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Targeting the Delivery of Army Advertisements on Television

Timothy W. Elig

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Manpower and Personnel Policy Research Group
Manpower and Personnel Research Laboratory



U. S. Army

Research Institute for the Behavioral and Social Sciences

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Research Report 1484

Targeting the Delivery of Army Advertisements on Television

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FOREWORD

The U.S. Army uses advertisements to affect the knowledge, attitudes, and behavioral intentions of youth to effectively recruit manpower. Both the message content and the delivery of the message are targeted to recruit soldiers who are most likely to provide effective national defense. This report addresses the targeting of message delivery to priority groups for enlistment through the placement of advertisements on TV.

Data for this report were collected under the Army Communications Objectives Measurement System (ACOMS), which was developed to meet the needs of Army policy makers and operational managers through a cooperative effort with a Special Advisory Group (SAG) of representatives from the staffs of the Office of the Deputy Chief of Staff for Personnel, the U.S. Army Recruiting Command, and the Office of the Chief of the Army Reserve. These offices have also provided the funding for the data collection.

The participation of the U.S. Army Research Institute (ARI) in this cooperative effort is part of an on-going research program designed to enhance the quality of Army personnel. This work is an essential part of the mission of ARI's Manpower and Personnel Policy Research Group (MPPRG) to conduct research to improve the Army's capability to effectively and efficiently recruit its personnel. ACOMS was undertaken at the direction of the Deputy Chief of Staff for Personnel (references: Message 2614317 NOV 84, subject: "Operation Image-Watchdog," and Memorandum for Record, ODCSPER, DAPE-ZXA, 3 Feb 86, subject: Army Communications Objectives Survey (ACOMS)). Results reported here were briefed to the Commander of the U.S. Army Recruiting Command on 12 April 1988.

Differences in the composition of television audiences by priority groupings for Army advertising are quantified in this report. This information can be used to improve the efficiency with which the Army targets advertisements.



EDGAR M. JOHNSON
Technical Director

TARGETING THE DELIVERY OF ARMY ADVERTISEMENTS ON TELEVISION

EXECUTIVE SUMMARY

Requirement:

To efficiently target the delivery of Army advertisements to prime recruiting markets.

Procedure:

As part of 30-minute computer-assisted telephone interviews conducted for the Army Communications Objectives Measurement System (ACOMS) between July and December 1987, half of all respondents were asked a series of questions about media habits. The analyses reported in this paper are based on the responses of 1,847 males, 16- to 21-years old. Comparisons are also made to an overlapping sample of 1,676 males, 18- to 24-years old.

These respondents are subsamples of ACOMS survey respondents. ACOMS respondents were selected and the samples were weighted to the eligible U.S. population defined as 16- to 24-year-old youths who live in the contiguous 48 states; who have no prior military service nor contractual commitment to serve; who are not institutionalized; and who are not graduates of 4-year colleges. Analyses in this paper focus on the male enlisted market as defined by the Youth Attitude Tracking Study II (YATS) (Research Triangle Institution, 1985)—that is, the subset of ACOMS male respondents who have neither completed the second year of college nor taken a college-level ROTC course.

The ACOMS interview collects demographic as well as educational and employment histories. These items are used to construct market groupings based on education and estimates of military entrance Test Score Category (TSC). Education groupings are based on whether or not the respondent has a high school diploma or is a high school student (a Graduate/Senior Male, GSM). An algorithm developed by Orvis and Gahart (1987) is used to calculate for each respondent the probability of scoring at or above the 50th percentile (TSC 1-3A) on the Armed Forces Qualification Test (AFQT). The probability that the respondent would score below the 50th percentile (TSC 3B-5) is, of course, 1 minus the probability of scoring above the cutpoint. These two probabilities are used as weights to estimate totals and proportions for the two groups (TSCs 1-3A and 3B-5). The test used for the association of TSC with an item is the correlation of the item with the probability of being in TSC 1-3A.

Findings:

Syndicated audience data (commonly available only for predetermined age categories) may provide biased estimates of audiences of interest to the Army. Males in the age range reported in syndicated data (18-24) tend to watch less TV than youth in the prime age range of interest to the Army (16-21). Differences are notable for situation comedies, music and music videos, MTV, and Friday Night Videos.

All other analyses were done only for 16- to 21-year-old males.

There are strong racial and ethnic differences in self-reported regular television viewing. Blacks are less likely than whites to watch MTV, David Letterman, and situation comedies. Blacks are more likely than whites to watch Black Entertainment Network, Friday Night Videos, Nashville Network, music or music videos, talk shows, Monday Night Football, college football, sports, and Sunday Night at the Movies. Hispanics are less likely than whites to watch David Letterman and situation comedies; Hispanics are more likely than whites to watch Friday Night Videos, Black Entertainment Network, and music or music videos.

Several TV programs and program types have significantly different proportions of Army prime market groups in their audiences:

- o more TSC 1-3A than TSC 3B-5 watch MTV and David Letterman;
- o more GSM than non-GSM watch Monday Night Football, college football, and WTBS;
- o more TSC 1-3A and GSM watch situation comedies and sports;
- o fewer TSC 1-3A than TSC 3B-5 watch music or music videos, TV movies, and the Nashville Network;
- o fewer GSM than non-GSM watch Black Entertainment Network; and
- o fewer TSC 1-3A and GSM watch Friday Night Videos and Sunday Night at the Movies.

These differences are significant for the full sample and for whites analyzed by themselves. They are in the same direction (often significantly) among blacks and Hispanics. Monday Night Football and college football are also watched regularly by more TSC 1-3A than 3B-5 among whites and Hispanics; however, the trends for these two shows is in the opposite directions among blacks, though not significantly. Other programs (Black Entertainment Network and talk shows) that are associated with TSC in the population but not in individual race/ethnic groups are not considered to be related to TSC.

Utilization of Findings:

Statistically significant differences are shown in the composition of television audiences in terms of priority groupings for Army advertising. For example, the audience for Friday Night Videos contains 13% fewer TSC 1-3A males than would be expected in an audience that does not differ by TSC; this program would seem to be a poor location for Army advertising. Other programs that would seem to be poor locations for Army advertising based on TSC are Nashville Network, Sunday Night at the Movies, music and music videos, and TV movies. In addition, the following shows would seem to be poor locations for Army advertising based on educational attainment: Black Entertainment Network, Friday Night Videos, and Sunday Night at the Movies.

The implications of the information presented in this report have to be weighed in terms of the gross reach of the program to the target age group and the cost per individual exposure. For example, if any one David Letterman show is seen by a relatively small audience in the target age group, it may not be a cost-effective way to reach TSC 1-3A males, compared to another program whose audience contains slightly fewer 1-3As but is much larger overall. Exact calculations are beyond the scope of this paper because they involve cost figures negotiated between ad agencies and television executives. However, the general sizes of the differences suggest that these findings are more likely to contribute to an understanding of which programs to avoid rather than to the selection among programs with generally favorable demographics.

Similarly, the quantification of audiences by race/ethnic groups and the quantification of priority groups within race/ethnic groups can contribute to the selection of programs for the Army's minority recruitment advertising efforts.

TARGETING THE DELIVERY OF ARMY ADVERTISEMENTS ON TELEVISION

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TARGETING THE DELIVERY OF ARMY ADVERTISEMENTS ON TELEVISION

INTRODUCTION

The personnel accessioning system of the U.S. Army is responsible each year for obtaining from the non-prior service youth market over 200,000 volunteers for the enlisted and warrant officer force. In addition, the U.S. Army Reserve Officers' Training Corps (ROTC) Cadet Command is responsible for attracting over 37,000 high quality youth as college freshman at four-year colleges. In order to effectively recruit in the youth market, various components of the Army use advertising to produce changes in the knowledge, attitudes, and behavioral intentions of both youth and such significant influencers as peers and parents.

Both the message content and the delivery of the message are targeted to recruit soldiers who are most likely to provide effective national defense. This report addresses the targeting of message delivery to priority groups for enlistment through the placement of advertisements on TV.

Priority Groups for Army Enlistment

Priority is given to recruiting male, high school diploma graduates who score at or above the 50th percentile on the Armed Forces Qualification Test (AFQT).

Because the largest requirement for military service personnel set by Congress is for males, and because the requirement for males is harder to fill than the smaller requirement for females, the bulk of Army recruiting efforts are directed toward recruiting males.

Priority is given to recruiting those individuals who will have at the time of entry into the Army a regular high school diploma (or if without a diploma, will have obtained at least one semester of college credit through college attendance, 15 semester hours or 20 quarter hours) because they have been found to have much lower attrition rates than do those recruits without these credentials.

The third priority grouping is based on test scores on the Armed Forces Qualification Test (AFQT), that is part of the Armed Services Vocational Aptitude Battery that predicts overall performance and training aptitudes. Priority is given to recruiting those personnel who score in Test Score Categories (TSC) 1-3A, percentiles 50-99 on the AFQT.

Background

Typical advertisers try to sell a product to as many people as possible, in contrast to the Army that needs to attract interest among target groups whose members are likely to qualify to make the "purchase". For the typical advertiser, the only qualification "test" for potential purchasers is that they can afford the product. Military service advertising, like advertising for employment or education services, needs to be targeted to market segments of individuals who can pass educational,

ability, and character tests.

Because there are few advertisers who are interested in this type of targeting, commercial vendors of audience data (e.g., Nielson, Arbitron) do not collect the demographic characteristics needed to segment audiences by Army Enlistment Priority Groups. In addition, the age ranges reported by commercial services do not match the age range (16-21) during which most enlistment decisions are made. The closest age range reported by commercial vendors (18-24), is older and may not always estimate closely the media habits of the age range of interest to the Army.

