DOCUMENT RESUME

ED 329 044   EC 300 036

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TITLE   Identifying Residential and Day Programs for Adults
              with Developmental Disabilities: An Application of
              Discriminant Analysis.
PUB DATE   May 90
NOTE   33p.; Paper presented at the Annual Meeting of the
              American Association on Mental Retardation (Atlanta,
              GA, May 27-31, 1990).
PUB TYPE   Speeches/Conference Papers (150) -- Reports -
              Evaluative/Feasibility (142)

EDRS PRICE   MF01/PC02 Plus Postage.
DESCRIPTORS   Adaptive Behavior (of Disabled); Adults; Behavior
              Problems; *Behavior Rating Scales; Day Programs;
              Decision Making; *Developmental Disabilities;
              Discriminant Analysis; Evaluation Methods;
              Multivariate Analysis; *Placement; Place of
              Residence; *Predictive Measurement; Residential
              Programs
IDENTIFIERS   Inventory for Client and Agency Planning

ABSTRACT
              Making decisions about residential or day program
placement for adults with developmental disabilities requires
examination of multidimensional measures of behavior and thus the use
of multivariate statistical techniques along with expert opinion.
This study used adaptive and maladaptive cluster scores on the
Inventory for Client and Agency Planning (ICAP) to examine the
multidimensional nature of behavioral characteristics for 1,884
adults with developmental disabilities, identified the variables
having the strongest relationship with various residential and/or day
programs, and predicted current residential and day program
placement. The ICAP consists of seven behavior scales: motor skills,
social/communication skills, personal living skills, community living
skills, maladaptive behavior, asocial maladaptive behavior, and
externalized maladaptive behavior. The study makes the following
conclusions: (1) there is statistical support for the residential and
day program placement decisions made by consensus building among team
members and by expert opinion; (2) errors in prediction based on the
multivariate analysis were in favor of the less restrictive
environment; (3) adaptive behavior was the theoretical construct best
discriminating among adults in residential and day programs; and (4)
support is provided for the use of multivariate statistical
techniques as a tool in the decision making process. (20 references)
(JDD)

ED329044

Identifying Residential and Day Programs

for Adults with Developmental Disabilities:

An Application of Discriminant Analysis

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Paper presented at the 114th Annual Meeting of the
American Association on Mental Retardation

Atlanta, May, 1990

C 300036

Introduction

Two primary placement decisions made for adults with developmental disabilities are residence and day program. Professionals and concerned individuals use information collected during an evaluation period to identify the residential and day programs which are most appropriate for a given client with developmental disabilities. The team considers personal characteristics of the clients and environmental characteristics of various program alternatives in making a decision regarding the most appropriate residential and/or day program for the referred client. Schalock (1985) describes this process as an ecological service delivery model in that consideration of both personal and environmental variables enables decision makers to identify the best person-environment match.

An increasing emphasis is being placed on the quantitative and formal assessments conducted during this evaluation period (Brown, Davis, Richards, & Kelly, 1989); these standardized measures of personal characteristics are regarded by many decision makers as the more important criteria to consider in making decisions (Halpern, Lehmann, Irvin, & Heiry, 1982). That is, performance on a number of related independent measures (e.g., adaptive and maladaptive behavior, achievement, physical and medical problems) may be used in part to identify or "predict" the most appropriate program or services for a given client.

An important part of the decision process then is to examine the multidimensional measures of behavior, weigh each measure in terms of its importance to the decision making process, and select those variables essential for obtaining the best possible person-environment match. Many researchers (Haney, Heal, 1987; Heal, 1985; Palmer, 1975; Vitello, Atthowe, Cadwell, 1983) have suggested that the characteristics of persons with developmental disabilities are multidimensional in nature. It seems appropriate then that multivariate statistical techniques should be used along with expert opinion in the decision

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making process. However, there is little evidence in the literature that the decisions made from multiple measures have been based in part on multivariate statistical techniques.

This study will demonstrate an application of one multivariate technique, discriminant analysis, to a large data set. Adaptive and maladaptive cluster scores on the Inventory for Client and Agency Planning (ICAP; Bruininks, Hill, Weatherman & Woodcock, 1986) and other variables will be used to examine the multidimensional nature of behavioral characteristics for adults with developmental disabilities in various residential and day programs, to identify the variables having the strongest relationship with various residential and/or day programs, and to predict current residential and day programs for adults with developmental disabilities. Another primary purpose of this research is to examine the role of multivariate statistical techniques in the fields of developmental disabilities and special education. The following research questions will be discussed in this study:

1. What are the relationships among the ICAP predictor variables used in these analyses?

2. Do the ICAP predictor variables individually differentiate among the residential and day program levels?

3. Can the composite predictor variables obtained from discriminant analyses be interpreted?

4. What combinations of ICAP variables are selected in stepwise discriminant analyses as good predictors of current residential and/or day program for adults with developmental disabilities?

5. Are the composite predictor variables obtained from discriminant analyses effective in predicting level of residential and day program for developmental and cross-validation samples of adults with developmental disabilities?

