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Recognizing Patterns of Leisure Constraints: An Extension of the Exploration of Dimensionality

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This paper tests Jackson's (1993) conceptualization of the dimensionality of leisure constraints by seeking to examine his findings on the importance of viewing constraints from an "aggregated" perspective. Thirty-two adults from a large metropolitan area in the Southwest took part in the study. Neighborhood interpretations of visual maps produced through multidimensional scaling led to the formation of four dimensions of leisure constraints: accessibility, personal reasons, costs, and facilities. These reproduced four of the six dimensions from Jackson's study. These dimensions were more clearly defined for males than females. Visual interpretation of the maps indicated that constraints do not work alone to constrain leisure but instead form dimensions, which in turn do not work in isolation of each other.

KEYWORDS: *Leisure constraints, recreation, dimensionality of constraints*

Jackson (1991) summarizes earlier efforts to identify and classify constraints in introductory comments to special issues of the *Journal of Leisure Research* and *Leisure Sciences.* He notes that constraints research evolved first from examinations of barriers to recreation participation, then to analysis of activity-specific leisure constraints, subsequently to categorizing types of leisure constraints, and eventually to exploration of the dimensionality underlying leisure constraints. While the earlier studies concentrated on the thorough examination of how individual constraints affected levels of—and feelings about—participation, the study of dimensionality takes this research in a new direction. This study focused on extending recent efforts by Jackson (1993) to identify the dimensions underlying constraints.

Dimensionality of Leisure Constraints

Recent studies have found that constraints do not work in isolation. Rather, constraints appear to be interrelated and thus can be evaluated in the context of underlying dimensions (c.f., Backman, 1991; Backman & Crompton, 1990; Backman & Wright, 1990; Blazey, 1989; Henderson, Stalnaker, & Taylor, 1998; Jackson & Dunn, 1987; McGuire, 1984; Wright & Goodale, 1991). The underlying premise of research on the "aggregation of constraints" is that it appears that leisure is not mitigated by a single constraint or even by a single set of constraints. Jackson (1993) identified six dimensions that represented commonalties found in the eight studies cited above. While some of these studies offered additional dimensions, these six

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dimensions surfaced repeatedly across studies. Jackson labeled the dimensions social isolation, accessibility, personal reasons, costs, time commitments, and facilities. Table 1 shows these six dimensions and the individual constraints that constitute each of them. Each dimension is also described briefly below.

Social isolation can be considered an interpersonal dimension that is based on characteristics that involve interaction between/among people. The premise behind the formation of this dimension refers to individuals' inability to access either information about or other people with whom to engage in leisure pursuits. Because socialization is so much a part of the leisure experience (Iso-Ahola, 1980), the inclusion of this dimension allows for examination of the concept of "interaction with others" as it relates to other dimensions.

The *accessibility dimension* is probably one of the most easily assembled and understood aggregations. A lack of or limited access to transportation, or "getting there" is a constraint often cited across the life span (e.g., Jackson, 1991; Jackson, 1994; Kay & Jackson, 1991). The inclusion of reference to inaccessibility to a destination in this dimension ("no opportunity to participate near home") implies that problems other than lack of a vehicle are important when considering accessibility.

The *personal reasons dimension* is an intrapersonal dimension in that each of the items it comprises relates directly to an individual's abilities or motivations. Of all the dimensions currently classified, the personal reasons di-

TABLE 1
Constraints Comprising Six Identifiable Dimensions

Dimension	Constraints
Accessibility	Cost of transportation
	Lack of transportation
	No opportunity to participate near home
Social Isolation	Lack of knowledge about where to participate
	Difficulty in finding others to participate
Personal Reasons	Lack of necessary skills
	Physically unable to participate
	Requires too much self-discipline
	Low energy level
	Lost interest in participating
Costs	Cost of equipment, materials, supplies
	Admission, rental fees, other charges for rec. facilities or programs
Time Commitments	Work commitments
	Family commitments
	Lack of time due to other leisure activities
Facilities	Overcrowded recreation facilities or areas
	Recreation facilities/areas poorly maintained

mension appears most likely to be affected by a host of situational variables and therefore may show a high correlation of its elements with those in other dimensions.