The Army has supplemented its knowledge of its target markets by surveying its recruits since 1982 (Benedict, 1987; Data Recognition Corporation, 1987). Elig, Weltin, Hertzbach, Johnson and Gade (1985) contains the first thorough investigation of recruit media habits by enlistment priority groupings. This report on 1982-83 data is being updated by Asbury (In Preparation). Recruit media habits have also been reported by Benedict (1988), Elig, Benedict, and Pliske (1986), and Elig, Pliske, Gade, Benedict, Hertzbach, and Knapp (1986). Recruit media habits have also been analyzed on an on-going basis for operational decision making for advertising placement (Brokenburr, personal communication). An example of how such information has been utilized is the increased placement of Army ads in televised college football games based on the finding that TSC 1-3A recruits were more likely to watch such games than were TSC 3B-4 recruits (Elig, Johnson, Gade, & Hertzbach; 1984).

However, such work is limited by being based only on "purchasers"; those who have enlisted, rather than on the entire market. Analyses based only on Army recruits can be expected to be a positive feedback loop because recruits have been influenced by where the Army has been placing ads. Opportunities to reach other segments of the youth market could be missed without an examination of the priority groupings in the entire market.

The only opportunity the Army has to examine the market's media habits by the three characteristics (gender, education, and TSC) that define priority groupings and by the age range of primary interest, is by analyses of the data collected for the Army Communication Objectives Measurement System (ACOMS) (Gaertner & Elig, 1988; Nieva & Elig, 1988).

ACOMS

The ACOMS survey was a continuous data collection effort designed to monitor the Army's advertising program over time and to provide information to increase its effectiveness and efficiency. National probability samples of youth were drawn monthly between October 1986 and December 1987. Respondents were interviewed using computer-assisted telephone interviewing (CATI) technology. The Waksberg Random Digit Dialing (RDD) method was used to locate households with youth who fulfilled ACOMS eligibility criteria. See Nieva and Elig (1988) and Nieva, Rhoads, and Elig (1988) for details on survey methodology.

Media habits reported by respondents in the first three quarters of data collected for ACOMS, October 1986 through June 1987, were analyzed by

Keil, Greenlees, and Gaertner (1988) and Greenlees and Gaertner (1988). In addition, youth media habits were tabulated for the same period for both Army enlisted and officer markets (Rhoads, Elig, McEntire, & Hoke, 1988a, 1988b). However, these analyses are limited in two ways.

These analyses were performed before the algorithm was available to calculate the respondents' predicted Test Score Category (TSC). This algorithm is based on biodata items that are common to the Youth Attitude Tracking Study (RTI, 1985) and to ACOMS. Orvis and Cahart (1987) developed the TSC predictor algorithm to allow analyses of survey data by military market priority groupings.

The second limitation of earlier analyses of ACOMS data is that during the first three quarters of ACOMS data collection, whether the youth reported 'regularly watching TV' was used as a filter question for all other questions on TV media habits. During the last two quarters of ACOMS data collection, the filter was changed to exclude from further questioning only those respondents who reported watching both zero hours of commercial network TV (ABC, NBC, and CBS) and zero hours on commercial cable stations (such as ESPN, MTV, USA, or TBS). Filtering on the basis of not regularly watching TV during the last two quarters of ACOMS would have excluded from the analysis respondents representing 37 percent of 16-to 24-year-old males in the population who watch an average of 9.4 hours of TV per week. Any analysis of the first three quarters of data from ACOMS is excluding a similar portion of the population or is erroneously assuming that all of them are not regular watchers of any of the programs. While individuals who reported not regularly watching TV did report fewer hours per week than regular watchers (M's of 9.4 vs. 20.4 hours), 9 hours per week are too many to ignore.

METHOD

Sample

As part of 30-minute computer-assisted telephone interviews conducted for the Army Communications Objectives Measurement System (ACOMS) between July and December 1987, half of all respondents were asked a series of questions about media habits (see Appendix A). The analyses reported in this paper are based on responses of 1,847, 16- to 21-year-old males. Comparisons are also made to an overlapping sample of 1,676, 18- to 24-year-old males (See Figure 1).

These respondents are sub-samples of the entire ACOMS survey respondents. ACOMS respondents were selected and the samples were weighted to the eligible U.S. population defined as 16- to 24-year old youths who live in the contiguous 48 states; who have no prior military service nor contractual commitment to serve; who are not institutionalized; and who are not graduates of 4-year colleges. Analyses in this paper focus on the male enlisted market as defined by the Youth Attitude Tracking Study II (YATS) (Research Triangle Institute, 1985). That is, the subset of ACOMS male respondents who have not completed the second year of college, nor have taken a college-level ROTC course.

Analyses

The ACOMS interview collects demographic as well as educational and employment histories. These items are used to construct market groupings including education and an estimate of military entrance Test Score Category (TSC). Education groupings are based on whether or not the respondent has a high school diploma or is a high school student (a Graduate/Senior Male, GSM). An algorithm developed by Orvis and Gahart (1987) is used to calculate for each respondent the probability that the respondent would score at or above the 50th percentile (TSC 1-3A) on the Armed Forces Qualification Test (AFQT). The probability that the respondent would score below the 50th percentile (TSC 3B-5) is of course 1 minus the probability of scoring above the cutpoint. These two probabilities are used as weights to estimate totals and proportions for the two groups, TSCs 1-3A and 3B-5. The test used for association of TSC with an item is the correlation of the item with the probability of being in TSC 1-3A.

Because of the strong association of educational attainment and TSC with race/ethnic groups and of race/ethnic groups with media habits, the association of educational attainment and TSC with media habits are tested both in the total population and within race/ethnic groups (see Elig, et al; 1985). Educational attainment and TSC can be said to be related to media habits directly, rather than just as the result of a third variable (race/ethnic group), only if the association found in the full population is also found within the race/ethnic groups.

Respondents who reported watching zero hours of TV per week on both commercial networks and cable stations were not asked any of the questions about programs or program types. See Appendix A for the media habits

MEDIA HABITS DATA SOURCE

- **INTERVIEWS CONDUCTED JUL-DEC 87 BY TELEPHONE (ACOMS)**
 - 48 CONTIGOUS STATES
 - NON-INSTITUTIONALIZED
 - NPS
- **MEDIA QUESTIONS ASKED OF RANDOM HALF OF SAMPLE**
- **ANALYSES LIMITED POPULATION AS YATS**
 - HAVE NOT COMPLETED 2 YEARS OF COLLEGE
 - HAVE NOT TAKEN AN ROTC COURSE IN COLLEGE
- **ANALYSES LIMITED TO MALES**
- **RESPONDENTS WHO REPORT 0 HOURS OF TV WATCHING ARE COUNTED AS ANSWERING "NO" TO REGULARLY WATCHING ALL PROGRAMS**

Figure 1. Media habits data source.

items in the ACCMS interview. For analyses reported in this paper, these respondents were imputed to have said no to regularly watching each of the programs and program types. Because of this imputation and because the respondents are weighted to the full population, percentages reported in this paper are estimates of the population.

Because the data are weighted to account for unequal sampling rates and non-response, usual statistical tests based on simple random samples are inappropriate. Significance tests reported in this paper take into account the design effects that resulted from weighting. Because weighting adds variance to estimates, the variance of estimates from complex samples and/or from samples that are weighted for non-response are larger than would be obtained from simple random samples. The design effect is an expression of how much larger the variance is. Dividing the sample size of a complex and/or weighted data set by the design effect can give an estimate of the power of statistical tests in terms of the power from a simple random sample.

The design effect for the sample of 1,676 18- to 24-year old males who were asked the media habits questions from July through December is 1.435985. Dividing the sample by the design effect indicates that this sample has as much power as would a simple random sample of 1,167. The loss in power of sample size is a trade-off for oversampling Hispanic males and weighting to dampen bias from non-response. Table 1 shows the sample sizes and design effects by race/ethnic groups for the main sample

Table 1

Sample Sizes by Educational Attainment and Race/Ethnic Group

Not Hispanic				
	Full sample	White	Black	Hispanic
Design Effect	1.44	1.38	1.40	1.63
Total males				
n	1847	1421	186	194
Effective n	1296	1030	132	119
Grad/senior males (GSM)				
n	1617	1256	158	158
Effective n	1135	873	105	92
Non-grad/senior males (NGSM)				
n	230	165	28	36
Effective n	161	157	20	27

of interest in this report: 16- to 21-year-old males who have not completed two years of college nor have taken an ROTC course in college. This sample is equivalent to the younger male sample in YATS (RTI, 1985).

As can be seen in Table 1, the effective sample size is sufficient for fairly good estimates of viewing habits within each of the education by race/ethnic groups, even though the estimates for NGSM Blacks and Hispanics will have large confidence intervals. The power to detect differences within Blacks or Hispanics is considerably lower than within Whites or in the full sample; differences must be quite large in the smaller race/ethnic groups in order to be detected by significance test.

Because TSC is estimated from all respondents, the samples for both TSC groups (1-3A and 3B-5) and for the correlations is the same as for Total males in Table 1.

RESULTS

Media habits of 18- to 24-year-old males are compared with media habits of 16- to 21-year-old YATS-eligible males in Figures 2, 3, and 4. Males in the age range reported in syndicated data, 18-24, tend to watch less TV than do youth in the prime age range of interest to the Army, 16-21. Differences are notable for situation comedies, music and music videos, MTV, and Friday Night Videos.

Syndicated audience data (that is commonly available only for pre-determined age categories) may provide biased estimates of audiences of interest to the Army. For this reason, all other analyses are done only among 16- to 21-year-old males.

