLARS**
- (14.33) The weather report for the evening and the next day which states that the highest expected temperature in Ankara for the next day will be 19 degrees Celcius.
- The map of Turkey showing the highest expected temperatures for the next day including the temperature of ANKARA, 19.
***ANKARA, 17**

7.3. Appendix 3: Questions Asked to Subjects in Experiment 1

Below, you will find questions pertaining to the news program which you have viewed. Please indicate only one answer for each question.

1. How is the political stance of the German Government being described regarding the Turkish Armed Forces' military operation in the southeast ?
 - a) As a double standard,
 - b) A stance of exploitation,
 - c) Multiple-facade politics,
 - d) Neutral politics,
 - e) I don't recall.

2. Within the same subject topic, it is stated that the German Democratic Socialist Party is financially supporting a radical group. Which group is this ?
 - a) Fundamentalists,
 - b) A radical Islamic group,
 - c) Both items, a and b,
 - d) A racist group,
 - e) I don't recall.

3. In the news item, Erdal İnönü's visit abroad to discuss the military operation in the southeast is mentioned. During his visit, with whom did İnönü meet ?
 - a) Wörner,
 - b) Genscher,
 - c) Kohl,
 - d) Kinkel,
 - e) I don't recall.

4. Based on the news story, what was the significant event in the Ministry of Foreign Affairs?
- a) The retirement of Volkan Vural,
 - b) Exchange of Duty in the Foreign Ministry Undersecretary,
 - c) New appointments made to the Bonn Embassy and to the Foreign Ministry Undersecretariat,
 - d) Both items, b and c,
 - e) I don't recall.
5. What was the distance mentioned in the news regarding the advancement of the Turkish troops into Iraqi territory ?
- a) 15 km,
 - b) 20 km,
 - c) 25 km,
 - d) 30 km,
 - e) I don't recall.
6. What was the reaction of Mesut Yılmaz towards the government regarding the military operation in the southeast ?
- a) He stated that he did not find the policy of the government to be very serious,
 - b) He stated that the political responsibility of the operation belonged to the government,
 - c) He criticized the government,
 - d) All above items, a, b, and c,
 - e) Items b and c,
 - f) I don't recall.
7. Which route did the handball national team follow to reach Larnaka for the game to be played with the Greek Cypriot team ?
- a) The national team flew directly from İstanbul to Larnaka,
 - b) They flew directly from Eskişehir to Larnaka,
 - c) From İstanbul they first flew to Athens, and from there to Larnaka,
 - d) They flew from İstanbul to Tel Aviv, then they took another plane to Larnaka,
 - e) I don't recall.

8. What is the route that the Greek Cypriot national team will follow in order to reach Eskişehir, where the return game will be played ?
- a) They will fly directly from Larnaka to Istanbul, and from there they will arrive at Eskişehir by bus,
 - b) They will first fly to Tel Aviv, from there they will take another plane to Istanbul, and later they will take the bus to Eskişehir,
 - c) They will take a plane to Athens, from there they will take another plane to Istanbul, and then they will take the bus to Eskişehir,
 - d) They will first take the plane from Larnaka to Athens, and from there they will take another plane to Eskişehir,
 - e) I don't recall.
9. How is Hikmet Çetin's position in his party described as for the time of the news report ?
- a) Loosing support,
 - b) Not different,
 - c) Trying to gain support,
 - d) Gaining strength,
 - e) I don't recall.
10. Regarding the Engin Civan court case, what was the verdict of the court for the murderer of Uğur Kılıç, Abdurrahman Keskin ?
- a) Capital punishment,
 - b) Life prisonment sentence,
 - c) 35 years and 8 months of prisonment,
 - d) The court detached the case of Alaattin Çakıcı and postponed his trial,
 - e) I don't recall.
11. Where will the Miss Turkey 1995 beauty pageant be held this year ?
- a) Sheraton Hotel,
 - b) Sürmeli Hotel,
 - c) Swiss Hotel,
 - d) Hilton Hotel,
 - e) I don't recall.

12. What was the highest index mark of the stock market for the time of the event reported ?
- a) 40.000,
 - b) 41.000,
 - c) 42.000,
 - d) 80.000,
 - e) I don't recall.
13. What was the exchange rate for the US dollar for the time of the event reported ?
- a) 30575,
 - b) 41000,
 - c) 42000,
 - d) 43000,
 - e) I don't recall.
14. Based on the report, what will be the highest temperature for Ankara for the next day ?
- a) 10,
 - b) 12,
 - c) 14,
 - d) 16,
 - e) I don't recall.