Some might argue that the *cost dimension* is not really a dimension at all because both of its items relate to the outlay of money. However, the difference between the two items is that one—cost of equipment—relates to financial outlay that can have a long term carryover value such as when equipment is purchased for ownership. Thus, such equipment is available for continuous use without additional costs. The other item—admission, rental fees—refers to single experience costs in which finances support a consumptive activity or good. One characteristic, however, that can tie these two items more closely together is that both can be affected by "payment over time." In other words, the use of credit cards allows individuals to have experiences or make purchases at a given time and "pay" for them at a later date.

The *time dimension* also represents a collection of items often referred to as reasons that affect levels and intensity of participation among adults. The thread that binds this aggregation is "obligation to do something else." It is important to keep in mind, however, that time commitments do not necessarily imply inability to participate in leisure. Kay and Jackson (1991), Shaw, Bonen and McCabe (1991), and Willits and Willits (1986) are credited with introducing research that indicated time constraints may in fact increase individuals levels of participation. Willits and Willits used the phrase "the more..the more" to describe how high levels of involvement often come with high levels of "other commitments."

The final dimension relates specifically to leisure settings and individuals' perceptions. The two items constituting the *facility dimension* relate to crowding and maintenance. This relationship might imply a cause and effect relationship. Yet this is not always the case. While very crowded facilities may not always be clean or safe, overcrowding itself may at times have a direct effect on the psychological experience (Andereck & Becker, 1993; Westover, 1989). In these instances, crowding may be perceived as an interpersonal barrier stemming from too much interaction with others.

Assessing Dimensionality

Jackson (1993) suggested that analysis of dimensionality of constraints is often more reliable than focusing on individual constraints because the latter may be affected by the way that data are collected or by the wording used. He cautioned, though, that the use of factor analysis (the primary statistical procedure used in each of the eight studies) separates individual items into discrete groups in which a high degree of intra-factor correlation often exists, but in which little thought is given to inter-factor correlations. Thus, an isolated perspective of aggregates is often provided.

The data in studies of constraints are usually gathered by asking subjects to assess the relative importance of individual constraints on participation. Often, importance is measured on scales anchored by terms such as "very

important" and "not important." This may, in fact, mislead the reader to assume strong relationships among the constraints that constitute a dimension with little insight about how the dimensions might relate to each other. In addition, by identifying discrete groups, factor analysis does little to indicate the level of association that an individual constraint might have with constraints in another dimension.

The purpose of the present study was to examine Jackson's (1993) findings regarding the dimensionality of constraints by using a method that allows for outcomes relating constraint dimensions to each other. This study used multidimensional scaling (MDS) which permits examination of peoples' perceptions of how similar or different individual constraints are related to each other, as opposed to the factor analytic approach of assessing perceptions of constraints individually. Thus, it was possible to determine perceptions of how closely related individual constraints actually were to each other because every constraint was considered in relation to each of the others.

Method

Multidimensional Scaling

Multidimensional Scaling (MDS) was selected to provide a new and different perspective on the nature and relationships among the underlying dimensions of constraints. While this study was not intended to be a "tool-driven" methodological piece, it is worth noting that, while MDS has the potential to contribute to leisure research and to leisure constraint theory, it has not been used frequently in leisure research. Thus, a brief overview is provided about the technique.

MDS uses data derived from interpoint distances bounded by word descriptors to study internal structures (Kruskal & Wish, 1978). The word descriptors for this study were 17 items representative of the reasons most often used to describe leisure constraints among adults (Jackson, 1993).

MDS focuses on similarities (e.g., how alike items are as reasons for altered participation patterns) and differences (e.g., how different items are as reasons for altered participation patterns) between items (e.g., constraints). The relationship between any two items is called a "proximity." The extent to which two items are judged alike or desperate (i.e., their proximity) is indicated by the value on a seven point scale ranging from "very similar" to "very different." A strength of MDS over other data reduction techniques is that subjects must indicate proximity values between every possible pairwise combination of the chosen items. To eliminate bias that could be induced by informing subjects about the nature of the dimensions under investigation, subjects typically are not provided details about attributes (e.g., social isolation, costs) to use as a basis to judge proximity (Kruskal & Wish, 1978).

