PREDICTORS, CORRELATES, AND CONSEQUENCES OF JOB SATISFACTION IN A UNIVERSITY LIBRARY

DISSERTATION

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By

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The problem with which this investigation is concerned is that of determining the predictors, correlates, and consequences of job satisfaction in a university library. A managerial model was constructed for the purpose of providing an overall framework of analysis. It was hypothesized, in the managerial model, that organizational effectiveness in any organization is linked closely to the concepts of job satisfaction and employee satisfactoriness. These two concepts, in turn, are closely related to managerial behavior.

This investigation focused upon only one box of this managerial model, the job satisfaction concept. The Job Descriptive Index (JDI) was administered to all full-time employees (N=107) of a large, modern library of a state-supported university located in the Southwest. The sample consisted of twenty-two male employees and forty-five female employees of the library. Part-time employees were excluded from the investigation.

An IBM computer was used to analyze the sample data. The scope of the investigation was limited fo four primary

questions: 1) What are the relationships among the fifty-four variables of the study as shown by simple (bivariate) analysis? 2) What are the relationships among the fifty-four variables as shown by multivariate analysis? 3) What are the limitations of correlation and regression analysis for this study? 4) What key parameters emerge as a result of statistical analysis of the data?

Computer programs were developed to analyze the data in order to answer these key questions. A correlation matrix (fifty-four by fifty-four) was printed out by the computer and analyzed on a cell-by-cell basis, using two levels of criticality. The first level was set at $r = 0.2409$ ($p<0.05$). The second level was set at $r = 0.3132$ ($p<0.01$). Using these critical limits thirty-one correlation tables were prepared by the computer.

Bivariate analysis was then performed upon the raw data in order to answer question number one. In general the hypothesis of linearity in the data was found to be a tenable proposition, though several of the significant relationships were found to be at low levels of criticality. Suppressor variables were isolated from predictor variables in the thirty-one tables. Explanations were made for all the significant relationships. If a causal connection existed it was so stated. Where the relationship resulted merely as a result of the structural peculiarities of the experimental design this was also stated.

The multivariate analysis was performed by subjecting the data to stepwise multiple linear regression techniques utilizing computer programs. All of the variables were predicted by the regression program, some several times, using various constraint principles to delimit the multivariate analysis to selected research factors of interest. The five job satisfaction dimensions (Work, Pay, Promotion, People, and Supervision) were predicted by the computer program, using all the research variables as free variables. The JDI (Total) was also predicted.

The limitations of correlation and regression analysis were thoroughly explored throughout the report. The concept of curvilinearity (skewness of data) was contrasted with the reciprocal concept of linearity (regressivity of data). Correlativity was examined as the connecting link between the two concepts.

An abstract mathematical model was developed to explain the rationale of multivariate analysis. The model predicted criterion variables on the basis of a prediction battery of predicated variables drawn from the fifty-four research variables of interest. Superfluous variables drop out of the model equation. The remaining (relevant) variables completely identify the criterion variate.

The concept of multidimensional job satisfaction was found to be an important research concept highly useful in

exploring and explaining many of the environmental and behavioral features of the work setting of a university library.

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CHAPTER I

INTRODUCTION

The question of how the structure of job satisfaction influences the interrelational patterns contributing to organizational effectiveness is being asked with increasing frequency by administrators who have the responsibility for making judgments about who should be hired, retained, promoted, and discharged.

There is little argument about the value of job satisfaction knowledge in providing a sound basis for making managerial decisions in all areas of our society. But making judgments on the effect of varying key parameters of the work situation in a specific job setting appears to be a matter of much complexity, requiring the application of quantitative techniques not always readily available to managerial personnel responsible for those decisions.

It is important that the parameters of job satisfaction be understood by all personnel who are charged with the responsibility for effectuating overall organizational goals and policies. The shape, structure, and constitutive parts of job satisfaction must be discovered and mapped in order that management know the boundaries of the problem facing them.

The elements of job satisfaction interrelate in complex patterns with all elements of the work setting. It requires a great deal of patience and skill to map out these interlinking patterns to get at underlying patterns of reality. By systematizing the information available in the organization it is possible to organize the data in groupings and patterns which fully utilize the knowledge which management needs in making judgments about people, money, materials, and relative job priorities.

Purpose of the Study

The purpose of the study was to determine and map the relationships existing between six dimensions of job satisfaction and forty-eight organizational and biographical variables constituting the environment of the university library.

Statement of the Problem

To accomplish the purposes of the study, the following specific questions were considered:

A. What are the relationships among the fifty-four variables of the study as shown by simple correlational analysis?

B. What are the relationships among the fifty-four variables as shown by stepwise multiple linear regression analysis?

C. What are the limitations of correlation and regression analysis for this study?

D. What key parameters emerge as a result of statistical analysis of the data?

Background and Significance of the Study

Many employers require that employees, as a condition of employment, submit to a battery of personnel tests which are used in the hope of improving the selection of personnel through weeding out those whose test profiles are obviously incongruent with the standard profile of the employee usually hired by the organization. This study is not concerned with such diagnostic tests and questionnaires. Rather this study aims at exploiting the potential of the Job Descriptive Index (JDI), (see Appendix H), the job satisfaction instrument developed by Dr. Patricia Cain Smith and her colleagues during some ten years of research at Cornell University. The results of the so-called Cornell Studies in Job Satisfaction were fully documented by Dr. Smith and published in 1969 (23).

The significance of the present study is related to the question of whether or not job satisfaction affects the organizational effectiveness of a university library, and whether or not job satisfaction determinants can be uncovered that will enable library management to predict satisfaction in its work groups.

This is an important question for those charged with the responsibility for managing a university library. It is also important for those who have the responsibility for deciding what variables will be manipulated in the library and to what extent a predictive apparatus can be constructed or discovered which can guide the judgmental process. The question also has substantial implications for formulating Management Development courses aimed at creating a managerial reserve pool of capable and competent library administrators.

From the personnel selection point of view, this study will help in isolating and defining those variables most closely correlated with job success in a university library. Both the correlational and regressional analyses will aim at defining the constraints and parameters which have the greatest overall impact upon criterion variables. The beta coefficients which emerge from regressional analysis will serve as heuristic parameters defining and organizing the data in the most optimal patterns to further the deepest understanding of the determinants of satisfaction in the library.

In evaluating the degree of success in selection, job satisfaction would seem to be a basic criterion, even though it is sometimes difficult to define and measure. In this study, the criterion of job satisfaction is a direct measure

of the amount of feelings (good or bad) each library employee has about his job in the library, expressed in terms of the Job Descriptive Index (JDI) scales. These scales are based on descriptive measures of the job, as opposed to purely evaluative judgments. Instead of asking the library employee whether his job is good or bad (an evaluative judgment) the Job Descriptive Index (JDI) asks the library employee to describe his job. The JDI scales are based upon a relatively simple numerical scoring key which does the evaluating of the descriptive statements for the employee. Positive and negative statements are appropriately weighted by the coefficients of the scoring key to arrive at definitive evaluations of the job through simple descriptive scales.

To do the best possible job of pre-evaluation of personnel and prediction of job success it is necessary to know the requirements of the job in terms of as many measurable variables as possible, and to match these parameters, insofar as is possible, to the abilities and traits of potential employees. Although this concept seems simple, problems do arise in application. With library personnel one of the specific problems has been that the generic term "librarian" is not descriptive of a homogeneous group. There are many kinds of librarians, all of whom have a unique (though perhaps similar) blend of style and personality. Clayton (1) and Douglass (2) have commented extensively on these differences. Rothwell and Baker (21) recognized this and

developed a checklist to obtain clusters of behavioral patterns to help in differentiating between kinds of employees for prediction purposes.

There have been a number of studies looking at the relationship between job satisfaction and various parameters of organizational effectiveness. The results have not been uniformly consistent. Likert (18) sees the problem as that of providing satisfaction through the creation of a supportive climate in which the ingenuity of the employee finds expression through solving problems under the authority of a benevolent manager. The same author (19) in a later analysis expanded his initial concepts of a supportive management climate to include extensive tables of organizational and performance characteristics of different management systems. A useful appendix of Likert's book lists the organizational variables which impinge upon organizational effectiveness. This study has greatly profited from the cogent analysis by Likert of intervening, causal, and end-result variables which provide a framework of reference in thinking about the problems implicit in managing an organization.

Gellerman (7) regards job satisfaction as a permanent problem of management:

> Morale can never be permanently assured, largely because new dissatisfactions will normally keep arising as old ones are relieved, forgotten, or misplaced. It is neither possible nor desirable

> to satisfy employees needs so well that they no longer find things to be unhappy about. Wanting something more is a normal, healthy, human trait--albeit a troublesome one for management--that makes progress possible.

This view by Gellerman emphasizes the pessimistic conclusions of several writers in the literature to the effect that job dissatisfactions are an inevitable part of the price which society must pay for living in a technologically advanced era. If certain needs such as dignity and self-respect are viewed as remote possibilities in a machine age the management theorist must provide surrogate concepts with which to explain why workers experience varying levels of job satisfaction.

Job satisfaction as an organizational criterion is also a well-established concept. Perrow (20) analyzes the problem of change and job satisfaction as complex phenomena which vary depending upon the type of organization being studied. Organizations are as unique as individuals. What works in one type of organization to produce job satisfaction will only exacerbate matters in another, different type of organization. But if organizational existence is the only legitimate type of human existence possible in the world today, the problems of coping with this type of existence are magnified by the encroachment of technological factors which were scarcely dreamed of in yesterday's work-world.

The relationship between satisfaction and mental health is also well-established. Herzberg (11) exhaustively

describes the two-sided nature of man and the problems which typically arise when the Adam side usurps the Abraham side of man's personality. If job dissatisfactions are allowed to accumulate and fester, the prognosis for organizational effectiveness is questionable, if indeed it can be predicted at all. What is needed is a concept of mental health which recognizes the claims of individual employees to job satisfaction and at the same time gives the right degree of emphasis to the satisfactoriness concept. For the concepts of satisfaction and satisfactoriness are reciprocal and complementary ideas. Gibson (8) comments on these concepts.

What appears to be beyond cavil is that job satisfaction is a measurable human characteristic and that it is very important, not only to management, but to individual employees. Job satisfaction can be measured. During the past fifty years crude instruments have been steadily refined. Presently, one of the most sophisticated instruments available is the JDI developed by Smith.

As Smith, et al. (23), have developed the concept the meaning of job satisfaction has undergone a subtle alteration in basic character since the Cornell studies were commenced in 1959. The fallacy of the single criterion called attention to the need for more sophisticated methods. As a result multi-dimensionality was soon recognized as a legitimate concept for purposes of criterion analysis, as well as

for predictor manipulation. Unidimensionality suffered defeats on all fronts and, for all practical purposes, was laid to rest as a theoretical construct. See the discussion of the job success criterion in Chapter V for an elaboration of this point.

That this is a new approach is evident. Hoppock (16) gave primary stress to identifying the job factors which contributed most to a feeling of satisfaction in a given work situation. Because of this unique emphasis situational factors were often advanced in early studies to account for troublesome areas of employee discontent which could not be collapsed into convenient categories for study and analysis. Later writers took this as evidence of the validity of a universal approach to the study of job satisfaction which had little basis in reality.

Wood (25) pointed out that factor analysis has proven the multidimensionality of job satisfaction. Traditionally job satisfaction had been interpreted as a unidimensional concept. This viewpoint assumed that any positive job-related or environmentally-related element offering satisfaction to a worker would create dissatisfaction in its absence. As a result, according to this theory, the unidimensional concept requires only an overall (global) job satisfaction measure.

Herzberg's (13) two-factor job satisfaction theory was the first significant step toward a multidimensional

description of job attitudes at the professional level. But Herzberg's theory assumed that satisfiers cannot evoke dissatisfaction with the corollary that dissatisfiers cannot evoke job satisfaction. It helps little to say that Herzberg oversimplified the problem. The situation is more complex in a given job setting than Herzberg was willing to admit. To say that his dichotomy was too simple does not say enough. What appears to be a truism is that job satisfaction is a very complex system of feelings, attitudes, and reactions.

The advent of factor analysis techniques gave management theorists a powerful tool for analyzing job attitudes. It is almost as if the reason for advocating global measures of job satisfaction in the early years of research was simply because the computational apparatus for undertaking complex analyses involving a great many variables was not yet available. The computer did much to spur job attitudes research and to give a powerful impetus to the new and innovative computational techniques such as stepwise multiple linear regression analysis. The old standbys, such as distributional analysis and factor analysis were already being utilized to some extent, but usually on a very limited, manual scale which usually meant that the number of variables that could be conveniently examined was very small.

Today the scene has changed considerably. The computer is limited in the number of variables it can analyze only by the ingenuity and skill of the programmer. This study has examined the complex relationships existing between fifty-four variables. The nature of the relationships can be determined by stepwise multiple linear regression techniques. By adding additional beta coefficients and specifying the variables to be included and excluded, the scope of the analysis can be considerably expanded.

Stepwise multiple linear regression analysis is a multivariate technique for identifying the various dimensions of job attitudes. It can be used as a research tool to probe the hyperspace region surrounding criterion variables of interest. Because of its multivariate nature stepwise multiple linear regression techniques must be used with caution. The ordinary principles of analysis which apply to the examination of univariate and bivariate data often do not apply when multivariate data is being examined. These differences will be fully explored in the chapter dealing with multiple regression data.

One of the problems often associated with describing relationships is the effect of group heterogeneity or the phenomenon of group means variability over the range of the controlled variable. It is commonly acknowledged that some group members are more predictable than others (5), for reasons usually unconnected with the study. In the group

under study, there were six subgroupings of interest. These were subgroups based on the major field of study, the ethnic group, the department of the library in which the employee works, the occupation of the employee, and two miscellaneous composite groups.

The two miscellaneous groupings were based on subordinate groups of individuals sharing a common quality that made them distinguishable from other members of a major group. If a member of this subordinate group shared basic similarities with other members of this group, then for the purposes of this study, the individual would be placed in the subgrouping in question. By this process all members of the subgroupings would then be analyzed to determine if the hypothesis of group homogeneity was tenable.

The first miscellaneous composite subgrouping differentiated the employees on the basis of age, sex, educational level, nepotism, student status, student hours carried, tenure, and earnings. For the purposes of stepwise multiple regression analyses, these miscellaneous (composite) variables were considered the experimental or treatment variables. Observations were then paired with the controlled variables to test the hypothesis of covariability. The conditions of the experiment were repeated for each of the controlled variables and for each of the experimental conditions. In every replication the objective was

to reduce residual error as much as possible. A large F-score was interpreted as a successful replication while a small F-score was considered a failure.

The second miscellaneous composite subgrouping dealt with two behavioral phenomena in the library. These were absenteeism and turnover. The other two phenomena were composed of existential characteristics of individual employees of the library. These were supervisor/nonsupervisor status and job level. Dichotomous scales were constructed for the existential categories while interval scales were devised for the phenomena dealing with turnover and absenteeism.

The purpose in including behavioral observations on turnover and absenteeism was to determine the relationships, if any, between job satisfaction and employee behavior. Porter and Lawler (17) hypothesize that the perceived equitability of job rewards determines, in large part, the job satisfaction (feelings) of an employee. If the combined effect of intrinsic and extrinsic rewards is great enough to offset the perceived deficiencies of the job, then positive job feelings can be a motivating factor in causing the employee to come to work. Attendance records were examined in the library to test the basic implications of the Porter/Lawler model of motivation. A subsequent chapter will present a graphical analysis of absenteeism and turnover, along

with other observational and behavioral analyses depending on graphical interpretations of the data.

Definition of Terms

Job Satisfaction. Smith, et al. (23) define job satisfaction as the feelings a worker has about his job. These feelings are heavily influenced by the discrepancies which are perceived between what is expected on the one hand and what is experienced on the job on the other. Perceived alternatives act as moderator variables to determine the overall valence or decathexis of the job. During the course of this study job satisfaction will be viewed as multidimensional rather than unidimensional. Both dichotomous and continuous measurement scales will be used to index the variables under study and the job dimensions under scrutiny will be limited to six, i.e., work, pay, promotion, people, supervision, and total satisfaction. The latter scale will be a simple numerical summation of the other five scales of the JDI.

Variable. For the purposes of this study a variable is limited in meaning to designate any aspect of the library that can conceivably be utilized as a controlled entity along the X_i hyperspace axis. This does not exclude criterion variables but it does limit their use to only those which are capable of hyperspatial extension and covariability with library entities of interest. In the

multiple linear regression equations the variables are distinguished from the constants by the device of printing out the word "CONSTANT" in bold type. It is considered good practice in regressional analysis to precede variables by constants (coefficients) and to reserve the final column on the computer print-out for all "CONSTANTS". Additional descriptions of common usages of the term variable will be made in the chapter on regression analysis.

Multiple R-Square. This is the coefficient of multiple correlation which measures the degree of association between the criterion variable and the prediction battery of variates composed of all the variables along the X_i hyperspace axis. The closer that multiple R-square approaches unity (1.0), the closer the connection between the criterion hyperplane and the prediction battery of independent variables.

Hyperplane. This geometrical concept deals with the spatial configuration taken on by the criterion variate as it relates to the constraints of the hyperspace region. In multivariate analysis the hyperplane is rigidly restricted to a linear configuration consisting mathematically of all the observational points lying in the regression hyperspace. The multivariate regression hyperplane is the hyperspatial least squares analogue of the bivariate linear regression curve. It is defined by a computer program which uses beta

coefficients to load the experimental variables in such a way to ensure the least squares configurational pattern. Any hyperspatial residuals are forced into the constant term of the final regression equation resulting from the stepwise iterations.

Beta Coefficient. This is a numerical constant which is derived from the raw coefficient of the final regression equation. Although it is commonly called a constant, in reality it is a variable which emerges in the process of stepwise linear regression. By hyperspatially manipulating this number in an infinite sequence of normal equations the least squares character of the final regression equation is conveniently ensured. Viewed conceptually this number expresses the impact of a standard deviation change in a controlled variable upon the criterion variable. This impact is also measured in standard deviation units.

Limitations

The specific results of this study should be valid not only for the library population under study, but also for librarians of other libraries in the Interuniversity Council (IUC) area. To extrapolate the results of the study beyond the boundaries of the specific library studied would involve calculated risks of error. Although the statistical methodology developed during the course of the study could conceivably be used in other organizational

settings it would be unwise to extrapolate the process too far. The beta coefficients which are developed in this study are as characteristic of this library as are the fingerprints of an individual. To attempt to impose a regime of beta coefficients on another library is a problematic proposition at best. In a pinch the maneuver might work but the hazards involved are so unpredictable and unanalyzable that the best policy would seem to be to develop a new set of beta coefficients for each library in the IUC fold.

Procedures for Collecting the Data

All librarians (N=107) who were full-time employees of the library were selected to participate in the study. With no advance notice being given, the Job Descriptive Index was mailed to all of these librarians on December 8, 1971. Both professional and nonprofessional categories of employees were included in the survey. Part-time employees were excluded from this study.

A presentation was made by the research team (N=4) to the Executive Committee of the library on February 24, 1972. The team members (Steve Owens, Gene Milbourn, Dennis Donaghey, Bill Vaughn) briefed the Committee on the value of job satisfaction research and presented models and guidelines for carrying out the basic design plan of the research. The seven members of the Executive Committee included the Director of the Library, Dr. David Webb, and

his two Associate Directors and four Assistant Directors, comprising the administrative staff of the library.

Following the initial presentation to the Executive Board another presentation was made by the writer to the Executive Board of the Library Staff Association. This occurred on March 1, 1972. The Executive Board consists of nine members, all employees of the library. The Committee is chaired by Mrs. Sarah Hogan, Assistant Director and Department Head of the Cataloging Division of the library. It was the purpose of this presentation to develop rapport with library employees and to assure everyone that anonymity would be ensured for all participants of the study. A chalk talk was given, outlining the major points involved in the statistical manipulation of the data collected during the study.

On March 9, 1972, a full-scale formal presentation was made by the Research Team (N=7) to the Library Staff Association consisting of all full-time employees of the library. The voluntary meeting was very successful in terms of attendance with a surprisingly large turn-out of employees (ninety-five employees attended the meeting held in the assembly hall on the fourth floor of the library). Team members present were Steve Owens, Gene Milbourn, Bill Loven, Truitt Leake, Glenn LeMoine, Jackie McClelland, and Bill Vaughn. This one and a half hour presentation accomplished much in the way of developing rapport between

research team members and employees of the library. The question and answer session which followed the presentation showed that library employees were interested in the study and would like to participate in order to further overall understanding of the conditions constituting the work environment of the library.

The JDI was then re-administered to all full-time employees of the library who had not previously responded. Sixty-seven employees had completed and returned the questionnaires through the intracampus mail directly to the writer's mail box in the Business Administration Building as a result of the first mailing. Copies of the correspondence with the library employees is included in Appendix I, (Exhibits 2, 3, 4). The (approximately) sixty-seven percent response constitutes the sample upon which all subsequent analysis was based. The JDI's from the second mailing were not included in this analysis. However, they were examined to see if those not responding to the first mailing were different. Significant differences were not found. Statistical analysis considers a sixty-seven percent sample a good, substantial return. And the computer runs which were based on this (relatively) large sample proved the value of the project. Patterns were discovered among the data responses which can be considered indicative of the underlying structure of library relationships.

Procedure for Analysis of the Data

Simple correlations were run on the computer initially. A fifty-four by fifty-four correlation matrix was developed which was then analyzed for significance, using critical ratios of 0.2409 ($p<0.05$) and 0.3132 ($p<0.01$) as set forth in tables appearing in Fisher (6). Rather than setting the critical ratio at one level it was decided to use two levels of significance. In view of the small sample size this decision appears to be a reasonable one in order to utilize as much of the information appearing in the correlation matrix as possible.

Question A (see page 2) was answered by computing the correlation matrix and inspecting this matrix for coefficients which met or exceeded the critical value as specified by Fisher's (6) table. In order to fully answer Question A it was necessary to tediously work through the correlation table cell by cell using a single stratification variable as the controlling principle of analysis. Organizational structure (Departments and Divisions) was utilized as one principle of classification while occupational status constituted another useful principle of stratification.

In answering Question A it is necessary to also consider Question C concurrently since the limitations of correlation analysis become only too painfully apparent as the analysis develops. The structure (design) of the study plays a major role in determining the implications of the

resultant data. In the chapter dealing with interpretation of the correlation matrix this limiting framework of reference will be commented on more extensively.

Question B was answered by a combination of simple correlation analysis and stepwise multiple linear regression analysis keeping in mind the limitations of both methods of analysis. One major difference between the two methods is that simple correlation shows the degree of relationship between only two isolated variables while multiple regression analyzes the degree of relationship existing among many variables simultaneously. The simple correlation coefficient (r) may assume plus or minus values for a particular sawtooth configuration existing between a given Y and X. Similarly, the multiple correlation beta coefficient must be recognized as a hyperspatial phenomenon subject to similar principles of interpretation. The hyperplane (linear) for a specific Y_i is based on a least squares constraint principle which assigns a plus or minus sign to b_i for the X_i in question which averages out (hyperspatially) the sawtooth character of the multivariate correlation coefficient (R) for the X_i and Y_i under study. These issues will become clearer when the analysis is developed in a later chapter.

Question D was answered by examining the overall patterns of relationships which were discovered in answering Questions A, B, and C. Only by exhaustively exploring

the implications of the first three questions can Question D be fully answered. The graphical analyses were very useful in uncovering global patterns of interaction among the fifty-four variables.

The computer runs were indispensable in answering Question D. The computer program on Distribution Statistics and Standard Scores was used to partition the data into numerical subgroupings which could then be paired sequentially with the stratification variables to arrive at overall meaningful patterns. The resultant graphical configurations were then analyzed using interpretative principles lying outside the scope of statistical methodology proper.

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CHAPTER II

SIMPLE CORRELATION ANALYSIS

Introduction

The purpose of this chapter is to examine the correlation matrix to determine if any meaningful patterns exist in the data. The study concentrated on fifty-four variables of interest. Each of these variables was assigned an identifying number early in the study in order to keep the variables separate and distinct in the numerous computer analyses which were subsequently run on the data.

The Variables Used in the Study

The following is a listing of the variables:

1. Work = X_1
2. Pay = X_2
3. Promotion = X_3
4. Supervision = X_4
5. People (Coworkers) = X_5
6. JDI Total = X_6
7. Age = X_7
8. Sex = X_8
9. Educational Level = X_9
10. Nepotism = X_{10}
11. Student = X_{11}
12. Student Hours = X_{12}
13. Tenure = X_{13}
14. Earnings = X_{14}
15. Library Science Major = X_{15}

16. Secretarial Science Major = X_{16}
17. High School Major = X_{17}
18. English Major = X_{18}
19. Elementary Education Major = X_{19}
20. Spanish Major = X_{20}
21. Business Major = X_{21}
22. Physical Therapy Major = X_{22}
23. Speech Major = X_{23}
24. History Major = X_{24}
25. Music Major = X_{25}
26. Home Economics Major = X_{26}
27. Art Major = X_{27}
28. Psychology Major = X_{28}
29. Drama Major = X_{29}
30. Sociology Major = X_{30}
31. Political Science Major = X_{31}
32. Journalism Major = X_{32}
33. Anglo-American = X_{33}
34. Black = X_{34}
35. Chicano = X_{35}
36. Indian = X_{36}
37. Absenteeism = X_{37}
38. Turnover = X_{38}
39. Job Level = X_{39}
40. Supervisor = X_{40}
41. Director Services = X_{41}
42. Central Services = X_{42}
43. Collections Services = X_{43}
44. Cataloging Services = X_{44}
45. Acquisitions Services = X_{45}
46. Bindery Services = X_{46}
47. Public Services/Technical Services = X_{47}
48. New Library/Old Library = X_{48}
49. Satisfied Group/Dissatisfied Group = X_{49}
50. Library Science Major/Non Library Science Major = X_{50}
51. Administrator = X_{51}
52. Professional Librarian = X_{52}
53. Professional Library Assistant (PLA) = X_{53}
54. Clerical = X_{54}

The Continuous Variables

The fifty-four scales of the study were further divided into dichotomous and continuous scales. Binary codings were assigned on the basis of membership in the respective subgroupings. The following is a listing of the continuous scales:

1. Work = X_1
2. Pay = X_2
3. Promotion = X_3
4. Supervision = X_4
5. People (Coworkers) = X_5
6. JDI Total = X_6
7. Age = X_7
8. Educational Level = X_9
9. Student Hours = X_{11}
10. Tenure = X_{13}
11. Earnings = X_{14}
12. Absenteeism = X_{37}
13. Turnover = X_{38}
14. Job Level = X_{39}

The Dichotomous Variables

Appropriate numerical scales were constructed for the continuous variables which recognized maximum and minimum variations in the underlying data. The following is a listing of the dichotomous scales and an explanation of their character:

1. Sex (X_8): If the employee was male, the data was coded a binary one; if the employee was female, the data was coded a binary zero.

2. Nepotism (X_{10}): If the employee was a nepotist, the data was coded a binary one; if the employee was a non-nepotist, the data was coded a binary zero. Nepotists are defined in the North Texas State University Fiscal Regulations (7) as persons related within the second degree by affinity or within the third degree of consanguinity to any person who under the law or University regulations has the appointive (employment) power (or authority) in whole or in part. Under this definition Non-Nepotists constitute, by far, the majority of employees in the library.
3. Student (X_{11}): If the employee was a student, the data was coded a binary one; if the employee was not a student, the data was coded a binary zero.
4. Library Science Major (X_{15}): If the employee was a library science major, the data was coded a binary one; if the employee was not a library science major, the data was coded a binary zero.
5. Secretarial Science (X_{16}): If the employee was a secretarial science major, the data was coded a binary one; if the employee was not a secretarial science major, the data was coded a binary zero.

