

MULTIDIMENSIONAL SCALING OF THE PERCEIVED SIMILARITY AND
SUBSTITUTABILITY OF LEISURE ACTIVITIES COLLECTED
BY PAIRED-COMPARISON AND SORT METHODS

by

Michael Allan Murray

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submitted in partial fulfillment
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Abstract

Attempts have been made, largely on intuitive grounds, to arrive at the dimensions that describe leisure activities. The extent to which leisure activities are similar or substitutable has also received attention. This study, using multidimensional scaling (M.D.S.), assessed the perceived similarity and substitutability of 20 leisure activities, and the extent to which these concepts are congruent. Since standard methods of data collection for M.D.S. with many stimuli are generally laborious, two alternatives were tested in addition to the standard complete paired-comparison design. An incomplete paired-comparison design and a sorting procedure were used to determine if they reproduce the results of the standard method.

One hundred and thirty-four University of Manitoba undergraduates were tested from which the data of 123 were subsequently analysed. Students were assigned to one of six groups representing either a similarity or substitutability set and one of the three data collection methods.

Nonmetric M.D.S. analyses on eight data sets were conducted with the KYST program, and the data from the 100% Similarity and Substitutability Groups were further analysed using the INDSCAL program. Other analyses, including cluster analysis, property-fitting, and factor matching, provided supplementary information for the interpretation of M.D.S. solutions.

A three dimension solution with stress of .097 in the KYST analysis and accounting for 44% of the variance in the INDSCAL analysis was selected to represent the 100% Similarity Group's data. An athletic/non-athletic activity dimension was reflected in the first dimension of this and all other solutions. The second and third dimensions seemed to reflect group/individual and social-entertainment/individual-involvement variation.

The three dimension solution of the 100% Substitutability Group had a stress of .116 and accounted for 36% of the variance. The first dimension reflected athletic/non-athletic activity variation while the second and third dimensions were correlated with group/individual and mental involvement properties, respectively.

KYST analyses were conducted for the incomplete paired-comparison data, but with the exception of the first dimension these were not the same as the 100% Groups. An inadequate sample size and possibly larger error might account for this. Two sets of data from each of the sorting groups were analysed with the KYST program. These seemed to produce M.D.S. solutions very similar to the 100% Groups.

The M.D.S. solution of the 100% Similarity Group is similar to an earlier M.D.S. study with fewer stimuli, and is related to intuitive formulations. Interpretation of results indicates that similarity and substitutability are not the same. Some problems and shortcomings of both the substitutability and sorting analyses are discussed.

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Chapter 1

INTRODUCTION

Man has always engaged in leisure activities, but in recent years factors such as shorter work weeks and increased mobility have lead to increasing amounts of time available for them. Many people have not found satisfactory ways of utilizing leisure time. In addition, leisure activities are making demands on natural resources and making imperative the need for recreational planning. Such factors have prompted an increasing volume of research on various aspects of leisure and recreation, involving both univariate and multivariate approaches (Amatora, 1959; Sessoms, 1963; Wippler, 1970).

Research has been directed at the meaning of leisure (Bull, 1971, 1972; Donald & Havinghurst, 1959; Ennis, 1968; Foote, 1961), as well as the study of more specific relationships between leisure and factors such as work, occupation, and income (Bishop & Ikeda, 1970; Burdge, 1969; McEvoy, 1974; Standlee & Popham, 1958) and education and age (Graham, 1958; Schmitz-Scherzer, 1971; White, 1975).

Neulinger (1974) and his associates (Neulinger & Breit, 1969; Neulinger & Raps, 1974) have conducted research into people's attitudes toward leisure.

The ways in which people spend their time and money have also been studied. Time-budget studies (Ennis, 1968; Robertson & Converse, 1972; Zeisel, 1958) and money-budget studies (de Grazia, 1962; Kaplan, 1960) have recorded what people do with their free-time and how much they spend on it (see Warwick & Bishop, 1972, for a bibliography of this literature). Although a knowledge of what people do in their free-time is valuable, other questions have begun to attract research interest. Researchers are concerned with how leisure activities can be described and categorized, in what ways leisure activities are related in terms of satisfactions and motivations, and whether different populations of people indulge in distinct subsets of activities. The literature dealing with the question of whether there are meaningful ways in which leisure activities can be described and grouped is reviewed below.

The large number of leisure activities has invited attempts to achieve some parsimony in describing them. Kaplan (1960) used six classes to describe leisure activities.

He created a typology which could be used to differentiate between activities, and allow categorization of them into groups. Although he generated many dimensions along which activities could be categorized, for example, expense, skill, number of people involved, Kaplan only used three, the extremes of each defining two classes of activities.

Activities could be differentiated in his typology on the basis of the involvement of people, on the role of rules and traditions, and on the level of movement necessary to gain experience. The six classes and examples of the activities in each are:

1. Sociability: dance, parties, friends,
2. Association: church activity, club meetings,
3. Games & Sports: watch sports, play in sports, fish,
hunt, cards,
4. Art: photographs, concerts, sew,
5. Mobility: auto, walk, trips, shopping, and
6. Immobility: T.V., radio, books.

Kaplan said that "it is inescapable that the typology... is a theory in which the selection of items and their

relationship is tied up with the social values and academic positions of the scholar (p. 26)."

De Grazia (1962) presented another framework for describing free time activities. He proposed that a series of six polar types could be used. They were active/passive, participant/spectator, solitary/social, indoor/outdoor, in the home/outside the home, and sedentary/on-the-feet. But, he indicated that not enough information was available to say with any exactness how much free-time activity is, for instance, sedentary versus on-the-feet. Although he did not use it as such, his polar types could also be used to create a classification system for leisure activities.

Burch (1965) identified six general types of recreation activities from observation in campgrounds:

1. Symbolic labour: hunting, fishing,
2. Subsistence play: camp chores,
3. Expressive play: waterskiing, dancing,
4. Unstructured play: drawing, sunbathing,
5. Structured play: games, contests, and,
6. Sociability: friends.