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ABSTRACT

This study explores the cognitive dimensions used by children in differentiating among television characters. Similarity judgments between all possible pairs of 14 television characters were analyzed using INDSCAL, a multidimensional scaling method which allows for individual or subgroup differences in scaling solutions. By linking the results of the INDSCAL analysis with content attributes suggested by prior research, a parsimonious four-dimensional mapping is identified. This cognitive mapping is virtually identical for children at three different stages of cognitive development. Further, dimensions identified are strong predictors of the children's desires to model the social behaviors of the TV characters. The dimensions identified and discussed include those of feminine attractiveness, buffoonery, masculine strength, and activity. The findings also indicate that young boys and girls use the same dimensions in markedly different ways. (Author)

CHILDREN'S PERCEPTIONS OF TELEVISION CHARACTERS

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Children's Perceptions of Television Characters

Of all mass media audiences, children are most rapidly changing their capacity to process and interpret information. It is important to understand the ways in which children perceive media content because those perceptions are likely to influence the application of media information to real-life situations.

In studying cognitive processes that intercede between children's exposure to television and their application of TV information, researchers have assumed that there are several operative and important dimensions of perception. Studies have examined the effects of intervening variables such as the perceived reality of TV portrayals (cf. Greenberg and Reeves, 1974; Feshbach, 1971); the differential impact of male and female characters (cf. Atkin and Miller, 1974; Miller and Reeves, 1976); the amount of violence attributed to characters (cf. McLeod, Atkin, and Chaffee, 1971); the amount of support received from other characters (cf. Walters and Parke, 1964; Bandura, Grusec, and Menlove, 1967); and the character's race (cf. Greenberg, 1971; Greenberg and Hanneman, 1969).

Children recognize and sort different portrayals using perceptual dimensions that may shift with age, sex, or any of several environmental influences. To young children, a TV character may be primarily funny; to an older child, the same character may be active; to a male, strong; or to a female, physically attractive.

Yet, the common approach in all the research cited above has been the imposition of the attributes on the children. These were researcher-chosen attributes, derived from theory and insight. The prominence of those perceptual attributes in the hierarchy of children's perceptual structures was not a concern. Thus, the examination of the role of a single attribute, e.g., perceived reality, was typically done without regard for other attributes and without regard with whether the attribute was at all salient from the child's perspective. Even if their identification enhances explanation or prediction of specific media impacts, they contribute not at all to a wholistic understanding of the children's overall perception of media content, or television content in particular as we shall focus on.

Mass communication literature is void of studies which attempt to empirically derive the full set of dimensions children use to differentiate television characters. That is, the dimensions suggested by past research are a result of investigator's choices, not a subject's responses. In this study, we attempted to collate two approaches--one which identifies a set of perceptual attributes and asks children to use them, and a second which asks children to respond to television characters in a fashion which does not bias the subject's responses in favor of any preconceived attributes.

For this second approach, a multidimensional scaling system was used to describe the dimensions children use to distinguish among television characters. Multidimensional scaling models assume that a set of some number of independent dimensions underly the perception of a larger set of stimuli. Here, the stimuli are television characters, and the dimensions are expected to be characterizable in terms of attributes which describe how children choose to differentiate TV characters.

The output of multidimensional scaling is a Euclidean space locating each stimulus, or TV character, on each dimension. Geometric distances between the characters can be interpreted as the perceived similarity between the characters. The interpoint distances in the geometric space are linearly related to the similarity judgments.

The greatest advantage of this method is that geometric representation is not determined by dimensions selected by the investigator. Subjects judge the perceived similarity between all possible pairs of stimuli, using as the basis for the judgments whatever attributes they choose to think about.

At the same time that we attempt to develop the judgmental or perceptual structure of television characters for children, we will also investigate the variation in such a structure. For example, we anticipate that there are developmental differences either in the content of the structural dimensions or in their number, and so repeating the study process with children at different developmental levels would be productive. In a similar fashion, sex differences may be examined.

A further question of import, and a basic reason for wishing to determine the perceptual structure, is to what extent children base their modeling and social learning decisions on their perceptions of TV characters. The general expectation was that certain character attributes were more desirable than others and children will at least partially differentiate TV characters on the basis of those desirable qualities. Within the dimensions used to differentiate TV characters should be a subset of dimensions which help children sort characters according to imitable real-life attributes.

Hypotheses

Dimensional Quantity. One aspect of child development on which psychologists agree is that children generally progress from simple to complex modes of understanding. For learning theorists, this progression is dependent on experience with the environment and different patterns of reinforcement (cf. Bandura, 1969). For cognitive developmental theorists, changes in complexity of perception are linked to developmental stages which define the upper bounds of understanding

(Piaget, 1953; Bruner, 1964). Despite these fundamental differences, however, both kinds of theories predict that children become more complex as they age.

From this increase in cognitive complexity, it was hypothesized that older children would use more dimensions to differentiate TV characters than younger children. The use of naturalistic descriptions of other people (Peevers and Secord, 1973) and checklists of descriptive traits (Yarrow and Campbell, 1963; Livesley and Bromley, 1973) show that the number of attributes used to describe people increase as children become older.