6. What implications and recommendations for future research and clinical practice are suggested from this study?

A number of limitations are evident in this type of research. First, this study is not experimental and thus inferences of causality are inappropriate. Second, the current program is not necessarily the "best" or most appropriate program for a given client. The inclusion, however, of only those subjects in the sample whose current residential and day programs were identical to the recommended placements increases the likelihood that adults were in the best possible environment. Finally, although the adaptive and maladaptive behaviors used in this study are generally recognized as the most important characteristics to consider in the decision making process, other variables may also be evaluated. Medical problems, functional limitations, client and family wishes, and finances as well as environmental characteristics may also be important in identifying the best possible person-environment match.

It is hoped that the findings from this research will support the application of multivariate statistical techniques in the decision making process for persons with developmental disabilities and provide decision makers with another tool for obtaining the best person-environment match. The outcomes of this study then may directly affect the lives of people with developmental disabilities by itr contributions to the decision making process. This study will be of interest to research methodologists as well to researchers, policy makers and others concerned with the welfare of people with special needs.

Methodology

The Subjects

The total sample consists of 1884 adults with developmental disabilities. These subjects were selected from a larger sample of 9176 subjects used in validation and research studies of the Inventory for Client and Agency Planning (ICAP). Criteria used to select subjects for the sample of 1884 included: ..ge between 22 and 62 years, diagnosis of mental retardation, no missing data on predictor or outcome variables, residence and day

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program described as one of the settings in the continuum outlined below, and current residence/day program identical to recommended residence/day program.

The demographic characteristics of the total sample (N = 1884) are summarized for the total group in Table 1. The subjects in this sample represent a cross-section of different geographical regions of the United States with 6.3% of the subjects from Georgia, 30.8% of the subjects from Montana, 32.0% of the subjects from South Dakota, and 30.8% of the subjects from Utah in the total group.

Insert Table 1 about here

Gender, age, race, and ethnic background characteristics are also described for the total group in Table 1. The percentage of males (55.0%) in the total sample is slightly higher than the percentage of females (45.0%). A greater percentage of adults in the total sample (64.1%) are between the ages of 22 and 39 years with the mean age for the entire group 37.31 years. The majority of adults in the total group are Caucasian (92.6%) and not Hispanic (99.1%). Other races represented in the total sample are Black (1.7%), Oriental, Asian, or Pacific Islander (0.1%), American Indian or Alaskan Native (5.0%) and Other (0.5%).

A further description of subjects by marital status and legal status for the total group is presented in Table 1. The majority of subjects in the total group have never been married (96.7%) and are legally competent adults (56.4%). The marital status of others in this total sample are married (1.8%), separated (0.3%), divorced (1.2%), and widow or widower (0.1%). The legal status of other adults in the sample are parent or relative as

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guardian or conservator (31.1%), non-relative as guardian or conservator (2.7%), state or county as guardian or conservator (5.7%), and other (4.2%).

A stratified random sample of 400 was selected from 6 residential program levels and was used in the analyses of: independent living (IL) and residential facilities (RF), independent (I) and independent with monitoring (IM) programs; semi-independent (S-I) and continuous care (CC) programs; and group home (GH), nursing facility (NF), and state institution (SI) programs. Sample size of each level $(N_I = 63, N_{IM} = 137, N_{S-I} = 50, N_{GH} = 50, N_{NF} = 50, N_{SI} = 50)$ was selected so that there were 200 each in the primary analyses of independent living programs (IL) and residential facilities (RF). A second stratified random sample of 280 (.70 from each level) was obtained for development of the prediction equation in the analyses of independent living and residential facility programs. The remaining 120 subjects was used for cross-validation purposes in these analyses.

A second stratified random sample of 400 was selected from 5 day program levels and was used in the analyses of: work (W) and training (T) programs, community-based (CB) and sheltered workshop (SW) programs, competitive employment (CE) and supported employment (SE) programs, and work activity center (WAC) and day activity center (DAC) programs. Sample size of each level $(N_{CE} = 43, N_{SE} = 60, N_{SW} = 97, N_{WAC} = 100, N_{DAC} = 100)$ was selected so that there were 200 subjects each in the primary analyses of work programs (W) and training programs (T). A second stratified random sample of 280 (.70 from each level) was obtained for development of the prediction equation in the analyses of work (W) and training (T) programs. The remaining 120 subjects was used for cross-validation purposes in these analyses.

The instrument

Many researchers (Borthwick, Meyers, Eyman, 1981; Borthwick-Duffy, Eyman, & White, 1987; Chadsey-Rusch & Gonzalez, 1983; Haney, 1988; Hill, Lakin, & E . ninks, 1988; Rotegard, Bruininks, Gorder Holman, Lakin, 1985; Salzberg, Likins,

McConaughy, & Lignugaris/Kraft, 1986) have discussed the relationships between personal characteristics of adults with developmental disabilities and success in various residential and day program placements. Adaptive behavior and maladaptive behavior, especially, are regarded as important variables to consider in the decision making process.