6. High School Major (X_{17}): If the employee had completed twelve years of schooling, the data was coded a binary one; if the employee had not completed twelve years of schooling, the data was coded a binary zero.
7. English Major (X_{18}): If the employee was an English major, the data was coded a binary one; if the employee was not an English major, the data was coded a binary zero.
8. Elementary Education Major (X_{19}): If the employee was an elementary education major, the data was coded a binary one; if the employee was not an elementary education major, the data was coded a binary zero.
9. Spanish Major (X_{20}): If the employee was a Spanish major, the data was coded a binary one; if the employee was not a Spanish major the data was coded a binary zero.
10. Business Major (X_{21}): If the employee was a business major, the data was coded a binary one; if the employee was not a business major, the data was coded a binary zero.
11. Physical Therapy Major (X_{22}): If the employee was a physical therapy major, the data was coded a binary one; if the employee was not a physical therapy major, the data was coded a binary zero.

12. Speech Major (X_{23}): If the employee was a speech major, the data was coded a binary one; if the employee was not a speech major, the data was coded a binary zero.
13. History Major (X_{24}): If the employee was a history major, the data was coded a binary one; if the employee was not a history major, the data was coded a binary zero.
14. Music Major (X_{25}): If the employee was a music major, the data was coded a binary one; if the employee was not a music major the data was coded a binary zero.
15. Home Economics Major (X_{26}): If the employee was a home economics major, the data was coded a binary one; if the employee was not a home economics major, the data was coded a binary zero.
16. Art Major (X_{27}): If the employee was an art major, the data was coded a binary one; if the employee was not an art major, the data was coded a binary zero.
17. Psychology Major (X_{28}): If the employee was a psychology major, the data was coded a binary one; if the employee was not a psychology major, the data was coded a binary zero.

18. Drama Major (X_{29}): If the employee was a drama major, the data was coded a binary one; if the employee was not a drama major, the data was coded a binary zero.
19. Sociology Major (X_{30}): If the employee was a sociology major, the data was coded a binary one; if the employee was not a sociology major, the data was coded a binary zero.
20. Political Science Major (X_{31}): If the employee was a political science major, the data was coded a binary one; if the employee was not a political science major, the data was coded a binary zero.
21. Journalism Major (X_{32}): If the employee was a journalism major, the data was coded a binary one; if the employee was not a journalism major, the data was coded a binary zero.
22. Anglo-American (X_{33}): If the employee was a member of the Anglo-American ethnic group, the data was coded a binary one; if the employee was not a member of the Anglo-American group, the data was coded a binary zero.
23. Black (X_{34}): If the employee was a member of the Black ethnic group, the data was coded a binary one; if the employee was not a member of

the Black ethnic group, the data was coded a binary zero.

24. Chicano (X_{35}): If the employee was a member of the Chicano ethnic group, the data was coded a binary one; if the employee was not a member of the Chicano ethnic group, the data was coded a binary zero.
25. Indian (X_{36}): If the employee was a member of the Hindu Indian ethnic group, the data was coded a binary one; if the employee was not a member of the Hindu Indian ethnic group, the data was coded a binary zero.
26. Turnover (X_{38}): If the employee terminated with the library, the data was coded a binary one; if the employee did not terminate with the library the data was coded a binary zero.
27. Supervisor (X_{40}): If the employee was a supervisor, the data was coded a binary one; if the employee was not a supervisor, the data was coded a binary zero.
28. Director Services (X_{41}): If the employee was a member of the director services department, the data was coded a binary one; if the employee was not a member of the director services department, the data was coded a binary zero.

29. Central Services (X_{42}): If the employee was a member of the central services department, the data was coded a binary one; if the employee was not a member of the central services department, the data was coded a binary zero.
30. Collections Services (X_{43}): If the employee was a member of the collections services department, the data was coded a binary one; if the employee was not a member of the collections services department, the data was coded a binary zero.
31. Cataloging Services (X_{44}): If the employee was a member of the cataloging services department, the data was coded a binary one; if the employee was not a member of the cataloging services department, the data was coded a binary zero.
32. Acquisition Services (X_{45}): If the employee was a member of the acquisition services department, the data was coded a binary one; if the employee was not a member of the acquisition services department, the data was coded a binary zero.
33. Bindery Services (X_{46}): If the employee was a member of the bindery services department, the data was coded a binary one; if the employee was not a member of the bindery services department, the data was coded a binary zero.

34. Public Services/Technical Services (X_{47}): If the employee was a member of the public services division, the data was coded a binary one; if the employee was not a member of the public services division, the data was coded a binary zero.

35. New Library/Old Library (X_{48}): If the employee worked in the new library, the data was coded a binary one; if the employee worked in the old library, the data was coded a binary zero.

36. Satisfied Group/Dissatisfied Group (X_{49}): If the employee scored above the JDI mean of 144, the data was coded a binary one; if the employee scored below the JDI mean of 144, the data was coded a binary zero.

37. Library Science Major/Non-Library Science Major (X_{50}): If the employee was a library science major, the data was coded a binary one; if the employee was not a library science major, the data was coded a binary zero.

38. Administrator (X_{51}): If the employee was one of the top seven administrators (a member of the Executive Committee of the library), the data was coded a binary one; if the employee was not a member of the Executive Committee, the data was coded zero.

39. Professional Librarian (X_{52}): If the employee was a professional librarian, the data was coded a binary one; if the employee was not a professional librarian, the data was coded a binary zero.

40. Professional Library Assistant (PLA) (X_{53}): If the employee was a professional library assistant, the data was coded a binary one; if the employee was not a professional library assistant, the data was coded a binary zero.

41. Clerical (X_{54}): If the employee was a member of the clerical staff, the data was coded a binary one; if the employee was not a member of the clerical staff, the data was coded a binary zero.

Analysis of the Simple Correlation Data

There are several pitfalls connected with simple correlation analysis that must be recognized and taken into account in analyzing correlational data. Simple bivariate analysis assumes that one variable is related to another variable in a simple linear regression pattern. To the extent that the assumption of linearity in the underlying data is not met the resulting correlation coefficients lose much of their significance. In cases of extreme curvilinearity of the underlying data the attenuation of the correlation coefficients can become quite pronounced.

Although correction factors can be applied to the data to partially offset attenuation effects the resulting interpretation of the data must be tempered with the realization that curvilinearity is present in the data and certain basic assumptions in correlation analysis are not being met in practice.

In this study the graphical analysis shows that much of the data does exhibit some curvilinearity rather than the ideal pattern of linear dispersion. Curvilinearity is present to some degree among all the data but it is especially pronounced in the data on absenteeism and turnover.

Still there is much information to be derived from simple correlation analysis which involves the cell-by-cell inspection of the correlation matrix printed out by the computer program. In the remainder of this chapter the implications of the correlational patterns will be considered. Comments will be made on interpretative problems as they are encountered during the analysis of the data.

In the analyses following, the critical ratio is set at $p<0.01$ which corresponds to a correlation ratio (r) of 0.3132. In order to limit the analysis within reasonable bounds, it was appropriate to set the critical ratio at this high value. However, note will be made of those cases where a critical ratio of 0.2409 is met or exceeded. This correlation coefficient corresponds to $p<0.05$.

Discussion of the Correlation Tables

The remainder of this section is devoted to a detailed analysis of the correlation tables contained in Appendix A. Particular stress will be placed on the categories of each table which offer unusual difficulties of interpretation or which yield the greatest insight into the relationships presently existing among the research variables.

Table I shows that employees working in the cataloging department have a tendency to score low on the work (itself) dimension of the JDI. Employees having an elementary education major also are low scorers on work. Bindery employees tend to be high scorers on work. Library science majors score high on work. The probability that an employee will fall in the satisfied range (defined as an employee who scores above the average JDI score of 144) is very high provided he scores high on the work category of the JDI.

Table II shows that clerical employees score low on pay. Employees who are also students are dissatisfied with pay.

Table III shows that nepotists and Anglo-Americans tend to be low scorers on the promotion scale of the JDI. Employees from India and employees in central services tend to be satisfied with promotion.

Table IV shows that employees in Collections Services are satisfied with supervision. Psychology majors fall

among the low scorers on the supervision scale of the JDI. Library science majors tend to be high scorers on this scale.

Table V shows that Spanish majors and art majors are low scorers on the People scale of the JDI. High scorers on the People scale are likely to fall into the satisfied group.

Table VI shows that clerical employees are low scorers on the JDI Total scale.

Table VII reveals that clerical employees tend to be younger employees. The older any employee, the less likely he is to be a student.

Table VIII shows that there are more males (32.8 percent or N=22) in our sample of 67 than there are employees in the Cataloging department (19.4 percent or N=13). Similarly, the males (N=22) outnumber the employees in Acquisitions (11.9 percent or N=8). Table VIII illustrates one of the characteristic features of a simple correlation analysis, i.e., that the numerical results often reveal nothing more than the detailed structure of the sample components.

Table IX reveals the truism that high school graduates are not likely to have a high educational level. The table also shows that the better educated employees have a better attendance record. Clerical employees do not rank

among the more highly educated group of employees. Supervisors, administrators, and professional librarians all tend to be better-educated than the typical employee in the library. Higher job levels require more education, in general.

Table X illustrates the structural characteristics only of the library sample (N=67). Nepotists number 14.93 percent of the sample or 10 employees. Psychology majors constitute 1.49 percent of the sample or one employee. Bindery employees number 5.97 percent or four employees. Political science majors constitute 1.49 percent or one employee. Thus in some instances the correlation coefficients do not hold much informational content other than revealing the structural nature of the underlying data.

Implications of Dichotomous (Two-Categoried) Data

Correlation coefficients are affected by the structure of the experimental design. The sample size can often have a major impact upon the magnitude of the correlation coefficient defining the "degree" of relationship between the two variables being measured against each other. The problem arises from the complications that invariably arise when dichotomous variables are mixed with continuous variables in a single statistical analysis. But the blending of dichotomous variates with interval-scaled variates offers

the statistician a powerful means of getting at underlying relationships without the necessity of rigidly isolating and examining separately the dual groupings involved in keeping continuous and discontinuous variables apart. The conceptual simplicity of blending continuous and discontinuous variables in a single framework of reference far outweighs any minor inconveniences of interpretation resulting from structural features of sample data.

Summary

Simple correlation analysis, though not as highly rated as multiple correlation analysis, can often be as useful to the analyst as the data generated by multivariate research methods. Powerful though multivariate analysis is it does suffer from one disadvantage that is often overlooked, viz., the multiple correlation coefficient (R) makes an emphatic statement about the degree of relationship existing between the criterion variable on the one hand and the prediction battery of independent variables on the other, but it says nothing about the nature of the relationship. Thus multiple R conceals much more than it reveals. This defect constitutes the peculiar strength and weakness of multiple R, from the viewpoint of the analyst.

The simple correlation coefficient (r), on the other hand, reveals more than it conceals. In simple

(bivariate) correlation analysis there is very little that can be concealed in the data. All of the ambiguities inherent in multiple correlation analysis are stripped from the data. The simple correlation coefficient (r) which results gives a clear, unambiguous indication of the degree of relationship obtaining between the two bivariates under consideration.

For example, in simple (bivariate) correlation the signs of the beta coefficient and r must agree. This limitation does not exist for multivariate correlation analysis. It is entirely possible for the betas and r's in the multiple linear regression equation to differ from each other in directionality (signs of the respective beta and correlation coefficients). This divergence or difference in signs would be unthinkable in simple (bivariate) correlation analysis.

The difference in results between the application of simple correlational methods and multiple correlation methods constitutes the peculiar strength and weakness of each respective method. The discrepancy in results is easily explained on grounds of the curvilinearity of the underlying data. This all-too-often recurring pattern of curvilinearity in the data conflicts with the basic assumption of linearity. Curvilinearity often takes the shape of a sawtooth configuration of the underlying raw data

which "confuses" the correlation coefficient (both simple and multiple). The correlation coefficient is "looking for" a linear pattern of data which unequivocally slopes up or down. Instead it finds a confusing pattern of data which exhibits both the features of ascending and descending values. The correlation coefficient does the only thing it can do; it "averages out" the sawtooth configuration (curvilinearity) to identify an overall or average pattern in the data which can be labelled simply "positive" or "negative."

Curvilinearity in simple (bivariate) analysis is bad enough. In multiple correlation analysis the problems generated by curvilinearity in the underlying data are compounded by the sheer number of independent variables entering into the analysis. The multiple correlation coefficient (R) is "looking for" patterns of unambiguous (linear) shape in the underlying data. If curvilinearity exists in the data the multiple correlation coefficient (R) is just as subject to "confusion" as is the simple correlation coefficient (r) described above. The multiple correlation coefficient (R) resolves the problem of curvilinearity (sawtooth configuration in the hyperspatial regions defining the composite "independent variable") in the same way that the simple correlation coefficient does, under similar conditions of ambiguity and confusion; it

assigns an "average" sign of directionality to each of the component beta coefficients which ensures maximum regressivity in the multiple linear regression equation.

The strength of the multiple linear regression equation, as a tool of analysis, is that it has the capability of resolving all such ambiguities and complexities inherent in curvilinear data to compute beta coefficients, which while often at variance with the associated bivariate coefficients (r's), do summarize or "average out" the underlying data to yield a predictive apparatus implicit in the regression equation itself.

The strength of the simple correlation analysis (symbolized by r) is that it ignores all the curvilinear complexities inherent in multiple linear regression analysis in order to focus the attention of the analyst upon the degree of relationship obtaining between the two bivariates. Quite often it is this focal point of inquiry that is of chief interest to the analyst. Multiple linear regression analyzes data for the purpose of prediction. Simple linear regression analyzes data for the purpose of obtaining existential knowledge of the degree of relationship vel non. The nature of the relationship is one thing. The degree of relationship is another.

The thirty-one correlation tables in Appendix A contain a wealth of information. In effect they lay bare

the basic relationships obtaining among the research variables. These relationships are clear and unequivocal. The Pearson Product Moment Correlation Coefficient (r) always has a plus or minus sign. This situation contrasts sharply with that defining the nature of the multiple correlation coefficient (R) in which the directionality of R is never specified, for good and sufficient reasons outlined above.

The analyst in the library must answer one important question before he attempts to use the simple correlation coefficients listed in Appendix A: Is the analysis for the purpose of predicting the magnitude of a criterion variable, or is the analysis for the purpose of determining if a relationship obtains between two research variables? The answer to this important question will determine the overall approach of the analyst in subsequent analysis of the data.

If the assumption is made that the existential status of relationship vel non is the primary issue to be determined, then the simple correlation coefficients in Appendix A may safely be consulted, without undertaking the hazardous task of interpreting the "faceless" multiple correlation coefficient, with its attendant horde of (highly) ambiguous beta coefficients.

Appendix A does not contain a complete listing of all the research variables. These omissions occurred mainly among the research variables dealing with educational major.

This research category proved to be singularly sterile, yielding few correlations of significance, except for the library science major which proved surprisingly fertile throughout the study.

The correlation results for the ethnic categories of Anglo, Black, and Chicano are not listed in Appendix A. The only significant correlations of these categories with other research variables merely reflected the structural peculiarities of the research data. Ethnicity became a major factor only in the case of the employees from India (the research variable labelled "Indian"). The results of correlation for the "India" (Indian) group are shown in Table XIV of Appendix A.

It should be noted that Chapter II discussed only a few of the correlation tables in Appendix A. Space limitations forbade an exhaustive discussion and critical evaluation of the complete listing of correlation tables contained in Appendix A. The remaining tables in Appendix A can be interpreted according to the same principles of analysis used throughout Chapter II. The chief advantage of analyzing the data from a simple correlational viewpoint lies in the wealth of managerial insights that result from such a simplified analysis of the data. By carefully going over the correlation tables in Appendix A the manager in the library can dissect each major variable which

impinges upon his area of concern. By knowing the significant relationships existing among the managerial variables of interest the overall quality of decision-making in the library can be supplemented by knowledge rooted in quantitative approaches.

In particular the manager should look at the departmental correlations (Tables XVIII-XXVI) and the occupational correlations (Tables XXVIII-XXXI). Table XXVII lists the correlations for the satisfied/dissatisfied group of employees. Of major significance in Table XXVII is the finding that clericals are dissatisfied, while professional librarians and professional library assistants are satisfied. The reasons for this cleavage in feelings about library work are not clear. Library management should be aware of the significance of occupational status in determining whether an employee of the library is satisfied vel non. Further research is needed to clarify this point.

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CHAPTER III

BIVARIATE CORRELATION ANALYSIS

Introduction

The analysis of study data can reveal significant relationships of interest to the managers concerned with such relationships as they relate to decisional parameters. At the same time because of the nature of the experimental design of the study, a large portion of the correlational data reveals only details of a structural or functional character. Positive or negative correlations can often result from a relative difference only in the numbers involved of the bivariate data in question.

At the same time, the significant relationships emerge from the overall correlational analysis. A close examination of all the data, preferably on a cell-by-cell basis, is the usual way of determining what informational content is contained in the correlation matrix.

Discussion of Tetrachoric Correlation Coefficients

By arranging the raw data into double dichotomies or fourfold tables, it is possible to compute tetrachoric correlation coefficients which define the degree of relationship existing between bivariate data which does not admit of exact measurement. The data in this study

consisted of thirteen continuous variables and forty-one discontinuous (dichotomous) variables. Because of the prevalence of dichotomous variates in the correlation matrix, it is essential to examine the concept of tetrachotomous data in relation to the purposes of this study.

Tetrachoric correlation techniques involve arranging the raw data tetrachotomously in fourfold tables. However, these methods were not used in this study. Rather, the raw data was plotted along the X and Y axes using dichotomous scales to derive a frequency distribution of individuals in the study (N=67). Each plotted point yielded two parameters of information about the individual employee. The first informational unit consisted of the definition of the employee in terms of his membership in the first dichotomous group. The second informational unit consisted of a similar definition of the employee, only this time in terms of the second dichotomous group.

By repeating this definitional process for each employee in the sample (N=67) it was possible to arrange a revealing tetrachotomous configuration of data points on the scatterplot region delimited by the orthogonally related X and Y axes. Empirical regression lines were then constructed through the means of the respective Y columns. The slope of the linear curve through the means of the scatterplot then was interpreted according to strict regression principles.

Positive correlations (tetrachoric) result from the scatterplot when high values of one of the double dichotomies are associated with high values of the other double dichotomy. Low values are also paired with low values.

Negative correlations (tetrachoric) result from the scatterplot when high values of one of the dichotomous variates are associated with low values of the other dichotomous variate. Similarly, low values of the first variate (dichotomous) are associated with high values of the second variate (dichotomous).

What is of significance for the purposes of this study is that the principles of regression analysis, which apply to strictly continuous data, also apply to discontinuous data. A similar line of reasoning also applies to the situations where a dichotomous variate is paired with a continuous variate. This is the case of point biserial correlation. It is necessary to classify the correlation studies into tetrachoric (both bivariates are discrete) and point biserial (one bivariate is discrete; the other is continuous) classifications since the computational methods based on tetrachotomously plotting the raw data differ slightly from those used in the point biserial approach to correlation analysis.

Investigation of Subgroupings Based On Discrete and Continuous Variables

Tables of Correlation Coefficients can be useful in understanding the relationships among bivariate data. If the limitations of the tetrachoric and point biserial correlational methods are kept in mind while analyzing and interpreting these coefficients, much insight can be gained into the structural complexities of the library organization in terms of the variables employed in the study.

Table XI reveals that student employees of the library rarely have long tenure. Clerical employees also correlate negatively with the tenure scale implying that there is considerable turnover among clerical personnel in the library. The positive correlations verify ratiocinatively what is intuitively known about the relationships between tenure and job level, supervisor status, and administrator status. Business majors tend to have long tenure with the library, though the correlation statistic for this variable barely exceeds the critical ratio.

Table XIV reveals that employees of the library from India (N=2) tend to be high scorers on the promotion scale of the JDI. The correlation with sex means that if the employee is an Indian he is likely to be a male. This interpretation results from the fact that the binary coding for male is one. The correlation with Anglo (negative) means that Indians and Anglos constitute two antipodal

groups of employees. In terms of the scatterplot, the low average implicit in grouping the Anglos (N=60) about the one point on the Anglo scale along the X-axis, as contrasted with the high average on the Indian scale along the Y-axis, so configures the empirical regression line to ensure that the resulting slope is negative. This result is often reached in cases like this where the two double dichotomy scales are composed of two mutually exclusive ethnic groups.

Table XV reveals that the higher the educational level of the employee, the better is his attendance record as reflected in the absenteeism records. Student employees also tend to have good attendance records. High school employees and cataloging employees tend to have relatively poor attendance records.

Table XVI shows that turnover correlates positively with art major employees (N=1) and drama major employees (N=2). Professional library assistants tend to have higher turnover rates than other occupational categories. This agrees with the finding that professionals among the staff usually have longer tenure patterns than lower-level employees. The positive slope on the tetrachotomous scatterplot is due to a clustering of points at the origin. This weights the average Y (art-axis) heavily towards the origin while the clustering of points about the one of the turnover (X-axis) scale is not enough to offset the one point at the

intersection of the two "one" grid lines. As a result, the average Y is pulled up along the perpendicular line erected at one on the X-axis. A definite positive reading results for this bivariate correlation.

Tables XVII-XXXI offer rich insights into the organizational complexities of the library. The data's significance lies in the fact that it is not limited to univariate analysis solely, but is structured multivariately in a format which favors concentration upon the particular variables of interest. Thus the manager can focus his attention upon the specific stratification variable which is most convenient for the decisional problem at hand. For example, if the issue of tenure plays a significant role in formulating policy for promotional purposes, then the tenure correlation table in Appendix A could be consulted to provide insights into the linkage of the tenure parameter with other variables under study. Similar statements could be formulated for age, sex, educational level, ethnic group, and all the other stratification variables constituting the structural framework of this study.

Tests of Significance for the Experimental Variables in the Study

Table XXXII in Appendix B shows the results of analyzing the dichotomous variables in this study from the viewpoint of satisfaction/dissatisfaction. Specifically, a computer program was written which utilized the X_{49} variable

in dichotomizing the total library sample (N=67) into two groups. The first group was designated the dissatisfied group. The second group was designated the satisfied group. The division of employees into these two mutually exclusive categories was made on the basis of each of the employee's JDI (Total) raw score. The cutting score chosen was 143.7, the mean JDI (Total) raw score for the total library sample (N=67).

The computer program was run on the raw data, after column 49 had been added. At this stage of the analysis, the evolving computer program contained only forty-nine variables. The results were then analyzed in terms of appropriate tests of significance. Group One (dissatisfied) was composed of a sub-sample of 29 employees. Group Two (satisfied) contained a sub-sample of 38 library employees.

Table XXXII in Appendix B shows the proportion of employees in each group of (dissatisfied/satisfied) statistical units. In computing the specific percentages for each stratification variable, the base used was the sub-sample size for each group rather than the total sample size. An appropriate computer program was formulated to ease the burden of computation.

Table XXXIII in Appendix B used the results of Table XXXII to answer the question of significance vel non of the proportion differences existing between the two groups of (dissatisfied/satisfied) employees.

Not all of the proportion differences reached the level of statistical significance. But the research variables which showed significant proportion differences vis-à-vis the two groups of employees offer further insights into the relationships presently existing in the library. The remainder of this section will discuss the major findings of this analysis of the research variables.

Table XXXIII in Appendix B reveals that sex differences among the two groups are not significant. This finding can be interpreted to mean that the parameter of sex is completely irrelevant in determining whether a library employee is satisfied or dissatisfied. One qualification must be kept in mind, however: the conclusions reached in this section were based on a measure of the total (global) satisfaction. In other sections reporting research findings significant sex differences do emerge, e.g., those based on JDI (component) mean raw scores.

Table XXXIII (Appendix B) shows that the parameter of nepotism is significant in accounting for group differences but at a very low level ($p<0.400$). Apparently there are more nepotists among the dissatisfied group than among the satisfied group. It could be that nepotists are paid lower salaries than average (non-nepotist) employees due to university policy. This research did not attempt to answer this question definitively.

Being a student had nothing to do with whether an employee was classified in Group One or Group Two. This finding has particular significance for library management policy dealing with the employment of student personnel as full-time library employees. This study dealt only with full-time library employees (N=67) and did not analyze any data relating to part-time personnel.

An employee with a library science major has a significantly greater probability of being classified in the satisfied group ($p<0.050$). If an employee is a secretarial science major, the probability is great ($p<0.001$) that she will be a satisfied employee. There were no significant differences for the high school graduates, however.

No significant differences were detected for the following academic majors: English, Elementary Education, Spanish, Business, Speech, History, Home Economics, Drama, and Political Science. Significant differences did show for these academic majors: Physical Therapy, Music, Art, Psychology, Sociology, and Journalism. The differences can be evaluated as follows.

Physical Therapists are likely to be in the dissatisfied group ($p<0.400$). Music majors have a greater probability ($p<0.400$) of being in the dissatisfied group. Art majors, Psychology majors, Sociology majors, and Journalism majors, are more likely than not to be classified in the dissatisfied group ($p<0.400$). These results should be interpreted with

caution, especially in view of the extremely low level of significance ($p<0.400$) involved. This study shows that only two academic majors, viz., Library Science and Secretarial Science, register significant differences vis-à-vis the two groups (dissatisfied/satisfied) of employees.

The analysis of the data using the stratification variable of ethnicity revealed few significant differences. Anglo-Americans did not differ in the two groups. Neither did Blacks or Chicanos. Indians however, were significantly more satisfied ($p<0.001$). It is difficult to account for this finding. It may be that the novelty of working in a country among coworkers with different customs and language may act as a stimulating environment. It would be interesting to follow this finding up with research questions directed toward the resolution of this (ethnic) question.

Turnover was greater among the dissatisfied group to a low, but significant degree ($p<0.400$). This finding agrees well with theory which postulates a direct linkage between dissatisfaction and turnover. The short duration of this study constitutes one limitation in the analysis of the turnover data. What is needed is a longer period of time in which to give the turnover phenomena a chance to manifest itself. Even so, the finding of a direct relationship existing between dissatisfaction and turnover has implications for management theory and policy.

Supervisors were significantly more satisfied than non-supervisors ($p<0.200$). This finding is in agreement with other research studies which have discovered a direct relationship between supervisor status and job satisfaction.

Analysis of the data by departmental cleavage revealed several interesting findings. Director Services and Central Services showed no significant differences vis-à-vis the (dissatisfied/satisfied) groups. But Collections Services registered a significant difference. If an employee is in Collections Services he is more probably satisfied ($p<0.200$) with his total (global=X_6 variable) job. This is an interesting finding since the Collections Services Department was the only department in the library which registered a significant difference on this analysis. There were no significant differences existing, for example, in the Cataloging Services, Acquisitions Services, or Bindery Services Departments. Further research needs to be conducted in order to determine why the employees in Collections Services are significantly more satisfied with their work than are the other library employees.