However, a multidimensional study of person perception in children did not find an increase in dimensions. The dimensional structure of third, sixth and ninth graders was similar with respect to the number and nature of perceptual dimensions (Olshan, 1971). With Kruskal's non-metric multidimensional scaling program, Olshan showed that for all three age levels, a two or three dimensional structure adequately represented a sample of 30 traits. This contrary finding has been criticized because the method used to determine the number of dimensions (multidimensional scaling) is a technique designed to achieve maximum parsimony from a set of concepts (Peevers and Secord, 1973).

It could be argued, however, that multidimensional scaling is a more appropriate measure of perceptual complexity because the results are based only on similarity ratings between concepts. Differential use of checklists of descriptive traits could be explained in terms of language development alone. The use of multidimensional scaling in this study should provide additional information about the validity of Olshan's findings.

Dimensional Content. Eight different dimensions were hypothesized to emerge as dimensions of judgment important in children's differentiation among TV characters in the multidimensional spaces: sex, age, physical strength, physical attractiveness, realism, goodness, humor, and social support from others.

Each has been, individually, a successful predictor of media effects. Our pilot testing for this study yielded a suggested ninth attribute--activity--which we added.[1]

It is unreasonable to expect that all of the hypothesized dimensions will be operative for large groups of children. Given the exploratory nature of this analysis, however, the concern was to identify a set of attributes which research and theory suggest would reasonably occur rather than predict the subset that will occur, or the particular manner in which they might be organized and linked.

Dimensional Impact. The description of these dimensions will be useful in understanding which TV characters will have the greatest effect for which children, and what it is about the character that maximizes that effect. The general expectation is that the method used to categorize a TV character will determine a child's reaction to the character and will be influential in the decision to apply the character's behavior to real-life situations.

A central part of all cognitive theories deals with the effect of mental representation of stimuli on behavioral response (Baldwin, 1969). Representation is not merely a memory process by which we retrieve usable experiences. The information processing formats by which experiences are categorized for later use are just as important in determining behavior as associating past experiences with the present.

For example, if television characters are differentiated on the basis of funniness, then humor should be an important referent in deciding whether to

[1]In a pre-test children were asked to name two favorite TV characters and two characters they did not like. For all possible pairs of characters they were asked "How is character A different from B?" All hypothesized dimensions emerged as responses to the question with the exception of a dimension describing characters' speed of movement and ability to do several different things. Consequently, a dimension called "activity" was added, bringing the total number of dimensions to nine.

apply the character's behavior to real life. The information processing methods used to catalog a character's behavior define the most salient aspects of the behavior when it is later retrieved. The type of situations that TV characters' behaviors are relevant to in real life, therefore, may be determined by the dimensions originally used to evaluate their behavior on the screen.

The specific hypothesis is that the dimensions children use to differentiate TV characters will be related to children's desires to model TV characters' behavior in real-life situations.

Methods

Interviews were conducted with two third, fifth and seventh grade classes from public schools near Lansing, Michigan. There was an approximately equal number in each grade and sex among the 210 children interviewed.

Choice of Television Characters. Fourteen television characters were used for this study:

Laura ("Little House on the Prairie")
Mary Tyler Moore
Reed ("Adam-12")
Fred Sanford
Fred Flintstone
Gilligan
Samantha ("Bewitched")
Hawkeye ("M*A*S*H")
Archie Bunker
Chico
Steve Austin ("The Six Million Dollar Man")
Fat Albert
John-Boy Walton
Marshal Matt Dillon

The characters were chosen to maximize children's awareness of the characters, to maximize variance on the hypothesized dimensions, and to represent TV characters most frequently seen by children.

Nielsen audience ratings for the Lansing, Michigan, area in February, 1975, indicated the shows featuring these characters were all among the top 25. Because the children questioned spanned an age range of from 8-13 years old, only characters from programs beginning before 9 p.m. were considered to maximize familiarity with the entire sample of characters among the full groups of respondents.

Choosing characters who maximized variance on the hypothesized dimensions was more difficult. It is quite possible that in the multidimensional analysis different samples of TV characters could result in different dimensional structures. If the sample was all male characters, for example, a sex dimensions would not emerge; if all were policemen, a funny dimension would probably not be apparent, etc.

Similarity comparisons were obtained for all possible pairings of this sample of 14 TV characters. Thus, the number of similarity comparisons was 91, defined by $n(n-1)/2$. The specific question used to obtain the comparitive judgments was:

"What do you think of character A and character B? Are they":

____	____	____	____	____
very much alike	alike	I'm not sure	different	very different

Scaling Method. The specific multidimensional scaling model used in this study was INDSCAL (Carrol and Wish, 1974), a technique which allows for individual or subgroup differences in dimensional solutions. The INDSCAL model assumes that all subjects will use the same dimensions in making judgments of concept similarity. Individuals or subgroups, however, may differ in the weighting or salience of the dimensions from the total group solution.

The model for INDSCAL is summarized in the equations:

$$(1) \qquad d_{jk}^{(i)} = \sqrt{\sum_{t=1}^{m} w_{it} \, (x_{jt} - x_{kt})^2}$$

and

(2) $$y_{jt}^{(i)} = w_{it}^{1/2} x_{jt}$$

where $d_{jk}^{(i)}$ is the distance between concept j and k for subject or subgroup i; w_{it} is the weight on dimension t by the i^{th} subgroup, x_{jt} and x_{kt} are the projections of concepts j and k on dimension t; and $y_{jt}^{(i)}$ is the coordinate value for concept j on dimension t for subgroup i.