The Inventory for Client and Agency Planning or ICAP (ICAP; Bruininks, Hill, Weatherman, & Woodcock, 1986) has been described as a comprehensive instrument which may be used to assess the personal characteristics of clients. A thorough description of adaptive behaviors and maladaptive behaviors and other characteristics may aid decision makers in identifying appropriate services and programs for persons with developmental disabilities. Furthermore, this instrument has been carefully developed and was standardized on a large national sample (Heal, 1988).

The ICAP consists of four adaptive behavior scales and three maladaptive behavior scales. The adaptive behavior scales are: motor skills, social/communication skills, personal living skills, and community living skills. The maladaptive behavior scales are: internalized maladaptive behavior, asocial maladaptive behavior, and externalized maladaptive behavior. These seven scales will be used to predict residential and/or day program for this sample of subjects.

Statistical Analyses

Discriminant analysis was chosen as an appropriate statistical technique to use in answering the research questions outlined above. Discriminant analysis is one of many multivariate statistical techniques. Harris (1985, p. 5) describes multivariate techniques as "an assortment of descriptive and inferential techniques that have been developed to handle situations in which sets of variables are involved either as predictors or as measures of performance." He adds that multivariate techniques are useful in situations where experimental manipulation affects many different but partially correlated aspects of the subject's behavior.

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Discriminant analysis constructs a new composite variable (Y) from a linear combination of two or more related variables (Xs). The new variable may be expressed as $Y = a_1X_1 + a_2X_2 + \ldots + a_pX_p$. The a's are weights for each of the original variables. This new variable is constructed to maximize the difference between two or more groups. The composite variable (Y) is constructed from a set of quantitative, independent or predictor variables and is used to predict group membership, the qualitative dependent or outcome variable. An optimization procedure is used to make the test statistic as large as possible.

The advantages of discriminant analysis over univariate techniques have been reviewed in the literature on multivariate statistical techniques (Harris, 1985; Tatsuoka, 1971). First, the new composite variable may be more important than any of the original variables in terms of interpretability and its ability to differentiate between groups. Discriminant analysis may help in interpreting the dimension(s) along which the groups differ. Second, the new composite variable may be used to predict group membership for subjects. If the new composite variable or discriminant function is effective in discriminating between groups, then predicted group membership should match actual group membership for most subjects. Third, discriminant analysis provides a solution to problems produced by multiple comparisons of variables. The experimentwise error rate (the probability of making one or more Type I errors) is controlled and thus the probability that findings are due to chance is reduced. Finally, by using a stepwise procedure, discriminant analysis assists in identifying those variables which are most important for predicting group membership.

Residential Program Analyses

A typology of living environments, based on a least restrictive to most restrictive continuum, can be constructed by considering the type of residential setting, the services and supervision provided by each program, the focus of training programs in various

settings, the cost of each alternative, and the characteristics of the residents in each setting. The literature on living environments for people with developmental disabilities suggests that there are two primary residential options: independent living programs and residential facility programs. The definition of a residential facility (RF) as "any living quarters that provide 24-hour, 7-days-a-week responsibility for room, board, and supervision of mentally retarded people" (Hill, Lakin, & Bruininks, 1988, p. 93) seems appropriate for settings like semi-independent living programs, group homes, nursing facilities, and state institutions. Independent living programs (IL) may be defined then as any public housing that does not provide readily available supervision or special services for people with mental retardation (Chadsey-Rusch & Gonzalez, 1988).

These two alternatives, independent living programs and residential facilities, may be further typed by the level and type of service clients receive, the amount of supervision available, the cost of the program, and the behavioral characteristics of clients. Clients in independent living programs are higher functioning and may be classified as totally independent (I) or independent with some periodic supervision, training, and/or monitoring (IM). Clients in residential facilities may be classified as needing continuous care, personal living skills training, and substantial supervision (CC: group home, nursing facility, state institution) or community living skills training, intermittent care, and occasional supervision (S-I: semi-independent living program). This typology of residential program alternatives will provide a framework for the studies of residential programs discussed in this study and is summarized in Table 2.

Insert Table 2 about here

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Day Program Analyses

A typology of day programs, based on a least restrictive to most restrictive continuum, can be constructed by considering the overall purpose of the program, the opportunities for integration with non-disabled workers, the goals and objectives of training programs, and the characteristics of the clients in each setting. The literature on day programs for people with developmental disabilities suggests that there are two primary day program alternatives: work programs (W) and training (T) programs (Schutz, 1988; Schalock, 1985; Rusch & Mithaug, 1980). The definition of work as a meaningful, remunerative vocational activity (Schutz, 1988) seems appropriate for programs like competitive employment, supported employment, and sheltered workshops. Work programs may be further typed by the opportunities for integration with non-disabled workers; competitive employment and supported employment are integrated, community-based programs (CB) while sheltered workshops (SW) are generally located in segregated settings. Training programs, on the other hand, focus on improving personal, community living, and/or vocational skills as preparation for work programs. Work activity centers (WAC) and day activity centers (DAC) are both considered training programs. This typology of day program alternatives will provide a framework for the studies of day programs discussed in this study and is summarized in Table 3.