A comparison was made on the stratification principle of Public Services versus Technical Services. No significant difference in satisfaction was discovered. When the employees were stratified on the basis of being housed in the New Library or the Old Library, no significant difference resulted. Again, these results apply only to the global (X_6)

measure of job satisfaction. Analyses to be discussed in later sections do turn up significant differences, but among the various JDI (component) scales. These findings will be discussed later, along with the accompanying implications for management policy.

It was discovered that there did exist a significant difference when variable X_{49} was used as the stratification principle ($p<0.001$). However, this finding was highly biased due to the structural design of the experiment. Ex hypothesis, all satisfied employees were placed in Group Two; all dissatisfied employees were placed in Group One. The (highly) significant correlation merely confirms the soundness of this statistical manipulation of the data.

Some rather significant findings did emerge when the employees were stratified on the principle of occupation. No significant difference exists for administrators, but the situation is quite otherwise if one is a nonadministrator. Specifically the Professional Librarians are significantly more satisfied ($p<0.050$). The Professional Library Assistants (PLA's) are also significantly more satisfied ($p<0.001$). The level of significance reached for the PLA difference was the highest used in this study.

The clericals, on the other hand, were significantly more dissatisfied ($p<0.001$). The reasons for this are obscure, but it may be that the low job level status of the clericals, combined with typically low pay scales and

opportunities for promotion, along with other contributing factors of job dissatisfaction all make for global measures of dissatisfaction. Further research definitely needs to be done in order to find out why the Professionals and PLA's are so much more (significantly) satisfied with their work than are the clericals. Another related question begging for resolution is why the administrators of the library constitute a "neutral" group in regard to this stratification principle (occupation).

Table XXXIV (Appendix B) presents the results of tests of significance which were run on the continuous variables of this study. It was found that the five job dimension scales of the Job Descriptive Index (JDI) all tested out in the (highly) significant range. Work, Pay, Promotion, Supervision, and People raw scores were significantly higher for the employees in Group Two (Satisfied) than for those employees in Group One (Dissatisfied). For the Work scale, $p<0.020$. For the Pay, Promotion, Supervision, and People scales, $p<0.001$.

The reasons underlying these findings are not difficult to discern. The fact that an employee scores highly on the JDI (component) scales directly determines his probability of being included or excluded from Group Two. It is interesting to note that a significant difference also exists for the JDI (total) variable. Again, if an employee scores highly on the JDI (total) scale the odds

are quite high that he will also be classified as a Group Two (Satisfied) employee. In a sense the (statistical) deck is "stacked" to reach these results.

Table XXXIV of Appendix B also reveals that age can play a significant role in determining whether a library employee is satisfied vel non. Older employees, as indicated by Table XXXIV, are much more likely ($p<0.010$) to be numbered among the Group Two (Satisfied) employees. It is interesting to speculate on the reasons for this difference based on the youth/aged stratification principle. It may be that the older employees have successfully mastered the trials and tribulations of a hectic work career and are now beginning to reap the rewards of later years of work which are invested with greater wisdom and insight. The younger employees, on the other hand, are just launching their work careers and may tend to register higher on indices of dissatisfaction if things do not always run a smooth course on the job. In a later section discussion will be directed at this question, only in terms of the JDI (component) scales.

In terms of educational level attainment, the higher-educated employees of the library tend to be more satisfied than their dissatisfied brethren in Group One ($p<0.200$). This result is made more difficult to interpret in view of the generally high level of education (mean = 15.8 years) which prevails throughout the library. It is evident that these library employees constitute a unique group of

employees, unlike the typically more diverse employees where the educational levels range over a wider spectrum. For example, it was discovered that one hundred percent of the full-time employees of the library have a high school education. This finding raises an interesting question for management policy: May there not be jobs within the library which would be better performed by non-high school graduates? An improvement in certain services might conceivably be achieved by employing less-than-high school attainment employees. This question needs more research however.

Student hours showed a significant difference in Table XXXIV of Appendix B. If a full-time library employee (N=67) is enrolled in and taking course-work, the odds are that he will fall in Group One (dissatisfied) ($p<0.400$). It is easy to account for this finding. According to some authorities, being a student is synonymous with being dissatisfied. High levels of anxiety are usually associated with student status. "Running scared" can have a carry-over effect which shows up on the job. Again, only further research can uncover the true reasons for explaining this finding of the study. The implications, policy-wise, seem to be that one way to reduce dissatisfaction among library employees is to establish a policy against carrying course hours and working in the library simultaneously. But this policy conflicts head-on with the policy favoring further

education and development of the employees of the library. This question, in its present state, is unanswerable.

Tenure, as a stratification principle, can distinguish the employees of the library in terms of satisfaction on the job. At a level of significance of 0.200, the employees in Group Two (Satisfied) are significantly longer-tenured than those employees in Group One (Dissatisfied). This finding can be explained using the same line of reasoning used in explaining the youth/aged differences. The longer-tenured employees of the library have "proven" themselves through the criterion of survival on the job and hence, tend to have a feeling of competence and achievement that is so often lacking among younger employees who have yet to "run the course" and "prove" themselves by actual success, as measured by the (admittedly crude, but simple) criterion of survival on the job. It is only too easy to become dogmatic and didactic in explaining the findings which emerge from this study of the library. Any "explanations" should be viewed with a healthy scepticism and with the realization that the only really positive statements which can be made in regard to this study are those which relate to the statistical facts and findings. No apology need be made for the "cold" figures, as revealed in the statistical tables, and illustrations--but the rationale for the causal factors at work in the situation must always be subject to a certain degree of doubt. This type of uncertainty can only be

dispelled by additional research and careful, deliberate reasoning, preferably seasoned with long years of experience on the firing line in the library itself. Any comments made during the course of this study must be viewed with these important caveats in mind.

Earnings, used as a principle of stratification to subgroup the library employees, register a high level of significance ($p<0.001$). This is, of course, as high as you can ordinarily register on the significance index. Employees in Group Two are significantly more satisfied employees. Higher earnings tend to make more satisfied employees. This finding has significance from the managerial point of view. Consider the situation if the finding had been the reverse case, i.e., that the employees in Group One (lower earnings) had been more satisfied. Management in this (strictly hypothetical) case could increase job satisfaction by lowering salaries. But the (actual) finding of a direct connection between job satisfaction and higher earnings means that the only way to boost satisfaction is by raising salaries. The role of pay in job satisfaction continues to be a fertile ground for research. The finding in this study confirms the important role which pay plays in producing job satisfaction.

Absenteeism registers significant ($p<0.100$) differences vis-à-vis the two research groups. Again, the finding agrees with expectations, viz, that absenteeism is

significantly greater among the Group One (Dissatisfied) employees than among those employees in Group Two. The reason for this finding appears to be that motivation to come to work depends directly and strongly upon the satisfaction vel non experienced in the job setting. Attendance records are heavily influenced by job satisfaction, another important reason why management should concern itself with the topic of job satisfaction.

Job level, as shown by Table XXXIV in Appendix B, registers a significant role ($p<0.050$) in determining satisfaction on the job. Employees at higher levels in the organization tend to be significantly more satisfied than their coworkers at lower levels in the organizational hierarchy. This finding can be explained on the grounds that higher levels of responsibility usually produce greater motivation to achieve which in a pyramidal fashion, causes feelings of job satisfaction. Other studies have also turned up this finding.

Grouping the Data for Purposes of the D/S Analyses

It was necessary to invent a concept at the initial stages of investigation of the library study. This concept is called the Index of Dissatisfaction and is defined as the ratio of dissatisfied to satisfied employees using any of the stratification variables to group the data. Mathematically the Index of Dissatisfaction equals the percentage

of dissatisfied employees divided by the percentage of satisfied employees in any stratification category. The Index of Dissatisfaction is an important concept emerging from the study. It will be discussed in later sections as the need arises to clarify various aspects of the concept.

Appendix C illustrates the method used to group the data for the D/S analyses. The "Distribution Statistics and Standard Scores" computer program was used to process the sample data (N=67) in order to stratify it for subsequent analyses. Five groupings were arranged to divide the raw scores of the JDI into convenient stratifications for purposes of regression analysis. Although F-scores can be computed from groupings as low as two on the experimental (X_i) axis, it was decided to use five groupings for the purposes of this study. Although increasing the number of groupings does materially increase the number of computations which must be performed manually (the arrangement of the data at this stage of the analysis precluded the application of computer techniques), to derive the F-scores, the increase in labor required is offset by the greater precision with which the final results can be interpreted.

The physical counts of the raw score values falling within each cell of the correlation table were then performed. This involved a simple inspection procedure which presented no particular problems other than its tedious nature. One slight technical problem was encountered in

splitting the data into two parts. The split was made along the mean value of each JDI (Component) category. The distribution analysis by the computer did not divide the data evenly at this particular juncture of the analysis, so that it was necessary to manually divide the data along the boundaries of the data within this region. Appendix C illustrates, in some detail, the precise manner in which the data was split along this critical zone.

Appendix C also illustrates the computation of the Index of Dissatisfaction (D/S) for each principle of classification. The percentage of dissatisfied employees is upstairs (in the numerator), while the percentage of satisfied employees is downstairs (in the denominator).

The computations at this stage of the analysis were all performed manually with the result that certain adjustments to the data had to be contrived instanter. However the calculations were double-checked to ensure that obvious check-features were incorporated in the analysis to preclude serious error. The final D/S figures can be safely trusted.

Appendix D continues the D/S analyses commenced in Appendix C. Figure 1 in Appendix C computes the Index of Dissatisfaction for the stratification variable of age. Figure 6 of Appendix C gives the D/S ratios for the JDI (Component) categories. The Indices of Dissatisfaction give an indication of the relative rankings of the six categories of the JDI. Figure 6 shows, for example, when

the data are analyzed along the Age stratification, the JDI (Component) category giving rise to the greatest amount of dissatisfaction (as measured by the number of employees scoring below the JDI Component means for each of the JDI categories). For Age, this category was Pay, with an D/S index of 1.85. This figure can be interpreted to mean that the number of employees dissatisfied with Pay is nearly double the number of employees who are satisfied with their Pay. The Promotion D/S ratio for Age is 1.84. Thus a "dissatisfaction hierarchy" can be constructed to yield insight into the relative rank order importance of the JDI (Component) categories.

Figure 6 of Appendix C lists the D/S ratios in descending order of importance of each of the stratification principles employed. It is interesting to note that the relative rank order of the five JDI (Component) categories was preserved throughout Figure 6 except for a slight inversion of the Pay and Promotion scales in the Tenure and Sex (Female) stratifications.

What clearly emerges from an analysis of Figure 6 is that the hierarchy of discontent in the library can be stated as follows (in descending order of importance): Pay, Promotion, People, Supervision, and Work (itself). By viewing the data inversely, a satisfaction hierarchy can be constructed which is the reverse of the dissatisfaction hierarchy. In terms of Figure 6, the satisfaction rank

order in descending order of importance is Work, Supervision, People, Promotion, and Pay.

By "averaging" the data, as in Figure 7 of Appendix C, it is possible to derive Indices of Dissatisfaction which can be taken to represent the best (unbiased) estimates of the population parameters for each of the five JDI (Component) categories and for the global category (X_6).

The Composite (average) figures shown in Figure 7 can be considered to be "dissatisfaction parameters" of the library involved in this study. Pay and Promotion are the frontrunners in fomenting dissatisfaction, with a majority of the employees dissatisfied with these two categories (Pay composite D/S = 1.88; Promotion composite D/S = 1.82). On the other hand, the D/S ratios for People, Supervision, and Work categories of the JDI are all below unity, indicating that a majority of the employees in the library are satisfied with these areas of their jobs.

The figure which has the greatest overall significance (for the library as a whole) is the "Total" D/S ratio of 1.12 in Figure 32 of Appendix D. This figure represents composite averaging of all the other figures as illustrated in Figure 7. If a "global" Index of Dissatisfaction were desired which would best summarize the job satisfaction status of the library, this 1.12 figure would be selected.

It can be interpreted to mean that there are twelve percent more dissatisfied employees in the library than there are satisfied employees.

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CHAPTER IV

SUBGROUPING ANALYSES OF STUDY DATA

Introduction

The appendices contains material essential to an understanding of computational and analytical techniques employed in deriving substantive research conclusions. Appendix A presents thirty-one correlation tables. Appendix B presents data on tests of significance which were performed on the discrete and continuous variables. Appendix C deals with frequency counts of the data which is stratified according to various classificatory principles deemed useful in exposing the basic raw figures to critical analysis. Appendix D discloses the techniques used in subjecting the research data to D/S analysis. The Index of Dissatisfaction (D/S) varies, depending upon which JDI (Component) is selected. Appendix E presents frequency diagrams useful in visualizing the relative magnitudes of satisfied/dissatisfied groups of employees. Appendix F is a graphical analysis of the degree of regressivity inherent in the raw data. Appendix G compares the group of dissatisfied employees with the group of satisfied employees in terms of the Indices of Dissatisfaction (D/S ratios). Appendix H illustrates the descriptive categories

of the Job Descriptive Index (JDI). Appendix I contains correspondence dealing with various aspects of the study.

Often the significance (or lack of significance) of data can be discovered through the reconfiguration of the data into appropriate categories which bear some reasonable relation to substantive research objectives and considerations. In Appendix E the data has been structured into two subgroupings for the purpose of determining whether Group One (Dissatisfied) and Group Two (Satisfied) employees are drawn from the same homogeneous universe or whether the two groups of employees are, in fact, drawn from two completely different universes of values.

Chi Square Analysis of the Data

The test to employ in this situation is a test of homogeneity, preferably a nonparametric variety since very little is known about the underlying parameters of the hypothetical universes under consideration. The Chi Square test of homogeneity qualifies for this purpose. As a research tool, the Chi Square test of homogeneity has several significant advantages to recommend it, especially in the area of frequency considerations where the data is grouped in odd lots with little underlying regularity in the configuration. The focus of attention would, in this case, be the absolute frequencies of the entities drawn

from the parent universe of values, in this case the individual (satisfied/dissatisfied) employees.

Using this principle of classification (satisfaction) the data was structured into dual groups and the absolute frequencies determined for both groups. Chi Square was then computed for each of the JDI (Component) categories and also for the JDI (Total) category. The results are as follows: 1) For JDI (Work) category of job satisfaction, the Chi Square value of 2.38 was significant at the 0.50 level; 2) For the JDI (Pay) category of job satisfaction, the Chi Square value of 0.03 was significant at the 0.95 level; 3) For the JDI (Promotion) category of job satisfaction, the Chi Square value of 4.32 was highly significant at the 0.05 level; 4) For the JDI (Supervision) category of job satisfaction, the Chi Square value of 0.732 was significant at the 0.50 level; 5) For the JDI (People) category of job satisfaction, the Chi Square value of 2.38 was significant at the 0.50 level; 6) For the JDI (Total) category of job satisfaction, the Chi Square value of 1.20 was significant at the 0.50 level.

Excluding the JDI (Pay) category of job satisfaction which failed to qualify for serious consideration under the ground rules of the Chi Square analysis, the Chi Square results show that the remaining JDI (Components) of job satisfaction, viz., JDI (Work), JDI (Promotion), JDI (Supervision), and JDI (People) assume particular importance in

this study of job satisfaction in the library. The remaining category of job satisfaction, JDI (Total) also qualifies for consideration on the merits as a result of the Chi Square findings.

Specifically, the JDI (Work) category of job satisfaction reveals the interesting conclusion that there are significantly more employees in the library who are satisfied with their work, as indicated by their raw score on the JDI (Work) category of job satisfaction. Once this conclusion emerges, search must be instituted to uncover the reasons for this finding. Regression analysis techniques were applied for the purpose of answering this question. Later sections will expand upon this theme.

In the JDI (Promotion) category of job satisfaction, the Chi Square results reveal that there are significantly more employees dissatisfied with promotional opportunities than can be accounted for on the basis of chance alone. Regression analysis techniques can be used to predict the criterion variable of JDI (Promotion), the X_3 research variable. The regressor variables existing in the X_i hyperspatial regions defining X_3 can then be examined at leisure in order to determine the causes of this dissatisfaction with promotional opportunities which appears to be so pronounced in the library. The implications for management policy are obvious. If employees are in doubt concerning the chances for promotion this area of management

policy needs to be thoroughly explored in meetings of the Executive Committee. Ground rules should be established, assuming they do not already exist and the possibilities of promulgating such policies to the employees should be seriously considered. Since this JDI (Component) category of Promotion (X_3) was found to be the most significant research variable, under the Chi Square ground rules, it follows that specific management attention should be directed at exploring the reasons for this finding.

The JDI (Supervision) category of job satisfaction yielded an interesting result. There are significantly ($p<0.50$) more employees satisfied with this dimension of their work than there are employees dissatisfied with it. The conclusion seems to be inevitable that the present management of the library is doing its job well as indicated by the JDI (Component) index as registered by the X_4 research variable. Attention to this finding will be directed in a later section.

Another interesting result turns up in the discovery linked with the JDI (People) category of job satisfaction. Chi Square analysis reveals that there are significantly more employees satisfied ($p<0.50$) with this dimension of their work than there are employees dissatisfied with it. Evidently the problem of getting along with coworkers does not exist to any serious degree in the library. Again, this finding may be because of the high level of

educational attainment existing in the library. The mean education for all employees in the library is 3.8 years beyond the high school diploma. A high school graduate represents 12 years of schooling. Thus the mean schooling of library employees is only 0.2 years short of a Bachelor's degree. The average educational level of attainment is 15.8 years, indicating a sophistication in interpersonal relations among library personnel that is seldom found among the typical organization. Regression analysis can be applied to focus upon the relevant X_i (regressor) research variables which are responsible for this (happy) state of affairs.

Problems of Interpretation in Relation to the Chi Square Analysis

Looking at the global measure of job satisfaction as indexed by the JDI (Total) category of job satisfaction, the Chi Square results show that there are significantly more employees satisfied globally or overall with their work than there are dissatisfied employees. However, this measure of job satisfaction must be interpreted with extreme caution. For example, look at the Composite (average) D/S ratio of 1.12 which is presented in Figure 32 of Appendix D. Here is listed a composite index of dissatisfaction which emerges from a consideration of six stratification principles used in this study, viz., tenure, sex (female), sex (male), education, age, and the JDI (Total) category of job satisfaction.

The D/S Analysis presented in Figure 32 of Appendix D leads to a global measure of overall job satisfaction which is tilted slightly in the direction of job dissatisfaction as indicated by the magnitude of the D/S ratio, i.e., 1.12. The discrepancy in results is caused by the differing definitions of satisfaction used in the two approaches to analysis of the data. In Figure 39, Appendix E, satisfaction was defined simply as those employees scoring above the JDI (Total) mean of 143.7. Using this definition of satisfaction there were twenty-nine dissatisfied and thirty-eight satisfied employees. Chi Square analysis on this basic data turns up significantly more satisfied employees in the library.

But the definition of satisfaction used in the D/S (Index of Dissatisfaction) analysis is more refined. Here satisfaction is defined on a JDI (Component) basis which is more exacting in its demands. In order to qualify as a satisfied employee in the D/S analysis, the employee must score above the individual JDI (Component) mean raw score. In other words, the global measure of satisfaction implicit in Figure 39 of Appendix E conceals more than it reveals. This is not an unusual situation since statistical averages often cover up much informational content that can only be determined through analytical dissection of composite figures. Only by setting up more rigorous standards can

the variability inherent in the JDI (Component) raw scores be fully exposed.

Which global measure of satisfaction should be adopted--the D/S figure or the measure based on the simple JDI (Total) mean? This question is basically unanswerable, since each measure of global satisfaction reflects the limitations of the raw data from which it was derived. Basically, there are two schools of thought on this apparently simple question. The "globalists" argue that the overall measure of satisfaction based on the JDI (Total) figure is the best single measure of job satisfaction. The "analyticalists," on the other hand, argue that the true essence of the job satisfaction concept lies hidden in the analytical details of the JDI (Component) raw scores. If the argument of the analyticalists is accepted, it follows that the D/S figure of 1.12 is the best single, global measure of job satisfaction since it is based on a five-fold analytical division of the data into various sub-measures of job satisfaction.

The divergency in results, illustrated in this simple problem, illustrates some of the more obvious pitfalls in job satisfaction research. The definitions that are formulated at the onset of the research can heavily influence the final conclusions that are reached. This study aligns itself with the viewpoint and basic philosophy of the analytical school of thinking which lays heavy stress on the analytical

makeup of the component parts of job satisfaction. If this conclusion is correct, it follows that the best estimates of population parameters may be found in Figure 32 of Appendix D.

This does not mean that Figure 39 of Appendix E must be scrapped, along with all the Chi Square conclusions derived from it. The only problem that arises in "reconciling" Figure 32 of Appendix D and Figure 39 of Appendix E lies in the one area of the global (JDI Total) measure. The JDI (Component) conclusions support each other in both figures. The word "reconciliation" is really not appropriate, since the only problem that really arises here is a definitional one, the resolution of which calls for considerations falling outside the methodological scope of the study proper.

Analysis of Data Means in Relation to JDI Subgroupings

Appendix F contains an analysis of data means based on subgroupings of the JDI raw scores. The stratification of raw scores was originally made on the basis of a rough scatterplot which utilized the JDI (Component) raw scores as the Y-axis and the JDI (Total) raw scores as the X-axis. Based on visual inspection of the scatterplot and considering such factors as even division of the data and interpretative problems which arise if too many or too little stratifications are made of the data, it was

decided to use five subgroupings to stratify the raw data. These five subgroupings are shown on the X-axis in the graphical analyses portrayed in Appendix F.

The graphical analyses contained in Appendix F were performed in order to answer the question, "does the stratification principle of JDI (Component) raw score have any bearing on the magnitude of the means of various research variables?" In order to answer this question it was necessary to construct empirical regression lines through the means of the various research variables, as illustrated in Figures 40-57 in Appendix F. By computing F-scores for each of the plots, it could be determined whether the research variables exhibited any pattern of regularity in relation to the chosen variable of JDI (Component) raw scores.

Figure 40 in Appendix F shows the JDI (Component) mean raw score for the group of employees scoring in the indicated group for each of the five JDI (Component) dimensions of job satisfaction. For example, the IBM runs (the Distribution Statistics and Standard Scores program) show that nine employees scored in the 0-12 range of the JDI (Work) dimension. The distribution for these nine employees is shown as follows:

Employee Number	JDI (Work) Raw Score
1	4
2	6
3	6
4	8
5	9
6	10
7	10
8	11
9	12

$76 \div 9 = 8.4444$

This illustrates the computation of mean JDI (Work) raw score for the 0-12 scorers. The means for each of the JDI (Component) categories were derived using this same method. Once the means are plotted empirical regression lines can be drawn through them, giving visual access to any patterns of regularity which occur in the basic raw data.

Figure 40 in Appendix F reveals several such regularity patterns. The most obvious pattern is that ascending means are regularly associated with ascending JDI (Component) raw score groups. This is not a universal pattern as will be shown in the discussion to follow on other configurations of the data. Education, for example, exhibits just the reverse pattern, i.e., the means drop as the JDI (Component) raw scores increase. See Figure 47 in Appendix F for the regression plot on education data.

Figure 40 shows a pattern that does tend to recur throughout this study however. The data on Pay and Promotion tend to cluster together in one constellation of

(similar) values, while the data on Supervision and People tend to cluster together in another constellation of (similar) values, as though some common factor were linking together these dual sets of data. Work on the other hand, falls neatly between these two antipodal groups as if serving as a buffer dimension between them. Work, as shown in Figure 40 is the most ambivalent of the JDI (Component) categories, ranging from extremely low values (comparable to the low scores registered for the Pay and Promotion scales of the JDI) to extremely high values (comparable to the high scores registered for the Supervision and People scales of the JDI).

The F-scores are all significantly high for all categories portrayed in Figure 40. This can be interpreted to mean that the regression patterns exhibited in Figure 40 were not produced by random forces in the underlying universe of values. There are strong recurrent causal factors at work in the library setting which tend to regularly and recurrently reproduce the regression patterns exhibited in Figure 40. Regression analysis was performed in order to answer why the regression patterns exist as they do. This analysis will be discussed in later sections.

Figure 41 in Appendix F is a composite graph showing the relationship existing between the regressor categories on the X-axis and the JDI (Total) means of the Y-axis. This figure can be interpreted as follows: For the

employees falling in each JDI (Component) grouping along the X-axis, there exists a mean JDI (Total) raw score. This raw score (mean) is shown along the Y-axis. For example, for all the employees collected in the 0-12 range, the mean JDI (Total) raw score is 68.1. This means that if all the JDI (Total) raw scores are added up for all the employees scoring in the 0-12 range for all the JDI (Component) categories (of Work, Pay, Promotion, Supervision, and People) a figure will be obtained which, when divided by the total number of employees falling in the 0-12 range (for all categories of the JDI), will yield the indicated mean JDI (Total) raw score--in this example, 68.1.

Figure 41 (Appendix F) says that high scorers on the JDI (Component) scales also tend to be high scorers on the JDI (Total) scale. This appears to be a truism, but it is not. The discussion on education (as the regressand variable) will show that just the opposite patterns may well emerge from the regression graphical analyses. What is important to note about Figures 40 and 41 (Appendix F) is that the apparent linearity of Figure 41 conceals a complex series of patterns of curvilinearity existing in the JDI (Component) dimensions (Figure 40, Appendix F). This divergence in linearity/curvilinearity patterns is one of the primary reasons why this study opts for the analytical school of thinking on job satisfaction. Too many complexities lie hidden in the global regression

patterns. Only an analytical dissection of the JDI (Component) dimensions can uncover whatever true, basic patterns of regularity exist in the underlying universes of values. For this reason Appendix F contributes valuable insights into the relationships existing between the global measures of job satisfaction and the component parts of which it is constituted.

Figure 42 (Appendix F) shows significant regression patterns based on age. There is a definite tendency for high scorers on Pay and Promotion to be older employees, except that the high scorers on Promotion are considerably younger suggesting that satisfaction with promotion might be linked to Promotion policies aimed at moving younger people ahead faster, based upon abilities and needs of the library. The relationships between satisfaction and raw scores are basically of a curvilinear nature, rather than linear. Curvilinearity becomes most pronounced in the case of promotion, with young employees predominating at both low and high ends of the satisfaction scales.

Figures 42 and 43 (Appendix F) also constitute an additional strong argument for adoption of the analytical approach to analysis of job satisfaction. The F-scores in Figure 42 are, with the exception of the Supervision category of work satisfaction, all significantly high, indicating the presence of true regression patterns in the underlying data. However, the F-score for the global (composite)

measure of job satisfaction, indexing the significance, vel non, of the age stratification principle on the data, is non-significant. Thus, again, we find significant regression patterns in the JDI (Component) dimensions which are completely obscured by the blanketing effect of the global measure of job satisfaction. The conclusion is obvious: only by analytically dissecting the multivariate aspects of job satisfaction from the global (overall) measure of job satisfaction can basic underlying realities of the raw data be fully and completely exposed.

The implications of Figure 42 (Appendix F) are clear. Older employees tend to be more satisfied in all dimensions of the work, except for the supervision dimension. The configuration of the JDI (Supervision) curve resembles that approaching a horizontal line which indicates lack of significant relationship between this dimension of job satisfaction and the stratification principle of age. More research is needed to fully explain the reasons for the impotence of age as a discriminating factor in job satisfaction, at least insofar as supervision is concerned. The only explanation that comes readily to mind is that an employee's basic reactions to his supervisor are established early in his working career. Only an in-depth or clinical approach based upon individual data can hope to resolve this interesting question.