Race/ethnic Differences

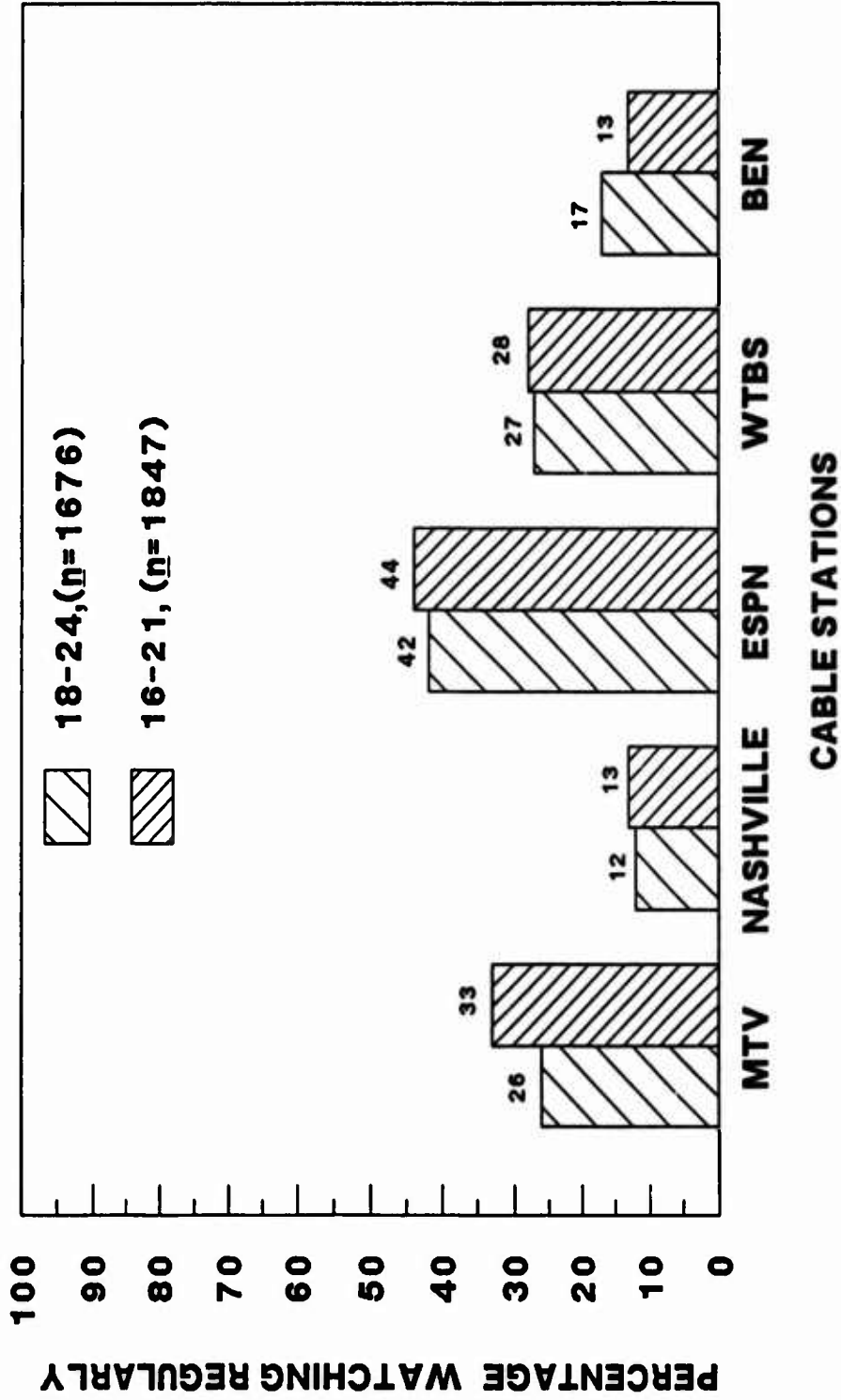
Three mutually exclusive groups were constructed for the investigation of race/ethnic differences. Self-identified Hispanics form a group regardless of how they identified themselves on the separate race question. The White and Black groups are respectively non-Hispanic Whites and non-Hispanic Blacks. The 46 individuals who did not identify themselves as White, Black, or Hispanic are excluded from these analyses.

Media habits that differ significantly by race/ethnicity are shown in Figures 5, 6, and 7. There are strong differences among race/ethnic groups in self-reported regular television viewing for MTV ($X^2(2, n = 1265) = 14.3, p < .001$), Nashville Network ($X^2(2, n = 1265) = 7.1, p < .05$), Black Entertainment Network ($X^2(2, n = 1265) = 251.5, p < .0001$), sports ($X^2(2, n = 1265) = 5.9, p < .05$), music or music videos ($X^2(2, n = 1265) = 26.6, p < .0001$), situation comedies ($X^2(2, n = 1265) = 9.0, p < .01$), talk shows ($X^2(2, n = 1265) = 26.6, p < .0001$), David Letterman ($X^2(2, n = 1265) = 12.1, p < .01$), Friday Night Videos ($X^2(2, n = 1265) = 87.2, p < .0001$), Monday Night Football ($X^2(2, n = 1265) = 20.4, p < .0001$), college football ($X^2(2, n = 1265) = 12.9, p < .01$), and Sunday Night at the Movies ($X^2(2, n = 1265) = 30.3, p < .0001$).

Blacks are less likely than Whites to watch MTV ($X^2(1, n = 1146) = 13.2, p < .0001$), David Letterman ($X^2(1, n = 1146) = 6.8, p < .01$), and situation comedies ($X^2(2, n = 1146) = 3.9, p < .05$). Blacks are more likely than Whites to watch: Black Entertainment Network ($X^2(1, n = 1146) = 252.1, p < .0001$), Friday Night Videos ($X^2(1, n = 1146) = 85.2, p < .0001$), Nashville Network ($X^2(1, n = 1146) = 5.9, p < .05$), music or music videos ($X^2(1, n = 1146) = 24.9, p < .0001$), talk shows ($X^2(1, n = 1146) = 26.6, p < .0001$), Monday Night Football ($X^2(1, n = 1146) = 20.4, p < .0001$), college football ($X^2(1, n = 1146) = 10.4, p < .001$), sports ($X^2(2, n = 1146) = 4.1, p < .05$), and Sunday Night at the Movies ($X^2(1, n = 1146) = 30.3, p < .0001$).

Hispanics are less likely than Whites to watch David Letterman ($X^2(1, n = 1147) = 7.0, p < .01$) and situation comedies ($X^2(2, n = 1147) = 6.8, p < .01$). Hispanics are more likely than Whites to watch Friday Night Videos ($X^2(1, n = 1147) = 12.5, p < .0001$), Black Entertainment Network ($X^2(2, n = 1147) = 7.7, p < .01$), and music or music videos ($X^2(1, n = 1147) = 3.8, p < .05$).

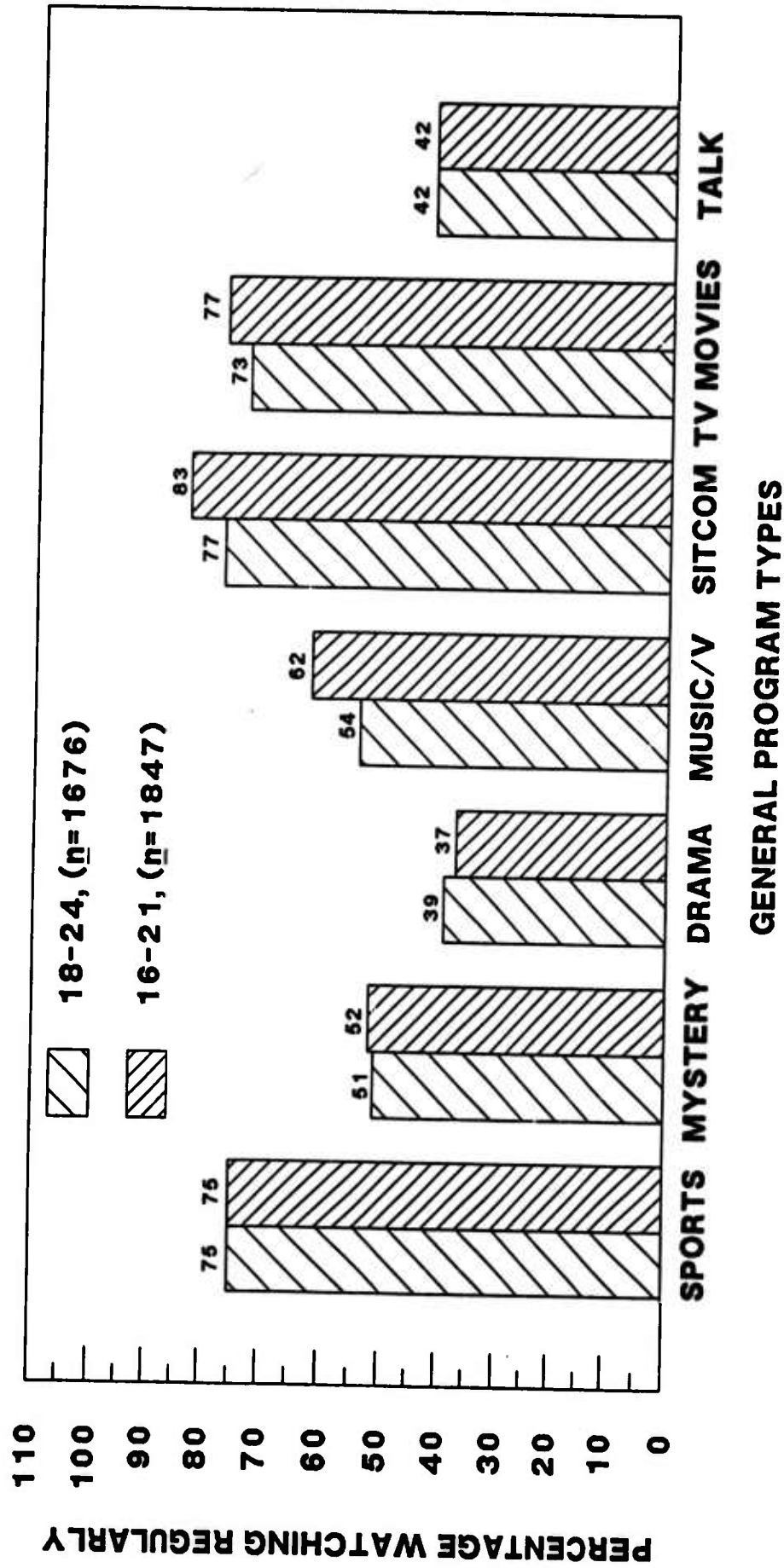
% REGULAR VIEWERS DIFFERS BY AGE RANGE FOR MTV



Notes. ACOMS Data, July - December 1987.