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Insert Table 3 about here

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Results

Research questions one to five are restated below and the analyses related to each question are discussed.

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1. What are the relationships among the ICAP predictor variables used in these analyses?

Multivariate statistical techniques should be used only if there is a relationship among the predictor variables (Harris, 1985). The pooled within group correlation matrices for residential and day program analyses (Tables 4 and 5) provide support for the use of a multivariate approach in this study. In general, there were low to moderate correlations (-.12 to .52) among maladaptive and adaptive scales, moderate correlations (.41 to .64) among the maladaptive scales, and moderate to high correlations (.49 to .91) among the adaptive scales. High correlations among some adaptive scales suggest that there is an overlap in the adaptive behaviors assessed by some scales.

Insert Tables 4 and 5 about here

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2. Do the ICAP predictor variables individually differentiate among the residential and day program levels?

Descriptive statistics and univariate analyses of variance on the ICAP predictor variables are also of interest. Table 6 summarizes the findings for the residential analyses. In the primary analyses of residential alternatives (independent living programs and residential facilities) and in the analyses of continuous care settings (group home, nursing facility, and state institution) there were significant overall differences in the programs (p < .001) on all adaptive and maladaptive ICAP scales. In comparisons of the two independent living programs (independent and independent with monitoring), results show there were significant differences (p <.05) between the two programs only on Internalized Maladaptive Behavior and Social/Communication Adaptive Behavior scales. In the analyses of residential facilities (semi-independent programs and continuous care programs), there

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were significant differences (p <.05) between the two programs on all adaptive behavior scales and on Externalized Maladaptive Behavior.

In general, adults in less restrictive residential settings had more adaptive behavior skills and fewer problem behaviors. In contrast, adults in more restrictive settings had fewer adaptive behavior skills and more problem behaviors. An exception to this conclusion was noted in the analyses of the continuous care settings (group homes, nursing facilities, and state institutions). Adults in nursing facilities were less likely to demonstrate maladaptive behaviors than those in group homes.

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insert Table 6 about here

The oneway analyses of variance for day programs are summarized in Table 7. In the first two day program analyses (work programs and training programs, community-based programs and sheltered workshops), there were significant differences (p < .001) between the programs on all adaptive and maladaptive ICAP scales. In the analyses comparing the two community-based programs (competitive employment and supported employment), there were significant differences (p < .05) between the programs on Social/Communication Adaptive Behavior and Community Skills Adaptive Behavior. In the analyses of work activity centers and day activity centers, significant differences (p <.001) were found between the two activity centers on all adaptive behavior scales and on Internalized Maladaptive Behavior.

In all analyses, it was found that adults in less restrictive day programs had more adaptive behavior skills and fewer maladaptive behaviors. In contrast, adults in more restrictive day programs had fewer adaptive behavior skills and more problem behaviors.

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Insert Table 7 about here

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3. Can the composite predictor variables or discriminant functions obtained from discriminant analyses be interpreted?

Standardized discriminant function coefficients and structure coefficients may be used as aids in the interpretation of the new composite variable or discriminant function. Large coefficients on the original variables may be used to interpret the characteristic or construct (the composite variable) which maximizes the difference between the programs. In most analyses, a construct which might be called adaptive behavior seems to be differentiate among people in the various residential and day programs. In the analyses of independent living programs (independent and independent with monitoring) and continuous care programs (group home, nursing facility, and state institution), however, interpretation of the discriminant function is not as clear. Consistency between the two coefficients is not evident; thus, labeling of the discriminant function is not possible.

Insert Tables 3 and 9 about here

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4. What combinations of ICAP variables are selected in stepwise discriminant analyses as good predictors of current residential and/or day program for adults with developmental disabilities?

Stepwise discriminant analyses may be used to identify those ICAP variables most important in differentiating among residential and day programs. Minimization of Wilks' Lambda was used as the criterion for determining the order of entry for the ICAP variables.

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Tables 10 and 11 summarize the results of these analyses. In the residential and day program analyses, only a few variables were identified as the most important predictors of residential and/or day program placement. The correlations among the ICAP predictor variables and the results of the stepwise analyses suggest that not all variables are needed to construct a composite variable which distinguishes among placements. In most analyses, an adaptive behavior measure like Community Living Skills or Personal Living Skills was identified as the most important ICAP variable for distinguishing among the residential and day programs. In all analyses, fewer than the seven ICAP variables were found to be sufficient for differentiating among the programs.

Insert Tables 10 and 11 about here

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5. Are the composite predictor variables obtained from discriminant analyses effective in predicting level of residential and day program for samples of adults with developmental disabilities?

Classification tables (Tables 12 and 13) may be used to determine the effectiveness of the discriminant function in predicting residential and day programs for adults with developmental disabilities. If the discriminant function is effective in discriminating among groups, predicted group membership should match actual group membership for most subjects. A "hit" rate (the total percentage of correct predictions) can be calculated from the classification table and used as an index of the effectiveness of the discriminant function in discriminating among groups.