Unidimensional Measures. To validate and describe dimensions that emerged in the multidimensional space, unidimensional ratings were obtained for each character on the eight hypothesized perceptual dimensions.[1] These items appeared on a separate questionnaire administered one day after the similarity ratings for the third and fifth graders, and immediately after the completion of the first questionnaire for the seventh graders. This questionnaire was administered second so the unidimensional attributes specified would not suggest dimensions the children would necessarily use in making their similarity judgments.

Each child rated all 14 characters on these eight attributes, which appeared in a constant order:

How funny do you think character A is?
How active do you think character A is?
How good looking do you think character A is?
How strong do you think character A is?
How much like a real person is character A?
How good do you think character A is?
How old do you think character A is?
How much do the other people on (name of show) like character A?

There were four possible responses for each question ranging from very much of the attribute to none of it, e.g. very funny/funny/not very funny/ not funny at all; very active/active/not very active/not active at all. Responses were coded from 4 to 1, with the higher number indicating the attribute was maximally applicable.

[1]Children were not asked to identify the character's sex, which was the ninth hypothesized attribute.

Identification with TV Characters. Two questions measured the extent to which the children identified with each TV character. The questions were:

"How much do you want to be like character A?" Response categories were: "a lot, a little, not very much, and not at all."

"Are there things that character A does that you would like to do?" Response categories were: "a lot of things, some things, almost nothing, and nothing at all."

Data Analyses. The similarity judgments and unidimensional ratings were collapsed across subjects to give each TV character a value or values for each of these sets of data. First, the similarity judgments were input into INDSCAL which resulted in a dimension coordinate for each TV character on n dimensions. Second, the unidimensional ratings were averaged across subjects so that each character was assigned a mean score for each attribute. The comparisons of these values for each TV character comprised most of the data analyses.

To test the extent to which the spatial dimensions can be defined as hypthesized, the dimension coordinates for each character were correlated with the unidimensional means for each character. The multiple correlation ~~of the dimension~~ coordinates with each unidimensional attribute indicated the extent to which each attribute was represented in the multidimensional space. The extent to which the dimensions predicted the indentification variables was also tested by correlating dimension coordinates with the mean ratings on the two identification measures.

For all correlations, the n for evaluating the significance of the coefficient is 14, i.e., the number of TV characters. However, the values for each character are not based on a single observation. They are based on numbers of observations ranging from 26 to 102. Reported significance levels are therefore conservative estimates.

Results

Dimensional Structure. Age differences in the relative number of dimensions that would emerge were hypothesized, anticipating that older children would use more dimensions to differentiate television characters than younger children. Nine separate attributes were posited as potential dimensions of children's perceptions of television characters.

The number of dimensions that should be retained for further analysis was determined by examining the proportion of variance accounted for in the original similarity data by each additional dimension in the INDSCAL solution. While the overall proportion of variance accounted for will increase with the addition of dimensions, new dimensions may provide only a negligible improvement in the goodness of fit measure.

Table 1 shows the amount of variance accounted for by one, two, three, and four dimension solutions. For the total group and all three age groups, the fifth dimension added only a negligible amount of explained variance.

The two dimensional solution for the entire group accounted for 74% of the variance in the original data. A third dimension increased the percentage to 82% and a fourth dimension to 87%. While the last two dimensions did not add a substantial amount of explained variance, they were retained at this point to determine if the content of those dimensions was either identifiable or predictive of the identification measures.

Table 1 also indicates that no substantial differences occurred among the dimensionalities of the three age group spaces. While the amount of variance explained by the same dimensional solution increased slightly with age, the percentage change across solutions was almost the same. The addition of dimensions 3 and 4 for the third graders increased the overall correlation by .04 for each addition. For the fifth graders, the increases were .05 and .03; and for the seventh graders, .03 for each addition. Essentially, after the first dimension, the dimensional structure is the same across these age groups. The hypothesis of increasing differentiation in dimensional structure by age is not supported.

Dimension Content. Figures 1 and 2 show the 14 TV characters plotted in four dimensions. Figure 1 contains dimensions one and two and Figure 2 contains dimensions three and four.

Interpretation of the four dimensions was guided by results from multiple regression analysis. These results are in Table 2. The columns in Table 2 represent zero order correlations and standardized regression weights for predicting mean ratings of 14 TV characters on the nine hypothesized unidimensional scales. The multiple correlations in the righthand column show how well the mean ratings can be predicted using all four of the INDSCAL dimensions as independent variables.

The general pattern of high multiple correlations indicate that most of the attributes can be accurately predicted from the four INDSCAL dimensions. Five of the multiple correlations were greater than .90 ($p<.001$); two were greater than .80 ($p<.05$); and two were not significant, despite their considerable magnitude. Based on the regression analysis, the four dimensions were labeled as follows:

Dimension 1: Unsupported Humor
Dimension 2: Physical Strength
Dimension 3: Physical Attractiveness
Dimension 4: Activity

The regression weights associated with Dimension 1 are very high for funny ($p<.001$) and support $p<.05$). Looking at the plots on Dimension 1 in Figure 1, highly funny characters are represented by Fred Sanford, Archie Bunker, Fred Flintstone and Gilligan. Highly supported characters are Steve Austin, Marshall Dillon, John-Boy Walton, and Laura.

Two other attributes, strength and sex, had significant regression weights

($p<.05$) associated with this dimension. Strength was not included because the weight was low in comparison to funny and support, and because the attribute was more clearly related to another dimension.