Similarities and differences are graphically depicted through the production of "maps" that show relationships between items—proximities—in

Euclidean space. The maps contain one point for each derived value. "The values are often called 'fitted distances'.... It is important to remember that the fitted distances are not distances, but simply numbers which are fitted 'to' distances." (Kruskal & Wish, 1978, pp. 28-29) The larger the perceived difference between two items, the further apart they would appear on a spatial map. This visual configuration helps reveal structures that might be hidden in the data. Schiffman, Reynolds, and Young (1981) indicated that MDS is best suited to systematizing "data in areas in which organized concepts and underlying dimensions are not well developed" (p. 3).

To determine the optimum number of dimensions that should be used to describe the spatial representation, it was necessary to calculate a "badness of fit" measure called "stress." Stress is represented by a number between zero and one. The closer stress is to zero (0), the better the number of dimensions chosen will actually "fit" the data. Stress also provides information about the optimal number of dimensions along which data can be meaningfully interpreted. In addition, an RSQ value, or squared multiple correlation (Schiffman, Reynolds, & Young, 1981) was also calculated. This statistic provides a good indication of how well the data themselves fit the statistical model. RSQ values also lie between zero and one. The closer the RSQ value is to one, the better the fit of the data to the statistical model. Stress and RSQ combined help determine the smallest number of dimensions beyond which there is no substantial improvement in interpretive power.

This leads to an issue of protocol: small samples are common in MDS research. For example studies have used as few as 12 (Farell, 1984), 18 (Wish, 1971), and 28 subjects (Russell & Hultsman, 1988). An advantage of MDS over factor analysis is that large amounts of data are generated from each subject and stable spaces can be established with only a few subjects (Schiffman, Reynolds, & Young, 1981). For example, one subject judging the similarity of all possible pairs of twenty items would produce 190 data points. Therefore, the results reflect more than the small number of subjects actually constituting the sample.

Sample

Thirty-two adults (25-59 years of age) constituted the sample. Of the subjects, 34% were male and 66% were female. Age categories (and percentage of subjects) were: 25-29 years old (15.6%), 30-39 years old (28.1%), 40-49 years old (43.7%), and 50-59 years old (12.6%). The decision was made to limit the sample to those not yet retired, given that retirees may have different perceptions than working adults. The subjects were largely from the Greater Phoenix area and volunteered to participate in the study. All subjects were approached by the author about their potential inclusion in the study and, upon consent, were sent a copy of the questionnaire. Subjects were selected who would not have contact with each other during the data collection period. A heterogeneous volunteer sample of adults was used.

Procedure

Subjects completed a mailed, nine-page, two-part questionnaire. The first part sought responses on how similar or different (i.e., 1 = "very similar," 7 = "very different") were all pairwise comparisons among 18 leisure constraints identified in the literature and included in Jackson's (1993) study. One item, "lack of activity leaders" was excluded from the analyses because it was considered dissimilar to every other item. Thus, the analyses were conducted on the similarities between all pairwise comparisons of 17 leisure constraints. An example of a portion of this part of the questionnaire is shown below.

	Very Similar		Very Different	
Work Commitments	1	2 3 4 5 6	7	Family Commitments

All subjects considered the items in the same order. This assured that if fatigue did set in, it would be uniform across the sample. While there were no reliability ratings available for the questionnaire, the technique employed (e.g., pairwise comparison of all items) is the common method of data collection across MDS studies. Part One of the questionnaire produced 136 data points per subject and is the only portion of the questionnaire used in this study. It took subjects approximately 15-20 minutes to complete that portion of the questionnaire. A cover letter sent with the questionnaire indicated to the subjects that while some of the comparisons they would be asked to make might appear totally unrelated (e.g., "family commitments" vs. "recreation facilities poorly maintained"), the intent of the study was to focus on those items that were perceived as having similar characteristics. Thus, items with little or no perceived relationship would receive ratings close to the "very different" end of the scale.