Figures 40-43 exhibit some curvilinearity, but nowhere near as much as other graphs in the series depicted in Appendix F. Except for Figure 50 (Tenure) and Figure 54 (Absenteeism) Figures 44-57 of Appendix F reveal the extremely asymmetrical nature of the underlying data as indicated by low F-scores. For this reason, the stratification principles of JDI (Total) and age are peculiarly important in making predictions about the relative rankings of component measures of job satisfaction, although, as pointed out, the global measure of job satisfaction leaves something to be desired, at least in the case of age, although the global measure of job satisfaction holds up quite well for the JDI (Total). In the latter case, the F-score equals 82.6 which is quite significant ($p<0.01$).

Figures 44 and 45 of Appendix F deal with sex as the regressand variable. By regressing sex on JDI (Component) raw score groups, it was expected that significant differences would emerge, based on sex as the stratification principle. However, no such results emerged. The degree of regressivity in Figure 5 is almost nil, as shown by the extremely low F-scores recorded for each of the JDI (Component) categories. The nonregressivity pattern is repeated in Figure 45 for the composite measure encompassing all the JDI (Component) dimensions. In order to understand Figures 44 and 45 it is essential to know the scales involved. Females were coded zero and males were coded one.

Thus the mean raw score for sex equals 0.404, as shown in Figure 45. This "strange" statistic can be interpreted to mean that the average or typical employee in the library is only slightly closer to the female antipode than to the male. Presumably, 0.500 would measure the midpoint between the two antipodal groups, based on sex.

Thus, for purposes of predicting the sex of the employees, the JDI (Component) and JDI (Total) raw scores are virtually useless. It is simply not possible to determine from the raw job satisfaction scores whether the respondent is a male or female. This extreme lack of regressivity in Figures 45 and 46 of Appendix F is really a bonus to library management however, since, for all practical purposes, the sexes become blurred in the library setting. Thus, the parameter of sex need not be considered, at least insofar as predicting whether the employees will be satisfied vel non in the respective JDI (Component) series.

Figures 46 and 47 of Appendix F examine education as the predictand. Regressivity was found not to exist in the underlying data though the patterns found do merit some comment, even though the F-scores disqualify the education variable as a serious regressand contender. None of the F-scores rise to the level of significance. Random forces could easily have produced the patterns shown. This is a curious finding inasmuch as the average or mean educational level of the employees in the library is 15.8 years,

just short of a bachelor's degree. The asymmetrical patterns reveal a degree of skewness (curvilinearity) in the underlying data which can be explained only on the basis of the uniqueness of the library employees qua their high educational status. The large number of master's in library science tend to contribute to this high level of education, while the equally large number of high school graduates (N=10) tend to depress the level. As a result, there emerges a curious blend of low and high educational levels in the library which may partially account for the erratic regression patterns reflected in Figure 46 of Appendix F.

Figure 47 (Appendix F) is the most interesting diagram. The relationship is predominantly negative, suggesting that job satisfaction (overall) drops as education increases. Other studies (7, 11) have shown this curious negative regression of education on job satisfaction. No explanation comes readily to mind.

The analysis involving earnings as the predicted variable is shown in Figures 48 and 49 of Appendix F. Although the degree of regressivity is much greater than in the analyses involving sex and education (as shown by the considerably higher F-scores computed for the JDI (Component) dimensions) the levels of significance implicit in the variance ratios shown do not qualify earnings as a

serious regressand variable, at least as far as the JDI (Component) raw scores are concerned.

This does not mean that earnings is not related to the JDI (Component) dimensions. Simple correlation analysis shows strong relationships existing in the bivariate data linking these variables. For example, the Pearson Product Moment Coefficient summarizing the relationships between earnings and JDI (Work) is 0.4936; for JDI (Pay) is 0.5243; and for JDI (Total) is 0.4397. All three of these bivariate coefficients are significant ($p<0.01$).

What this comparison of subgrouping analysis (Appendix F) and bivariate analysis (Appendix A) does show is that extreme caution must be exercised in interpreting any conclusions resulting from a single method of analysis. The results emerging from using one method may contradict those evolving from the use of another. This does not prove the basic inconsistency of the underlying data, but it does suggest the need for extreme caution in interpreting the results. Results which are method-bound can be useful if the limitations implicit in their origin are fully understood.

For purposes of this study, the analyses in Appendix A must be considered of somewhat greater value (other things being equal) than the analyses in Appendix F. This results from the fact that bivariate analysis, in general, abstracts

from interactional variance (implicit in multivariate analysis) and shows the dominant relationship existing between the bivariates of interest, unsullied, as it were, by any loss of informational content which invariably accompanies the subgrouping of data as in Appendix F. For these (technical or methodological) reasons the conclusions resulting from one analysis should be verified, if at all possible, by other approaches and methods. It is because of these methodological considerations that this study includes so many appendices, in order to expose the basic raw data to as many methodological variations as possible in order to optimize the extraction of informational content.

Subgrouping analysis, using tenure as the regressed variable, shows significant relationships. See Figures 50 and 51 of Appendix F. The F-scores for all the JDI (Component) dimensions are highly significant ($p<0.01$) indicating a high degree of regressivity in the underlying data. Tenure regresses beautifully over the JDI (Component) subgroupings, as shown in Figure 50. In general, the higher values of tenure are associated with the higher values of the subgroupings, indicating a direct or positive relationship between tenure and component job satisfaction. If the data are grouped compositely, however, as in Figure 51, the F-score negates any regressivity possibility. Again, the method of subgrouping tends to conceal, rather than reveal the underlying true patterns of regularity, implicit in

the data, as can be verified through the use of alternate statistical methods.

Subgrouping the data tends to also obscure the underlying patterns of regularity when job level is regressed over component subgroupings of the JDI. In this instance, the data is compressed too much. The subgroupings conceal too much. This implies that there exists an intermediate point somewhere between simple (bivariate) analysis and complex (multivariate) analysis involving subgrouping of the data which represents the optimal treatment of the data. No significant regressivity exists in Figures 52 and 53 (Appendix F), as shown by the low F-scores.

Regressivity is most pronounced in the case of absenteeism data. This result can be explained on the basis of the uniqueness of the library as an organization qua organization. See Figures 54 and 55 of Appendix F. In general, the F-scores tend to be high and significant ($p<0.01$) in every component case. Curvilinearity is also most pronounced in the case of absenteeism. In practical terms, this means that complicated curvilinear regression equations would have to be devised in order to predict the levels of absenteeism, given the regressor values associated with the discrete points of the component subgroupings. Although regression patterns do exist in the absenteeism data, the curvilinear nature of the relationships makes generalization extremely difficult.

Regressivity among the turnover data was practically nil as shown by the extremely low F-scores in Figures 56 and 57 of Appendix F. The erratic patterns evidenced in Figures 56 and 57 in the case of turnover data can be partially explained by the low number of "turnovers" (N=6) in the sample data (N=67). If a longer period of time were involved in the study, it is possible that firmer, more recurrent patterns of regularity would emerge in the turnover data. As it is, knowledge of an employee's membership in one of the JDI (Component) subgroupings is virtually worthless, insofar as predicting whether he will be a "turnover" vel non. The low rate of turnover in the library makes prediction of turnover extremely hazardous, subject to large margins of error.

A preliminary investigation of turnover data related to the thirty-three nonrespondent employees revealed slightly more regularity in the regression patterns through the low F-scores preclude the possibility of using linear regression equations as predictive devices.

Limitations Implicit in the Method of Subgrouping Sample Data

The discussions in this chapter have tended to the technical side, primarily because of certain methodological considerations impinging upon the interpretation of the final results. Compression of the sample data into narrow subgroupings is bound to distort the resulting data, to

some degree. There is no escaping this methodological limitation, but by recognizing the abridgment of data involved in successive reduction to narrower and narrower compass the pitfalls of interpretative error can be largely avoided.

It should be emphasized that the analyses contained in Appendix F were undertaken with full knowledge of the resulting hazards in interpretation. The purpose of the analyses was to determine if JDI (Component) subgroupings could be used as regressor (independent) variates, useful in predicting the magnitude of certain other regressand (dependent) variates. The answers to this question were mixed. In certain cases knowledge of JDI (Component) subgrouping membership was extremely useful in predicting the dependent variable. These cases were:

1. JDI (Indicated Component) mean scores
2. JID (Total) mean scores
3. Age mean values
4. Tenure mean values
5. Absenteeism mean values.

In these five cases it is relatively easy to predict these variables if knowledge of the employee's subgrouping membership is available.

In other cases knowledge of subgrouping membership was virtually useless for prediction purposes. These cases were:

1. Sex
2. Education
3. Earnings
4. Job Level
5. Turnover

Again, it must be emphasized that compression of the data, implicit in the methodology employed in Appendix F, may lead to obscuration of certain relationships, as well as to the uncovering of whatever regressivity does exist in the underlying raw data. The ideal method of course is to examine each basic entity in the universe of values. When the data are compressed into means, the resulting line of means (empirical regression curves) may or may not exhibit regressivity. Only analysis of variance, as exemplified in the F-ratios can determine this. As a minimum, and in order to check the conclusions emerging from the subgrouping analysis, the bivariate correlation coefficients should and must be checked. See Appendix A. The value of the latter Appendix lies in the fact that every individual sample value is examined and compared against every other sample value. The resulting Pearson Product Moment Coefficient suffers from only one serious limitation, that of possible attenuation effects due to curvilinearity present in the data. Also there exists the possibility of dilution of the coefficient if the basic assumption of homoschedasticity is not met. Other than these two well-known limitations, the simple (Pearson) coefficient offers yeoman service in exposing relationships among the underlying data.

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CHAPTER V

FINDINGS, CONCLUSIONS, AND SUMMARY

Introduction

Appendix G contains graphical analyses relating to the Index of Dissatisfaction (D/S). The analytical approach to the analysis of data offers a convenient methodology for gaining insight into the various areas of job satisfaction. D/S ratios can be computed by various stratifications of the data, depending upon the area of management interest. The resulting D/S ratios will differ, naturally, since the stratifications made will determine the absolute frequencies of employees "collapsed" into the selected stratifications. The relative frequencies (proportions or percentages) appear as the Y-axis in Figures 58-88 of Appendix G.

As indicated in Chapter IV, this study adopts the "analytical" philosophy as opposed to the "global" philosophy of job satisfaction analysis. Chapter IV showed the perils and inherent pitfalls connected with the so-called global approach. The "double-compression" of the data (once by means and once by subgroupings) involved in the Appendix F analyses illustrates the technical problems which can arise in the analysis of job satisfaction raw

data. However, each method (analytical or global) has something of interest to offer the analyst if the limitations (methodological) of each approach are kept in mind.

Discussion of Correlation and Regression Concepts

Correlation and Regression are not identical concepts though the ideas involved are very closely connected. A comparison of the two concepts can be made by examining the measures which best typify each concept. The Correlation concept can be defined by the Pearson Product Moment Coefficient of Correlation (r). The Regression concept can similarly be defined by the F-score or variance ratio. Now, $r = 1 - s_{y.x}/s_y$, while $F = s^2_R/s^2_{y.x}$. Although $s_R \neq s_y$, the two quantities are very similar. For the purposes of comparing r and F, assume that $s_R = s_y$. It follows from the definitions of r and F that $r = 1 - 1/F^2$. Thus the relationship between r and F is an inverse squared one. The higher the F-score, the higher the r coefficient, indicating the nature of the relationship between the two concepts of correlation and regression. It follows that regressivity is linked closely to correlation ratios, and vice versa.

D/S (Component) Analyses

Figure 58 in Appendix G shows that more employees are satisfied with JDI (Work) than otherwise. The D/S ratio is computed by summing across the graph the two categories

of satisfied and dissatisfied employees. Thus, the numerator and denominator of the D/S ratio must always add up to one hundred percent, or else an error has occurred.

Figure 59 (Appendix G) shows much dissatisfaction in the JDI (Pay) category (D/S = 1.85). The same situation obtains for JDI (Promotion) in Figure 60. However, the situation changes in Figure 61, where JDI (Supervision) yields a D/S ratio of 0.81. In Figure 62, the JDI (People) D/S ratio is 0.90, indicating a preponderance of satisfaction in this JDI (Component) category.

The other graphs in Appendix G can be interpreted in a similar fashion. By using the stratification principle which best fits the decisional parameters of the specific management problem, insight can be gained through an examination of the various JDI (Component) D/S ratios (Indices of Dissatisfaction).

For purposes of overall or comparative analysis, Figure 88 should be consulted in Appendix G. Some interesting conclusions emerge. First, the categories of satisfied and dissatisfied employees appear to be typically existential categories. These classifications (dual) do not depend, for their validity upon any criteria of right or wrong. The two categories constitute a bipolar division of all library employees on a dual (two-categoried) basis. Since the reasons underlying the cleavage of the employees into two (opposed) categories are multitudinous and complex, this

study perforce will not attempt an exhaustive evaluation of underlying rationales supporting the cleavage of the data. The two categories will be accepted on a purely existential basis and the resulting data analyzed to determine the existence vel non of any observed patterns of regularity.

Figure 88 of Appendix G shows that the satisfied and the dissatisfied employees divide into two separate statistical universes. The two resulting distributions along the X-axis are very nearly normal in appearance with a slight skewing to the right. Very little kurtosis occurs although if the data were smoothed, the peaks occuring at the tops of the distributions would presumably assume a more platykurtic appearance.

The mean of the unimodal distribution of satisfied employees (solid lines) lies far to the right on the JDI (Total) or X-axis. This parameter characterizes the (greater) magnitude of satisfaction which this universe of employees enjoy as a whole. The mean of the unimodal distribution of dissatisfied employees, on the other hand, lags far to the left along the X-axis, indicating the (lesser) magnitude of satisfaction obtaining among this universe of employees as a whole.

What is most striking about Figure 88 is the amazing similarity in the relative distributions of the two constituent elements of the bimodal array of distributions. It appears that similar forces are at work in the two underlying

universes of employees, yet, due to a complex structuring of the problem caused by multitudinous factors involving attitudes, biographical elements, and little-understood psychological parameters the resulting distributions are pulled apart and stand as separate, yet overlapping, universes of values, as illustrated in Figure 88.

Pay and promotion group together in both unimodal distributions, suggesting common factors at work determining the levels of satisfaction/dissatisfaction in these two JDI (Component) dimensions. People, supervision, and work likewise exhibit similar and related patterns suggesting a common underlying rationale for the distribution of these three JDI (Component) series of values.

It is interesting to note the agreement of Figure 88 (Appendix G) with Figure 32 (Appendix D). In both Figures the hierarchy of JDI (Component) satisfaction is identical, viz, in ascending order, people, supervision, and work. The corresponding D/S ratios, in descending order, are people (0.94), supervision (0.80), and work (0.72). Thus the job satisfaction dimensions responsible for producing the greatest amount of satisfaction in the library are work (itself) (number 1 rank), supervision (number 2 rank), and people (number 3 rank).

Promotion and pay constitute another constellation of (related) values. Among both groups of satisfied and dissatisfied employees the values of the pay and promotion

categories of job satisfaction were closely linked to each other, suggesting a common series of underlying causal factors at work, tending to produce identical patterns of dispersion. Pay causes the greatest amount of dissatisfaction, followed closely by promotion. On the other hand, dissatisfaction with people, supervision, and work is significantly below that for pay and promotion. Even among the satisfied group of employees (solid lines in Figure 88, Appendix G) the satisfaction with pay and promotion areas of the job are significantly less than the satisfaction experienced in the other three areas of work, supervision, and people.

Clayton (3) explores the reasons for low satisfaction patterns of librarians with the pay and promotion scales. Librarians typically have less status than their teacher-counterparts on campus. One factor making for this low status of librarians is the personality profile of librarians themselves. For example, those who succeed in any culture are the ones who vigorously participate in its dominant value--and on a college campus or in a public school that value is teaching. Since librarians typically do not participate in directly-related teaching activities (oriented usually to the classroom) they are customarily relegated to a position in the social hierarchy of campus life which is several degrees below that of most academic personnel.

Dunn and Rachel (5) view the problem of dissatisfaction with pay and promotion in a broader context. Modern wage theories are still not completely free of the influence of the classical subsistence theory of wages. The key question which the subsistence theory attempted to answer was: "Why does the general wage level hover at the subsistence level?" This is still the key question in all current (modern) wage theories.

Comparison of pay and promotion policies of all libraries in the IUC fold would be one way of investigating the problem. Normative tables should be prepared which explain all significant differences in pay and promotion policies in terms of structural and functional variations among the constituent library organizations. This data is readily available and accessible.

Figure 89 (Appendix G) illustrates this latter point vividly. The bimodal distribution of values depicted in Figure 89 reveals that people, supervision, and work dimensions constitute one constellation of values, while pay and promotion constitute another constellation of work values. The underlying reasons for this peculiar, bimodal distribution are somewhat obscure, yet management should be aware of its existence since pay and promotion policies are often among the least susceptible variables, insofar as rapid changes in practices are concerned.

The discovery that work, supervision, and people are major contributors to job satisfaction also has major implications for management policy. Further research needs to be undertaken in order to determine the specific determinants of component job satisfactions. One obvious question presents itself: Why is people number three rank on the satisfaction hierarchy? Should not the people component of job satisfaction play a more important role in the library? Of course the argument might be made that the differences among the top three contenders are not statistically significant, yet this brushes aside the issues too easily. Only by further research into underlying causal factors can these questions be successfully resolved.

Variables Influencing Job Success in the Library

Research Variable X_{55} was defined as $X_{13} + X_{14} + X_{6} + (300 - X_{37})$. This variable can be labelled Job Success since the four constituent elements have a direct bearing on levels of achievement. X_{13} is Tenure. X_{14} is Earnings. X_{6} is JDI (Total). X_{37} is Absenteeism. The element $(300 - X_{37})$ is a measure of attendance in the library.

Correlation and regression analyses were made on the Job Success variable, X_{55}. The results of the correlation analysis will be presented first.

Job success, as defined above, correlates positively with all five JDI (Component) dimensions and also with JDI

(Total). The correlation coefficients are all well above the critical ratio of 0.3132. Job success correlates positively with Age (0.3986) and with Education (0.3855). The remaining correlations are as follows: Tenure (0.6715), Earnings (0.4548), Business Major (0.2645), Job Level (0.5415), Supervisor Status (0.4815), Cataloging Department (-0.2573), Satisfaction/Dissatisfaction (0.5929), Administrator (0.5215), and Clerical (-0.4295).

Few surprises were discovered by the correlation analysis except the finding in regard to the Cataloging Department. More research needs to be undertaken in order to explain this result. Since JDI (Work) acts as a suppressor variable for Cataloging Department the managerial implications are that job enrichment techniques need to be applied in Cataloging job areas to boost JDI (Work) raw scores to more acceptable ranges.

Regression analysis was next performed on the X_{55} (Job Success) variable. The regression equation was developed in two different ways: 1) using only variables 1 through 5; 2) using only variable 6. The regression equations are as follows:

$$1)\ X_{55} = 2.56388X_1 + 2.77420X_2 + 1.51669X_5 + 0.38691X_3 + 251.26466$$

$$2)\ X_{55} = 1.45080X_6 + 231.91319.$$

Regressivity was pronounced in both equations. For regression equation 1) F = 12.1246 and P = 0.0000. For

regression equation 2) F = 40.1603 and P = 0.0000. These results are highly significant and show that the prediction of job success by using the indicated regressors can be quite successful.

What is important to note in regression equation 1) is the relative rank order of the JDI (Component) dimensions. Work (itself) is first in importance. The raw coefficients do not indicate the relative rank order, but the standard coefficients do. In the equations as shown, the order of importance is based on the magnitude of the standard regression coefficient. Next in importance is pay. Next is people. And last is promotion. Rank evidently is not as meaningful in library organizations as it is in other types of organizations. Note that all the regressors (predictors) represent merely feelings about the job dimensions as measured by the JDI (Component) raw scores. But the job success (regressand) is composed of objective behavioral features associated with the job which are easily indexed and observed.

The implications for management policy are not difficult to discern. If it is assumed that "job success" is an important variable to monitor in the library, the constituent elements of which it is composed should be carefully observed by members of management and appropriate action initiated. Presumably, action would be initiated in the priority-ranking as indicated in regression equation number one.

Note that supervision did not turn up in equation one. Evidently the issue of supervision plays an insignificant role in defining job success in the library. This finding agrees, in general, with the regressivity pattern in Figure 42 of Appendix F which illustrates the lack of relationship in the JDI (Supervision) component of job satisfaction. A predictive equation which ignores supervision as a key predictor equation raises serious questions. Does the library differ so drastically from other organizations that management becomes a superfluous concept? The generally high raw scores on the JDI (Supervision) scale indicate a generally pervasive overall satisfaction with library management. But this favorable showing on supervision should not lull management into a false sense of security. What needs to be done is to find out the reasons underlying the high JDI scores on supervision and to transfer this potency to other JDI (Component) areas of concern.

Discussion of Model Regression Equations

A model regression equation can be constructed in the following fashion:

$$Y_i = \Sigma(+\beta_i X_i) + \Sigma(-\beta_i X_i)$$

This multiple linear regression model equation represents, in highly abstract form, the essentials of regression analyses which were run on the library data.

Y_i is the regressand or predicted variable. Y_i "regresses" over the X_i hyperspatial region defined by the right side of the equation. The beta's (β_i) are the regression coefficients expressed in standard coefficient format. The positive and negative signs indicate the direction of the impact of the X_i variables upon the Y_i variable.

The directionality of the impact upon the criterion variable of the independent variables (X_i) is indicated by the sign of the beta coefficients. It is extremely important in regression analysis to verify the directionality of the independent variables for prediction purposes. If, for example, management policy is established which implies the increase in magnitude of a given criterion variable, there are two ways (basically) of accomplishing this increase: 1) Attention can be directed to incremental increases in the ($+\beta_i X_i$) elements of the model multiple linear regression equation or 2) Attention can be directed to incremental reductions in the ($-\beta_i X_i$) elements of the model equation.

Thus, the existence of the model equation introduces a much-needed degree of flexibility into the framework of managerial decision-making which was heretofore lacking. The optimalization of decisions need not involve a rigid process of focusing attention upon a single experimental (X_i) variable and building policy around it exclusively. The model regression equation implies that management policy

can be created from a consideration of many alternative experimental variables. If management cannot change one of the experimental variables, for good and sufficient reasons, then alternative explorations of the problem can be made, using the next-best experimental variable in the model regression equation. Thus, by a selective, stepwise, process of infinite regress, a suitable or optimal solution to a given managerial problem can be constructed, based primarily upon mathematical insight into the constituent elements of the given problem as indicated by the appropriate model regression equation.

In short, the model equation offers a complete theoretical framework of analysis which is adequate for solving the great majority of managerial problems which are susceptable to reduction to constituent elements for purposes of analysis. However, the existence of the theoretical model does not completely preclude the usage of intuition in the solution of certain problems. It requires intuition and insight to properly apply the given model regression equation, developed by the technique of stepwise multiple linear regression analysis, to a given managerial problem. The existence of a large beta coefficient does not imply that the final decision will be based upon it solely. Wisdom and insight, usually acquired by long years of practical experience in the organizational setting, are still indispensable managerial qualities requisite for totally

successful problem-solving. And of course, the existence of a lengthy battery of prediction beta's implies the necessity for sound judgment in selecting the particular beta's for purposes of selective problem-solving.

The argument here is not that quantitative methods will supplant qualitative techniques of managerial decision-making, but that quantitative analysis has a great deal to offer the pragmatically-minded manager who is searching for optimal solutions to problems of policy. The prediction batteries based upon the concepts of regressivity and correlativity (implicit in the F-ratios and Pearson Product Moment Coefficients) offer the manager a powerful assist in studying a given problem. To reject this powerful analytic tool solely on grounds that it is purely quantitative in nature (thus presumably inadequate for practical problem-solving activities) may be a dubious qualitative decision. The argument which exists for quantitative frameworks of reference is based upon the notion that the final management decision should be rationally connected to those, in the final analysis, quantitative variables which exhibit the closest relationships to the criterion variable.

Technology presently exists which enables management to quickly assess a managerial problem using computer techniques. The IBM runs produced by this study attest to the truth of this statement. It is not enough to use the university's computer center for routine business applications. What is

required is application of the computer to non-routine managerial problems. The study of job satisfaction in the library illustrates one such application. There are others. Problems which were once considered basically unanalyzable are now routinely analyzed by the computer. Beta coefficients in earlier management problems were typically shrouded in mystery. Today the beta coefficients are routinely computed to three and four decimal places by the computer (five decimal places in this study). With such a powerful analytic machine at its disposal, the issue reduces to a single, simple query: can management afford not to use the computer to solve managerial-type problems today? This study adds an emphatic negative answer to this question.

The interpretation of a multiple linear regression equation is facilitated by comparing it with the model as shown. The magnitude of the beta coefficients (standard) give an indication of the relative potencies of each of the regressor (X_i) variables in influencing the magnitude of the predicted variates. For example, a one standard deviation variation in each of the X_i variables produces a concomitant variation in the criterion variable, expressed in standard (beta) deviation units. The regression equations produced by the computer runs in this study are unique in that the order of the variables indicates the relative importance of the X_i quantities (as indicated by the beta coefficients). Thus, by scanning the regression equations from left to

right insight can be gained into the prediction battery of elements impinging upon the criterion variable. If full recognition is given to the complete battery of X_i variables it follows that the overall quality of managerial decisions in the library can be improved by a factor of three to four, the precise magnitude depending upon the degree of regressivity present in the specific multiple linear regression equation under consideration.

An Answer to Question A

Question A asked what were the relationships among the fifty-four research variables as shown by simple correlational analysis. This question was answered by the correlation tables appearing in Appendix A. Overall job satisfaction (X_6) was linked directly with age, earnings, job level, and library science major. Overall job satisfaction was inversely related to clerical status. See Table VI, Appendix A. Satisfaction with work (X_1) was directly related to tenure, earnings, job level, supervisor status, bindery department membership, and library science major; X_1 was indirectly linked to elementary education major, cataloging department membership, and clerical status. See Table I, Appendix A. Pay satisfaction (X_2) was directly connected to age, tenure, earnings, job level, Director Services, library science major, and administrator status; indirectly connected with student status and clerical status.

Promotion satisfaction (X_3) was directly linked to (Hindu) Indian status, Central Services, and Public Services; indirectly linked to nepotism and Anglo status. Supervision satisfaction (X_4) was directly related to library science major, Collections Services, satisfied group membership, and professional librarian status; indirectly related to psychology major. People satisfaction (X_5) was directly related to satisfied group membership and indirectly related to Spanish and Art majors.

Two levels of criticality were included, in order to maximize the utility of the correlation matrix from which the correlation tables were prepared. One critical level was set at r equals 0.3132, corresponding to $p<0.01$. The other level of criticality was set at r equals 0.2409, corresponding to $p<0.05$. As was usual in tests of significance the critical levels were set at 0.01 and 0.05. Although these levels of significance need not be rigorously adhered to, for the purposes of this study they are deemed peculiarly appropriate since setting the critical limits at lesser r-values would increase the p-values to unacceptable levels. By observing the usual 0.01 and 0.05 limits of criticality, the raw correlational data is "milked" of all the major informational content it contains. The probability is quite low that any important correlations slipped through a statistical net as fine as the one constructed for this study.

An Answer to Question B

Question B asked what were the relationships among the fifty-four (research) variables as shown by stepwise multiple linear regression analysis?