A number of findings are important to note. First, the results in the majority of residential and day program analyses show that the composite variables constructed from the four adaptive behavior and three maladaptive behavior ICAP scales (Direct) and from

the scales selected in stepwise analyses (Stepwise) are effective in matching actual placement with predicted placement at a level appreciably higher than chance. One notable exception to this is the analysis of independent living programs (independent and independent with monitoring); the total percentage of correct classifications (55.5%) based on the discriminant function was not much better than chance.

Second, in most analyses errors in prediction (subjects whose predicted placement did not match actual placement) were in favor of the less restrictive environment. That is, the discriminant function, constructed from adaptive and maladaptive behavior scores, predicted placement in a less restrictive setting than the actual current placement. or example, in the analysis of independent living programs and residential facilities, 16.4% of the adults currently living in residential facilities were predicted to be residing in a less restrictive setting (independent living programs), while only 7.9% of the adults currently living in independent living programs were predicted to be in a more restrictive setting (residential facilities).

Third, the "hit" rates for cross-validation samples in the first analyses of residential programs (independent living programs and residential facilities) and in the first analyses of day programs (work programs and training programs) validated the results obtained by the developmental samples. In the analysis of independent living programs and residential facilities, the "hit" rate was 87.9% for the developmental group and 83.3% for the cross-validation group. In the analysis of work programs and training programs, the "hit" rate for the developmental and cross-validation group was 77.5% and 81.7%, respectively.

Finally, in most analyses there was not a substantial difference in the percentage of correct classifications based on all seven ICAP predictor variables (Direct) and those based only on those variables entered in a stepwise analysis (Stepwise). For example, the total "hit" rate in the analysis of independent living programs and residential facilities was 87.9% in the direct analysis and 87.1% in the stepwise analysis. Thus, discriminant

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functions constructed from only the most important variables were generally as effective in predicting placement as the functions constructed from all seven predictor variables.

Insert Tables 12 and 13 about here

Discussion

A number of conclusions are suggested from this study. In general, there appears to be statistical support for the residential and day program placement decisions made by consensus building among team members and by expert opinion. That is, the personal characteristics that are generally regarded as important in making these decisions also are important in a multivariate statistical model for predicting placement. In some instances, however, these personal characteristics seem to be of little importance in differentiating among programs (independent and independent with monitoring). Perhaps some other characteristics (personal or environmental) provide the basis for these decisions.

Second, errors in prediction based on a multivariate analysis of seven personal characteristics were in favor of the less restrictive environment. That is, the statistical model predicted placement in a less restrictive setting then the actual current placement. Two explanations for this finding are suggested. One explanation is that adults with developmental disabilities are being placed in more restrictive settings than necessary based on adaptive skills and problem behaviors. A second explanation is that other variables (not included in this study) may necessitate placement in a setting with more supervision and care.

Third, adaptive behavior is the theoretical construct represented by the composite variables which best discriminates among adults in residential and day programs. The results of the stepwise analyses, however, suggest that not all adaptive behavior measures

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are needed to construct a composite variable which sufficiently distinguishes among placements. In fact, discriminant functions constructed from subsets of ICAP variables were almost as effective in predicting placement as the functions based on all seven predictor variables. In most analyses, an adaptive behavior measure like Community Living Skills or Personal Living Skills was identified as the most important ICAP variable for differentiating among programs. These results suggest that professionals and concerned individuals could simplify the decision making process by initially examining a subset of personal characteristics that are sufficient for predicting placements. Secondary consideration of all other variables effecting placement outcomes would follow.

Finally, this study provides support for the use of multivariate statistical techniques like discriminant analysis as a tool in the decision making process. Such a tool would provide professionals and concerned individuals with objective information to support the conclusions arrived at by consensus building. The findings from this study suggest that the residential and day programs selected for adults with developmental disabilities are more likely to result in positive outcomes if multivariate techniques are used along with expert opinion in the decision making process.

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Table 1

Demographic Characteristics of Adults in the Total Sample (N=1884)

Adult Characteristic	Percentage
State of Origin	
Georgia	6.3
Montana	30.8
South Dakota	32.0
Utah	30.8
Gender	
Male	55.0
Female	45.0
Age	
22-39 years	64.1
39-62 years	35.9
Race	
Caucasian	92.6
Black	1.7
Oriental, Asian, or Pacific Islander	0.1
American Indian or Alaskan Native	5.0
Other	0.5
Ethnic Background	
Not Hispanic	99.1
Hispanic	0.9
Marital Status	
Never married	96.7
Married	1.8
Separated	0.3
Divorced	1.2
Widow or Widower	0.1
Legal Status	
Legally competent adult	56.4
Parent or relative - guardian/conservator	31.1
Non-relative - guardian/conservator	2.7
State or county - guardian/conservator	5.7
Other	4.2