Data Analysis

The overall analysis did not target specific leisure activities, but instead focused on general perceptions of constraints, as suggested by Raymore, Godbey, Crawford, and von Eye (1993). PROC SAS (SAS Institute, Inc., 1992) was used to analyze the data. Because the primary intention of this portion of the analysis was to evaluate Jackson's (1993) work on defining dimensions of constraints, it was considered important to focus attention on the "maps" produced through the MDS analysis. In addition to the overall analysis, maps were produced to analyze potential gender differences. If dimensions were to be considered stable, cohorts should provide similar dimensions.

Criteria for Identifying Dimensions

According to Kruskal and Wish (1978), the number of dimensions should not exceed $I - 1 > 4R$, where the number of stimuli (I, or constraint items) minus one should be at least four times as great as the dimensionality (R). Using this formula, a solution of up to four dimensions was plausible for these data. "Stress" improved substantially through two dimensions (from .63 to .39) and then had minimal changes through subsequent dimensions (Table 2). When coupled with the RSQ value (.74 to .86), a two-dimensional solution was considered optimal for interpreting the data. Because the RSQ value was still a considerable distance (.14) from one after two dimensions, it must be recognized that some "noise" existed in the statistical interpretation and thus an additional means of analyzing the data should be used.

In addition to analyzing the "stress" and "RSQ" statistics, a visual inspection of the maps produced by the MDS analysis was employed. This inspection was used to determine if constraints tended to form apparent groupings that could be interpreted as dimensions. Visual inspection allowed interpretation of the relationship of dimensions through shared constraints. A common method of visually interpreting maps is called neighborhood interpretation, which is based on the identification of similar items through their clustering or formation of "neighborhoods."

Results

Neighborhood Interpretation of the Data

Although a two dimensional solution was indicated as most appropriate from the perspective of stress and RSQ values, dimensions can be identified through other means. According to Kruskal and Wish (1978):

> sometimes structure can be observed in the multidimensional space in addition to or instead of that provided by dimensional interpretation...neighborhoods or regions of space may have meaning associated with other shared characteristics. This often happens, for example, when a two-dimensional solution is obtained for data whose appropriate dimensionality is even higher. An important reason why neighborhood interpretation can reveal other patterns in the

TABLE 2
Stress and RSQ Values for Dissimilarity Data of Leisure Constraints

Number of Dimensions	Stress	RSQ
1	.64	.74
2	.39	.86
3	.33	.92
4	.26	.96
5	.22	.96

> data is that the focus is primarily on the small distances (large similarities), while a dimensional approach attends most to the larger distances. (pp. 43-44)

Clustering techniques, or the drawing of loops around relevant stimulus points, are often used to interpret neighborhoods. Once clustered, common characteristics of the stimulus groupings can be sought.

There are other ways to visually interpret MDS data such as drawing lines between every pair of items whose similarity (based on mean values of pairwise comparisons) exceeds a specified threshold. When using this method, it is usually desirable to use more than one threshold to represent various degrees of proximity.

This study used a seven-point scale in which 1 was "very similar" and 7 was "very different" to determine proximity. Means of 3.18 or less were considered strong proximity (thick, solid lines). Means of 3.31-3.42 were considered close proximity (solid lines; see Figures 1 and 2). Means of 3.50-3.94 were considered moderate proximity (dashed lines). These values were chosen based on three criteria: a) a mean of "4" represented neither "very similar" or "very different." Thus, means below 4 represented some degree of similarity; b) natural divisions of mean values occurred between 3.18-3.31 separating very close and close proximity. Similarly, natural divisions of mean values occurred between 3.42 and 3.50, defining close and moderate proximity; and c) to counteract "rounding procedures," means higher than 3.94 were not considered to describe similarities.

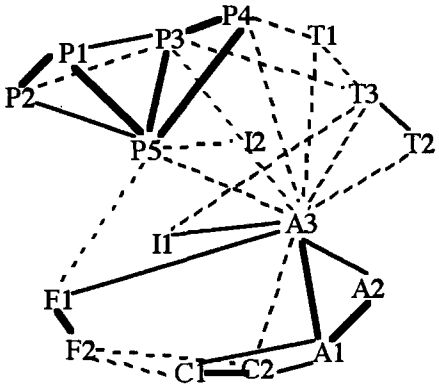
Global Dimensionality and Relationships

Figure 1 shows the "map" produced by plotting the similarities all subjects perceived among the 17 constraints. It is important to note that while the configuration might vary depending on whether a map was produced on two, three, or four dimensions, the proximity thresholds would remain the same throughout because they are based on mean values.