This question was answered by successive series of computer runs which used the results of one computer analysis to open up new approach avenues to exploring the boundaries of the data. It should be emphasized that the nature of research work is highly exploratory. During the course of this study it was necessary to work closely with computer programmers in the Computer Center in devising new computer programs and techniques to deal with various technical problems which kept arising. Columns were added to the computer worksheets (basic) not only for substantive research purposes, but also as a means of technically manipulating the data for purposes of the correlational and regressional analyses.

The following instructions are a sampling of the communications between the Research Director of this study (the writer) and Frank Walker, the Chief Computer Programmer in the Computer Center:

I. (March 12, 1972):

1. Predict these variables, using all other variables as free variables for the total sample (N=67): X_1, X_2, X_3, X_4, X_5, X_{13}, X_{14}, X_{15}, X_{37}, X_{38}, X_{39}, X_{40}, X_{41}, X_{42},

X_{43}, X_{44}, X_{45}, X_{46}, X_{47}, X_{50}, X_{51}, X_{52}, X_{53}, X_{54}.

2. Predict X_6, excluding X_1, X_2, X_3, X_4, X_5, using all other variables as free variables.

3. Predict X_{49}, using only the following variables in the regression equation: X_6, X_{30}, X_{37}, X_{23}, X_{34}, X_{47}, X_{22}, X_{31}, X_{24}, X_{15}, X_7, X_{48}, X_{38}, X_{27}, X_{45}, X_{19}, X_{10}, X_{20}, X_{29}, X_{14}, X_9, X_{40}, X_{21}, X_5. This instruction illustrates the exploratory nature of this study. These variables were isolated in Computer Run number three (March 7, 1972) during a prediction of research variable, X_{49}, using all variables. It was decided to regress X_{49} again, using only those variables "turned up" in the number three computer run. The results were exactly as anticipated, i.e. several more variables were dropped from the new regression equation developed in this (number five) computer run.

4. Predict X_6, using two groups, zero (in X_{49}) and one (in X_{49}), excluding X_1, X_2, X_3, X_4, and X_5. The purpose of this manuever was to isolate the determinants of job satisfaction by a frontal assault, using dual groupings (a double-dichotomy of satisfied/dissatisfied employees).

II. (March 15, 1972):

1. Predict X_{15}, using all variables in total sample (N=67), but excluding X_{50}.
2. Predict X_1, X_2, X_3, X_4, X_5, using all variables but excluding X_1, X_2, X_3, X_4, X_5.
3. Predict X_{41}, using all variables, but excluding X_{42}, X_{43}, X_{44}, X_{45}, X_{46}, X_{47}.
4. Predict X_{42}, using all variables, but excluding X_{41}, X_{43}, X_{44}, X_{45}, X_{46}, X_{47}.
5. Predict X_{44}, using all variables, but excluding X_{41}, X_{42}, X_{43}, X_{45}, X_{46}, X_{47}.
6. Predict X_{45}, using all variables, but excluding X_{41}, X_{42}, X_{43}, X_{44}, X_{46}, X_{47}.
7. Predict X_{46}, using all variables, but excluding X_{41}, X_{42}, X_{43}, X_{44}, X_{45}, X_{47}.
8. Predict X_{47}, using all variables, but excluding X_{41}, X_{42}, X_{43}, X_{44}, X_{45}, X_{46}.
9. Predict X_{50}, using all variables, but excluding X_{15}.
10. Predict X_{53}, using all variables, but excluding X_{39}, X_{51}, X_{52}, X_{54}.
11. Predict X_{54}, using all variables, but excluding X_{51}, X_{52}, X_{53}.
12. Predict X_{51}, using all variables, but excluding X_{52}, X_{53}, X_{54}.

13. Predict X_{52}, using all variables, but excluding X_{51}, X_{53}, X_{54}.

III. (March 21, 1972)

1. Predict all variables, using all variables.
2. Predict all variables, using only X_1, X_2, X_3, X_4, X_5.
3. Predict all variables, using only X_1, X_2, X_3, X_4, X_5, X_7, X_8, X_9, X_{13}, X_{14}, X_{15}, X_{33}, X_{34}, X_{35}, X_{36}, X_{51}, X_{52}, X_{53}, X_{54}.
4. Predict $(X_{13} + X_{14} + X_6 + (300 - X_{37})$, using only X_1, X_2, X_3, X_4, X_5.
5. Predict all variables using only X_6.
6. Predict $(X_{13} + X_{14} + X_6 + (300 - X_{37})$, using only X_6.
7. Predict X_{43}, using all variables, but excluding X_{41}, X_{42}, X_{44}, X_{45}, X_{46}, X_{47}.

The above instructions are not exhaustive but merely illustrative of the communications flowing between the Research Director (the writer) and the staff of the Computer Center during the course of the study. A complete listing of the computer runs is as follows:

Computer Run Number	Date
1	February 28, 1972
2	February 29, 1972
3	March 7, 1972
4	March 13, 1972
5	March 14, 1972
6	March 17, 1972
7	March 21, 1972
8	March 28, 1972

Computer run number 8, the latest, involved a Calcomp computer sketch illustrating, in graphical fashion, some of the relationships discovered among the research variables. It should be stressed that the computer runs were exploratory in nature. The study was based on no preconceived notions of the final destination nor the precise road to be traversed in developing the data. Signposts were read and interpreted as the research journey progressed. Mistakes were plentiful in the early stages of the research, but these were rectified and overcome, using statistical methods and technology as required to advance the study.

An Answer to Question C

Question C asked what are the limitations of correlation and regression analysis for this study? This question has been treated throughout this paper. Correlation and regression are closely related concepts, though not identical. The concept of correlation requires covariation in the data. A horizontal line is devoid of correlation since only one variable changes. The other remains static, the antithesis of covariation.

The concept of regression requires that regressivity be present in the data. Mathematically, this requires that the residual variance be considerably smaller than the regression variance. The F-score attests to this difference in variances. The higher the F-score, the greater the degree of

regressivity in the underlying data and the greater the degree of correlation, since r varies inversely with the square of F, as previously discussed.

One limitation is the sample size. The beta coefficients depend, for their validity, on the size of the sample. It is believed that the (quite large) sample size (67%) involved in this study strengthens considerably the confidence limits of the beta coefficients in the (stepwise) multiple linear regression equations. The Pearson Product Moment Correlation Coefficient likewise is limited by the sample data, since r is defined as $1 - s_{y.x}/s_y$. As the standard error of estimate shrinks, r increases in magnitude, reflecting the closer degree of relationship existing in the data. Again, the sample size (67%) was amply large enough to ensure that the standard error (of estimate) and the standard deviation (of observations) were representative of population parameters.

An Answer to Question D

Question D asked what key parameters emerge as a result of statistical analysis of the data. The answer to this question is clear. All of the research variables in the study are key variables. This is shown by close analysis and inspection of the multiple linear regression equations developed in the study.

For illustrative purposes only the following data are presented:

Research Variable	Predictor Variables
1. Work	5, 14, 3, 4, 52, 34, 15, 2, 9, 36, 53, 8, 7.
2. Pay	14, 3, 51, 8, 54, 7, 9, 33, 13, 1, 34, 5, 4, 36, 53.
3. Promotion	4, 2, 33, 34, 9, 1, 8, 54, 15, 5, 52, 7, 14, 36, 13.
4. Supervision	3, 1, 51, 15, 33, 5, 14, 34, 9, 8, 52, 13, 2, 7, 54.
5. People	1, 4, 54, 3, 34, 13, 53, 15, 2, 14, 35, 8, 52, 7, 9, 36.
6. Age	13, 14, 54, 36, 33, 9, 15, 52, 3, 1, 2, 34, 5, 51, 4.
7. Education	54, 53, 14, 34, 36, 51, 3, 8, 4, 2, 13, 7, 33, 1, 5.
8. Student	7, 8, 53, 14, 1, 33, 9, 3, 2, 34, 35, 5, 52, 4, 13, 15, 51.
9. Tenure	51, 7, 15, 14, 5, 8, 34, 36, 9, 54, 2, 33, 52, 4.
10. Earnings	54, 7, 53, 9, 1, 2, 33, 13, 15, 52, 8, 3, 34, 5.
11. Library Science Major	54, 13, 14, 4, 3, 8, 7, 51, 5, 1, 52, 34, 36.
12. Absenteeism	9, 15, 11, 49, 23, 54, 14, 39, 16, 48, 1, 40, 22, 27, 8, 44, 46, 36, 30, 38, 10, 26, 12, 43, 2, 13, 31, 3, 32, 19, 4, 17, 28, 41, 7, 51, 53, 33, 20, 5, 18, 47, 35, 29, 25.
13. Turnover	27, 53, 29, 42, 12, 49, 4, 30, 5, 10, 32, 23, 28, 22, 45, 8, 33, 20, 37, 9, 15, 7, 13, 19, 14, 54, 48, 17, 24, 3, 21, 41, 34, 43, 31, 52, 40, 18, 16, 39, 2, 11, 1, 46.

Obviously there are many key variables involved in the prediction of any specific key criterion variable. The prediction batteries illustrated above were developed by computer analyses of the library data. Many such prediction batteries were developed during the course of this study. The implications for management policy and planning are not so obvious however. Turnover and absenteeism are complex concepts as shown by the multivariate nature of the associated prediction batteries.

There is also the problem of multiple criteria and conflictual demands that arise among the prediction battery sets. For example, assume that management policy decides to reduce turnover. At the same time, it wants to reduce absenteeism. Items 12 and 13 above reveal that there are many common predictor variables shared by the two criterion variables of absenteeism and turnover. This causes problems. It turns out that to reduce turnover it is necessary to increase (say) variable 53--but, in order to reduce absenteeism, it is necessary to decrease (say) variable 53. Here, there exists two priorities which call for directly opposite actions to be taken. Management as a result is thrown back upon its old intuitional methods of problem-resolution.

This (practical) flaw in the analysis does not impair the theoretical validity of the prediction battery sets of regression equations, however. The theory remains impregnable. The flaw merely exists in the practical realm. This study

offers a theoretical framework of reference for resolution of management problems using straightforward, rigorous, ratiocinative (quantitative) methods of problem-solving which, in the opinion of this study, can powerfully assist, aid, and abet the managerial decision-making process. The limitations of the quantitative approach lie in the practical realm solely. If priorities are realistically arranged, it follows that few conflicts such as the one described above will ever actually occur in practice.

Summary and Conclusions

The dual concepts of regressivity and correlativity are central to this study of job satisfaction in the university library. Enough background material has been presented to illustrate some of the analytical pitfalls and methodological dilemmas which enter in to muddy the waters of analysis. But there exists a pure strain of ratiocination implicit in the various analytical techniques. A residue of overall positive contributions to organizational insights remains after all the beta coefficients fade out of sight.

This study focused upon the concept of job satisfaction in a university library. What was learned cannot be reduced to a single sentence. Thirty-one correlation tables alone were mentioned in Chapter I. The anatomy of a university library is very complex. Delicate surgical (statistical) tools are required to expose the vital organs and get at underlying linkages and interrelationships.

What does arise from this study is a firm conviction that the JDI tool developed by Dr. Smith and her colleagues at Cornell University can serve as a powerful tool of inquiry in bringing to light some of the structural peculiarities of job satisfaction in an organization such as the university library. Differences in job satisfaction dimensions invariably arise based upon structural peculiarities unique to each organization. These differences in job satisfaction are based upon organizational and individual stratifications such as occupation, department, division, ethnicity, age, sex, tenure, educational level, and educational major. There is little limit that can be placed upon the scope of job satisfaction research other than the initiative, judgment, ingenuity, and drive of the individual researcher.

This study, of practical necessity, limited itself to basically fifty-four (fifty-five if the criterion of job success is included as the fifty-fifth variable) research variables. It must be emphasized that the meaningfulness of any job satisfaction research is limited by the scope of the research variables included.

It is possible that the addition of certain research variables could materially assist in overall evaluation of job satisfaction in the organization. This study, at one stage, considered adding the following variables to the basic list: 1) total work experience; 2) region of natal

origin; 3) marital status; 4) number of dependents; 5) spouse's income; 6) other income; 7) grades in school; 8) number of extracurricular activities; and 9) number of jobs held since school.

For various reasons it was decided not to include these research variables in the basic "shopping" list. For one reason,it is expensive to add research variables to a study. Each research variable to be added to the study must be rigidly inspected on strict economical grounds of evaluation. If the informational returns are not commensurate with the incremental computer cost, then the potential research variable must be eliminated from further consideration as a serious contender for inclusion in the study.

Research results are based upon variability in the data. Thus, the results of this study cannot be summarily stated as "job satisfaction was such-and-such a figure in department A of the library." Rather the total array of charts, graphs, figures, and tables must be carefully inspected, evaluated, and assessed in comparative terms in order to properly gain insight into the overall results of the study.

The correlational insights must be added to the regressional insights. The F-scores must be carefully weighed in the balance with the r-scores. Regressivity and correlativity do not exist independently of each other in a vacuum, as mentioned previously.

As stated in Chapter I, the purpose of this study was to determine and map the relationships existing between six dimensions of job satisfaction and forty-eight organizational and biographical variables constituting the environment of the university library. The answers to Questions A, B, C, and D fully explore the ramifications implicit in the statement of purpose.

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APPENDICES

APPENDIX A

Simple (Bivariate) Correlation Tables

TABLE I

CORRELATION COEFFICIENTS OF WORK WITH EXPERIMENTAL VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Pay	0.4407			
Promotion	0.4586			
Supervision	0.4707			
People	0.5194			
JDI Total	0.8084			
Age	0.3332			
Tenure		0.3086		
Earnings	0.4936			
Elementary Education				0.2449
Job Level	0.3840			
Supervisor		0.2988		
Cataloging				0.2460
Bindery		0.2549		
Satisfied Group	0.6340			
Library Science		0.2789		
Clerical			0.3844	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE II

CORRELATION COEFFICIENTS OF PAY WITH EXPERIMENTAL VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Promotion	0.4339			
Supervision		0.2430		
JDI Total	0.6360			
Age	0.3400			
Student				0.2703
Student Hours				0.2707
Tenure	0.3319			
Earnings	0.5243			
Job Level	0.4182			
Director Services		0.3038		
Satisfied Group	0.5624			
Library Science		0.2784		
Administrator	0.3466			
Clerical			0.4125	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE III

CORRELATION COEFFICIENTS OF PROMOTION WITH EXPERIMENTAL VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05**
Work	0.4586			
Pay	0.4339			
Supervision	0.4959			
People	0.3728			
JDI Total	0.7593			
Nepotism				0.2556
Anglo				0.2980
Indian		0.2577		
Central Services		0.2442		
Public Services/Tech.	0.3367			
Satisfied Group	0.6291			

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE IV

CORRELATION COEFFICIENTS OF SUPERVISION WITH EXPERIMENTAL VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Work	0.4707			
Pay		0.2430		
Promotion	0.4959			
People	0.4164			
JDI Total	0.7268			
Library Science		0.2806		
Psychology				0.2654
Collections Services		0.2453		
Satisfied Group	0.6166			
Professional Librarian		0.2409		

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE V

CORRELATION COEFFICIENTS OF PEOPLE WITH EXPERIMENTAL VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Work	0.5194			
Promotion	0.3728			
Supervision	0.4164			
JDI Total	0.6879			
Spanish				0.2546
Art				0.2595
Satisfied Group	0.5673			

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE VI

CORRELATION COEFFICIENTS OF JDI TOTAL WITH EXPERIMENTAL VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Work	0.8084			
Pay	0.6360			
Promotion	0.7593			
Supervision	0.7268			
People	0.6879			
Age		0.3056		
Earnings	0.4397			
Job Level		0.2682		
Satisfied Group	0.8306			
Library Science		0.2829		
Clerical			0.3396	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE VII

CORRELATION COEFFICIENTS OF AGE WITH EXPERIMENTAL VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Work	0.3332			
Pay	0.3400			
JDI Total		0.3056		
Student			0.3874	
Student Hours			0.3610	
Tenure	0.6644			
Earnings	0.6058			
Library Science		0.2502		
Job Level	0.4753			
Supervisor	0.4298			
Bindery		0.2437		
Administrator	0.4025			
Clerical			0.3758	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE VIII

CORRELATION COEFFICIENTS OF SEX WITH EXPERIMENTAL VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Educational Level		0.2412		
Student	0.3869			
Student Hours	0.4007			
Indian		0.2509		
Central		0.2652		
Cataloging				0.2627
Acquisitions				0.2575
Public Services/Tech.	0.3423			

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE IX

CORRELATION COEFFICIENTS OF EDUCATIONAL LEVEL WITH EXPERIMENTAL VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Sex		0.2412		
Tenure		0.2634		
Earnings	0.5034			
Library Science	0.4893			
High School			0.6979	
Absenteeism			0.3317	
Job Level	0.7247			
Supervisor	0.5628			
Administrator	0.4469			
Professional Librarian	0.4500			
Clerical			0.6810	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE X

CORRELATION COEFFICIENTS OF NEPOTISM WITH EXPERIMENTAL VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Psychology		0.2939		
Political Science		0.2939		
Bindery		0.2480		
Public Services/Tech.				0.2831

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XI

CORRELATION COEFFICIENTS OF TENURE WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Pay	0.3319			
Age	0.6644			
Educational Level		0.2634		
Student				0.2882
Student Hours				0.2797
Earnings	0.5011			
Business	0.3165			
Job Level	0.5523			
Supervisor	0.5259			
Director	0.3142			
Administrator	0.6894			
Clerical			0.3171	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XII

CORRELATION COEFFICIENTS OF EARNINGS WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.95*	0.01**	0.05*
Work	0.4936			
Pay	0.5243			
JDI Total	0.4397			
Age	0.6058			
Educational Level	0.5034			
Student			0.3639	
Student Hours			0.3521	
Tenure	0.5011			
Library Science	0.6635			
Job Level	0.8435			
Supervisor	0.6440			
Director		0.2683		
Satisfied Group	0.4387			
Administrator	0.4570			
Professional	0.6379			
Clerical			0.8687	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XIII

CORRELATION COEFFICIENTS OF LIBRARY SCIENCE MAJOR WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Work		0.2789		
Pay		0.2784		
Supervision		0.2806		
JDI Total		0.2829		
Age		0.2502		
Educational Level	0.4893			
Earnings	0.6635			
High School			0.3311	
Job Level	0.6069			
Supervisor	0.3817			
Satisfied Group		0.2757		
Professional	0.5780			
PLA		0.2617		
Clerical			0.7403	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XIV

CORRELATION COEFFICIENTS OF INDIAN WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Promotion		0.2577		
Sex		0.2509		
Business		0.2521		
Anglo			0.5136	
Central Services		0.2788		
PLA		0.2839		

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XV

CORRELATION COEFFICIENTS OF ABSENTEEISM WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Educational Level			0.3317	
Student				0.2807
Student Hours				0.2454
High School		0.2587		
Cataloging		0.3054		

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XVI

CORRELATION COEFFICIENTS OF TURNOVER WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Art	0.3925			
Drama		0.2521		
PLA		0.3088		

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XVII

CORRELATION COEFFICIENTS OF JOB LEVEL WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Work	0.3840			
Pay	0.4182			
JDI Total		0.2682		
Age	0.4753			
Educational Level	0.7247			
Student				0.2857
Student Hours				0.2712
Tenure	0.5523			
Earnings	0.8435			
Library Science	0.6069			
High School				0.2825
Supervisor	0.8720			
Director		0.2711		
Satisfied Group		0.2709		
Administrator	0.7095			
Professional	0.5429			
Clerical			0.8531	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XVIII

CORRELATION COEFFICIENTS OF DIRECTOR WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Pay		0.3038		
Tenure	0.3142			
Earnings		0.2683		
Secretarial Science	0.4885			
Job Level		0.2711		
Administrator	0.3622			

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XIX

CORRELATION COEFFICIENTS OF NEW LIBRARY/OLD LIBRARY WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Central Services		0.2788		
Collections				0.2575
Bindery			0.5685	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XX

CORRELATION COEFFICIENTS OF SUPERVISOR WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Age		0.4298		
Educational Level	0.5628			
Student				0.2509
Tenure	0.5259			
Earnings	0.6440			
Library Science	0.3817			
Job Level	0.8720			
Administrator	0.6714			
Professional	0.3614			
Clerical			0.6252	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XXI

CORRELATION COEFFICIENTS OF CENTRAL SERVICES WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Promotion		0.2442		
Sex		0.2652		
Student	0.3770			
Student Hours	0.3154			
Indian		0.2788		
Collections			0.3958	
Cataloging				0.3087
Public Services/Tech.	0.4854			
New Library/Old		0.2788		

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XXII

CORRELATION COEFFICIENTS OF CATALOGING SERVICES WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Work				0.2460
Sex				0.2627
Student				0.2635
Student Hours				0.2507
Absenteeism		0.3054		
Central Services				0.3087
Collections				0.3087
Public Services/Tech.			0.6360	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XXIII

CORRELATION COEFFICIENTS OF COLLECTIONS SERVICES WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Supervision		0.2453		
High School History		0.2607		0.2788
Central Services			0.3958	
Cataloging				0.3087
Public Services/Tech.	0.4854			
New Library/Old				0.2575

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XXIV

CORRELATION COEFFICIENTS OF ACQUISITIONS WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Sex				0.2575
Physical Therapy	0.3343			
Public Services/Tech.			0.4773	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XXV

CORRELATION COEFFICIENTS OF BINDERY SERVICES WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Work		0.2549		
Age		0.2437		
Nepotism		0.2480		
Public Services/Tech.			0.3266	
New Library/Old			0.5685	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XXVI

CORRELATION COEFFICIENTS OF PUBLIC SERVICES/TECHNICAL SERVICES WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Promotion	0.3367			
Sex	0.3423			
Educational Level		0.2855		
Nepotism				0.2831
Student	0.4144			
Student Hours	0.3942			
High School			0.4078	
Central Services	0.4854			
Collections	0.4854			
Cataloging			0.6360	
Acquisitions			0.4733	
Bindery			0.3266	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XXVII

CORRELATION COEFFICIENTS OF SATISFIED GROUP/DISSATISFIED GROUP WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Work	0.6340			
Pay	0.5624			
Promotion	0.6291			
Supervision	0.6166			
People	0.5673			
JDI Total	0.8306			
Earnings	0.4387			
Library Science		0.2757		
Job Level		0.2709		
Professional		0.2763		
PLA		0.2481		
Clerical			0.4013	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XXVIII

CORRELATION COEFFICIENTS OF ADMINISTRATOR WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Pay	0.3466			
Age	0.4025			
Educational Level	0.4469			
Tenure	0.6894			
Earnings	0.4570			
Job Level	0.7095			
Supervisor	0.6714			
Director	0.3622			
Clerical			0.4198	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XXIX

CORRELATION COEFFICIENTS OF PROFESSIONAL LIBRARIAN WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Supervision		0.2409		
Educational Level	0.4500			
Student				0.2635
Student Hours				0.2507
Earnings	0.6379			
Library Science	0.5780			
Job Level	0.5429			
Supervisor	0.3614			
Satisfied Group		0.2763		
Clerical			0.6568	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XXX

CORRELATION COEFFICIENTS OF PROFESSIONAL LIBRARY ASSISTANT (PLA) WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Student		0.2562		
Student Hours		0.2482		
Library Science		0.2617		
Speech		0.2839		
Indian		0.2839		
Turnover		0.3088		
Satisfied Group		0.2481		
Clerical			0.3801	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

TABLE XXXI

CORRELATION COEFFICIENTS OF CLERICAL OCCUPATION WITH VARIABLES IN THE STUDY

Variable	Positive		Negative	
Level of Significance	0.01**	0.05*	0.01**	0.05*
Work			0.3844	
Pay			0.4125	
JDI Total			0.3396	
Age			0.3758	
Educational Level			0.6810	
Tenure			0.3171	
Earnings			0.8687	
Library Science			0.7403	
High School	0.3311			
Job Level			0.8531	
Supervisor			0.6252	
Satisfied Group			0.4013	
Administrator			0.4198	
Professional			0.6568	
PLA			0.3801	

*Critical Ratio = 0.2409
**Critical Ratio = 0.3132

APPENDIX B

Tests of Significance on Continuous/Dichotomous Variables (on Differences Between Satisfied and Dissatisfied Groups)

TABLE XXXII

DICHOTOMOUS VARIABLES: PERCENTAGE OF EMPLOYEES WITHIN GROUP (BASED ON NUMBER OF EMPLOYEES IN EACH GROUP)

Stratification Variable (Nominal Scale)	Dissatisfied Group (N=29)	Satisfied Group (N=38)
Sex (X_8)	34XXXXXXXXXXX	XXXXXXXXXX32
Nepotism (X_{10})	21XXXXXXX	XXX11
Student (X_{11})	24XXXXXXXX	XXXXXXX21
Library Science (X_{15})	21XXXXXXX	XXXXXXXXXXXXXXXX47
Secretarial Science (X_{16})	0	X3
High School (X_{17})	17XXXXXX	XXXXX16
English (X_{18})	3X	X3
Elementary Education (X_{19})	7XX	X3
Spanish (X_{20})	7XX	X3
Business (X_{21})	10XXX	XX8
Physical Therapy (X_{22})	3X	0
Speech (X_{23})	3X	X3
History (X_{24})	3X	XX8
Music (X_{25})	3X	0
Home Economics (X_{26})	0	X3

TABLE XXXII--Continued

Stratification Variable (Nominal Scale)	Dissatisfied Group (N=29)	Satisfied Group (N=38)
Art (X_{27})	3X	0
Psychology (X_{28})	3X	0
Drama (X_{29})	3X	X3
Sociology (X_{30})	7XX	0
Political Science (X_{31})	0	X3
Journalism (X_{32})	3X	0
Anglo (X_{33})	93XXXXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXX87
Black (X_{34})	3X	X3
Chicano (X_{35})	3X	XX5
Indian (X_{36})	0	XX5
Turnover (X_{38})	14XXXX	XX5
Supervisor (X_{40})	10XXX	XXXXXXXX24
Director (X_{41})	7XX	X5
Central Services (X_{42})	31XXXXXXXXXX	XXXXXXXXX26
Collections (X_{43})	21XXXXXXX	XXXXXXXXXXX34
Cataloging (X_{44})	24XXXXXXXX	XXXXX16
Acquisitions (X_{45})	14XXXX	XXX11

TABLE XXXII--Continued

Stratification Variable (Nominal Scale)	Dissatisfied Group (N=29)	Satisfied Group (N=38)
Bindery (X_{46})	3X	XX8
Public Services/Tech. (X_{47})	58XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXX66
New Library/Old (X_{48})	86XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXXXXXX82
Satisfied/Dis. (X_{49})	0	XXXXXXXXXXXXXXXXXXXX100
Administrator (X_{51})	7XX	XXX11
Professional (X_{52})	7XX	XXXXXXXXX29
Prof. Lib. Asst. (X_{53})	0	XXXX13
Clerical (X_{54})	86XXXXXXXXXXXXXXXXXX	XXXXXXXXXXXXXXXX47

TABLE XXXIII

TEST OF SIGNIFICANCE FOR DICHOTOMOUS VARIABLES UTILIZING PERCENTAGE OF EMPLOYEES IN EACH GROUP (BASED ON NUMBER OF EMPLOYEES IN EACH GROUP)