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Table 2

Analyses of residential programs

Analysis	Independent (I)	Independent/ Monitoring (IM)	Semi- Independent (S-I)	Group Home (GH)	Nursing Facility (NF)	State Institution (SI)
1. Independent Living (IL) & Residentia. Facility (RF)	(IL	IL)	(RF	RF	RF	RF)
2. Independent (I) & Independent/Monitoring (IM)	.)	(IM)	-	-	-	-
3. Semi-Independent (S-I) & Continuous Care (CC)	-	-	(S-I)	(CC	CC	CC)
4. Group Home (GH), Nursing Facility (NF) & State Institution (SI)	-	-	-	(GH)	(NF)	(SI)

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Table 3

Analyses of day programs

	A continuum of day programs from least restrictive to most restrictive				
	Competitive Employment (CE)	Supported Employment (SE)	Sheltered Workshop (SW)	Work Activity Center (WAC)	Day Activity Center (DAC)
Analysis					
1. Work program (W) & Training program (T)	(W	W	W)	(T	T)
2. Community-Based (CB) & Sheltered Workshop (SW)	(CB	CB)	(SW)	-	-
3. Competitive Employment (CE) & Supported Employment (SE)	(CE	(SE)	-	-	-
4. Work Activity Center (WAC) & Day Activity Center (DAC)	-	-	-	(WAC)	(DAC)

Table 4

Pooled Within Group Correlations - Residential Program Analyses

Analysis

1. Independent Living (IL) &
   Residential Facilities (RF)

	1	2	3	4	5	6	7
1. Motor							
2. Social	.72						
3. Personal	.84	.76					
4. Community	.78	.85	.86				
5. Internalized	.22	.34	.26	.35			
6. Asocial	- .04	.08	.05	.11	.47		
7. Externalized	.10	.22	.16	.22	.48	.54	
	1	2	3	4	5	6	7

2. Independent (I) &
   Independent/Monitoring (IM)

	1	2	3	4	5	6	7
1. Motor							
2. Social	.49						
3. Personal	.57	.51					
4. Community	.50	.71	.56				
5. Internalized	.02	.11	.03	.12			
6. Asocial	- .03	.06	.03	.17	.48		
7. Externalized	.07	.14	.10	.14	.50	.54	
	1	2	3	4	5	6	7

3. Semi-Independent (S-I) &
   Continuous Care (CC)

	1	2	3	4	5	6	7
1. Motor							
2. Social	.76						
3. Personal	.91	.83					
4. Community	.79	.90	.85				
5. Internalized	.19	.39	.28	.34			
6. Asocial	- .06	.11	.05	.10	.49		
7. Externalized	.01	.15	.09	.13	.49	.56	
	1	2	3	4	5	6	7

4. Group Home (GH),
   Nursing Facility (NF) &
   State Institution (SI)

	1	2	3	4	5	6	7
1. Motor							
2. Social	.79						
3. Personal	.91	.86					
4. Community	.80	.89	.85				
5. Internalized	.21	.33	.27	.28			
6. Asocial	- .12	- .01	- .03	- .03	.41		
7. Externalized	- .06	.02	.01	.01	.43	.51	
	1	2	3	4	5	6	7

Table 5

Pooled Within Group Correlations - Day Program Analyses

Analysis

1. Work program (W) &
   Training program (T)

		1	2	3	4	5	6	7
1.	Motor							
2.	Social	.80						
3.	Personal	.90	.84					
4.	Community	.81	.90	.86				
5.	Internalized	.26	.43	.36	.43			
6.	Asocial	.06	.16	.15	.17	.49		
7.	Externalized	.07	.17	.17	.18	.50	.60	

2. Community-Based (CB) &
   Sheltered Workshop (SW)

		1	2	3	4	5	6	7
1.	Motor							
2.	Social	.61						
3.	Personal	.82	.67					
4.	Community	.6	.84	.77				
5.	Internalized	.20	.37	.28	.41			
6.	Asocial	.06	.21	.23	.31	.50		
7.	Externalized	.13	.33	.35	.40	.54	.62	

3. Competitive Employment (CE) &
   Supported Employment (SE)

		1	2	3	4	5	6	7
1.	Motor							
2.	Social	.64						
3.	Personal	.82	.70					
4.	Community	.69	.81	.80				
5.	Internalized	.39	.40	.43	.52			
6.	Asocial	.16	.24	.31	.38	.52		
7.	Externalized	.23	.40	.44	.46	.64	.51	

4. Work Activity Center (WAC) &
   Day Activity Center (DAC))

		1	2	3	4	5	6	7
1.	Motor							
2.	Social	.74						
3.	Personal	.88	.82					
4.	Community	.75	.89	.83				
5.	Internalized	.10	.36	.24	.34			
6.	Asocial	-.13	-.02	-.06	-.02	.46		
7.	Externalized	-.08	.02	.01	.04	.45	.54	

Table 6

Descriptive Statistics and Oneway Analyses of Variance - Residential Program Analyses