7.4. Appendix 4: Questions Asked to Subjects in Experiment 2

Below, you will find questions pertaining to the news program which you have viewed. Please indicate only one answer for each question.

1. In the car bomb incident in İstanbul, which group is the police suspecting of ?
 - a) DEV-SOL,
 - b) PKK,
 - c) IBDA-C,
 - d) No group is suspected of at this point,
 - e) I don't recall.

2. Regarding the same incident, do you recall the brand of the car in which the bomb was placed?
 - a) Broadway,
 - b) Doğan,
 - c) Şahin,
 - d) Tempura,
 - e) I don't recall.

3. In the same incident, what type of a bomb was used ?
 - a) A plastic bomb,
 - b) A C-4 type bomb,
 - c) Both items, a and b,
 - d) The type of the explosives were not mentioned,
 - e) I don't recall.

4. In the same incident, who was the first person to notice the car in Sultanahmet and warn the police ?
 - a) A bank clerk,
 - b) People in the surroundings,
 - c) Shop owners in the area,
 - d) The police removed the car without any previous warning because it was illegally parked,
 - e) I don't recall.

5. Based on the story content, what kind of a relationship exists between the bombing incident in Sarayburnu and the Ugur Mumcu incident ?
 - a) The power of the explosives used in Sarayburnu was more than the one used in the Uğur Mumcu incident,
 - b) Both were the same type of explosives,
 - c) Both items, a and b,
 - d) No specific ties has been established yet,
 - e) I don't recall.

6. If the court case of the national football player Tanju Çolak, who has been tried in the illegal Mercedes incident, is reopened, which court will initially handle the case ?
 - a) The Supreme Court,
 - b) The İstanbul Criminal Court,
 - c) The İstanbul District Attorney,
 - d) There is an inconsistency in the delivery of the information,
 - e) I don't recall.

7. What is the reason for the shooting of Sarp Kūray, who is one of the board members of the recently bankrupt firm, TurkInvest ?
 - a) Differences in political views,
 - b) One of the bodyguards aiming to take revenge from Sarp Kuray,
 - c) Nasrullah Ayan's bodyguard's demanding a share of the land selling process and receiving a negative answer,
 - d) A discrepancy between the board members of TurkInvest firm,
 - e) I don't recall.

8. Regarding the same incident, how many bullets have been taken out of Sarp Kuray's body ?
 - a) 1,
 - b) 2,
 - c) 3,
 - d) The number of bullets are not indicated,
 - e) I don't recall.

9. How many of the senators of the ousted party DEP were still taking advantage of the special housing privileges ?
 - a) 5,
 - b) 7,
 - c) 9,
 - d) No specific number has been indicated,
 - e) I don't recall.

10. Within the cooperation regarding narcotic drugs, what is the type of assistance provided to Turkey by the US ?
 - a) The US is buying the hashish,
 - b) The US is providing Turkey with the technology, specialists and cooperation,
 - c) The US is assisting in the increase of productivity,
 - d) All above items, a, b, and c,
 - e) I don't recall.

11. In the presidential elections to take place in the Turkish Republic of Northern Cyprus, how much of the votes do the candidates have to win in the second round in order to be selected as president ?
 - a) 50 percent of the votes is a must,
 - b) 60 percent of the votes is a must,
 - c) A majority of the votes is sufficient in the second round,
 - d) Two thirds of the votes is needed,
 - e) I don't recall.

12. Based on the news item which you have viewed, what was the most significant development of the day in the stock market ?
- a) The weekly gain of the stock exchange being higher than the gain of the US dollar or the German mark,
 - b) Exceeding the 55000 index in the stock exchange,
 - c) The minor level of receding in the foreign currency rates,
 - d) All above items are correct,
 - e) I don't recall.
13. Which one of the following is true regarding the cost of the latest advertising film produced by Pirelli tires ?
- a) The film cost 100.000 dollars,
 - b) The film cost 1.000.000 dollars,
 - c) Carl Lewis received 1.000.000 dollars to play in this film,
 - d) The film cost 1.000.000 dollars, and Carl Lewis received 1.000.000 dollars to play in this film,
 - e) I don't recall.
14. Based on the news, what will be the highest temperature of Ankara tommorrow?
- a) 17,
 - b) 19,
 - c) 23,
 - d) There is an inconsistency in the presentation of the news story,
 - e) I don't recall.