Four of the dimensions proposed by Jackson (1993) could be identifed through visual interpretation in this study: person-related, accessibility, facilities, and cost. The other two, social isolation and time constraints, were not as readily definable.

The dimensions with the strongest similarity between individual constraints were (1) "facilities," represented by the constraints (a) "overcrowded recreation facilities or areas" and (b) "recreation facilities/areas poorly maintained" and (2) "cost," represented by the constraints (a) "cost of equipment, materials, and supplies" and (b) "admission, rental fees, other charges." The individual constraint that appeared to have the greatest association with other constraints was "no opportunity to participate near home." It had strong proximity with one other constraint, close proximity with three others, and moderate proximity with seven others.

Another constraint with multiple associations was "lost interest in participation." This constraint had strong proximity with three other constraints, close proximity with one, and moderate proximity with three. Losing



Accessibility
A1 Cost of transportation
A2 Lack of transportation
A3 No opportunity to participate near home

Social Isolation
I1 Lack of knowledge about where to participate
I2 Difficulty in finding others to participate

Personal Reasons
P1 Lack of necessary skills
P2 Physically unable to participate
P3 Requires too much self-discipline
P4 Low energy level
P5 Lost interest in participating

Costs
C1 Costs of equipment, materials and supplies
C2 Admission, rental fees, other charges

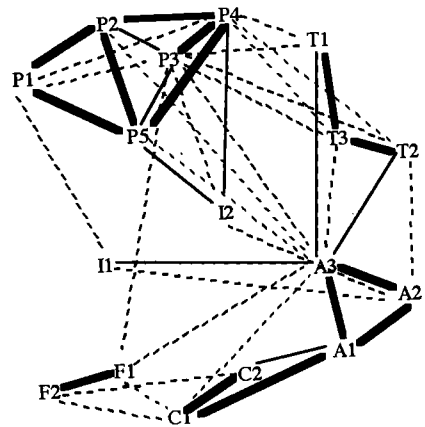
Time Commitments
T1 Work commitments
T2 Family commitments
T3 Lack of time because of other leisure activities

Facilities
F1 Overcrowded recreation facilities or areas
F2 Recreation facilities/areas poorly maintained

Very close proximity
Close proximity
Moderate proximity

Figure 1. Configuration for 17 Leisure Constraints

Males



Accessibility
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Costs
C1 Costs of equipment, materials and supplies
C2 Admission, rental fees, other charges

Time Commitments
T1 Work commitments
T2 Family commitments
T3 Lack of time because of other leisure activities

Facilities
F1 Overcrowded recreation facilities or areas
F2 Recreation facilities/areas poorly maintained