Sex is interpreted as part of this dimension. However, it is not unique to this dimension. In fact, Table 2 shows that sex has significant weights on all four dimensions, and the lowest of those is on Dimension 1. Figure 1 confirms this relation for Dimension 1. All three females are on the not funny, highly supported section of the dimension.

Dimension 2 was interpreted as Physical Strength. The regression weight for strength on this dimension was high and positive (.85, $p<.001$). The dimension is most representative of masculine strength. The weight for sex is highest on this dimension and negative (-.77, $p<.001$; male coded as 1, female coded as 2). Characters arrayed high on this dimension included Steve Austin, Reed, Hawkeye, and Marshall Dillon. The three females (Samantha, Mary Tyler Moore, and Laura) were lowest on this dimension. Two other attributes that weighted significantly ($p<.05$) on Dimension 2 were active and good.

Dimension 3 in Figure 2 was interpreted as Physical Attractiveness. The regression weights for good looking (.62) and sex (.63) on Dimension 3 were the highest of all attributes. Dimension 3 also predicted the character ratings for good (.39), with the good looking females being rated as better than less attractive male characters.

Two females, Samantha and Mary Tyler Moore, were rated highest on this dimension, followed by attractive males such as Steve Austin and Hawkeye. At the other end of the dimension were the cartoon characters, Fred Flintstone and Fat Albert, and John-Boy and Gilligan.

Dimension 4 was labeled Activity. The regression weight for Dimension 4 as a predictor of active was .65 ($p<.05$). Sex and goodness were also related to Dimension 4, Their weights were -.36 ($p<.05$) and .56 ($p<.05$). Characters with high values on Dimension 4 included Gilligan, John-Boy and Laura. Less active characters were Archie Bunker, Fred Sanford and the two cartoon characters.

Two of the unidimensional attributes were not significantly represented by any dimension in the multidimensional space (Table 2). These are the perceived reality of the TV characters ($R=.45$; n.s.) and the perceived age of the characters ($R=.66$; n.s.). The hypotheses regarding children's use of these dimensions to differentiate television characters are, therefore, not supported to the extent that the other attributes were. The statistical insignificance of thses sizeable multiple correlations is in part attributable to the conservatism necessarily associated with the n of 14 used here to test significance.

Subgroup Comparisons. To determine if the dimensional structures for boys and girls and the three age groups were different, canonical correlations (Cooley and Lohres, 1962) were computed between multidimensional solutions calculated separately for each subgroup (Table 3). Four significant canonical variates were found for each subgroup comparison, indicating a very high degree of isomorphism between multidimensional solutions.

Modeling. The final hypothesis predicted that the dimensions children use to differentiate TV characters will be related to how much children want to "be like" the characters and how much they would like "to do things that the characters do." Table 4 shows the regression analysis broken down by sex and age for predicting the two dependent measures from the four INDSCAL dimensions.

The multiple correlations are consistently large, ranging from .69 to .94, using only these four dimensions of character perceptions as predictors. Thus, the amount of variance explained varies from 47 to 89 percent.

For the dependent variable, "want to be like," the magnitude of multiple correlations by grade and by sex are strikingly similar. Yet, the dimensional emphasis in those predictions for boys and girls are entirely different. For the male youngsters, this variable is predicted by the dimensions of masculine strength and activity; for the females, this variable, predictable to the same extent, consists almost solely of the dimension physical attractiveness. The same pattern persists for the second dependent variable, "want to do like."

There are no similar differences in predictor usage by grade level. Among the youngest participants, the third graders, activity is never a significant predictor, whereas it appears to demonstrate more impact in subsequent age groupings.

While the dimensional solutions are almost identical according to the canonical correlation analysis, large differences, particularly, by sex, exist in the ability of the dimensional structures to predict the two identification measures.

Summary and Discussion

Children rated the similarity of all possible pairs of 14 TV characters and judged the same characters on eight specific attributes. The coordinate values for the TV characters, as determined by multidimensional scaling, were then correlated with the mean ratings for each character on the unidimensional attributes. The relationship of these two independently collected sets of data was the basis for most of the results.

Overall, these correlations were very high. The multiple correlation of four dimensions on each attribute was greater than .90 for five of nine unidimensional attributes, and two other multiple correlations were greater than .80.

Ideally, the two methods should have produced isomorphic results. Each operation was attempting to identify and measure the dimensions children use to differentiate TV characters. Therefore, the high multiple correlations do not represent a theoretically independent set of variables predicting a dependent variable. They constitute a multi-method approach to measurement of the same phenomenon.

Based on a considerable past literature on developmental differences in the dimensionality of person perception, it was hypothesized that older children would use more dimensions to distinguish TV characters than young children. The evidence did not support this expectation.

This is the second known study which reports no age differences in the dimensions children use to evaluate other people and the second which uses multi-dimensional scaling to identify the dimensions. Olshan (1971) reported no dimensionality differences among children in a similar age range. Although her research dealt with person perception in general and not with TV characters, the same number of dimensions adequately represented similarity data for her third, sixth, and ninth graders.

Similarity in the concept spaces for children in three different age groups is not very supportive of extensive developmental shifts in the dimensionality of cognitive processes. The range of children's ages in the sample did not represent all of the critical developmental periods, which may have minimized the possibility of finding developmental differences. It could be argued, however, that by third grade, socialization to television is complete to the extent that third and seventh graders should perceive TV characters similarly.