Analysis		M*			SD*			p
1. Independent Living (IL) & Residential Facilities (RF)		**IL**	**RF**		**IL**	**RL**		
	Motor	498	432		32	59		<.001
	Social	511	444		27	47		<.001
	Personal	530	472		20	47		<.001
	Community	522	446		21	53		<.001
	Internalized	-2	-9		7	11		<.001
	Asocial	-6	-11		9	11		<.001
	Externalized	0	-6		5	10		<.001
2. Independent (I) & Independent/Monitoring (IM)		**I**	**IM**		**I**	**IM**		
	Motor	501	496		30	33		.290
	Social	517	508		27	27		.039
	Personal	531	530		20	20		.558
	Community	526	521		18	22		.072
	Internalized	0	-3		5	8		.008
	Asocial	-5	-6		9	9		.930
	Externalized	1	0		5	5		.279
3. Semi-Independent (S-I) & Continuous Care (CC)		**S-I**	**CC**		**S-I**	**CC**		
	Motor	472	419		29	61		<.001
	Social	472	434		19	49		<.001
	Personal	509	459		19	46		<.001
	Community	485	433		22	55		<.001
	Internalized	-8	-10		10	12		.320
	Asocial	-10	-12		9	12		.469
	Externalized	-3	-7		7	11		.019
4. Group Home (GH), Nursing Facility (NF) & State Institution (SI)		**GH**	**NF**	**SI**	**GH**	**NF**	**SI**	
	Motor	452	403	402	53	57	60	<.001
	Social	453	445	405	42	43	49	<.001
	Personal	487	451	439	35	43	47	<.001
	Community	457	439	404	42	54	53	<.001
	Internalized	-9	-4	-16	10	8	13	<.001
	Asocial	-12	-7	-16	10	11	13	<.001
	Externalized	-6	-3	-11	8	7	14	<.001

* Rounded to the nearest whole number

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Table 7

Descriptive Statistics and Oneway Analyses of Variance - Day Program Analyses

Analysis		M *		SD *		p
1. Work program (W) & Training program (T)		**W**	**T**	**W**	**T**	
	Motor	485	421	42	54	<.001
	Social	494	425	38	48	<.001
	Personal	514	461	33	44	<.001
	Community	504	430	37	51	<.001
	Internalized	- 6	- 14	9	12	<.001
	Asocial	- 7	- 14	11	11	<.001
	Externalized	- 4	- 9	10	13	<.001
2. Community-Based (CB) & Sheltered Workshop (SW)		**CB**	**SW**	**CB**	**SW**	
	Motor	500	469	36	44	<.001
	Social	509	478	34	35	<.001
	Personal	528	499	27	33	<.001
	Community	523	484	29	33	<.001
	Internalized	- 2	- 9	7	10	<.001
	Asocial	- 4	- 11	8	11	<.001
	Externalized	- 1	- 7	8	11	<.001
3. Competitive Employment (CE) & Supported Employment (SE)		**CE**	**SE**	**CE**	**SE**	
	Motor	503	498	40	33	.498
	Social	518	503	35	32	.029
	Personal	532	525	29	24	.231
	Community	533	516	29	27	.003
	Internalized	- 1	- 3	6	8	.209
	Asocial	- 4	- 5	7	9	.349
	Externalized	- 1	- 1	7	9	.757
4. Work Activity Center (WAC) & Day Activity Center (DAC)		**WAC**	**DAC**	**WAC**	**DAC**	
	Motor	443	399	45	53	<.001
	Social	448	403	36	48	<.001
	Personal	482	439	32	44	<.001
	Community	453	406	37	53	<.001
	Internalized	- 11	- 16	12	10	.001
	Asocial	- 12	- 15	11	11	.064
	Externalized	- 8	- 11	12	13	.084

* Rounded to the nearest whole number

Table 8

Standardized Discriminant Function Coefficients and Structure Coefficients - Residential Program Analyses

Standardized Discriminant Function Coefficients - Residential programs

ICAP variables	ICAP Adaptive Behavior				ICAP Maladaptive Behavior		
	Motor	Social	Personal	Community	Internalized	Asocial	Externalized
Analysis							
1. IL & RF	-.23	.33	-.05	.89	-.11	.16	.09
2. I & IM	.07	.37	-.27	.33	.88	-.48	.04
3. S-I & CC	-.66	-.68	1.54	.63	-.25	-.06	.31
4. GH , NF & SI							
Function 1	-.69	1.22	-.61	.22	.32	.13	.22
Function 2	-.37	-.53	1.67	.09	-.09	-.01	.26

Structure Coefficients - Residential programs

ICAP variables	ICAP Adaptive Behavior				ICAP Maladaptive Behavior		
	Motor	Social	Personal	Community	Internalized	Asocial	Externalized
Analysis							
1. IL & RF	.64	.89	.77	.96	.38	.29	.36
2. I & IM	.29	.57	.16	.50	.74	.02	.30
3. S-I & CC	.68	.61	.87	.76	.12	.08	.27
4. GH , NF & SI							
Function 1	-.07	.45	.07	.33	.63	.45	.49
Function 2	.77	.65	.92	.70	.24	.09	.23

Table 9

Standardized Discriminant Function Coefficients and Structure Coefficients - Day Program Analyses