Stratification Variable (Nominal Scale)	Dissat. Group (N=29)	Satis. Group (N=38)	Z
Sex (X_8)	34.48	31.58	0.25
Nepotism (X_{10})	20.69	10.53	1.16*
Student (X_{11})	24.14	21.05	0.29
Library Science (X_{15})	20.69	47.40	2.26****
Secretarial Science (X_{16})	0.00	2.63	88.30******
High School (X_{17})	17.24	15.79	0.16
English (X_{18})	3.45	2.63	0.20
Elementary Education (X_{19})	6.90	2.63	0.83
Spanish (X_{20})	6.90	2.63	0.84
Business (X_{21})	10.35	7.90	0.36
Physical Therapy (X_{22})	3.45	0.00	1.15*
Speech (X_{23})	3.45	2.63	0.20
History (X_{24})	3.45	7.90	0.76
Music (X_{25})	3.45	0.00	1.15*
Home Economics (X_{26})	0.00	2.63	0.88
Art (X_{27})	3.45	0.00	1.15*
Psychology (X_{28})	3.45	0.00	1.15*
Drama (X_{29})	3.45	2.63	0.20

TABLE XXXIII--Continued

Stratification Variable (Nominal Scale)	Dissat. Group (N=29)	Satis. Group (N=38)	Z
Sociology (X_{30})	6.90	0.00	1.10*
Political Science (X_{31})	0.00	2.63	0.88
Journalism (X_{32})	3.45	0.00	1.15*
Anglo (X_{33})	93.10	86.80	0.83
Black (X_{34})	3.45	2.63	0.20
Chicano (X_{35})	3.45	5.26	0.31
Indian (X_{36})	0.00	5.26	3.95******
Turnover (X_{38})	13.79	5.26	1.22*
Supervisor (X_{40})	10.35	23.70	1.41**
Director Services (X_{41})	6.90	5.26	0.28
Central Services (X_{42})	31.03	26.30	0.42
Collections Services (X_{43})	20.69	34.20	1.21**
Cataloging Services (X_{44})	24.14	15.79	0.86
Acquisitions Services (X_{45})	13.79	10.53	0.41
Bindery Services (X_{46})	3.45	7.90	0.76
Public Services/Tech. (X_{47})	58.62	65.80	0.60
New Library/Old (X_{48})	86.21	81.58	0.51
Satisfied Group (X_{49})	0.00	100.00	8.17******
Administrator (X_{51})	6.90	10.50	0.51
Professional (X_{52})	6.90	28.90	2.28****
Prof. Lib. Asst. (PLA) (X_{53})	0.00	13.16	12.25******
Clerical (X_{54})	86.21	47.40	3.28******

TABLE XXXIV

TEST OF SIGNIFICANCE FOR CONTINUOUS VARIABLES UTILIZING MEANS OF RAW SCORES OF EMPLOYEES WITHIN EACH GROUP (BASED ON NUMBER OF EMPLOYEES IN EACH GROUP)

Stratification Variable (Interval Scale)	Dissatis. Group Mean (N=29) (X_1)	Satis. Group Mean (N=38) (X_2)	t
Work (X_1)	21.93103	38.55263	2.58*****
Pay (X_2)	7.03448	20.21053	5.40******
Promotion (X_3)	7.31034	22.21053	6.42******
Supervision (X_4)	34.44827	47.42105	6.18******
People (X_5)	33.68965	46.78946	5.46******
JDI Total (X_6)	102.41379	175.18420	37.50******
Age (X_7)	32.00000	37.76315	1.87***
Educational Level (X_9)	15.27586	16.13158	1.50**
Student Hours (X_{12})	1.65517	1.07895	0.88*
Tenure (X_{13})	30.65517	52.97368	1.58**
Earnings (X_{14})	4.17241	6.05263	3.87******
Absenteeism (X_{37})	66.03447	41.05263	1.72***
Job Level (X_{39})	1.62069	2.65789	2.23****

* $p<0.4$
** $p<0.2$
*** $p<0.1$
**** $p<0.05$
***** $p<0.02$
****** $p<0.001$

APPENDIX C

Frequency Count Data

	Satisfied Frequencies				
Absolute Relative	15.5 23.1%	4.0 6.0%	9.0 13.4%	9.5 14.2%	1.0 1.5%

JDI Component Raw Score*	Absolute Frequencies				
Over 49	0	2	0	0	0
37-48	12	0	2	8	1
25-36	7	4	4	3	0
13-24	6	1	2	1	0
0-12	8	0	1	0	0
Age Subgroup	20-29	30-39	40-49	50-59	60-69

	Dissatisfied Frequencies				
Absolute Relative	17.5 26.1%	3.0 4.5%	5.0 7.5%	2.5 3.7%	0.0 0.0%

Computation of D/S Ratio:

1. D = 26.1% + 4.5% + 7.5% + 3.7% + 0.0% = 41.8%
2. S = 23.1% + 6.0% + 13.4% + 14.2% + 1.5% = 58.2%
3. Check: D + S = 41.8% + 58.2% = 100.0%
4. D/S = 41.8% ÷ 58.2% = 0.72

*Average = 31.4

Fig. 1--Frequency count of satisfied and dissatisfied employees on the JDI (Work) (X_1) scale, stratified by age (X_7).

	Satisfied Frequencies				
Absolute	8.0	3.0	5.5	6.0	1.0
Relative	11.9%	4.5%	8.2%	9.0%	1.4%

JDI Component Raw Score*	Absolute Frequencies				
Over 49	0	0	0	0	0
37-48	1	0	2	1	0
25-36	4	1	1	2	1
13-24	6	4	5	6	0
0-12	22	2	6	3	0
Age Subgroup	20-29	30-39	40-49	50-59	60-69

	Dissatisfied Frequencies				
Absolute	25.0	4.0	8.5	6.0	0.0
Relative	37.3%	6.0%	12.7%	9.0%	0.0

Computation of D/S Ratio:

1. D = 37.3% + 6.0% + 12.7% + 9.0% = 65.0%
2. S = 11.9% + 4.5% + 8.2% + 9.0% + 1.4% = 35.0%
3. Check: D + S = 65.0% + 35.0% = 100.0%
4. D/S = 65.0% ÷ 35.0% = 1.85

*Average = 31.4

Fig. 2--Frequency count of satisfied and dissatisfied employees on the JDI (Pay) (X_2) scale, stratified by Age (X_7).

	Satisfied Frequencies				
Absolute Relative	9.5 14.2%	2.5 3.7%	5.0 7.5%	5.5 8.2%	1.0 1.6%

JDI Component Raw Score*	Absolute Frequencies				
Over 49	0	0	0	0	0
37-48	0	0	0	1	0
25-36	4	1	3	2	1
13-24	7	3	4	5	0
0-12	20	3	7	4	0
Age Subgroup	20-29	30-39	40-49	50-59	60-69

	Dissatisfied Frequencies				
Absolute Relative	23.5 35.0%	4.5 6.7%	9.0 13.4%	6.5 9.7%	0.0 0.0%

Computation of D/S Ratio:

1. D = 35.0% + 6.7% + 13.4% + 9.7% + 0.0% = 64.8%
2. S = 14.2% + 3.7% + 7.5% + 8.2% + 1.6% = 35.2%
3. Check: D + S = 64.8% + 35.2% = 100.0%
4. D/S = 64.8% ÷ 35.2% = 1.84

*Average = 15.8

Fig. 3--Frequency count of satisfied and dissatisfied employees on the JDI (Promotion) (X_3) scale, stratified by age (X_7).

	Satisfied Frequencies				
Absolute Relative	17.0 25.4%	4.0 6.0%	8.0 11.9%	8.0 11.9%	0.0 0.0%

JDI Component Raw Score*	Absolute Frequencies				
Over 49 37-48 25-36 13-24 0-12	12 10 6 5 0	3 2 1 1 0	6 4 2 2 0	7 2 2 1 0	0 0 1 0 0
Age Subgroup	20-29	30-39	40-49	50-59	60-69

	Dissatisfied Frequencies				
Absolute Relative	16.0 23.8%	3.0 4.5%	6.0 9.0%	4.0 6.0%	1.0 1.5%

Computation of D/S Ratio:

1. D = 23.8% + 4.5% + 9.0% + 6.0% + 1.5% = 44.8%
2. S = 25.4% + 6.0% + 11.9% + 11.9% + 0.0% = 55.2%
3. Check: D + S = 44.8% + 55.2% = 100.0%
4. D/S = 44.8% ÷ 55.2% = 0.81

*Average = 40.9

Fig. 4--Frequency count of satisfied and dissatisfied employees on the JDI (Supervision) (X_4) scale, stratified by Age (X_7).

	Satisfied Frequencies				
Absolute Relative	16.5 24.6%	3.5 5.2%	6.0 9.0%	7.5 11.2%	1.0 1.6%

JDI Component Raw Score*	Absolute Frequencies				
Over 49	11	2	4	5	1
37-48	11	3	4	5	0
25-36	6	1	6	1	0
13-24	4	1	0	1	0
0-12	1	0	0	0	0
Age Subgroup	20-29	30-39	40-49	50-59	60-69

	Dissatisfied Frequencies				
Absolute Relative	16.5 24.6%	3.5 5.2%	8.0 11.9%	4.5 6.7%	0.0 0.0%

Computation of D/S Ratio:

1. D = 24.6% + 5.2% + 11.9% + 6.7% + 0.0% = 48.4%
2. S = 24.6% + 5.2% + 9.0% + 11.2% + 1.6% = 51.6%
3. Check: D + S = 48.4% + 51.6% = 100.0%
4. D/S = 48.4% ÷ 51.6% = 0.94

*Average = 41.1

Fig. 5--Frequency count of satisfied and dissatisfied employees on the JDI (People) (X_5) scale, stratified by Age (X_7).

	Satisfied Frequencies			
Absolute Relative**		26.5 59.0%		12.5 56.8%

JDI Component Raw Score*	Absolute Frequencies			
Over 49 37-48 25-36 13-24 0-12		0 20 13 6 6		2 8 5 4 3
Nominal Scale		Female		Male

	Dissatisfied Frequencies			
Absolute Relative**		18.5 41.0%		9.5 43.2%

Computation of D/S Ratio:

1. D = 41% (Female); 43.2% (Male)
2. S = 59% (Female); 56.8% (Male)
3. Check: D + S = 41% + 59% = 100% (Female);
   D + S = 43.2% + 56.8% = 100% (Male)
4. D/S = 41% ÷ 59% = 0.70 (Female);
   D/S = 43.2% ÷ 56.8% = 0.76 (Male)

*Average = 31.4 **Proportions based on 22 males and 45 females in total sample (N=67)

Fig. 6--Frequency count of satisfied and dissatisfied employees on the JDI (Work) (X_1) scale, stratified by Sex (X_8).

	Satisfied Frequencies				
Absolute Relative**		16.5 36.6%		7.0 31.8%	

JDI Component Raw Score*	Absolute Frequencies				
Over 49 37-48 25-36 13-24 0-12		0 2 7 15 21		0 2 2 6 12	
Nominal Scale		Female		Male	

	Dissatisfied Frequencies				
Absolute Relative**		28.5 63.4%		15.0 68.2%	

Computation of D/S Ratio:

1. D = 63.4% (Female); 68.2% (Male)
2. S = 36.6% (Female); 31.8% (Male)
3. Check: D + S = 63.4% + 36.6% (Female);
   D + S = 68.2% + 31.8% (Male)
4. D/S = 63.4% ÷ 36.6% = 1.73 (Female);
   D/S = 68.2% ÷ 31.8% = 2.14 (Male)

*Average = 14.5 **Proportions based on 22 males and 45 females in total sample (N=67)

Fig. 7--Frequency count of satisfied and dissatisfied employees on the JDI (Pay) (X_2) scale, stratified by Sex (X_8).

	Satisfied Frequencies				
Absolute Relative**		13.5 30.0%		10.0 45.5%	

JDI Component Raw Score*	Absolute Frequencies				
Over 49 37-48 25-36 13-24 0-12		0 2 6 11 26		0 1 5 8 8	
Nominal Scale		Female		Male	

	Dissatisfied Frequencies				
Absolute Relative**		31.5 70.0%		12.0 54.5%	

Computation of D/S Ratio:

1. D = 70.0% (Female); 54.5% (Male)
2. S = 30.0% (Female); 45.5% (Male)
3. Check: D + S = 70.0% + 30.0% = 100.0% (Female);
   D + S = 54.5% + 45.5% = 100.0% (Male)
4. D/S = 70.0% ÷ 30.0% = 2.33 (Female);
   D/S = 54.5% ÷ 45.5% = 1.20 (Male)

*Average = 15.8

*Proportions based on 22 males and 45 females in total sample (N=67).

Fig. 8--Frequency count of satisfied and dissatisfied employees on the JDI (Promotion) (X_3) scale, stratified by Sex (X_8).

	Satisfied Frequencies			
Absolute Relative**		25.0 55.5%		12.0 54.5%

JDI Component Raw Score*	Absolute Frequencies			
Over 49 37-48 25-36 13-24 0-12		19 12 8 6 0		9 6 4 3 0
Nominal Scale		Female		Male

	Dissatisfied Frequencies			
Absolute Relative**		20.0 44.5%		10.0 45.5%

Computation of D/S Ratio:

1. D = 44.5% (Female); 45.5% (Male)
2. S = 55.5% (Female); 54.5% (Male)
3. Check: D + S = 44.5% + 55.5% = 100.0% (Female);
   D + S = 45.5% + 54.5% = 100.0% (Male)
4. D/S = 44.5% ÷ 55.5% = 0.80 (Female);
   D/S = 45.5% ÷ 54.5% = 0.84 (Male)

*Average = 40.9

**Proportions based on 22 males and 45 females in total sample (N=67)

Fig. 9--Frequency count of satisfied and dissatisfied employees on the JDI (Supervision) (X_4) scale, stratified by Sex (X_8).

	Satisfied Frequencies				
Absolute Relative**		23.0 51.2%		11.5 52.4%	

JDI Component Raw Score*	Absolute Frequencies				
Over 49 37-48 25-36 13-24 0-12		15 16 8 6 0		8 7 6 0 1	
Nominal Scale		Female		Male	

	Dissatisfied Frequencies				
Absolute Relative**		22.0 48.8%		10.5 47.6%	

Computation of D/S Ratio:

1. D = 48.8% (Female); 47.6% (Male)
2. S = 51.2% (Female); 52.4% (Male)
3. Check: D + S = 48.8% + 51.2% = 100.0% (Female);
   D + S = 47.6% + 52.4% = 100.0% (Male)
4. D/S = 48.8% ÷ 51.2% = 0.95 (Female);
   D/S = 47.6% ÷ 52.4% = 0.91 (Male)

*Average = 41.1

**Proportions based on 22 males and 45 females in total sample (N=67).

Fig. 10--Frequency count of satisfied and dissatisfied employees on the JDI (People) (X_5) scale, stratified by Sex (X_8).

	Satisfied Frequencies		
Absolute Relative	10.0 14.9%	28.0 41.7%	1.0 1.6%

JDI Component Raw Score*	Absolute Frequencies		
Over 49	1	1	0
37-48	6	21	1
25-36	6	12	0
13-24	5	5	0
0-12	0	9	0
Education Group**	12-14	15-19	20-24

	Dissatisfied Frequencies		
Absolute Relative	8.0 11.9%	20.0 29.9%	0.0 0.0%

Computation of D/S Ratio:

1. D = 11.9% + 29.9% + 0.0% = 41.8%
2. S = 14.9% + 41.7% + 1.6% = 58.2%
3. Check: D + S = 41.8% + 58.2% = 100.0%
4. D/S = 41.8% ÷ 58.2% = 0.72

*Average = 31.4 **Years of schooling

Fig. 11--Frequency count of satisfied and dissatisfied employees on the JDI (Work) (X_1) scale, stratified by Education (X_9).

	Satisfied Frequencies		
Absolute	5.5	17.0	1.0
Relative	8.2%	25.4%	1.5%

JDI Component Raw Score*	Absolute Frequencies		
Over 49	0	0	0
37-48	2	1	1
25-36	1	8	0
13-24	5	16	0
0-12	10	23	0
Education Group**	12-14	15-19	20-24

	Dissatisfied Frequencies		
Absolute	12.5	31.0	0.0
Relative	18.6%	46.3%	0.0%

Computation of D/S Ratio:

1. D = 18.6% + 46.3% + 0.0% = 64.9%
2. S = 8.2% + 25.4% + 1.5% = 35.1%
3. Check: D + S = 64.9% + 35.1% = 100.0%
4. D/S = 64.9% ÷ 35.1% = 1.85

*Average = 14.5 **Years of schooling

Fig. 12--Frequency count of satisfied and dissatisfied employees on the JDI (Pay) (X_2) scale, stratified by Education (X_9).

	Satisfied Frequencies		
Absolute Relative	7.5 11.2%	16.0 23.8%	0.0 0.0%

JDI Component Raw Score*	Absolute Frequencies		
Over 49 37-48 25-36 13-24 0-12	0 2 3 5 8	0 1 8 14 25	0 0 0 0 1
Education Group**	12-14	15-19	20-24

	Dissatisfied Frequencies		
Absolute Relative	10.5 15.7%	32.0 47.7%	1.0 1.6%

Computation of D/S Ratio:

1. D = 15.7% + 47.7% + 1.6% = 65.0%
2. S = 11.2% + 23.8% + 0.0% = 35.0%
3. Check: D + S = 65.0% + 35.0% = 100.0%
4. D/S = 65.0% ÷ 35.0% = 1.85

*Average = 15.8 **Years of schooling

Fig. 13--Frequency count of satisfied and dissatisfied employees on the JDI (Promotion) (X_3) scale, stratified by Education (X_9).

	Satisfied Frequencies		
Absolute Relative	10.5 15.7%	25.5 38.0%	1.0 1.5%

JDI Component Raw Score*	Absolute Frequencies		
Over 49	7	20	1
37-48	7	11	0
25-36	2	10	0
13-24	2	7	0
0-12	0	0	0
Education Group**	12-14	15-19	20-24

	Dissatisfied Frequencies		
Absolute Relative	7.5 11.2%	22.5 33.6%	0.0 0.0%

Computation of D/S Ratio:

1. D = 11.2% + 33.6% + 0.0% = 44.8%
2. S = 15.7% + 38.0% + 1.5% = 55.2%
3. Check: D + S = 44.8% + 55.2% = 100.0%
4. D/S = 44.8% ÷ 55.2% = 0.81

*Average = 40.9 **Years of schooling

Fig. 14--Frequency count of satisfied and dissatisfied employees on the JDI (Supervision) (X_4) scale, stratified by Education (X_9).

	Satisfied Frequencies		
Absolute Relative	11.0 16.4%	23.0 34.4%	0.5 0.7%

JDI Component Raw Score*	Absolute Frequencies		
Over 49 37-48 25-36 12-24 0-12	8 6 1 3 0	15 16 13 3 1	0 1 0 0 0
Education Group**	12-14	15-19	20-24

	Dissatisfied Frequencies		
Absolute Relative	7.0 10.5%	25.0 37.3%	0.5 0.7

Computation of D/S Ratio:

1. D = 10.5% + 37.3% + 0.7% = 48.5%
2. S = 16.4% + 34.4% + 0.7% = 51.5%
3. Check: D + S = 48.5% + 51.5% = 100.0%
4. D/S = 48.5% ÷ 51.5% = 0.94

*Average = 41.4 **Years of schooling

Fig. 15--Frequency count of satisfied and dissatisfied employees on the JDI (People) (X_5) scale, stratified by Education (X_9).

	Satisfied Frequencies			
Absolute Relative	32.5 48.5%	4.5 6.7%	1.0 1.5%	1.0 1.6%

JDI Component Raw Score*	Absolute Frequencies			
Over 49	2	0	0	0
37-48	22	4	1	1
25-36	17	1	0	0
13-24	10	0	0	0
0-12	9	0	0	0
Tenure Group**	0-99	100-199	200-299	300-399

	Dissatisfied Frequencies			
Absolute Relative	27.5 41.0%	0.5 0.7%	0.0 0.0%	0.0 0.0%

Computation of D/S Ratio:

1. D = 41.0% + 0.7% + 0.0% + 0.0% = 41.7%
2. S = 48.5% + 6.7% + 1.5% + 1.6% = 58.3%
3. Check: D + S = 41.7% + 58.3% = 100.0%
4. D/S = 41.7% ÷ 58.3% = 0.72

*Average = 31.4 **10 units = 1 year

Fig. 16--Frequency count of satisfied and dissatisfied employees on the JDI (Work) (X_1) scale, stratified by Tenure (X_{13}).

	Satisfied Frequencies			
Absolute	18.5	3.5	1.0	0.5
Relative	27.6%	5.2%	1.6%	0.7%

JDI Component Raw Score*	Absolute Frequencies			
Over 49	0	0	0	0
37-48	2	2	0	0
25-36	7	1	1	0
13-24	19	1	0	1
0-12	32	1	0	0
Tenure Group**	0-99	100-199	200-299	300-399

	Dissatisfied Frequencies			
Absolute	41.5	1.5	0.0	0.5
Relative	62.0%	2.2%	0.0%	0.7%

Computation of D/S Ratio:

1. D = 62.0% + 2.2% + 0.0% + 0.7% = 64.9%
2. S = 27.6% + 5.2% + 1.6% + 0.7% = 35.1%
3. Check: D + S = 64.9% + 35.1% = 100.0%
4. D/S = 64.9% ÷ 35.1% = 1.85

*Average = 14.5 **10 units = 1 year

Fig. 17--Frequency count of satisfied and dissatisfied employees on the JDI (Pay) (X_2) scale, stratified by Tenure (X_{13}).

	Satisfied Frequencies			
Absolute Relative	19.0 28.4%	3.0 4.5%	1.0 1.5%	0.5 0.7%

JDI Component Raw Score*	Absolute Frequencies			
Over 49	0	0	0	0
37-48	3	0	0	0
25-36	7	3	1	0
13-24	18	0	0	1
0-12	31	3	0	0
Tenure Group**	0-99	100-199	200-299	300-399

	Dissatisfied Frequencies			
Absolute Relative	40.0 59.7%	3.0 4.5%	0.0 0.0%	0.5 0.7%

Computation of D/S Ratio:

1. D = 59.7% + 4.5% + 0.0% + 0.7% = 64.9%
2. S = 28.4% + 4.5% + 1.5% + 0.7% = 35.1%
3. Check: D + S = 64.9% + 35.1% = 100.0%
4. D/S = 64.9% ÷ 35.1% = 1.85

*Average = 15.8 **10 units = 1 year

Fig. 18--Frequency count of satisfied and dissatisfied employees on the JDI (Promotion) (X_3) scale, stratified by Tenure (X_{13}).

	Satisfied Frequencies			
Absolute Relative	33.5 50.0%	3.0 4.5%	0.0 0.0%	1.0 1.5%

JDI Component Raw Score*	Absolute Frequencies			
Over 49	25	3	0	0
37-48	17	0	0	1
25-36	9	2	1	0
13-24	9	0	0	0
0-12	0	0	0	0
Tenure Group**	0-99	100-199	200-299	300-399

	Dissatisfied Frequencies			
Absolute Relative	26.5 39.5%	2.0 3.0%	1.0 1.5%	0.0 0.0%

Computation of D/S Ratio:

1. D = 39.5% + 3.0% + 1.5% + 0.0% = 44.0%
2. S = 50.0% + 4.5% + 0.0% + 1.5% = 56.0%
3. Check: D + S = 44.0% + 56.0% = 100.0%
4. D/S = 44.0% ÷ 56.0% = 0.79

*Average = 40.9 **10 units = 1 year

Fig. 19--Frequency count of satisfied and dissatisfied employees on the JDI (Supervision) (X_4) scale, stratified by Tenure (X_{13}).

	Satisfied Frequencies			
Absolute Relative	30.0 44.7%	2.5 3.7%	1.0 1.6%	1.0 1.6%

JDI Component Raw Score*	Absolute Frequencies			
Over 49	19	2	1	1
37-48	22	1	0	0
25-36	12	2	0	0
13-24	6	0	0	0
0-12	1	0	0	0
Tenure Group**	0-99	100-199	200-299	300-399

	Dissatisfied Frequencies			
Absolute Relative	30.0 44.7%	2.5 3.7%	0.0 0.0%	0.0 0.0%

Computation of D/S Ratio:

1. D = 44.7% + 3.7% + 0.0% + 0.0% = 48.4%
2. S = 44.7% + 3.7% + 1.6% + 1.6% = 51.6%
3. Check: D + S = 48.4% + 51.6% = 100.0%
4. D/S = 48.4% ÷ 51.6% = 0.94

*Average = 41.0 **10 units = 1 year

Fig. 20--Frequency count of satisfied and dissatisfied employees on the JDI (People) (X_5) scale, stratified by Tenure (X_{13}).

	Satisfied Frequencies		
Absolute Relative	0.0 0.0%	12.5 18.6%	26.5 39.6%

JDI Component Raw Score*	Absolute Frequencies		
Over 49	0	0	2
37-48	0	8	20
25-36	0	9	9
13-24	0	9	1
0-12	6	3	0
JDI (Total)	0-74	75-149	150-224

	Dissatisfied Frequencies		
Absolute Relative	6.0 9.0%	16.5 24.6%	5.5 8.2%

Computation of D/S Ratio:

1. D = 9.0% + 24.6% + 8.2% = 41.8%
2. S = 0.0% + 18.6% + 39.6% = 58.2%
3. Check: D + S = 41.8% + 58.2% = 100.0%
4. D/S = 41.8% ÷ 58.2% = 0.72

*Average = 31.4

Fig. 21--Frequency count of satisfied and dissatisfied employees on the JDI (Work) (X_1) scale, stratified by JDI (Total) (X_6).[1]

	Satisfied Frequencies		
Absolute	0.5	5.5	17.5
Relative	0.7%	8.2%	26.1%

JDI Component Raw Score*	Absolute Frequencies		
Over 49	0	0	0
37-48	0	0	4
25-36	0	2	7
13-24	1	7	13
0-12	5	19	9
JDI (Total)	0-74	75-149	150-224

	Dissatisfied Frequencies		
Absolute	5.5	22.5	15.5
Relative	8.2%	33.6%	23.2%

Computation of D/S Ratio:

1. D = 8.2% + 33.6% + 23.2% = 65.0%
2. S = 0.7% + 8.2% + 26.1% = 35.0%
3. Check: D + S = 65.0% + 35.0% = 100.0%
4. D/S = 65.0% ÷ 35.0% = 1.86

*Average = 14.5

Fig. 22--Frequency count of satisfied and dissatisfied employees on the JDI (Pay) (X_2) scale, stratified by JDI (Total) (X_6).

	Satisfied Frequencies		
Absolute Relative	0.0 0.0%	5.0 7.5%	18.5 27.5%

JDI Component Raw Score*	Absolute Frequencies		
Over 49	0	0	0
37-48	0	0	3
25-36	0	1	10
13-24	0	8	11
0-12	6	20	8
JDI (Total)	0-74	75-149	150-224

	Dissatisfied Frequencies		
Absolute Relative	6.0 9.0%	24.0 35.8%	13.5 20.2%

Computation of D/S Ratio:

1. D = 9.0% + 35.8% + 20.2% = 65.0%
2. S = 0.0% + 7.5% + 27.5% = 35.0%
3. Check: D + S = 65.0% + 35.0% = 100.0%
4. D/S = 65.0% ÷ 35.0% = 1.85

*Average = 15.8

Fig. 23--Frequency count of satisfied and dissatisfied employees on the JDI (Promotion) (X_3) scale, stratified by JDI (Total) (X_6).