Figure 2. Configuration for 17 Leisure Constraints by Gender

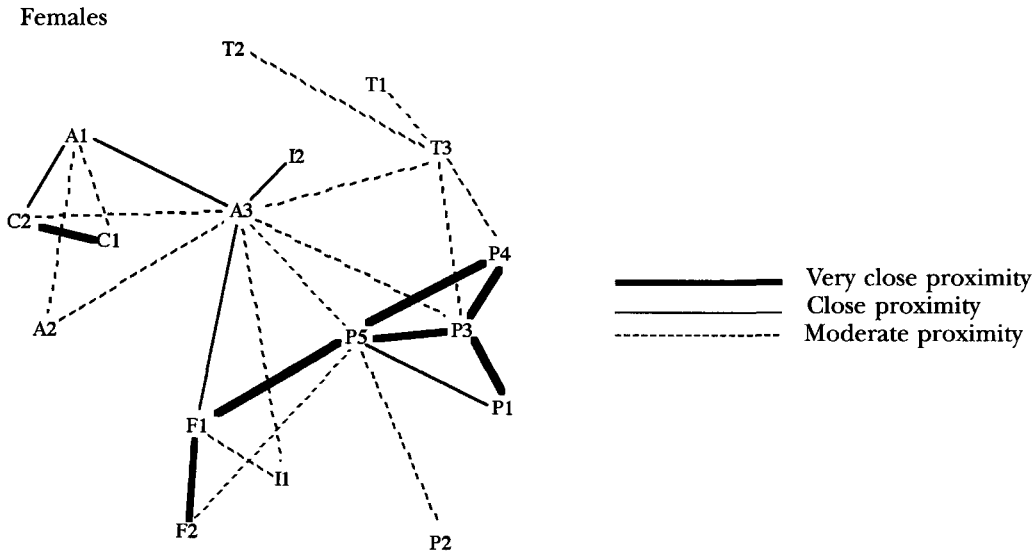

Figure 2. (Continued)

interest is part of the "personal reasons" dimension identified in both this study and the Jackson (1993) study. This constraint appeared to have little perceived similarity with cost and accessibility items, and more linkage with motivational factors, physical well-being, and constraints related to other people.

Accessibility and facility-related dimensions appeared to be related through the close proximity between "overcrowded recreation facilities and areas" and "no opportunity to participate near home" (M = 3.42). Likewise, accessibility and cost dimensions appeared to be related through the close proximity of "cost of transportation" and "cost of equipment" (M = 3.37), as well as the close proximity of "cost of transportation" and "admission, rental fees, other charges" (M = 3.31).

Jackson's study (1993) indicated a strong factor loading on the time constraint dimension (work commitments = .88; family commitments = .87). In this study, which included the constraint "involved in other leisure activities," there was only moderate association between work and other leisure activities (M = 3.62) and little similarity perceived between work and family commitments (M = 4.36). Only other leisure activities and family commitments were perceived as having close proximity (M = 3.34). The time constraint dimension outlined in Jackson's (1993) study does not take into account similarities between the items within the dimension. Thus, two time constraints, "work commitments" and "family commitments" are in fact both time commitments. This study, however, demonstrated that inclusion in a dimension did not necessarily imply similarity in perceptions between or among the items making up the dimension.

Gender-specific Dimensionality and Relationships

To determine the stability of the dimensions, separate analyses were conducted for males and females. The results of these analyses provided some differences relative to the perceptions of constraints (See Figure 2 and Table 3). Dimensions were much more clearly defined for males than for females. Three theorized dimensions, personal reasons, cost and facilities, were confirmed. The accessibility dimension, however, which was so apparent in the global analysis, appears to be influenced more by the male cohort. In the female cohort, the relationship among the three items was dominated by close proximity values, compared to very close proximity values for the males (M = 3.53, 3.77, 3.28; 2.58, 2.68, 2.97, females and males respectively).

The time dimension is vividly represented in the male cohort in which both of the relationships were of close proximity (M = 2.98, 2.91). Regardless of the form of analysis, there appears to be little perceived connection between work commitments and family commitments as leisure constraints. Another gender-specific difference worth noting is the strong connection that females indicated between losing interest in participating in activities and overcrowded facilities (M = 3.17), compared to M = 4.29 for males.