Figure 2. Percentage of males regularly watching five cable stations by age categories.

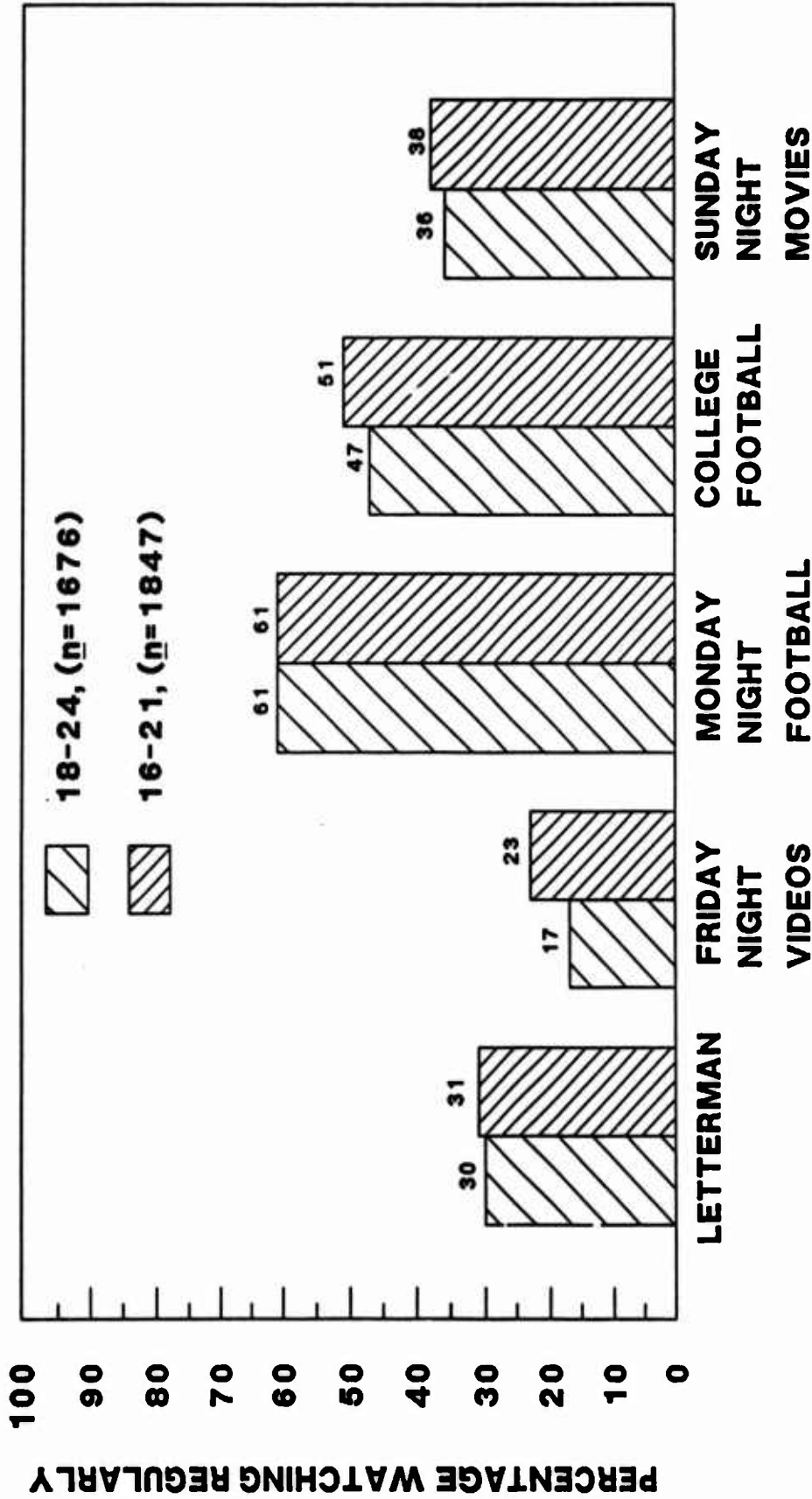
% Regular Viewers Differ by Age Range for Sitcoms and Music/Music Videos



Note. ACOMS Data, July-December 1987.

Figure 3. Percentage of males watching seven general program types by age categories.

% REGULAR VIEWERS DIFFERS BY AGE RANGE FOR FRIDAY NIGHT VIDEOS

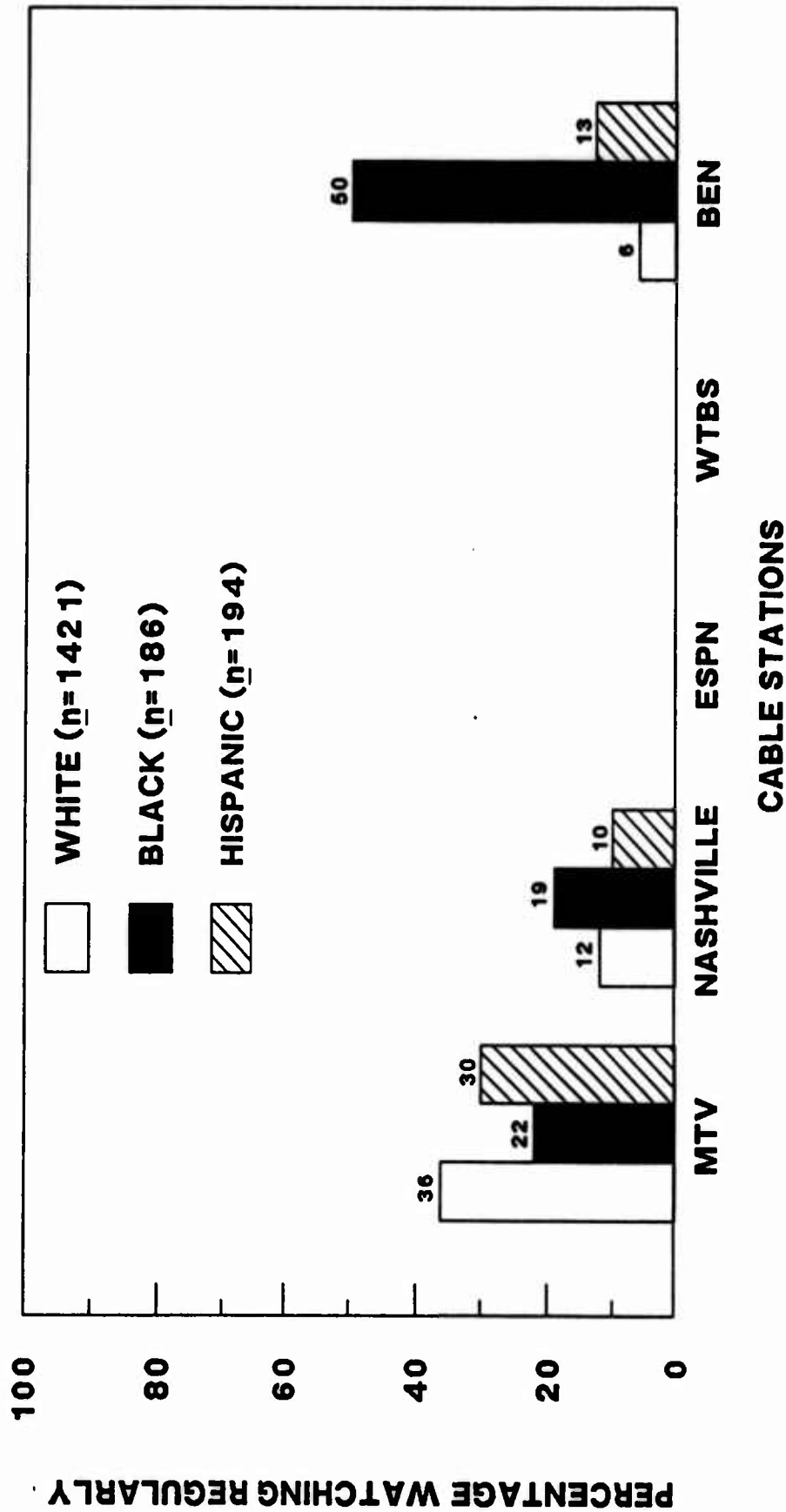


SPECIFIC PROGRAMS AND TYPES

Note. ACOMS Data, July-December 1987.

Figure 4. Percentage of males regularly watching five specific programs and types by age categories.