	Satisfied Frequencies		
Absolute	1.0	10.5	26.5
Relative	1.5%	15.7%	39.5%

JDI Component Raw Score*	Absolute Frequencies		
Over 49	1	5	23
37-48	0	11	7
25-36	1	9	1
13-24	4	4	1
0-12	0	0	0
JDI (Total)	0-74	75-149	150-224

	Dissatisfied Frequencies		
Absolute	5.0	18.5	5.5
Relative	7.5%	27.6%	8.2%

Computation of D/S Ratio:

1. D = 7.5% + 27.6% + 8.2% = 43.3%
2. S = 1.5% + 15.7% + 39.5% = 56.7%
3. Check: D + S = 43.3% + 56.7% = 100.0%
4. D/S = 43.3% ÷ 56.7% = 0.76

*Average = 40.9

Fig. 24--Frequency count of satisfied and dissatisfied employees on the JDI (Supervision) (X_4) scale, stratified by JDI (Total) (X_6).

	Satisfied Frequencies		
Absolute Relative	0.5 0.7%	10.5 15.7%	23.5 35.1%

JDI Component Raw Score*	Absolute Frequencies		
Over 49	0	4	19
37-48	1	13	9
25-36	2	8	4
13-24	2	4	0
0-12	1	0	0
JDI (Total)	0-74	75-149	150-224

	Dissatisfied Frequencies		
Absolute Relative	5.5 8.2%	18.5 27.6%	8.5 12.7%

Computation of D/S Ratio:

1. D = 8.2% + 27.6% + 12.7% = 48.5%
2. S = 0.7% + 15.7% + 35.1% = 51.5%
3. Check: D + S = 48.5% + 51.5% = 100.0%
4. D/S = 48.5% ÷ 51.5% = 0.94

*Average = 41.1

Fig. 25--Frequency count of satisfied and dissatisfied employees on the JDI (People) (X_5) scale, stratified by JDI (Total) (X_6).

APPENDIX D

Index of Dissatisfaction (D/S) Analysis

JDI (Component)	Satisfied Group: Age Subgroup 20-29	30-39	40-49	50-59	60-69
Work	23.2	6.0	13.4	14.2	2.3
Pay	11.9	4.5	8.2	9.0	1.5
Promotion	14.2	3.7	7.5	8.2	1.6
People	24.6	5.2	9.0	11.2	1.6
Supervision	25.4	6.0	12.0	12.0	0.0
Total	99.3	25.4	50.1	54.6	7.0
Average	19.8	5.0	10.0	11.0	1.4

JDI (Component)	Dissatisfied Group: Age Subgroup 20-29	30-39	40-49	50-59	60-69
Work	0.0	26.2	4.5	7.5	3.7
Pay	37.3	6.0	12.7	9.0	0.0
Promotion	35.0	6.7	13.4	9.7	0.0
People	24.6	5.2	11.9	6.7	0.0
Supervision	23.9	4.5	9.0	6.0	1.5
Total	120.8	48.6	51.5	38.9	5.2
Average	24.2	9.7	10.3	7.8	1.0

Computation of Index of Dissatisfaction (D/S):

1. D = 24.2% + 9.7% + 10.3% + 7.8% + 1.0% = 52.9%.
2. S = 19.8% + 5.0% + 10.0% + 11.0% + 1.4% = 47.1%.
3. Check: D + S = 52.9% + 47.1% = 100.0%.
4. D/S = 52.9% ÷ 47.1% = 1.12.

Fig. 26--Index of Dissatisfaction (D/S) for stratification principle of Age (X_7). Note: Derived from Appendix C data.

JDI (Component)	Satisfied Group	
	Female	Male
Work	59.0	57.0
Pay	36.6	31.8
Promotion	30.0	45.5
People	51.2	52.4
Supervision	55.5	54.5
Total	232.3	241.2
Average	46.4	48.3

JDI (Component)	Dissatisfied Group	
	Female	Male
Work	41.0	43.0
Pay	63.4	68.2
Promotion	70.0	54.5
People	48.8	47.6
Supervision	44.5	45.5
Total	267.7	298.8
Average	53.6	51.7

Computation of Indices of Dissatisfaction:

1. D = 53.6% (Female); 51.7 (Male).
2. S = 46.4% (Female); 48.3 (Male).
3. Check: D + S = 53.6% + 46.4% = 100.0% (Female).
   D + S = 51.7% + 48.3% = 100.0% (Male).
4. D/S = 53.6% ÷ 46.4% = 1.15 (Female).
   D/S = 51.7% ÷ 48.3% = 1.07 (Male).

Fig. 27--Indices of Dissatisfaction (D/S) for stratification Principle of Sex (X_8). Note: Derived from Appendix C data.

	Satisfied Group		
	Education Subgroup*		
JDI (Component)	12-14	15-19	20-24
Work	14.9	41.7	1.6
Pay	8.2	25.4	1.5
Promotion	11.2	23.8	0.0
People	16.4	34.3	0.7
Supervision	15.7	38.0	1.5
Total	66.4	163.2	5.3
Average	13.3	32.7	1.0

*Years of Schooling

	Dissatisfied Group		
	Education Subgroup*		
JDI (Component)	12-14	15-19	20-24
Work	11.9	29.9	0.0
Pay	18.6	46.3	0.0
Promotion	15.7	47.7	1.6
People	10.5	37.3	0.7
Supervision	11.2	33.6	0.0
Total	67.9	194.8	2.3
Average	13.6	39.0	0.4

*Years of Schooling

Computation of Index of Dissatisfaction (D/S):

1. D = 13.6% + 39.0% + 0.4% = 53.0%.
2. S = 13.3% + 32.7% + 1.0% = 47.0%.
3. Check: D + S = 53.0% + 47.0% = 100.0%
4. D/S = 53.0% ÷ 47.0% = 1.13

Fig. 28--Index of Dissatisfaction For Stratification Principle of Education (X_9). Note: Derived from Appendix C data.

	Satisfied Group			
	Tenure Subgroup*			
JDI (Component)	0-99	100-199	200-299	300-399
Work	48.5	6.7	1.5	1.6
Pay	27.6	5.2	1.6	0.7
Promotion	28.4	4.5	1.5	0.7
People	44.7	3.7	1.6	1.6
Supervision	50.0	4.5	0.0	1.5
Total	199.2	24.6	6.2	6.1
Average	39.7	4.9	1.2	1.2

*10 units = 1 year

	Dissatisfied Group			
	Tenure Subgroup*			
JDI (Component)	0-99	100-199	200-299	300-399
Work	41.0	0.7	0.0	0.0
Pay	62.0	2.0	0.0	0.7
Promotion	59.7	4.5	0.0	0.7
People	44.7	3.7	1.6	0.0
Supervision	39.5	3.0	1.5	0.0
Total	246.9	14.1	3.1	1.4
Average	49.3	2.8	0.6	0.3

*10 units = 1 year

Computation of Index of Dissatisfaction (D/S):

1. D = 49.3% + 2.8% + 0.6% + 0.3% = 53.0%.
2. S = 39.7% + 4.9% + 1.2% + 1.2% = 47.0%.
3. Check: D + S = 53.0% + 47.0% = 100.0%.
4. D/S = 53.0% ÷ 47.0% = 1.13.

Fig. 29--Index of Dissatisfaction (D/S) For stratification principle of Tenure (X_{13}). Note: Derived from Appendix C data.

	Satisfied Group		
	JDI (Total) Subgroup		
JDI (Component)	0-74	75-149	150-224
Work	0.0	18.6	39.6
Pay	0.7	8.2	26.1
Promotion	0.0	7.5	27.6
People	0.7	15.7	35.1
Supervision	1.5	15.7	39.5
Total	2.9	65.7	167.9
Average	0.6	13.1	33.6

	Dissatisfied Group		
	JDI (Total) Subgroup		
JDI (Component)	0-74	75-149	150-224
Work	9.0	24.6	8.2
Pay	8.2	33.6	23.2
Promotion	9.0	35.8	20.2
People	8.2	27.6	12.7
Supervision	7.5	27.6	8.2
Total	41.9	149.2	72.5
Average	8.4	29.8	14.5

Computation of Index of Dissatisfaction (D/S):

1. D = 8.4% + 29.8% + 14.5% = 52.7%.
2. S = 0.6% + 13.1% + 33.6% = 47.3%.
3. Check: D + S = 52.7% + 47.3% = 100.0%.
4. D/S = 52.7% - 47.3% = 1.12.

Fig. 30--Index of Dissatisfaction For stratification principle of JDI (Total) (X_6). Note: Derived from Appendix C data.

Tenure Stratification	
JDI (Component)	D/S
Pay	1.85
Promotion	1.85
People	0.94
Supervision	0.79
Work	0.72
Total	1.13

Sex (Female) Stratification	
JDI (Component)	D/S
Promotion	2.33
Pay	1.73
People	0.95
Supervision	0.80
Work	0.70
Total	1.15

Sex (Male) Stratification	
JDI (Component)	D/S
Pay	2.14
Promotion	1.20
People	0.91
Supervision	0.84
Work	0.76
Total	1.07

Education Stratification	
JDI (Component)	D/S
Pay	1.85
Promotion	1.85
People	0.94
Supervision	0.81
Work	0.72
Total	1.13

Age Stratification	
JDI (Component)	D/S
Pay	1.85
Promotion	1.84
People	0.94
Supervision	0.81
Work	0.72
Total	1.12

JDI (Total) Stratification	
JDI (Component)	D/S
Pay	1.86
Promotion	1.85
People	0.94
Supervision	0.76
Work	0.72
Total	1.11

Fig. 31--Indices of Dissatisfaction (D/S) for Six Stratification Principles

Stratification Principle	JDI (Component) D/S		
	Pay	Promotion	People
Tenure	1.85	1.85	0.94
Sex (Female)	1.73	2.33	0.95
Sex (Male)	2.14	1.20	0.91
Education	1.85	1.85	0.94
Age	1.85	1.84	0.94
JDI (Total)	1.86	1.85	0.94
Total	11.28	10.92	5.62
Average	1.88	1.82	0.94

Stratification Principle	JDI (Component D/S		
	Supervision	Work	Total*
Tenure	0.79	0.72	1.13
Sex (Female)	0.80	0.70	1.15
Sex (Male)	0.84	0.76	1.07
Education	0.81	0.72	1.13
Age	0.81	0.72	1.12
JDI (Total)	0.76	0.72	1.11
Total	4.81	4.34	6.71
Average	0.80	0.72	1.12

*From Figures 1-5, Appendix D.

JDI (Component)	Composite (Average) D/S
Pay (X_2)	1.88**
Promotion (X_3)	1.82**
People (X_5)	0.94**
Supervision (X_4)	0.80**
Work (X_1)	0.72**
Total (X_6)	1.12**

**Best estimates of population D/S parameters.

Fig. 32--Composite Indices of Dissatisfaction (D/S) For the Six Scales of the JDI.

APPENDIX E

Frequency Diagrams for Satisfied/Dissatisfied Groups for Five JDI (Components) and JDI (Total)

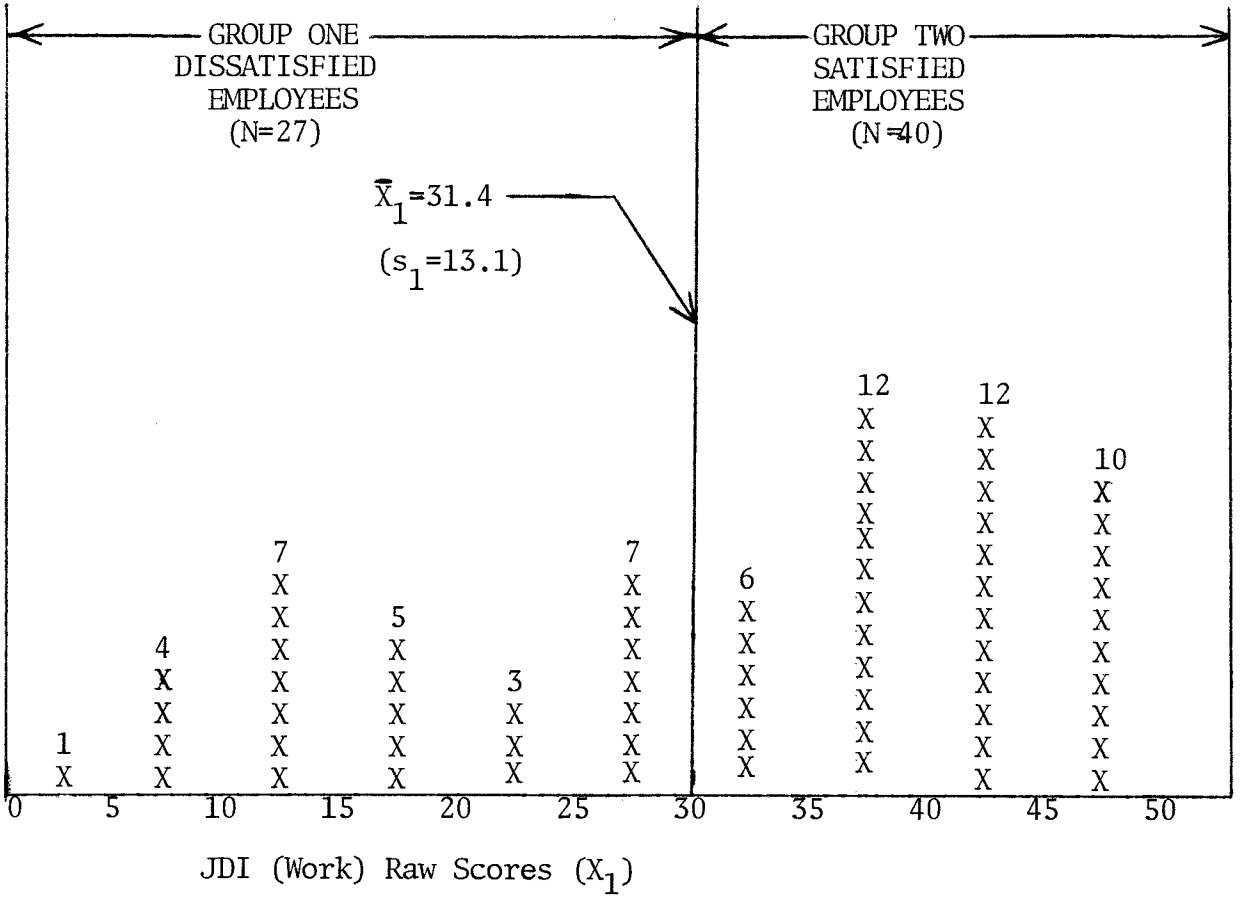


Fig. 33--Frequency Diagram For JDI (Work) Raw Scores For Total Library Sample (N-67)

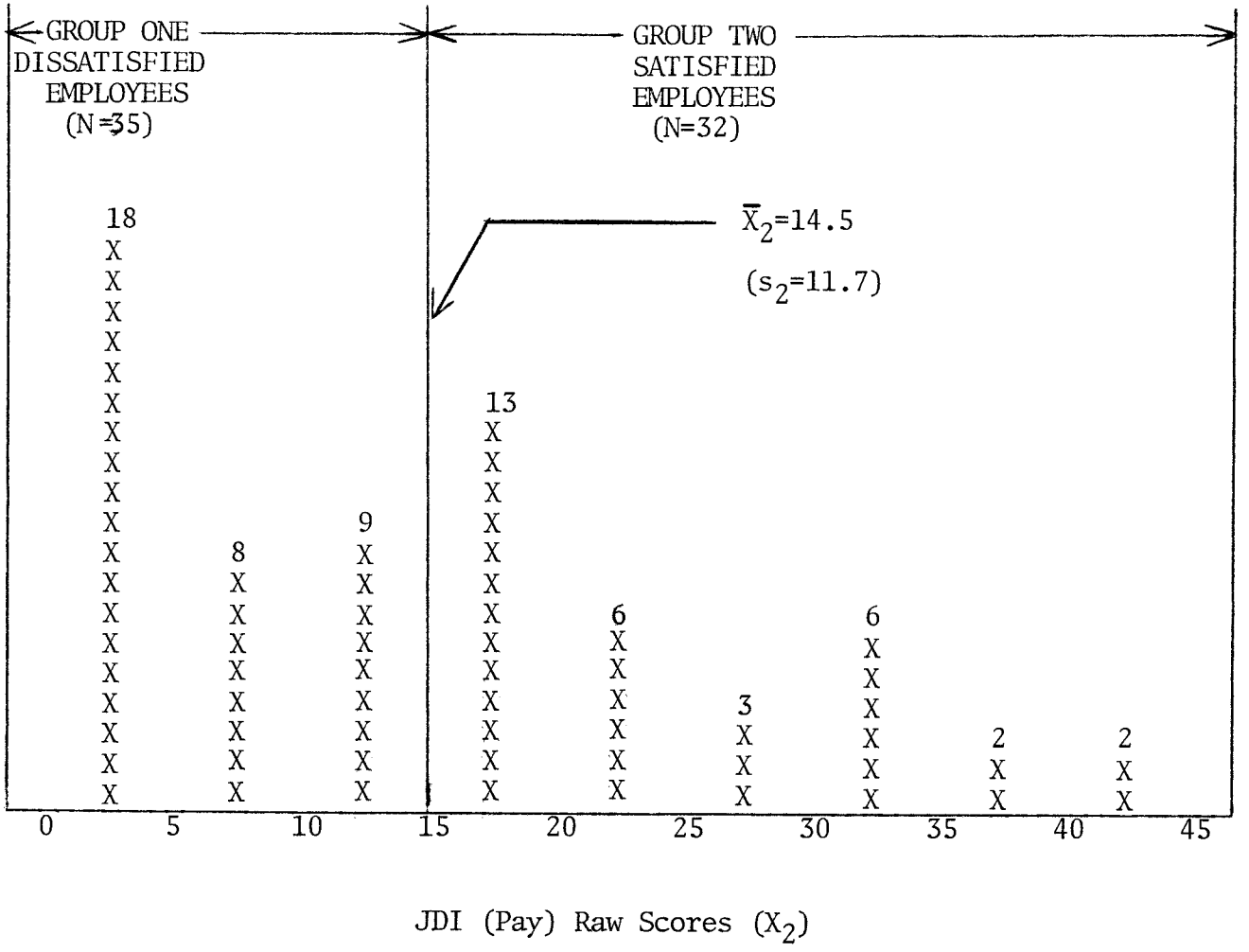


Fig. 34--Frequency Diagram For JDI (Pay) Raw Scores For Total Library Sample (N=67)

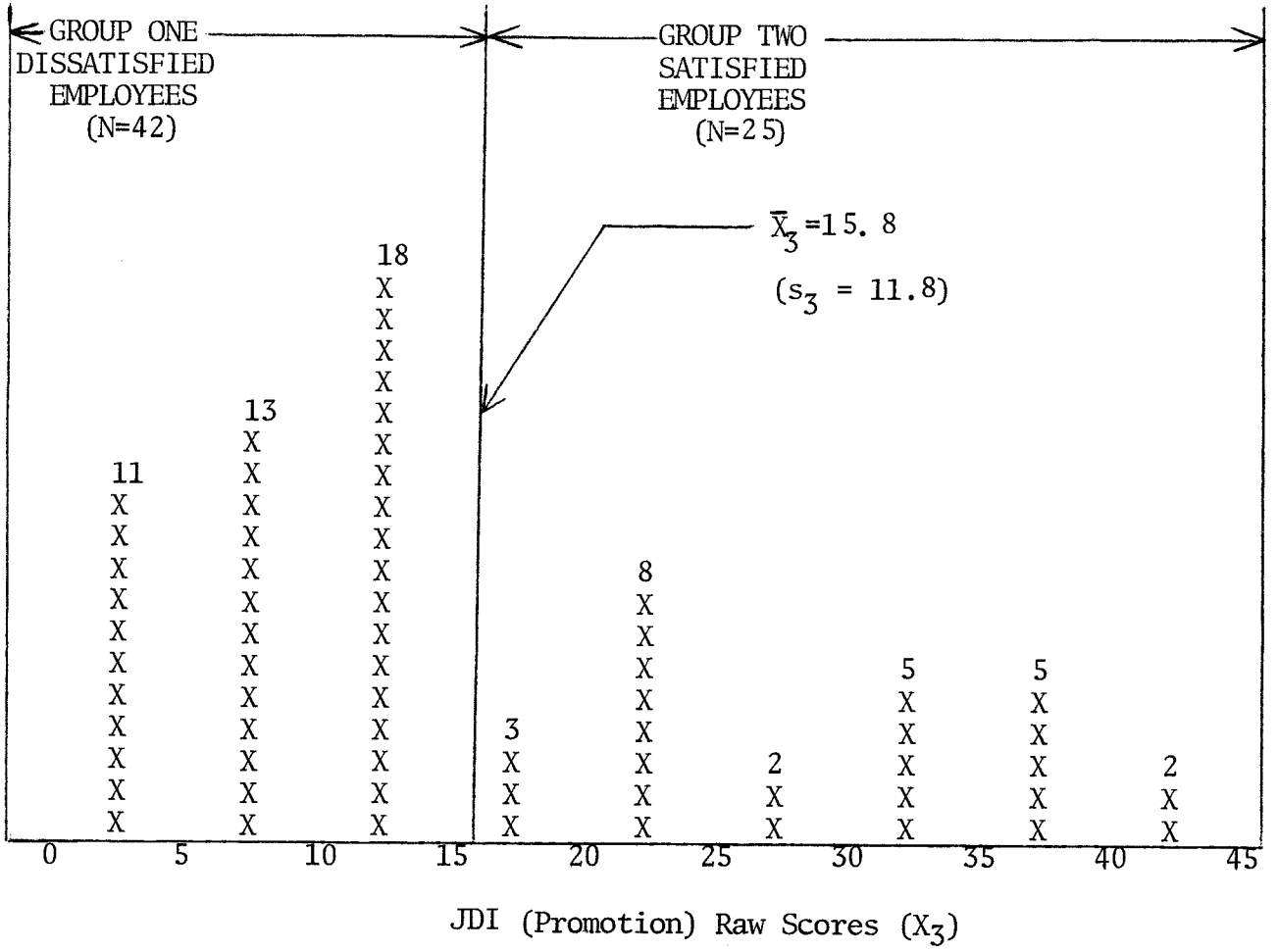


Fig. 35--Frequency Diagram For JDI (Promotion) Raw Scores For Total Library Sample (N-67)

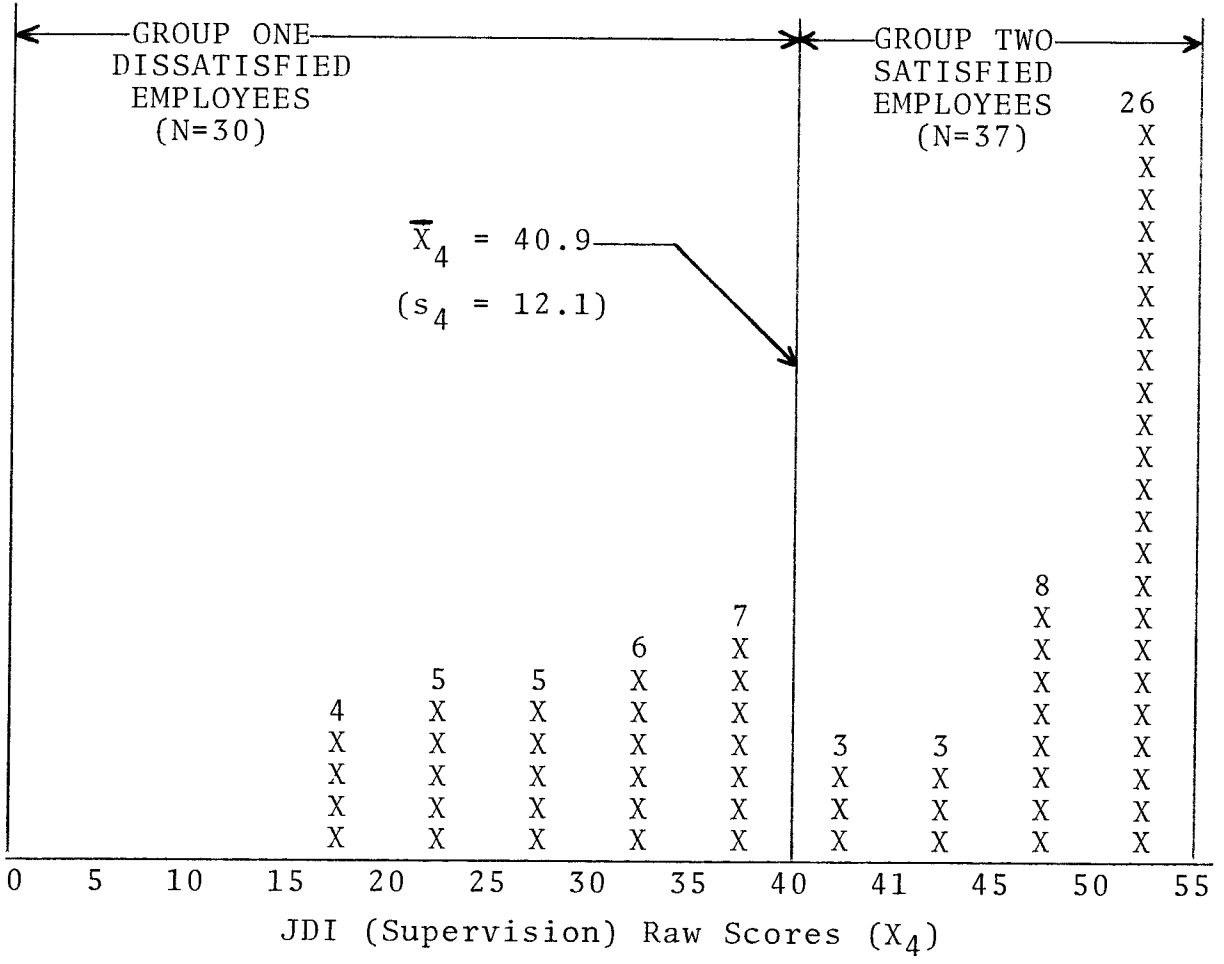


Fig. 36--Frequency Diagram for JDI (Supervision) Raw Scores for Total Library Sample (N=67).