The similarity among age groups may also be due to other socialization processes that are countering the development of more complex cognitive processes. At the same time that complexity of evaluation is increasing for children, they may be learning from other social agents the relevant dimensions which society expects them to use in evaluating others. The ability to use more dimensions may be offset by the discovery that only certain ones should be applied.

Dimension Content. The most obvious dimension which emerged in the multi-dimensional space was humor. It accounted for the majority of variance in the four dimensional solution. Due to its high negative association with social support, humor was labeled somewhat differently than might be expected.

Previous research has not focused on the role of humor in imitation. Nevertheless, it seemed reasonable to assume that children would positively evaluate humorous behavior. Funny people are generally positively reinforced for their talent, making them desirable models.

The type of humor which emerged was unsupported humor. These were characters who were laughed at rather than laughed with--the classic "boobs." Characters at the other end of this dimension were not funny, but very much supported in these behaviors by television peers.

The humor dimension which differentiates TV characters may not be a positive, desired attribute. The total inability of his dimension to predict which characters children wanted to do like or be like supports this rationale. While this dimension represents the primary characteristic that children use to differentiate TV characters, it was not related to children's application of television to real life.

The second and third dimensions are probably best discussed together because they represent stereotypic evaluations of other people. They also were most predictive of children's desires to be like and do like TV characters.

The stereotypic use of these dimensions is most closely associated with sex differences. Males used the strength dimension most and females used the attractiveness dimension most. This was the critical finding, although both dimensions were significant predictors of the two attributes for both sexes. Furthermore, the spatial configurations for males and females were generally very similar as determined by canonical correlation analysis.

This finding is most interesting when the predictive power of the two dimensions is considered. For boys, strength was the primary predictor of wanting to do like and be like TV characters while attractiveness was totally unrelated to the two dependent measures. For girls, the opposite was true. Attractiveness was highly predictive of the two imitation behaviors and strength was unrelated. The magnitude of the multiple correlations, however, was equal. The key conclusion is that cognitive structures for males and females are the same while the use of the structures is completely different.

This is different from saying that only males use the dimension of strength and, therefore, strength is only predictive of media effects for males. Males use both strength <u>and</u> attractiveness, but only one dimension is applicable to their modeling decisions. The counterpart process exists for females' use of attractiveness.

These results may be more expected by parents than psychologists studying sex differences. In an extensive current review of psychological research on sex differences, Maccoby and Jacklin (1975) find no support for assuming that male and female children differentially use dimensions traditionally associated with their sex. However, increased aggression among males is a well documented finding and this could possibly explain boys' dependence on the strength dimension to evaluate TV characters suitable for imitation. Regarding the stereotype that females are dependent on attributes related to social interaction (e.g., physical attractiveness), Maccoby and Jacklin conclude there is no empirical support. This study then constitutes a conspicuous exception. The regression weight for the dimension of attractiveness, as a predictor of wanting to be like TV characters was .74 ($p<.001$) for girls and .00 for boys.

The fourth dimension, activity, was most predictive of wanting to be like and do like TV characters for the boys.

Present Implications of Research Findings. There ~~are~~ several implications for the production and evaluation of television for children. Knowledge of which character attributes impact most on children could be used to greatly increase the deliberate communication of pro-social messages and decrease the effects of anti-social portrayals. Each dimension and its association with the modeling variables in this study is related to both types of impact.

First, humor appears to be a neutral attribute in terms of differentiating characters which children model. Producers probably should not depend on humor to deliver efficacious prosocial messages, nor may there be any reason to believe that funny violence, for example, is any different from serious violence.

Strength, attractiveness and activity are clearly attributes which producers and parents should consider. The more they are perceived to be present, the greater the likely impact of the portrayal. These findings suggest that strong, active males will have the greatest effect on boys and attractive females the most pronounced effect on girls. As with the other dimensions, the results can be used to either augment prosocial television messages or diminish negative consequences of exposure.

The regression equations from this research may be used to calculate which characters would have the most impact on children. By multiplying the regression weight for each dimension by the coordinate value for each TV character on that dimension, a value could be calculated which represented the TV character's likely effect.

For example, the regression equation for predicting which TV characters boys most wanted to be like is:[1]

$$Y = (-.06)(\text{value for DIM 1}) + (.89)(\text{value for DIM 2}) + (.00)(\text{value for DIM 3}) + (.56)(\text{value for DIM 4})$$

[1] This equation was obtained using the coordinate values from a multidimensional space calculated for all males and a value on the variable "want to be like" averaged across all males.

Y in the formula parallels the mean rating on "want to be like" for each character. The equation predicts 75% of the variance in Y.

Applying this formula to all 14 of the TV characters in the study yields the following results. The values for each character should indicate the extent to which boys want to be like each character based on a weighted consideration of all four perceptual dimensions.

Character	Predicted Value of Y for Males[1]
Steve Austin	.339
Hawkeye	.329
Reed	.309
Chico	.292
Marshall Dillon	.222
Fred Sanford	.021
John-Boy	.020
Archie Bunker	-.181
Samantha	-.235
Gilligan	-.254
Fred Flintstone	-.255
Fat Albert	-.267
Laura	-.343
Mary Tyler Moore	-.435

From these values, the relative modeling impact of several TV characters can be strongly suggested. Content analyses could determine the behaviors of any of the characters, but particularly those identified as most likely to be modeled. The combined information would indicate which characters and which behaviors were most likely having an impact on children.