7.5. Appendix 5: Questionnaire of Subject Profile

The following questions are not intended to reveal any identification, please reply freely and correctly:

- A. Gender:
 Female Male
- B. Your Age:
 17 and below 18-30 31-50 51 and above
- C. Your education:
 Elementary school Secondary school High school
 College degree year college student
 Master degree or Ph.D. degree No education received
- D. If you are a college student what is your field of study, if you have completed college, which department have you graduated from ?
 Social Sciences Hotel Management Communication
 Engineering Fine Arts/Design Music/Theatre
 International Relations/Public Management Science
 Business Administration/Economics Medicine
 Other (please indicate):
- E. Your occupation:
 Self-employed Teacher Student
 Civil Servant Worker Executive
 Retired Salary-based employee
 Not employed at the moment Other (indicate):.....

- F. Which socio-economic group do you consider yourself as a part of ?
 Lower income class Lower middle income class
 Middle income class Upper-middle class Upper class
- G. How often do you watch television ?
 During all free times
 A certain amount every day
 Once in a while
 Very rarely
 I don't watch television at all
- H. For what reason do you watch television the most ?
 Entertainment
 News information
 Utilizing free times/killing time
 Increasing intellectual and/or knowledge level
 To keep me company
 Other (indicate):
- I. How important is it for you to be informed about what's going on in Turkey?
 Very important Quite important
 Somewhat important Not very important
 I don't care about what's going on in Turkey
- J. How important is it for you to be informed about what's going on in the world ?
 Very important Quite important
 Somewhat important Not very important
 I don't care about what's going on in the world

- K. What source do you prefer to attain information about what's going on in the world and in Turkey ?
 Radio Television Newspaper
 Magazines Other sources (please indicate):
- L. Overall, how trustworthy and correct do you consider television news to be ?
 Very trustworthy, very correct
 Quite trustworthy and correct
 Somewhat trustworthy and correct
 Generally not trustworthy, not correct
 Never trustworthy or correct
- M. What are the five television channels that you prefer the most for watching the prime time news ?
 ATV Cine 5 Channel D
 FLASH TV HBB Mesaj TV
 Samanyolu TV SHOW TV Star TV
 TGRT TRT 1, or 2 Channel 6
 Channel 7 One of the foreign channels
 One of the local channels
- N. What are the reasons for you to make the above choice(s) ?
 The station's adhering to the principle of correct-news-reporting
 Delivering the news in details
 Objective reporting
 Using visual informational materials like maps, animation sequences, or captions
 The set up and design of the newsroom studio
 The abundance of the station's live reporting
 The outfit and appearance of the news reporters
 Interviews being conducted during the news programs
 The commentary presentations bringing a new dimension to the story contents
 The lesser amount of commercial ads in comparison to other stations

- The channel's views being similar to my philosophy of life
- The presentation format of the news being short and concise
- Without any newsworthy criteria, just out of habit
- Other (indicate):

O. Which one of the following do you or your family possess ?

- Car phone or cellular telephone Dishwasher
- Fully automatic washer Computer Printer
- Music set Video player Video camera

P. Which one of the following accommodations do you possess ?

- House (amount): Summer house (amount):
- Time share (amount):.....

R. What is the total number of cars in your family ?

- 1 2 3 or more None

S. The house that you are presently residing is:

- Rent Yours

7.6. Appendix 6: Results of Questionnaire of Subject Profile
 (The amounts below do not always add up to the same numbers due to items left blank by subjects)

A. Gender

| | Number | Percentage |
|--------|--------|------------|
| Female | 273 | 47.9 |
| Male | 297 | 52.1 |
| ----- | | |
| Total | 570 | 100.0 |

B. Age Groups

| | Number | Percentage |
|--------------|--------|------------|
| 17 and below | 7 | 1.2 |
| 18-30 | 518 | 90.7 |
| 31-50 | 41 | 7.2 |
| 51 and above | 5 | 0.9 |
| ----- | | |
| Total | 571 | 100.0 |