TABLE 3
Matrix of Mean Similarity Ratings for Seventeen Leisure Constraints

	Work	Family	Charges	Nooport	Physunab	Dkwhere	Trans	Lowenerg	Nointer	Oleis	Noseldis	Noskill	Poorfac	Costtran	Costequi	Findoth	Crowded
Work	—																
Family	4.36	—															
Charges	5.13	4.95	—														
Nooport	3.92[m]	3.83[m]	3.86[m]	—													
Physunab	4.94	5.15	5.56	4.46	—												
Dkwhere	5.13	4.91	4.73	3.50[m]	4.71	—											
Trans	4.94	4.95	4.26	3.37[c]	4.50	3.90[m]	—										
Lowenerg	3.78[m]	4.42	5.03	4.00	4.02	4.63	4.71	—									
Nointer	4.57	4.03	4.27	3.66[m]	3.54[m]	3.85[m]	4.91	3.14[vc]	—								
Oleis	3.68[m]	3.34[c]	4.87	3.81[m]	5.06	4.47	4.87	4.28	4.23	—							
Noseldis	4.14	4.55	4.71	3.75[m]	3.80	4.77	5.02	3.13[vc]	3.08[vc]	3.75[m]	—						
Noskill	4.73	5.60	4.83	4.39	3.54[m]	4.25	4.77	4.08	3.16[vc]	4.52	3.37[c]	—					
Poorfac	5.24	5.30	3.71[m]	4.18	4.92	4.35	4.87	5.41	3.98	5.30	4.63	5.14	—				
Costtran	4.96	5.34	3.31[c]	3.16[vc]	5.35	4.82	3.18[vc]	5.29	4.68	4.56	4.91	5.28	4.51	—			
Costequi	4.73	4.98	2.81[vc]	4.39	4.78	4.72	4.61	5.08	4.42	4.87	4.51	4.59	3.94	3.37[c]	—		
Findoth	4.60	4.59	5.03	3.64[m]	5.31	4.23	4.17	3.86[m]	3.78[m]	4.33	4.39	4.52	4.91	4.71	4.70	—	
Crowded	5.33	4.70	4.30	3.42[c]	5.07	3.78[m]	4.77	4.73	3.58[m]	4.82	4.19	5.26	2.51[vc]	4.62	4.19	4.72	—

Costtran-Cost of transportation (A1)*
Trans = Lack of transportation (A2)
Nooport = No opportunity to participate near home (A3)

Dkwhere = Lack of knowledge about where to participate (I1)
Findoth = Difficulty in finding others to participate (I2)

Noskill = Lack of necessary skills (P1)
Physunab = Physically unable to participate (P2)
Nodeldis = Requires too much self-discipline
Lowenerg = Low energy level (P4)

vc = very close proximity
c = close proximity
m = moderate proximity

Nointer = Lost interest in participating (P5)

Costequi = Cost of equipment, materials and supplies (C1)
Charges = Admission, rental fees, other charges (C2)

Work = Work commitments (T1)
Family = Family commitments (T2)
Oleis = Lack of time because of other leisure activities (T3)

Crowded = Overcrowded recreation facilities or areas (F1)
Poorfac = Recreation facilities / areas poorly maintained (F2)

* keyed to Figure 1

TABLE 3
(Continued)

	Work	Family	Charges	Nooport	Physunab	Dkwhere	Trans	Lowenerg	Nointer	Oleis	Noseldis	Noskill	Poorfac	Costtran	Costequi	Findoth	Crowded
Work	—																
Family	4.06	—															
Charges	5.37	5.01	—														
Nooport	4.24	4.10	3.72^{m}	—													
Physunab	5.00	5.55	5.37	4.98	—												
Dkwhere	5.56	5.26	5.10	3.63^{m}	4.88	—											
Trans	5.46	5.59	4.31	3.77^{m}	4.58	4.02	—										
Lowenerg	3.94^{m}	4.87	4.84	4.15	4.64	4.48	5.05	—									
Nointer	4.92	4.64	4.06	3.75^{m}	3.90^{m}	4.24	4.83	3.18^{vc}	—								
Oleis	4.14	3.58^{m}	5.36	3.89^{m}	5.31	4.77	5.37	4.71	4.41	—							
Noseldis	4.45	4.97	4.56	3.72^{m}	4.06	4.77	5.06	3.16^{vc}	2.97^{vc}	3.74^{m}	—						
Noskill	4.92	5.38	4.52	4.15	4.02	4.53	4.45	4.26	3.43^{c}	4.70	3.22^{c}	—					
Poorfac	5.18	5.54	3.71^{m}	4.07	4.77	4.36	4.76	5.48	3.79^{m}	5.41	4.74	4.90	—				
Costtran	4.88	5.27	3.35^{c}	3.28^{c}	5.40	4.88	3.53^{m}	5.33	4.41	4.81	4.74	5.05	4.61	—			
Costequi	4.55	4.81	2.88^{vc}	3.99	4.96	4.71	4.12	4.80	4.10	4.98	4.24	4.46	4.07	3.70^{m}	—		
Findoth	4.44	4.68	5.18	3.39^{c}	5.80	4.57	4.50^{m}	4.18^{c}	4.04	4.74^{m}	4.79	4.55	4.99	4.84	4.55	—	
Crowded	5.42	4.83	4.44	3.37^{c}	5.07	3.71^{m}	4.67	4.81	3.17	5.11	4.34	5.23	2.66^{vc}	4.86	4.34	4.99	—