But, separate consideration must be given to different age groups and especially to the sexes. Applying the same equation calculated separately for young girl viewers yield a completely different rank order of characters' likely impact.

[1]The values derived from the regression equation were correlated with the values on the "want to be like" measure which ranged from 1 to 5 to determine the degree of relationship.

Character	Predicted Value of Y for Females[1]
Samantha	.459
Mary Tyler Moore	.371
Laura	.253
Steve Austin	.178
Reed	.062
Hawkeye	.049
Marshall Dillon	.002
Chico	-.026
John-Boy	-.047
Gilligan	-.099
Fred Sanford	-.106
Archie Bunker	-.173
Fat Albert	-.403
Fred Flintstone	-.408

It is obvious from a comparison of these two lists that children identify most with same sex TV models. For the portions of the tables that are similar (Steve Austin through Chico), boys mark these characters high because they are strong and active. Girls rank this subset second to the TV females because they are highly attractive.

These "impact values" are a very precise way of determining which characters merit special attention. They are not based on content analysis of researcher defined attributes, as are most other ratings of TV shows and characters. They are dependent on the ratings of TV characters along perceptual dimensions which are maximally weighted to predict the child's affinity for the characters. Thus, they should yield excellent predictions.

[1]The values derived from the regression equation were correlated with the values on the "want to be" like measure which ranged from 1 to 5 determine the degree of relationship.

Table 1

Percentage of Variance Accounted for by INDSCAL Analysis with Different Dimensional Solutions (Total Group and Third, Fifth, and Seventh Grades)[a]

	Number of Dimensions in Solution							
	1		2		3		4	
	R	R^2	R	R^2	R	R^2	R	R^2
Third Grade	.68	.46	.83	.69	.87	.76	.91	.83
Fifth Grade	.77	.59	.86	.73	.91	.83	.94	.88
Seventh Grade	.84	.70	.89	.80	.92	.86	.95	.90
Total Group	.77	.59	.86	.74	.90	.82	.93	.87

[a]The correlational value for a subgroup is between a matrix of scalar products derived from the subgroup's similarity matrix and a matrix of scalar products derived from the group space.