C. Educational Levels

| | Number | Percentage |
|------------------------|--------|------------|
| Elementary School | 4 | 0.7 |
| Secondary School | 56 | 9.8 |
| High School | 28 | 4.9 |
| College Student | 427 | 74.8 |
| College Graduate | 40 | 7.0 |
| Master or Ph.D. degree | 16 | 2.8 |
| ----- | | |
| Total | 571 | 100.0 |

D. College Students' Fields of Study

| | Number | Percentage |
|-------------------------|--------|------------|
| Social Sciences | 8 | 1.8 |
| Communication | 58 | 13.2 |
| Engineering | 24 | 5.5 |
| Fine Arts/Design | 300 | 68.5 |
| Business Administration | 48 | 11.0 |
| <hr/> | | |
| Total | 438 | 100.0 |

E. Occupation

| | Number | Percentage |
|---------|--------|------------|
| Student | 431 | 75.5 |
| Worker | 125 | 21.9 |
| Other | 15 | 2.6 |
| <hr/> | | |
| Total | 571 | 100.0 |

F. Socio-Economic Group

| | Number | Percentage |
|---------------------------|--------|------------|
| Lower income class | 34 | 6.1 |
| Lower-middle income class | 54 | 9.6 |
| Middle income class | 250 | 44.6 |
| Upper-middle income class | 215 | 38.4 |
| Upper income class | 7 | 1.3 |
| <hr/> | | |
| Total | 560 | 100.0 |

G. Frequency of Watching Television

| | Number | Percentage |
|----------------------------|--------|------------|
| During all free times | 89 | 15.8 |
| A certain amount every day | 257 | 45.5 |
| Once in a while | 121 | 21.4 |
| Very rarely | 91 | 16.1 |
| I don't watch TV at all | 7 | 1.2 |
| ----- | | |
| Total | 565 | 100.0 |

H. Reason for Watching Television

a. The total amount of selections for each item as the 1st, 2nd, 3rd, 4th, 5th, and 6th choice

| | Total No. | Percentage |
|-------------------------------|-----------|------------|
| News information | 610 | 27.32 |
| Entertainment | 389 | 17.42 |
| Utilizing free times | 383 | 17.15 |
| To develop intellectual level | 371 | 16.62 |
| To keep company | 352 | 15.76 |
| Other | 128 | 5.73 |

b. Weighted responses (the first choice receives 6 points, the second choice receives 5, the third choice 4, the fourth choice 3, the fifth choice 2, and the final choice receives 1 point)

| | Total No. | Percentage |
|-------------------------------|-----------|------------|
| News information | 3156 | 33.77 |
| Entertainment | 1729 | 18.50 |
| Utilizing free times | 1460 | 15.62 |
| To develop intellectual level | 1458 | 15.60 |
| To keep company | 1168 | 12.50 |
| Other | 375 | 4.01 |

I. Importance of Being Informed of Turkey

| | Number | Percentage |
|--------------------|--------|------------|
| Very important | 221 | 39.4 |
| Quite important | 265 | 47.2 |
| Somewhat important | 51 | 9.1 |
| Not very important | 15 | 2.7 |
| Don't care at all | 9 | 1.6 |
| <hr/> | | |
| Total | 561 | 100.0 |

J. Importance of Being Informed of the World

| | Number | Percentage |
|--------------------|--------|------------|
| Very important | 171 | 30.7 |
| Quite important | 285 | 51.2 |
| Somewhat important | 78 | 14.0 |
| Not very important | 14 | 2.5 |
| Don't care at all | 9 | 1.6 |
| <hr/> | | |
| Total | 557 | 100.0 |

K. Most Preferred News Source

| | Number | Percentage |
|------------|--------|------------|
| Television | 357 | 64.0 |
| Newspaper | 165 | 29.6 |
| Magazines | 19 | 3.4 |
| Radio | 10 | 1.8 |
| Other | 7 | 1.3 |

L. Trust Towards Television News

| | Number | Percentage |
|----------------------|--------|------------|
| Very trustworthy | 23 | 4.1 |
| Quite trustworthy | 100 | 17.8 |
| Somewhat trustworthy | 389 | 69.2 |
| Not trustworthy | 41 | 7.3 |
| Never trustworthy | 9 | 1.6 |
| <hr/> | | |
| Total | 562 | 100.0 |