Standardized Discriminant Function Coefficients - Day programs

ICAP variables	ICAP Adaptive Behavior				ICAP Maladaptive Behavior		
	Motor	Social	Personal	Community	Internalized	Asocial	Externalized
Analysis							
1. W & T	.04	.36	- .33	.91	- .13	.26	- .06
2. CB & SW	- .14	- .37	.15	1.17	.20	.10	- .08
3. CE & SE	- .63	.05	- .30	1.53	.19	- .02	- .48
4. WAC & DAC	- .34	.28	.94	.13	- .11	.25	.07

Structure Coefficients - Day programs

ICAP variables	ICAP Adaptive Behavior				ICAP Maladaptive Behavior		
	Motor	Social	Personal	Community	Internalized	Asocial	Externalized
Analysis							
1. W & T	.75	.91	.78	.96	.41	.33	.20
2. CB & SW	.59	.69	.73	.95	.56	.45	.47
3. CE & SE	.17	.54	.30	.75	.31	.23	.08
4. WAC & DAC	.74	.87	.93	.86	.38	.22	.20

Table 10

Stepwise Discriminant Analysis - Residential Program Analyses

	Variables Entered in Stepwise Discriminant Analysis [*]						
ICAP variables	ICAP Adaptive Behavior				ICAP Maladaptive Behavior		
	Motor	Social	Personal	Community	Internalized	Asocial	Externalized
Analysis							
1. IL & RF	-	-	-	1	-	2	-
2. I & IM	-	-	-	-	1	-	-
3. S-I & CC	2	-	1	-	-	-	-
4. GH , NF & SI	-	2	1	-	-	-	3

* Variables entered in stepwise discriminant analysis

1   First variable entered
2   Second variable entered
3   Third variable entered
-     Variable not entered

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Table 11

Stepwise Discriminant Analysis - Day Program Analyses

ICAP variables	Variables Entered in Stepwise Discriminant Analysis [*]						
	Adaptive Behavior				Maladaptive Behavior		
	Motor	Social	Personal	Community	Internalized	Asocial	Externalized
Analysis							
1. W & T	-	-	-	1	-	-	-
2. CB & SW	-	-	-	1	-	-	-
3. CE & SE	-	-	-	1	-	-	-
4. WAC & DAC	-	-	1	-	-	2	-

[*] Variables entered in stepwise discriminant analysis

1   First variable entered
2   Second variable entered
3   Third variable entered
-    Variable not entered

Table 12

<u>Classification Tables - Residential Program Analyses</u>

<u>Analysis</u>			<u>Direct</u>				<u>Stepwise</u>		

1. IL & RF

$X^2 = 210.63$ $p < .001$		Predicted	IL	RF			IL	RF	
	Actual	IL	92.1%	7.9%			92.1%	7.9%	
		RF	16.4%	83.6%			17.9%	82.1%	
	Total				87.9%				87.1%
	Cross-validation				83.3%				82.5%

2. I & IM

$X^2 = 12.64$ $p = .08$		Predicted	I	IM			I	IM	
	Actual	I	63.5%	36.5%			81.0%	19.0%	
		IM	48.2%	51.8%			56.2%	43.8%	
	Total				55.5%				55.5%

3. S-I & CC

$X^2 = 62.18$ $p < .001$		Predicted	S-I	CC			S-I	CC	
	Actual	S-I	90.0%	10.0%			94.0%	6.0%	
		CC	28.7%	71.3%			32.0%	68.0%	
	Total				76.0%				74.5%

4. GH , NF & SI

$X^2 = 95.42$ $p < .001$ (2 functions)		Predicted	GH	NF	SI		GH	NF	SI
		GH	70.0%	8.0%	22.0%		68.0%	10.0%	22.0%
	Actual	NF	28.0%	58.0%	14.0%		18.0%	66.0%	16.0%
		SI	26.0%	12.0%	62.0%		22.0%	18.0%	60.0%
	Total				63.3%				64.7%

Table 13

Classification Tables - Day Program Analyses

Analysis			Direct		Stepwise	
1. W & T						
$X^2 = 143.59$ $p < .001$		Predicted	W	T	W	T
		W	78.6%	21.4%	81.4%	18.6%
	Actual					
		T	23.6%	76.4%	26.4%	73.6%
		Total		77.5%		77.5%
		Cross-validation		81.7%		80.8%
2. CB & SW						
$X^2 = 70.72$ $p < .001$		Predicted	CB	SW	CB	SW
		CB	79.6%	20.4%	80.6%	19.4%
	Actual					
		SW	28.9%	71.1%	33.0%	67.0%
		Total		75.5%		74.0%
3. CE & SE						
$X^2 = 14.79$ $p = .04$		Predicted	CE	SE	CE	SE
		CE	74.4%	25.6%	79.1%	20.9%
	Actual					
		SE	31.7%	68.3%	33.0%	67.0%
		Total		70.9%		66.0%
4. WAC & DAC						
$X^2 = 61.43$ $p < .001$		Predicted	WAC	DAC	WAC	DAC
		WAC	81.0%	19.0%	81.0%	19.0%
	Actual					
		DAC	31.0%	69.0%	28.0%	72.0%
		Total		75.0%		76.5%