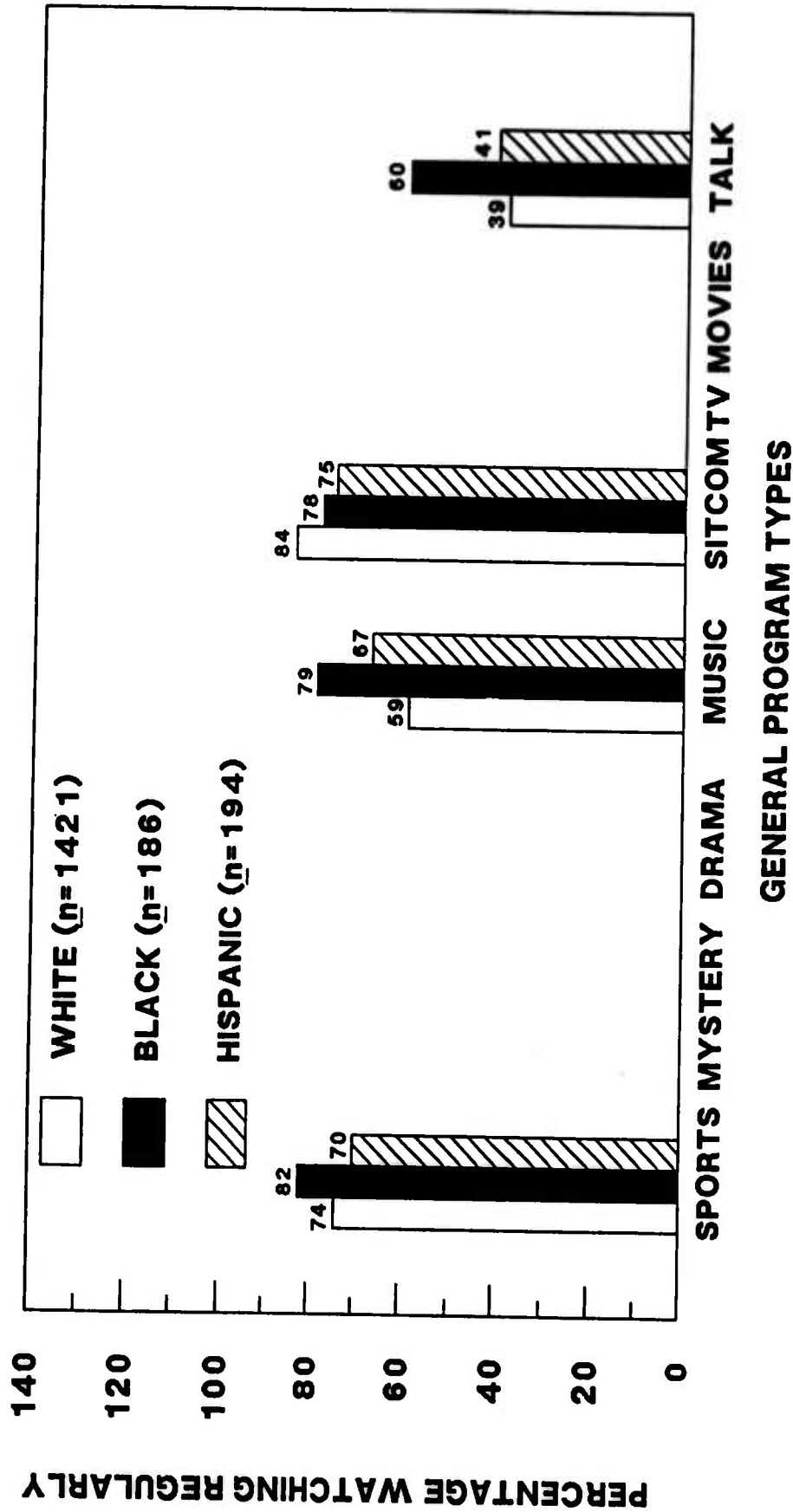
CABLE STATION VIEWING THAT DIFFERS BY RACE/ETHNICITY



Note. ACOMS Data, July-December 1987.

Figure 5. Percentage of YATS-eligible young (16-21) males regularly watching cable stations that differ by race/ethnicity.

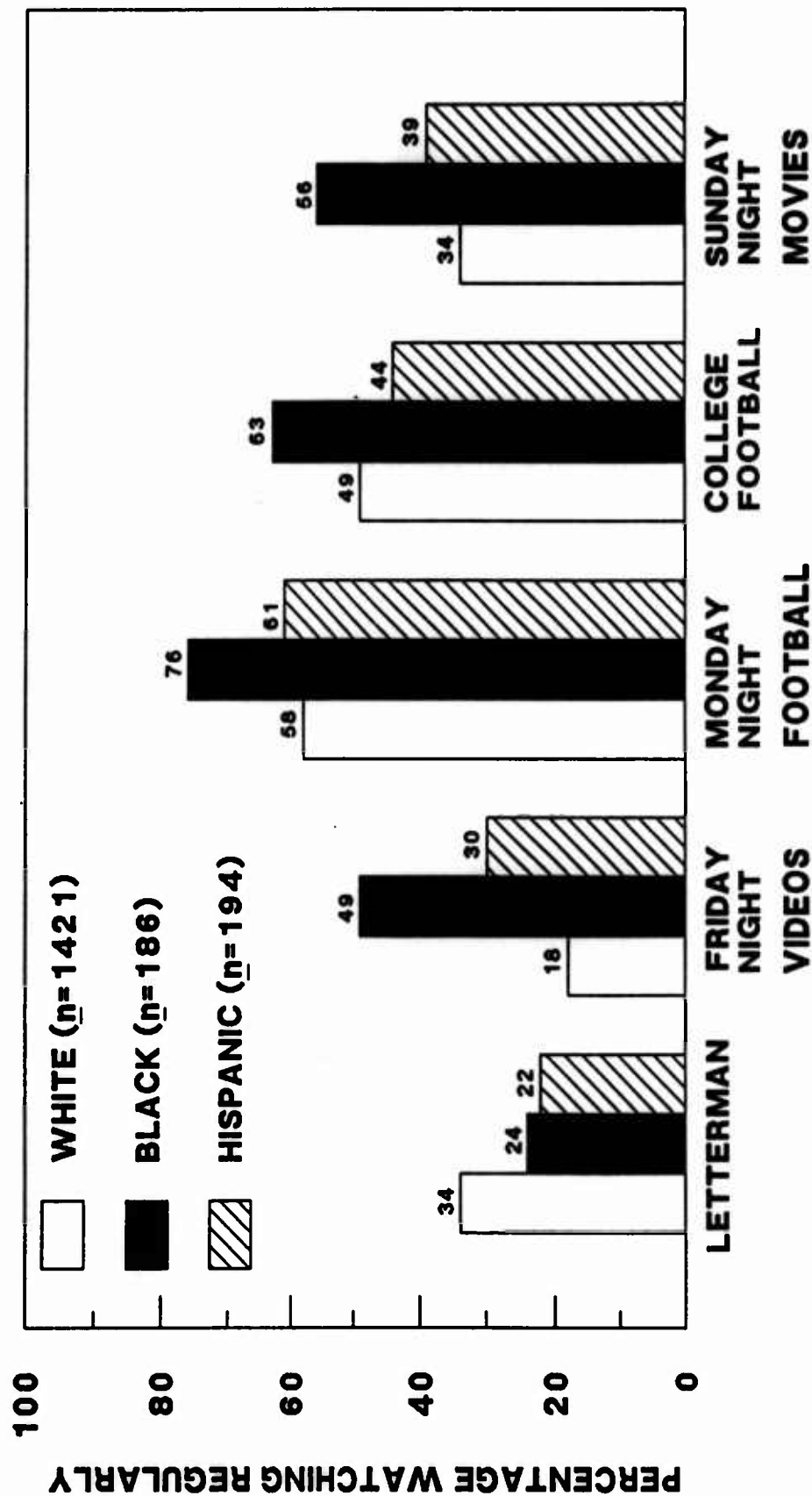
GENERAL PROGRAM TYPE VIEWING THAT DIFFERS BY RACE/ETHNICITY



Note. ACOMS Data, July-December 1987.

Figure 6. Percentage of YATS-eligible young (16-21) males regularly watching general program types that differ by race/ethnicity.

SPECIFIC PROGRAM/TYPE VIEWING THAT DIFFERS BY RACE/ETHNICITY



SPECIFIC PROGRAMS AND TYPES

Note. ACOMS Data, July-December 1987.

Figure 7. Percentage of YATS-eligible young (16-21) males regularly watching specific programs and types that differ by race/ethnicity.

Priority Categorizations

The association of television viewing habits with educational attainment and TSC are shown in Tables 2 and 3, respectively. The overlap of Grad/seniors and TSC 1-3A to form the highest priority group for Army recruiting, Grad/senior 1-3A males, is not tabled because the estimates never differ by more than one percent from the estimate for TSC 1-3A.

Several TV programs and program types have significantly different proportions of Army prime market groups in their audiences:

- (a) more TSC 1-3A than TSC 3B-5 watch MTV and David Letterman;
- (b) more GSM than non-GSM watch Monday Night Football, college football, and WTBS;
- (c) more TSC 1-3A and GSM watch Situation comedies and sports;
- (d) fewer TSC 1-3A than TSC 3B-5 watch Music or music videos, TV movies, and the Nashville Network;
- (e) fewer GSM than non-GSM watch Black Entertainment Network; and
- (f) fewer TSC 1-3A and GSM watch Friday Night Videos and Sunday Night at the Movies.

These differences are significant for the full sample and for Whites analyzed by themselves. They are in the same direction (often significantly) among Blacks and Hispanics. Monday Night Football and college football are also watched regularly by more TSC 1-3A than 3B-4 among Whites and Hispanics; however, the non-significant trend for these two shows is in the opposite direction among Blacks. Other programs (Black Entertainment Network and talk shows) that were associated with TSC in the population but not in the race/ethnic groups are not considered to be related to TSC.