M. Most preferred five channels for prime time news

a. Channels selected as the first choice

| | Number | Percentage |
|-----------|--------|------------|
| ATV | 270 | 47.4 |
| Channel D | 108 | 19.0 |
| SHOW TV | 85 | 14.9 |
| TRT | 63 | 11.1 |
| STAR TV | 22 | 3.9 |
| TGRT | 7 | 1.2 |
| Other | 14 | 2.5 |
| <hr/> | | |
| Total | 569 | 100.0 |

b. Channels selected as second choice

| | Number | Percentage |
|------------------|--------|------------|
| Channel D | 186 | 36.3 |
| SHOW TV | 128 | 25.0 |
| ATV | 94 | 18.3 |
| STAR TV | 45 | 8.8 |
| TRT | 17 | 3.3 |
| Channel 6 | 12 | 2.3 |
| CINE 5 | 10 | 1.9 |
| Foreign Channels | 6 | 1.2 |
| Other | 15 | 1.9 |
| ----- | | |
| Total | 513 | 100.0 |

c. Channels selected as third choice

| | Number | Percentage |
|------------------|--------|------------|
| SHOW TV | 159 | 31.4 |
| Channel D | 105 | 20.8 |
| STAR TV | 75 | 14.8 |
| ATV | 50 | 9.9 |
| Channel 6 | 41 | 8.1 |
| TRT | 38 | 7.5 |
| TGRT | 14 | 2.8 |
| Foreign Channels | 10 | 2.0 |
| Other | 14 | 2.8 |
| ----- | | |
| Total | 513 | 100.0 |

N. Reasons for Selecting the Above Choices

| | Number | Percentage |
|------------------------------|--------|------------|
| Correct-news-reporting | 277 | 48.43 |
| Reporting news in detail | 248 | 43.36 |
| Objective reporting | 240 | 41.96 |
| Using visual materials | 157 | 27.45 |
| Design of newsroom | 108 | 18.88 |
| Live reports | 187 | 32.69 |
| Appearance of newscasters | 67 | 11.71 |
| Interview segments | 175 | 30.59 |
| Commentaries | 177 | 30.94 |
| Less commercial breaks | 106 | 18.53 |
| Closeness to life philosophy | 100 | 17.48 |
| Short and brief news format | 174 | 30.42 |
| Just out of habit | 30 | 5.24 |
| Other | 35 | 6.12 |

O. Various devices owned

| | Number | Percentage |
|--------------------|--------|------------|
| Music set | 454 | 79.4 |
| Washer | 448 | 78.3 |
| Dishwasher | 359 | 62.8 |
| Video recorder | 320 | 55.9 |
| Computer | 248 | 43.4 |
| Cellular telephone | 208 | 36.4 |
| Video camera | 141 | 24.7 |
| Printer | 132 | 23.1 |

P. Accommodations possessed

a. House

| No. of house | Total Selection | Percentage |
|--------------|-----------------|------------|
| 0 | 101 | 17.7 |
| 1 | 271 | 47.5 |
| 2 | 111 | 19.4 |
| 3 | 47 | 8.2 |
| 4 | 25 | 4.4 |
| 5 | 8 | 1.4 |
| 6 or more | 8 | 1.4 |
| <hr/> | | |
| Total | 571 | 100.0 |

b. Summer house

| No. of house | Total Selection | Percentage |
|--------------|-----------------|------------|
| 0 | 313 | 54.8 |
| 1 | 184 | 32.2 |
| 2 | 58 | 10.2 |
| 3 | 13 | 2.3 |
| 4 or more | 1 | .2 |
| <hr/> | | |
| Total | 571 | 100.0 |

c. Time share

| No. of shares | Total Selection | Percentage |
|---------------|-----------------|------------|
| 0 | 520 | 91.1 |
| 1 | 37 | 6.5 |
| 2 | 12 | 2.1 |
| 3-5 | 1 | .2 |
| <hr/> | | |
| Total | 571 | 100.0 |

R. Number of cars possessed

| Number | Total Selection | Percentage |
|--------|-----------------|------------|
| 0 | 178 | 31.2 |
| 1 | 178 | 31.2 |
| 2 | 136 | 23.8 |
| 3 | 79 | 13.8 |
| <hr/> | | |
| Total | 571 | 100.0 |

S. Living in own house or in rent

| | Total | Percentage |
|-----------|-------|------------|
| Rent | 179 | 31.3 |
| Own house | 392 | 68.7 |
| <hr/> | | |
| Total | 571 | 100.0 |