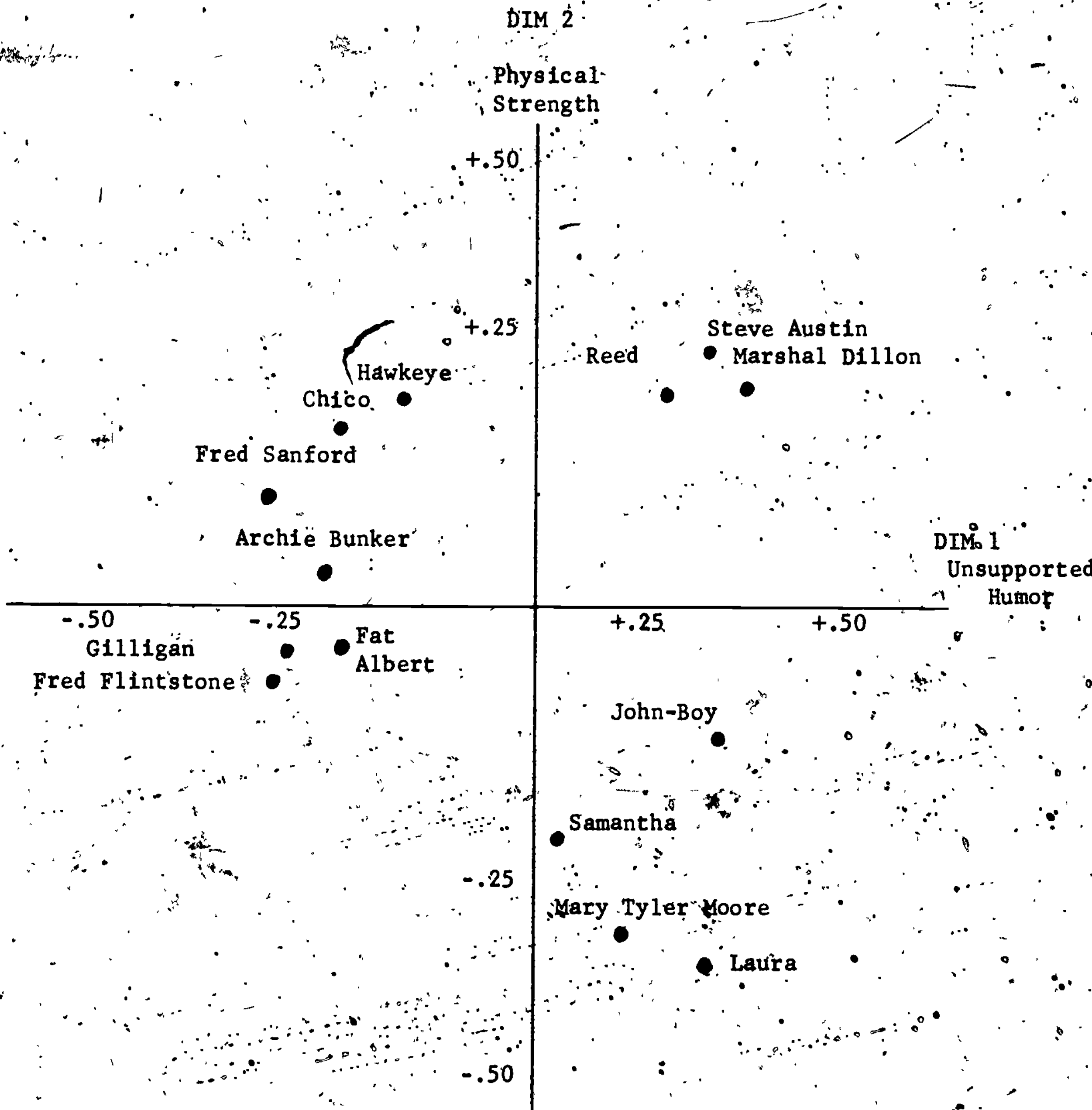

Figure 1

Dimensions 1 and 2 of the Four Dimensional Group Concept Space From and INDSCAL Analysis of Data on Perceived Similarities Among Fourteen Television Characters[a]

[a]The INDSCAL program does not compute totally orthogonal dimensions. The dimensions in Figure 2 are drawn as orthogonal for clarity of presentation. The correlation between dimension 1 and dimension 2 is .02.

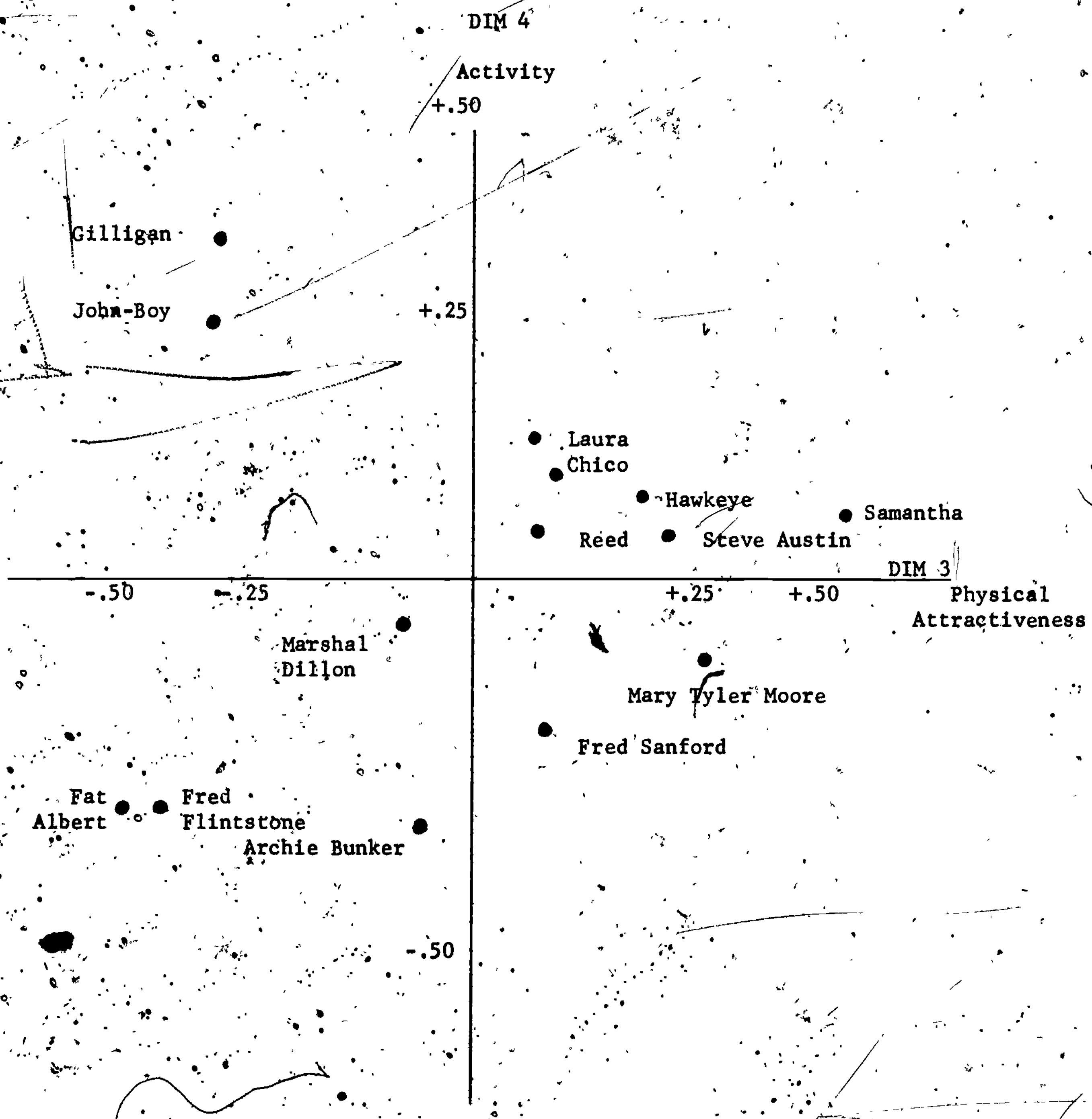

Figure 2

Dimension 3 and 4 of the Four Dimensional Group Concept Space From an INDSCAL Analysis of Data on Perceived Similarities Among Fourteen Television Characters[a]

[a]The INDSCAL program does not compute totally orthogonal dimensions. The dimensions in Figure 3 are drawn as orthogonal for clarity of presentation. The correlation between dimension 3 and dimension 4 is .24.