Tables 2 and 3 show the rates of regularly watching TV programs and program types. However, the implications of these rates are more clearly shown in Figures 8 and 9. Figure 8 shows the difference in the percentage of watchers who are grads/seniors from the 84 percent of the population who are grads/seniors. The program with the lowest percentage of grad/seniors in the audience is Black Entertainment Network at 75 percent; the programs with the largest percentage of grad/seniors in the audience are WTBS and college football at 88 percent. Figure 9 shows the difference in the percentage of watchers who are TSC 1-3A from the 53 percent of the population who are TSC 1-3A. The program with the lowest percentage of TSC 1-3A in the audience is Friday Night Videos at 40 percent; the program with the largest percentage of TSC 1-3A in the audience is David Letterman at 59 percent. Note that Figures 8 and 9 show only programs that are considered to be related to educational attainment and TSC, respectively, over and above any relationship of the program with race/ethnicity. Note that the largest differences from the population are in lower quality, rather than in higher quality.

Table 2

Percentage Regularly Watching TV as a Function of Education by Race/Ethnic Group

Program	FULL SAMPLE			NON-HISPANIC WHITE			NON-HISPANIC BLACK			HISPANIC		
	GSM	NGSM	$\chi^2(1)$	GSM	NGSM	$\chi^2(1)$	GSM	NGSM	$\chi^2(1)$	GSM	NGSM	$\chi^2(1)$
MTV	34	29	2.4	36	35	0.2	24	13	1.6	33	18	2.3
NASHVILLE NETWORK	13	14	0.1	12	13	0.0	18	23	0.4	11	8	0.2
ESPN	45	42	0.5	45	42	0.4	50	45	0.2	41	40	0.0
WTBS	29	21	6.2*	28	20	4.5*	34	29	0.2	29	14	2.4
BLACK ENTERTAINMENT NETWORK	11	20	11.8***	5	10	5.4*	46	63	2.3	12	16	0.4
SPORTS	77	66	10.9***	76	65	8.5**	83	77	0.5	74	57	2.8
SUSPENSE OR MYSTERY	52	56	1.0	53	57	1.0	49	48	0.0	49	58	0.7
GENERAL DRAMA	37	39	0.2	36	38	0.2	41	37	0.2	36	44	0.6
MUSIC OR MUSIC VIDEO	61	68	3.4	57	66	4.1*	80	72	0.8	66	72	0.3
SITUATION COMEDY	84	75	9.4**	85	81	1.6	84	57	9.4**	78	68	1.1
TV MOVIES	77	75	0.4	77	75	0.1	83	70	2.3	72	77	0.3
TALK SHOWS	41	46	1.8	38	44	2.4	59	61	0.0	42	38	0.2
DAVID LETTERMAN	32	26	2.7	35	28	2.6	23	27	0.2	24	15	1.1
FRIDAY NIGHT VIDEOS	22	31	8.2**	17	21	1.6	47	60	1.6	26	46	3.7*
MONDAY NIGHT FOOTBALL	63	48	17.3***	61	43	16.7***	78	71	0.5	67	43	4.7*
COLLEGE FOOTBALL	53	38	16.1***	52	36	13.8***	65	52	1.7	48	30	2.6
SUNDAY NIGHT AT THE MOVIES	36	49	13.2***	33	43	6.5**	52	72	3.6*	36	51	1.9

NOTE. ACSMS (July-December 1987), VATS-eligible younger (16-21) males. Sample sizes for the chi-square tests and percentages of GSM and NGSM are listed in Table 1 as Effective n for Total males, GSM, and NGSM, respectively.

* $p < .05$ ** $p < .01$ *** $p < .001$ **** $p < .0001$

Table 3

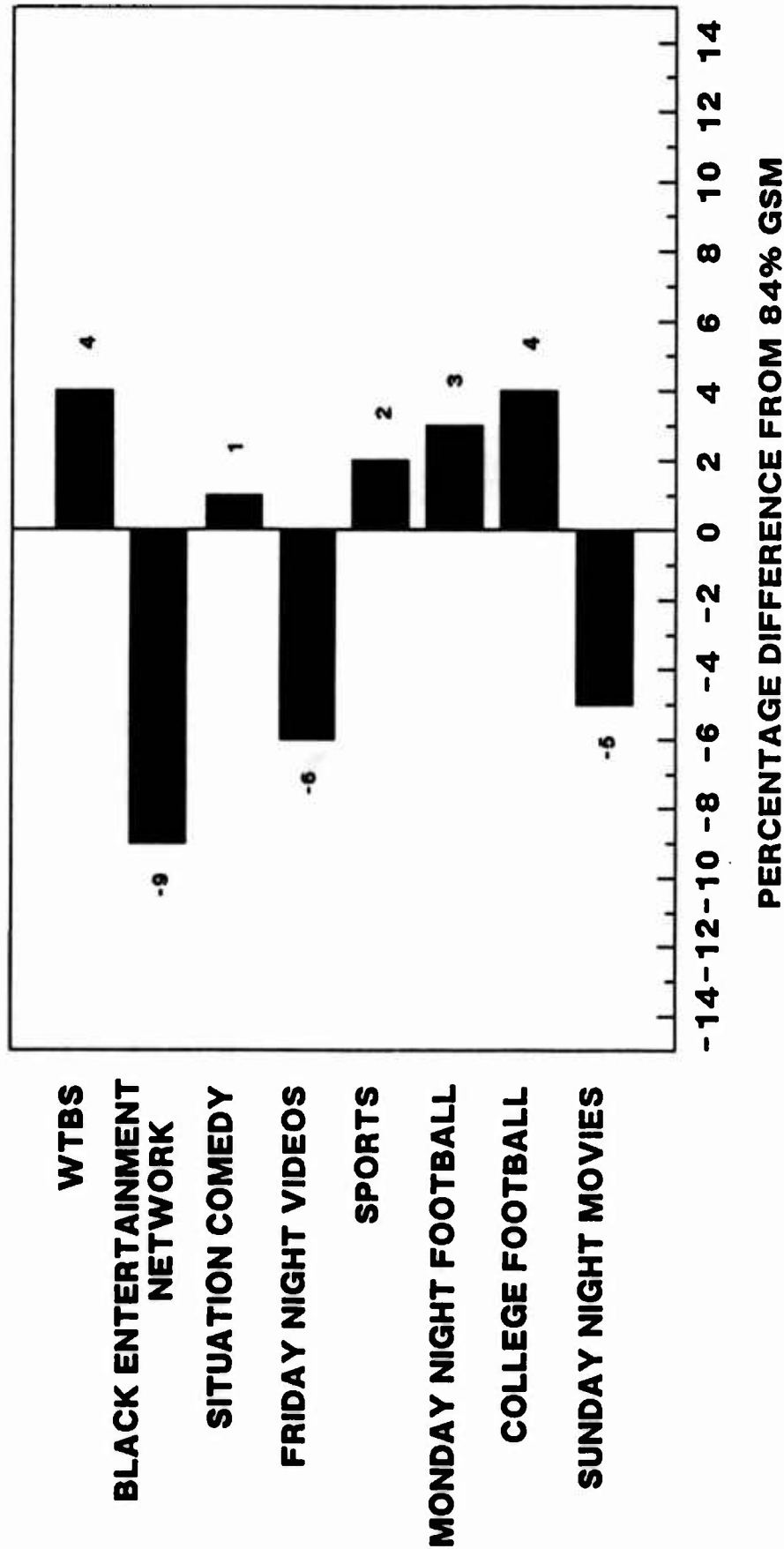
Percentage Regularly Watching TV as a Function of Predicted Test Score Category (TSC) by Race/Ethnic Group

Program	FULL SAMPLE			NON-HISPANIC WHITE			NON-HISPANIC BLACK			HISPANIC		
	1-3A	3B-5	r	1-3A	3B-5	r	1-3A	3B-5	r	1-3A	3B-5	r
MTV	36	31	.08**	37	36	.01	26	21	.10	35	27	.16*
NASHVILLE NETWORK	11	15	-.10**	12	14	-.07*	13	20	-.16*	9	10	-.04
ESPN	45	43	.03	45	42	.06	48	49	-.01	42	40	.05
WTBS	28	27	.03	28	25	.05	38	32	.11	26	25	.04
BLACK ENTERTAINMENT NETWORK	8	18	-.26****	6	7	-.04	48	50	-.05	11	13	-.05
SPORTS	76	74	.05	76	72	.04**	81	82	-.00	77	67	.21*
SUSPENSE OR MYSTERY	53	52	.02	53	54	-.01	54	47	.13	52	50	.03
GENERAL DRAMA	37	34	-.00	36	37	-.01	45	39	.11	42	36	.13
MUSIC OR MUSIC VIDEO	58	66	-.14****	57	61	-.08**	73	80	-.14**	69	67	.06
SITUATION COMEDY	85	80	.10**	85	83	.05	85	77	.17**	78	74	.09
TV MOVIES	74	79	-.10***	74	80	-.12***	80	80	-.02	73	73	.00
TALK SHOWS	40	45	-.08**	38	40	-.03	66	58	.14	41	41	-.01
DAVID LETTERMAN	34	27	.14****	36	30	.12****	25	23	.03	25	21	.09
FRIDAY NIGHT VIDEOS	18	30	-.26****	16	21	-.14****	38	52	-.24**	28	31	-.07
MONDAY NIGHT FOOTBALL	61	61	.01	60	55	.11***	71	78	-.14	68	58	.19*
COLLEGE FOOTBALL	52	49	.05	52	46	.12***	58	64	-.10	50	41	.18*
SUNDAY NIGHT AT THE MOVIES	33	43	-.17****	32	38	.12***	54	57	.04	33	42	-.16*

NOTE. ACOMS (July-December 1987), YATS-eligible younger males. Correlations are between probability of being TSC 1-3A and Regularly Watching. Sample sizes for the correlations and for percentages of 1-3A and 3B-5 are listed in Table 1 as Effective n for Total males.