Costtran-Cost of transportation (A1)*
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Crowded = Overcrowded recreation facilities or areas (F1)
Poorfac = Recreation facilities / areas poorly maintained (F2)

* keyed to Figure 1

vc = very close proximity
c = close proximity
m = moderate proximity

Discussion and Conclusions

This study was able to support the theorized aggregation of constraints into three theorized dimensions and verify that these dimensions, as suggested in the Jackson (1993) study were identifiable.

Aggregation of Constraints

In Jackson's (1993) paper, "Recognizing patterns of leisure constraints: Results from alternative analyses," he concluded:

> the need for exact replication of the clusters uncovered in the present study is less important than the desirability of investigating whether an identical structure exists within constraints data..., and whether this structure consists of combinations of constraints which have not been revealed in previous research (p. 147).

By focusing on the similarities and differences that adults perceived between pairwise comparisons of the primary leisure constraints as defined in the literature, it was possible to develop a meaningful interpretation of how constraints relate to each other and in turn form dimensions.

Three general categories of constraints surfaced as fairly distinct groups: cost, personal reasons, and facilities. The accessibility dimension, while vividly represented within the male cohort, showed a much weaker aggregation within the female cohort. Thus, the map in Figure 1 represents a strong male influence, but is not representative of perceived similarity for both genders. Each category, or dimension, was made up of several individual items, or constraints. The aggregating of the individual items into recognizable groups on a "map" suggested, in terms of face validity, that relationships among individual constraints actually do exist. The closest association among individual constraints occurred in the "cost" and "facility" dimensions. However, the "personal reasons" dimension should be regarded as the strongest as there are five items that show a relatively complete aggregation. The "looseness" of the time commitments and social isolation dimensions indicates that additional research is needed to determine, as Jackson (1993) indicated, if the combination of constraints is in fact the appropriate assemblage of items or if there are other items that have yet to be revealed.

It is important to understand the relative composition of dimensions for two reasons. First, for those involved in experience marketing, an understanding of the combination of factors that are assimilated through perceptions about constraints allows more accurate images to be created through the written and spoken word, as well as through visual imagery. In other words, it becomes possible to use several items that are perceived as related constraints (forming into a dimension) to facilitate participation, interest and/or understanding of leisure experiences.

Second, knowledge of dimensionality affords a better understanding of the perceived relationships that exist among factors that may not be as visibly related to leisure. For example, when no opportunity to participate near home exists, we now know that a variety of factors other than related acces-

sibility concerns are affected or affect leisure participation—for example, lack of knowledge about where to participate, and/or concern over overcrowded recreation facilities or areas are perceived to be related to lack of nearby opportunities. Thus, addition of opportunities for leisure experiences near groups of individuals affected by lack of nearby opportunities should, in fact, have an effect on eliminating or modifying the effects of other perceived constraints.

Based on the current study, we can be fairly certain that constraints do not act alone to constrain leisure, but instead may be represented through dimensions that describe relationships between and among similarly perceived constraints. Associations indicated through close and moderate proximity relationships appear to support this notion.

Perhaps of equal importance is the realization that constraints do not always work in clear cut dimensions either. While these relationships have been hypothesized in previous studies, this study helped congeal the formation of identifiable dimensions. However, the profusion of moderate relationships among constraints still needs to be addressed in future studies. Perhaps more clarity would be present if examination focused on specific types of activities instead of looking at constrained participation in a general context. In addition, recent studies (Messner & Sabo, 1991; Raymore, Godbey, & Crawford, 1994; Shaw, 1994) that focused on gender-specific issues related to leisure constraints indicated that there may be a host of other variables that need to be considered before the study of dimensionality of leisure constraints is exhausted. Finally, from the perspective of building theory, it is important that closer examination be given to the composition of dimensions across the life span. Thus, the perspectives of youth, adolescents, and senior adults should be the focus of future studies related to dimensionality of leisure constraints.

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