Table 2

Zero Order Correlations and Standardized Regression Weights For Predicting Mean Ratings on Unidimensional Scales from Four INDSCAL Dimensions (Total Group)[a]

	DIM 1		DIM 2		DIM 3		DIM 4				(corrected for shrinkage)
	r	Beta	r	Beta	r	Beta	r	Beta	R	R^2	R^{2b}
Funny	-.92**	-1.02**	-.16	-.18	-.14	+.17	-.21	+.11	.96**	.92	.89
Active	+.54*	+.23	+.29	+.46*	+.43	+.15	+.66*	+.65*	.87*	.77	.67
Good Looking	+.53*	+.19	+.17	+.21	+.79**	+.62**	+.54*	+.37	.91**	.83	.76
Strength	+.38	+.40*	+.82**	+.85**	+.19	-.01	-.03	+.03	.92**	.84	.76
Reality	+.25	+.08	+.14	+.23	+.23	+.09	+.35	+.36	.45	.20	-.15
Good	+.60*	+.25	+.20	+.32*	+.64*	+.39*	+.68*	+.56*	.92**	.86	.80
Age	-.36	-.24	+.46	+.33	+.02	+.15	-.52	-.37	.66	.44	.20
Support	+.84**	+.84*	-.09	-.06	+.24	-.01	+.37	+.01	.84*	.71	.58
Sex	+.40	+.33*	-.62*	-.77**	+.57*	+.63**	+.13	-.36*	.96**	.93	.90

*$p < .05$
**$p < .001$

[a]The correlations and regression analysis are based on an n of 14, the number of TV characters. Each character has a coordinate value for each dimension (based on the INDSCAL analysis) and a value on the unidimensional attributes (based on the mean rating given the character by the entire sample of children). These two numbers are the X and Y values in the correlations.

[b]Because the number of variables in the regression equations (5) approaches the sample size used to compute the correlations (14), all multiple correlations were corrected for shrinkage (McNemar, 1969). This correction gives an unbiased estimate of the population coefficient.

Table 3

Canonical Correlations of Four INDSCAL Dimensions For Three Separate Age Levels (Third Grade, Fifth Grade, and Seventh Grade), and Males and Females[a]

	Canonical Variate Number	Canonical Correlation	χ^2	Degrees of Freedom	$p \leq$
Third grade	1	.985	88.03	16	.001
with	2	.972	54.28	9	.001
Fifth grade	3	.916	26.60	4	.001
	4	.787	9.18	1	.002
Third grade	1	.991	92.14	16	.001
with	2	.963	53.04	9	.001
Seventh grade	3	.907	27.94	4	.001
	4	.837	11.45	1	.001
Fifth grade	1	.991	108.10	16	.001
with	2	.985	69.65	9	.001
Seventh grade	3	.957	35.84	4	.001
	4	.851	12.28	1	.001
Males	1	.997	199.49	16	.001
with	2	.988	70.87	9	.001
Females	3	.947	35.33	4	.001
	4	.874	13.73	1	.001

[a]Separate INDSCAL solutions were obtained for each subgroup. The values in the canonical analysis are the coordinate values for each of 14 TV characters calculated separately for each grade and sex.

Table 4

Zero Order Correlations and Standardized Regression Weights For Predicting Mean Ratings On Two Media Effects Variables From Four INDSCAL Dimensions (Grade By Sex Breakdown)[a]

	Unsupported Humor DIM 1		Masculine Strength DIM 2		Feminine Attractiveness DIM 3		Activity DIM 4				(corrected for shrinkage)
	r	Beta	r	Beta	r	Beta	r	Beta	R	R^2	R^2
Want to be like											
3rd males	.04	-.13	+.76*	+.89**	+.16	-.00	+.18	+.48	.87*	.77	.67
5th males	.20	-.00	+.63*	+.81**	+.13	-.10	+.38	+.63*	.87*	.76	.65
7th males	.18	-.04	+.74*	+.87**	+.32	+.12	+.30	+.52*	.92**	.84	.76
3rd females	.53*	.31	-.16	-.24	+.78**	+.72**	+.31	-.05	.87*	.76	.65
5th females	.53*	.27	-.24	-.27	+.74*	+.65*	+.46	+.11	.87*	.76	.65
7th females	.52*	.18	-.09	-.10	+.87**	+.77**	+.51	+.21	.94**	.89	.85
Want to do like											
3rd males	.07	-.10	+.55*	+.69*	+.11	-.04	+.27	+.51	.72	.52	.30
5th males	.15	-.11	+.32	+.49	+.18	+.00	+.49	+.67*	.69	.47	.24
7th males	.22	-.11	+.32	+.47	+.40	+.23	+.55	+.66*	.77	.59	.41
3rd females	.49	.22	-.28	-.27	+.64*	+.54*	+.50	+.20	.80*	.64	.48
5th females	.50	.18	-.35	-.32	+.69*	+.59*	+.60*	+.29	.89*	.79	.70
7th females	.49	.11	-.17	-.13	+.79**	+.68**	+.62*	+.36*	.92**	.85	.79

*$p < .05$
**$p < .001$

[a]The correlations and regression analysis are based on an n of 14, the number of TV characters. Each character has a coordinate value for each dimension (based on the INDSCAL analysis) and a value for each of the media use variables (based on the mean rating given the character by each grade by sex subgroup). These two numbers are the X and Y values in the correlations.

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