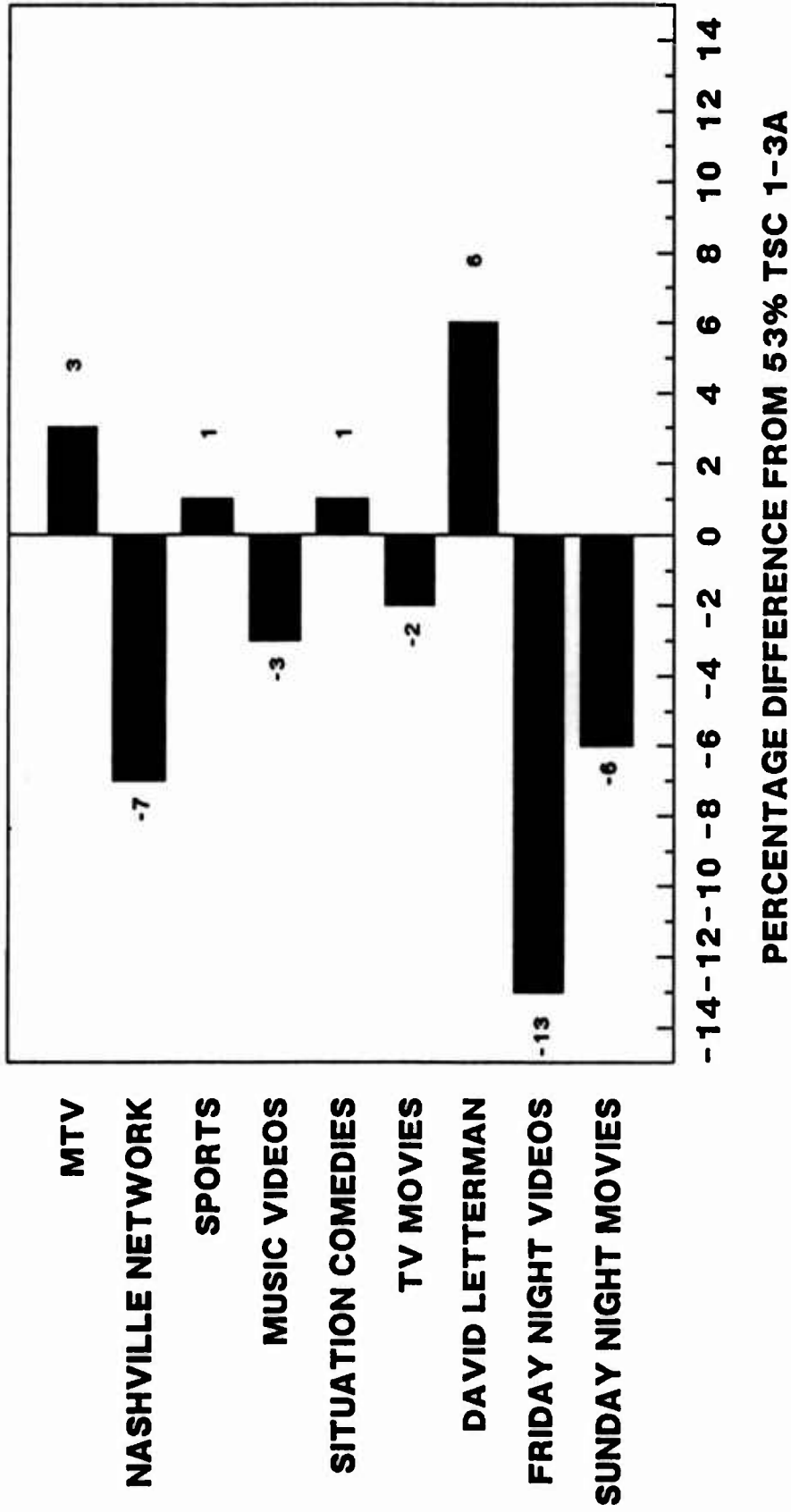
*p < .05 **p < .01 ***p < .001 ****p < .0001

DIFFERENCES IN TV AUDIENCES BY EDUCATIONAL ATTAINMENT



Note. ACOMS data, July-December 1987. YATS-eligible young (16-21) males (n=1847).
Figure 8. Percentage difference from 84% GSM in TV audiences.

DIFFERENCES IN TV AUDIENCES BY TEST SCORE CATEGORY (TSC)



Note. ACOMS data, July-December 1987. YATS-eligible young (16-21) males (n=1847).

Figure 9. Percentage difference from 53% TSC 1-3A in TV audiences.

DISCUSSION

Statistically significant differences are shown in the composition of TV audiences in terms of priority groupings for Army advertising. Many of these differences are consistent within race/ethnic groups and thus do not result just from differential TV viewing by race/ethnicity. Differences in audience shares by the priority groupings are quantified and for some shows are quite large. For example, the audience for Friday Night Videos contains 13 percent fewer TSC 1-3A males than would be expected in an audience that does not differ by TSC; this program would seem to be a poor location for Army advertising. Other programs that would seem to be poor locations for Army advertising based on TSC are: Nashville Network, Sunday Night at the Movies, Music and music videos, and TV movies. In addition, the following shows would seem to be poor locations for Army advertising based on educational attainment: Black Entertainment Network, Friday Night Videos, and Sunday Night at the Movies.

The implications of the information presented in this report have to be weighed in terms of the gross reach of the program to the target age group and the cost per individual exposure. For example, if any one David Letterman show is seen by a relatively small audience in the target age group, it may not be a cost effective way to reach TSC 1-3A males, compared to another program whose audience contains slightly fewer 1-3As but is much larger overall. Exact calculations are beyond the scope of this paper because they involve cost figures that are negotiated between ad agencies and television executives. However, the general sizes of the differences in Figures 8 and 9 suggest that these findings are more likely to contribute to an understanding of which programs to avoid rather than to the selection among programs with generally favorable demographics.

Similarly, the quantification of audiences by race/ethnic groups and the quantification of priority groups within race/ethnic groups can contribute to the selection of programs for the Army's minority recruitment advertising efforts.

Caution should be exercised in applying self-reports of regularly watched program types, rather than specific programs. Although the sports category moved in the same direction as Monday Night Football and college football, music or music videos showed significant differences by TSC in the opposite direction from MTV. Also note that David Letterman has a distinctly different audience from talk shows.

Preferences in television are changeable as are the content of the programs themselves. Analyses reported here may have a limited shelf-life; they need to be updated in the future as television shows and audiences change. For example, the data collection period covered the period of the NFL strike during the Fall of 1987; this event may well have affected how many and what types of respondents said they regularly watched Monday Night Football.

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APPENDIX A

ACOMS ANNOTATED QUESTIONNAIRE

SUMMER 87 (Jul, Aug, Sep 87)

Module: Media Habits

Quarterly Updates indicated by sidebar.

ACOMS Annotated Questionnaire
Quarter 87-4 (Jul, Aug, & Sep 87)
Module: Media Habits

Screen Name: MH-1
Variables: Ranges: Order #:
YTVWATCH 1,2,-7,-8 290
Sub-Population: Approximately half of youth given the main
interview
[RANDROY EQ 2,4,6]

Screen Name: MH-2 Change code:
Variables: Ranges: Order #: (87-4) S
YTVHRREG 0-168,-7,-8 291
YTVHRCAB 0-168,-7,-8 292
Sub-Population: Approximately half of youth given the main
interview
[RANDROY EQ 2,4,6]

Screen Name: MH-11
Variables: Ranges: Order #:
YTV CAB1 1,2,-7,-8 295
YTV CAB2 1,2,-7,-8 296
YTV CAB3 1,2,-7,-8 297
YTV CAB4 1,2,-7,-8 298
YTV CAB5 1,2,-7,-8 299
Sub-Population: Youth who watch cable TV regularly
[YTVHRCAB (MH-2) GT 0] OR
[YTVHRCAB EQ -7,-8]

ACOMS Annotated Questionnaire
Quarter 87-4 (Jul, Aug, & Sep 87)
Module: Media Habits

MH-1. I'd like to ask a few questions about your TV, radio and reading habits.

Do you regularly watch TV?

- YES 1 (MH-2)
- NO 2 (MH-2)
- REFUSED -7 (MH-2)
- DON'T KNOW -8 (MH-2)

MH-2. How many hours per week do you spend watching...

a. programs on commercial networks, _____
 such as ABC, CBS, or NBC?

b. programs on commercial cable stations _____
 such as ESPN, MTV, USA, or TBS?

 | CATI CHECK #MH1: IS CABLE OR SUBSCRIPTION TV WATCHED? |
 | [MH-2a > 0 OR MH-2a = -7,-8] |
 |
 | YES 1 (MH-11) |
NO 2 (MH-12)

MH-11. Do you watch any of the following Cable or Subscription TV channels regularly?

	YES	NO	REF	DK
MTV [Rock Videos]?	1	2	-7	-8
Nashville Network [TNN]?	1	2	-7	-8
ESPN [Sports]?	1	2	-7	-8
WTBS [Syndicated]?	1	2	-7	-8
Black Entertainment TV [BET]? ..	1	2	-7	-8

 | CATI CHECK #MH2: IS TV WATCHED REGULARLY? |
 | [MH-2a > 0 OR MH-2a = -7,-8 OR |
 | MH-2b > 0 OR MH-2b = -7,-8] |
 |
 | YES 1 (MH-12) |
NO 2 (MH-14)

ACOMS Annotated Questionnaire
Quarter 87-4 (Jul, Aug, & Sep 87)
Module: Media Habits

Screen Name: MH-12

Variables:	Ranges:	Order #:
YTVSPORT	1,2,-7,-8	300
YTMYS	1,2,-7,-8	301
YTVDRAMA	1,2,-7,-8	302
YTMUSIC	1,2,-7,-8	303
YTVCOMDY	1,2,-7,-8	304
YTMOVIE	1,2,-7,-8	305
YTVTALK	1,2,-7,-8	306

Sub-Population: Youth who watch TV regularly
 [YTVHRREG (MH-2) GT 0] OR [YTVHRREG EQ -7,-8] OR
 [YTVHRCAB (MH-2) GT 0] OR [YTVHRCAB EQ -7,-8]

Screen Name: MH-13

Variables:	Ranges:	Order #:
YTVSH1	1,2,-7,-8	307
YTVSH2	1,2,-7,-8	308
YTVSH3	1,2,-7,-8	309
YTVSH4	1,2,-7,-8	310
YTVSH5	1,2,-7,-8	311

Sub-Population: Youth who watch TV regularly
 [YTVHRREG (MH-2) GT 0] OR [YTVHRREG EQ -7,-8] OR
 [YTVHRCAB (MH-2) GT 0] OR [YTVHRCAB EQ -7,-8]

Screen Name: MH-14

Variables:	Ranges:	Order #:
YVCRHAVE	1,2,-7,-8	312

Sub-Population: Youth asked the media habits questions
 [RANDROY EQ 2,4,6]

Screen Name: MH-15

Variables:	Ranges:	Order #:
YVCRHOUR		313

Sub-Population: Youth who have a VCR
 [YVCRHAVE (MH-14) EQ 1]

ACOMS Annotated Questionnaire
 Quarter 87-4 (Jul, Aug, & Sep 87)
 Module: Media Habits

MH-12. Do you frequently watch any of the following types of TV shows?

	YES	NO	REF	DK
Sports?	1	2	-7	-8
Suspense or mystery? ...	1	2	-7	-8
General drama?	1	2	-7	-8
Music or music video? ..	1	2	-7	-8
Situation comedy?	1	2	-7	-8
TV movies?	1	2	-7	-8
Talk shows?	1	2	-7	-8

MH-13. Please tell me if you watch any of the following TV shows regularly. Do you watch...

	YES	NO	REF	DK
David Letterman?	1	2	-7	-8
Friday Night Videos?	1	2	-7	-8
Monday Night Football?	1	2	-7	-8
College Football?	1	2	-7	-8
Sunday Night at the Movies? ..	1	2	-7	-8

MH-14. Does your household have a Video Cassette Recorder [VCR]?

YES	1	(MH-15)
NO	2	(MH-16)
REFUSED	-7	(MH-16)
DON'T KNOW	-8	(MH-16)

MH-15. How many hours per week do you usually spend watching your VCR?

HOURS _____

ACOMS Annotated Questionnaire
Quarter 87-4 (Jul, Aug, & Sep 87)
Module: Media Habits

Screen Name: MH-16
Variables: Ranges: Order #:
YRADLIS 1,2,-7,-8 314
Sub-Population: Youth asked the media habits questions
[RANDROY EQ 2,4,6]

Screen Name: MH-17 Change Code:
Variables: Ranges: Order #: (87-4) S
YRADHRAM 0-168,-7,-8 315
YRADHRFM 0-168,-7,-8 316
Sub-Population: Youth asked the media habits questions
[RANDROY EQ 2,4,6]

Screen Name: MH-26
Variables: Ranges: Order #:
YRADNEWS 1,2,-7,-8 319
YRADCLAS 1,2,-7,-8 320
YRADPOP 1,2,-7,-8 321
YRADCW 1,2,-7,-8 322
YRADSPOR 1,2,-7,-8 323
YRADTALK 1,2,-7,-8 324
YRADROCK 1,2,-7,-8 325
YRADEASY 1,2,-7,-8 326
Sub-Population: Youth who regularly listen to the radio
[YRADHRAM (MH-17) GT 0] OR [YRADHRAM EQ -7,-8] OR
[YRADHRFM (MH-17) GT 0] OR [YRADHRFM EQ -7,-8]

ACOMS Annotated Questionnaire
Quarter 87-4 (Jul, Aug, & Sep 87)
Module: Media Habits

MH-16. Now let's talk about radio listening. Do you regularly listen to the radio?

- YES 1 (MH-17)
- NO 2 (MH-17)
- REFUSED -7 (MH-17)
- DON'T KNOW -8 (MH-17)

MH-17. How many hours per week do you listen to ...

- a. AM Radio? _____
- b. FM Radio? _____

CATI CHECK #MH3: IS RADIO LISTENED TO REGULARLY?
 [MH-17a > 0 OR MH-17a = -7,-8 OR
 MH-17b > 0 OR MH-17b = -7,-8

YES 1 (MH-26)
 NO 2 (MH-28)

MH-26. Do you frequently listen to any of the following types of radio programs?

	YES	NO	REF	DK
News?	1	2	-7	-8
Classical music?	1	2	-7	-8
Pop?	1	2	-7	-8
Country?	1	2	-7	-8
Sports?	1	2	-7	-8
Talk Shows?	1	2	-7	-8
Rock & Roll?	1	2	-7	-8
"Easy Listening"?	1	2	-7	-8

ACOMS Annotated Questionnaire
Quarter 87-4 (Jul, Aug, & Sep 87)
Module: Media Habits

Screen Name: MH-27
Variables: **Ranges:** **Order #:**
 YRADSH1 1,2,-7,-8 327
 YRADSH2 1,2,-7,-8 328
 YRADSH3 1,2,-7,-8 329
 YRADSH4 1,2,-7,-8 330
 YRADSH5 1,2,-7,-8 331
Sub-Population: Youth who regularly listen to the radio
 [YRADHRAM (MH-17) GT 0] OR [YRADHRAM EQ -7,-8] OR
 [YRADHRFM (MH-17) GT 0] OR [YRADHRFM EQ -7,-8]

Screen Name: MH-28
Variables: **Ranges:** **Order #:**
 YPAPREAD 1-5,-7,-8 332
Sub-Population: Youth asked the media habits questions
 [RANDROY EQ 2,4,6]

Screen Name: MH-29
Variables: **Ranges:** **Order #:**
 YPAPHOUR 0-168,-7,-8 333
Sub-Population: Youth who read the newspaper
 [YPAPREAD (MH-28) EQ 2,3,4,5]

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MH-27. Do you listen to the following programs regularly?

	YES	NO	REF	DK
American Top 40?	1	2	-7	-8
King Biscuit Flower Hour? ..	1	2	-7	-8
Rick Dees' Top 40?	1	2	-7	-8
Metal Shop?	1	2	-7	-8
Rockline?	1	2	-7	-8

MH-28. How often do you read the newspaper? Is it...

never,	1	(MH-31)
less than twice a week,	2	(MH-29)
2-3 times per week,	3	(MH-29)
4-5 times per week, or	4	(MH-29)
daily?	5	(MH-29)
REFUSED	-7	(MH-31)
DON'T KNOW	-8	(MH-31)

MH-29. How many hours per week do you spend reading the newspaper?

HOURS _____

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| CATI CHECK #MH4: IS NEWSPAPER READ?
|                   [MH-29 > 0 OR = -7, -8]
|
|                   YES ..... 1 (MH-30)
|                   NO ..... 2 (MH-31)
|
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Screen Name: MH-30

Variables:	Ranges:	Order #:
YPAPSPOR	1,2,-7,-8	335
YPAPCOM	1,2,-7,-8	336
YPAPNEWS	1,2,-7,-8	337
YPAPLOC	1,2,-7,-8	338
YPAPFOOD	1,2,-7,-8	339
YPAPSTYL	1,2,-7,-8	340
YPAPCLAS	1,2,-7,-8	341

Sub-Population: Youth who read the newspaper
 [YPAPHOUR (MH-29) GT 0] OR [YPAPHOUR EQ -7,-8]

Screen Name: MH-31

Variables:	Ranges:	Order #:
YMAGREAD	1,2,-7,-8	342

Sub-Population: Youth asked the media habits questions
 [RANDROY EQ 2,4,6]

Screen Name: MH-32

Variables:	Ranges:	Order #:
YMAG1	101-254,991,-7,-8	343
YMAG2	101-254,991	344
YMAG3	101-254,991	345
YMAG4	101-254,991	346
YMAG5	101-254,991	347
YMAG6	101-254,991	348

Sub-Population: Youth who regularly read magazines
 [YMAGREAD (MH-31) EQ 1]

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MH-30. Do you regularly read any of the following sections?

	YES	NO	REF	DK
Sports?	1	2	-7	-8
Comics?	1	2	-7	-8
News?	1	2	-7	-8
Local?	1	2	-7	-8
Food?	1	2	-7	-8
Lifestyle?	1	2	-7	-8
Classified?	1	2	-7	-8

MH-31. Do you regularly read magazines?

YES	1	(MH-32)
NO	2	(RECALL MODULE)
REFUSED	-7	(RECALL MODULE)
DON'T KNOW	-8	(RECALL MODULE)

MH-32. What magazines do you read on a regular basis, that is, that you have read at least 3 of the past 4 issues?

[ENTER APPROPRIATE NUMBER FROM HARD COPY LIST
OR '991' FOR OTHER. ENTER CTRL/P TO CONTINUE.]

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

REFUSED	-7
DON'T KNOW	-8

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Screen Name: MH-33
Variables: Ranges: Order #:
YMAGHOUR 0-168,-7,-8 349
Sub-Population: Youth who regularly read magazines
[YMAGREAD (MH-31) EQ 1]

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MH-33. How many hours a week do you spend reading magazines?

HOURS _____

[GO TO KNOWLEDGE-RECALL MODULE]

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END OF MEDIA HABITS MODULE