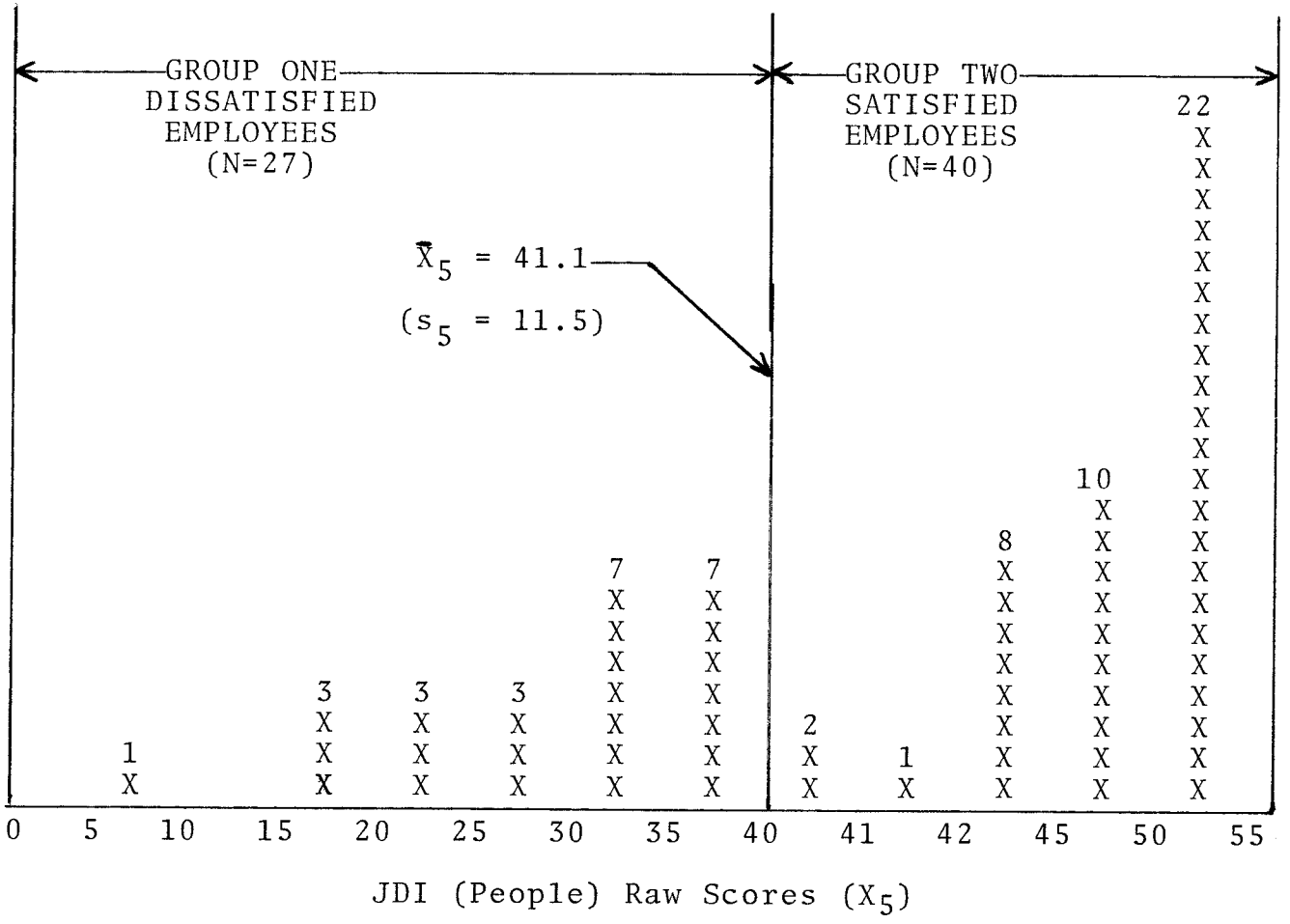


Fig. 37--Frequency Diagram for JDI (People) Raw Scores for Total Library Sample (N=67).

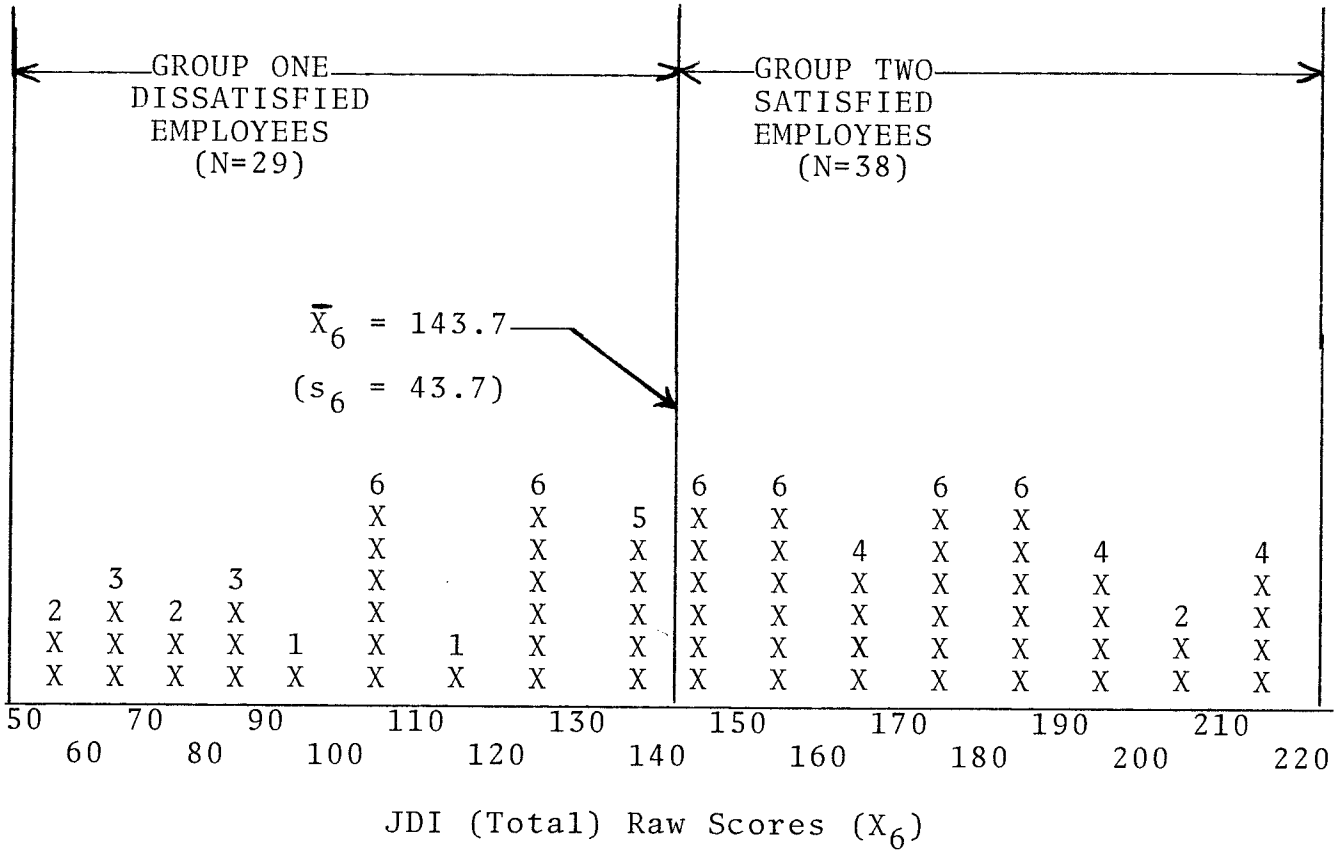


Fig. 38--Frequency Diagram for JDI (Total) Raw Scores for Total Library Sample (N=67) .

	GROUP ONE DISSATISFIED EMPLOYEES	GROUP TWO SATISFIED EMPLOYEES
Work (X_1)	27 XXXXXXXXX	XXXXXXXXXXXXX 40
Pay (X_2)	35 XXXXXXXXXXXX	XXXXXXXXXXX 32
Promotion (X_3)	42 XXXXXXXXXXXXXX	XXXXXXXX 25
Supervision (X_4)	30 XXXXXXXXXX	XXXXXXXXXXXX 37
People (X_5)	27 XXXXXXXXX	XXXXXXXXXXXXX 40
Total (X_6)	29 XXXXXXXXXX	XXXXXXXXXXXX 38

Fig. 39--Frequency Diagram for JDI (Components) and JDI (Total) Raw Scores for Total Library Sample (N=67).

APPENDIX F

Means and Subgrouping of JDI (Component) Scores as Indication of Degree of Regressivity (F-Scores) Present in the Data

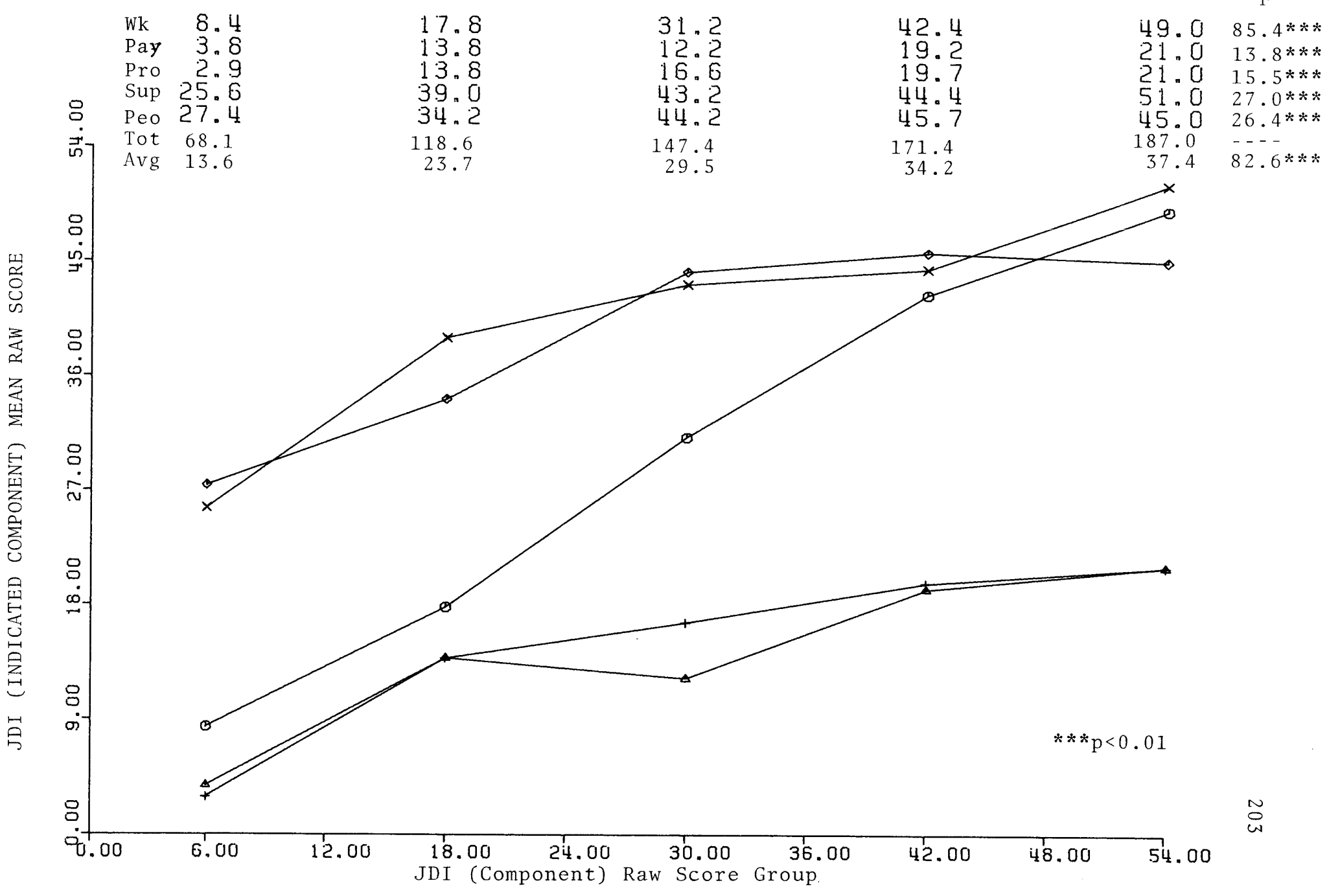


Fig. 40--JDI (Indicated Component) Means

68.1 118.6 147.4 171.4 187.0

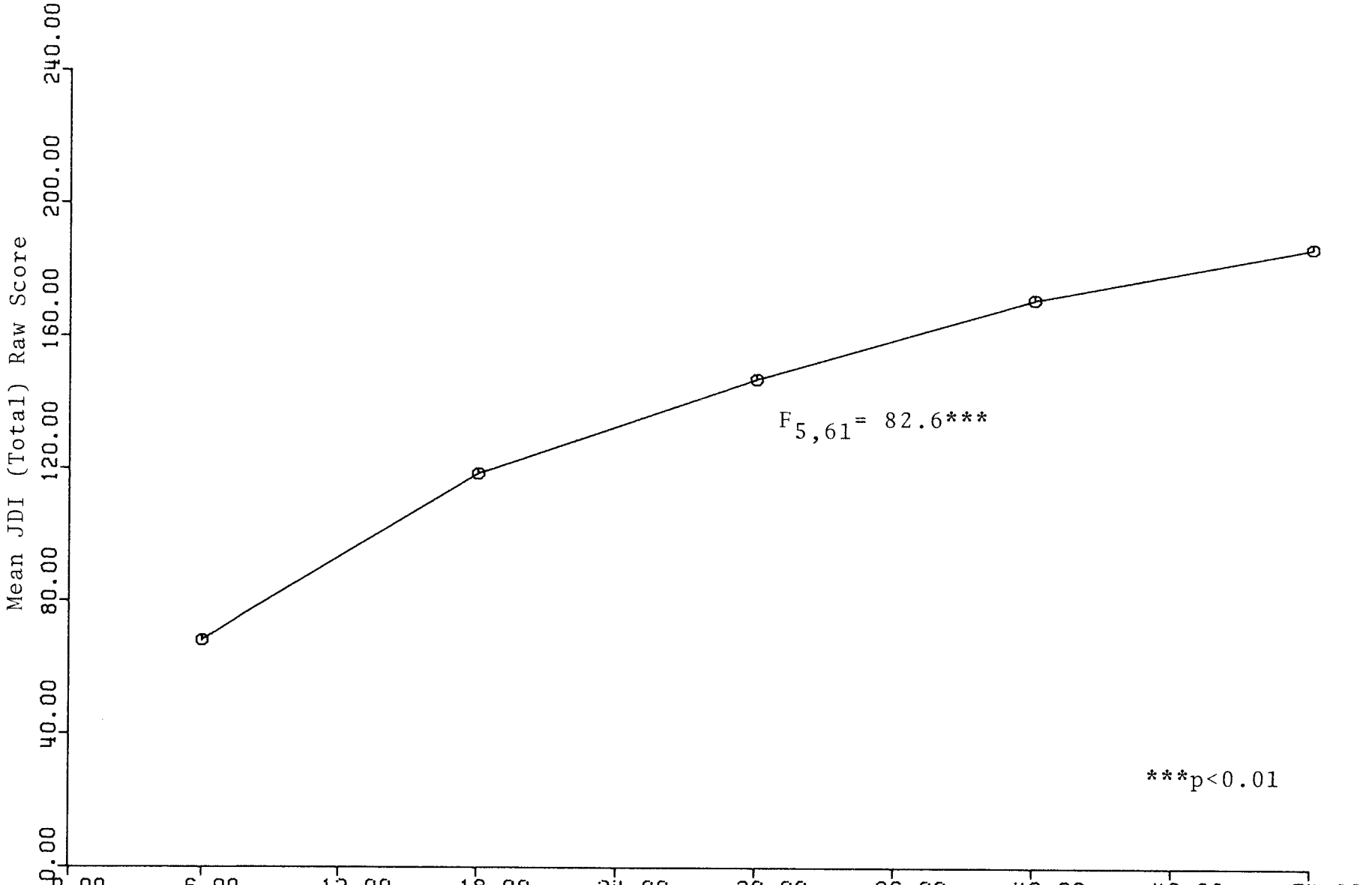


Fig. 41--JDI (Component) (Composite) JDI (Total) Means

						F
Wk	26.4	32.3	35.8	38.7	36.0	6.70***
Pay	31.1	39.1	38.3	42.2	N.A.	4.80***
Pro	32.4	38.2	40.0	32.3	N.A.	3.52***
Sup	N.A.	32.4	36.2	33.5	36.9	1.05
Peo	23.0	29.8	36.0	35.0	37.0	13.55***
Tot	113.0	171.8	186.3	181.9	109.9	----
Avg	28.2	34.4	37.3	36.4	36.6	0.27

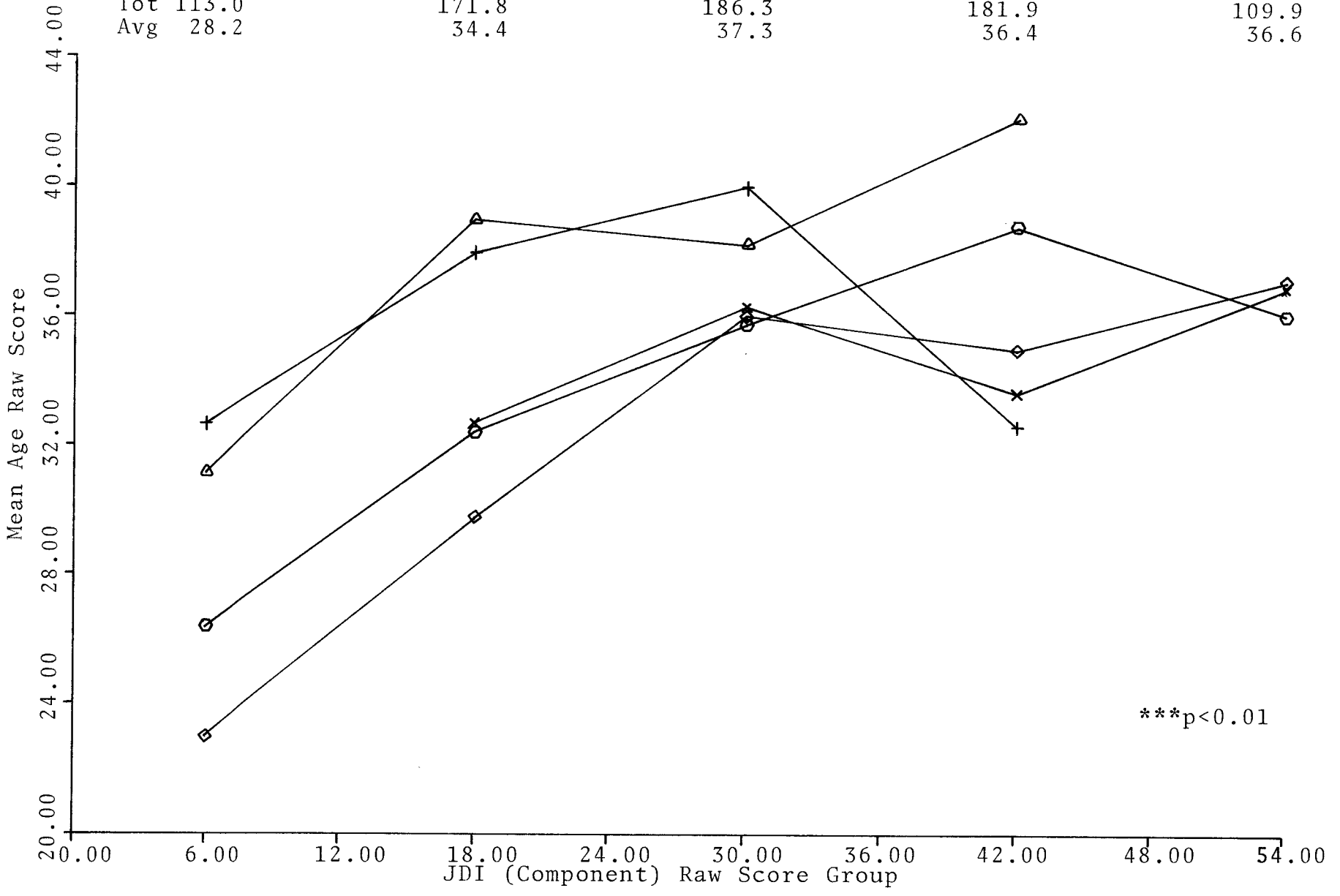


Fig. 42-- JDI (Component) Age Means

28.2 34.4 37.3 36.4 36.6

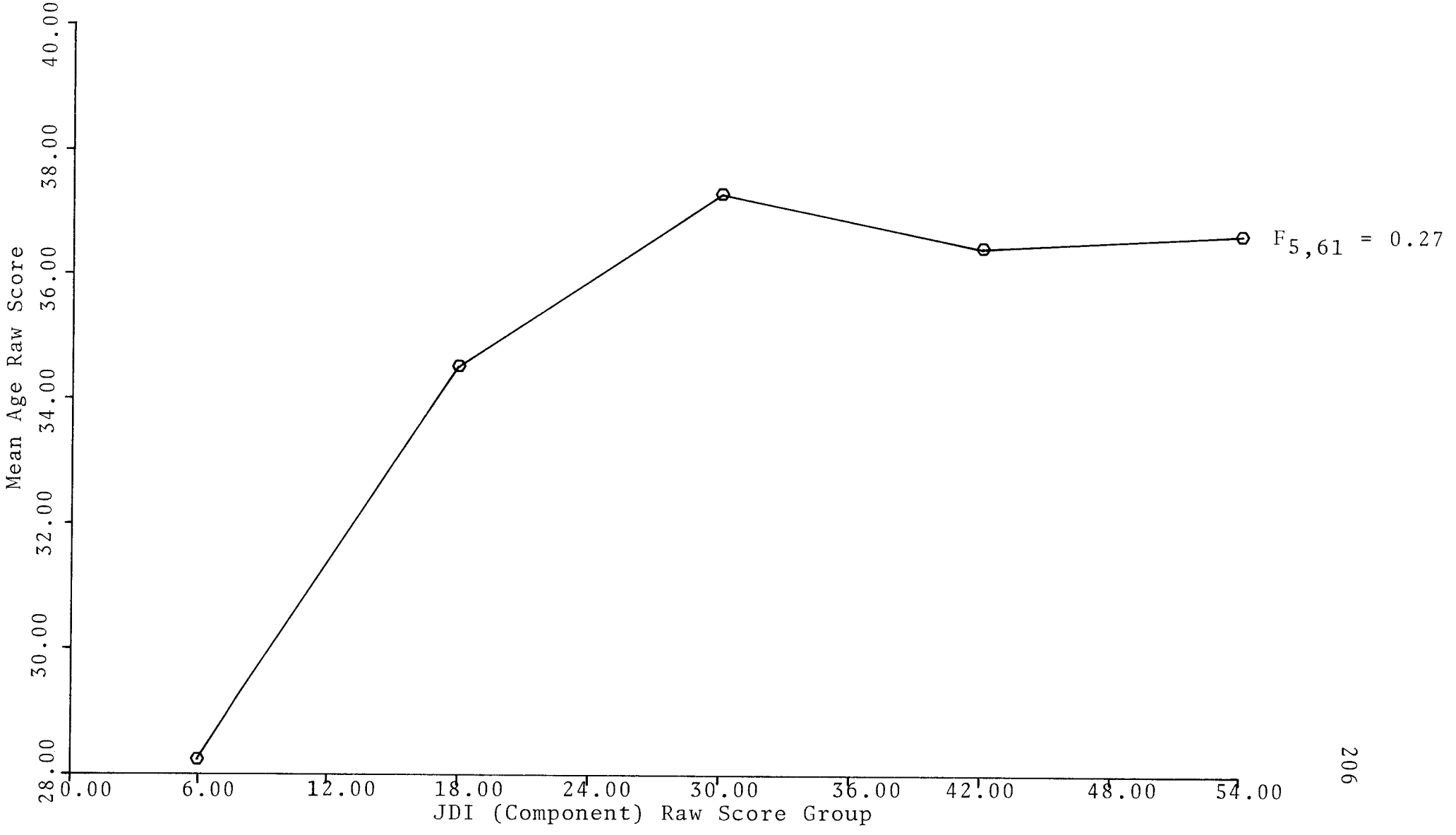


Fig. 43--JDI (Component) (Composite) Age Means

						F
Wk	0.33	0.40	0.28	0.29	1.00	0.03
Pay	0.36	0.29	0.22	0.50	N.A.	0.00
Pro	0.24	0.42	0.45	0.33	N.A.	0.00
Sup	N.A.	0.33	0.33	0.33	0.32	0.00
Peo	1.00	0.00	0.43	0.30	0.35	0.03
Tot	1.93	1.44	1.71	1.75	1.67	----
Avg	0.48	0.29	0.34	0.35	0.56	0.00

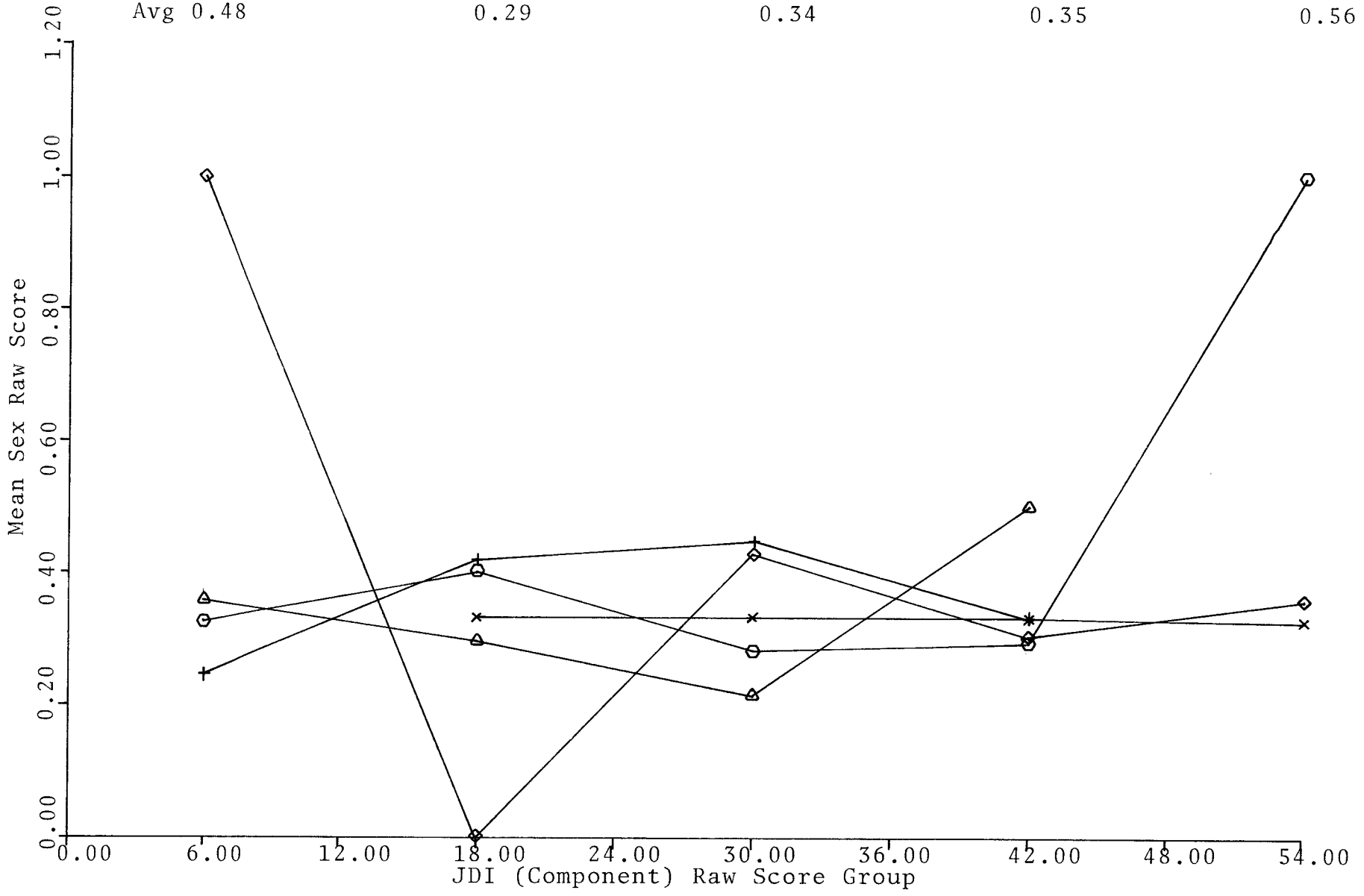


Fig. 44--JDI (Component) Sex Means

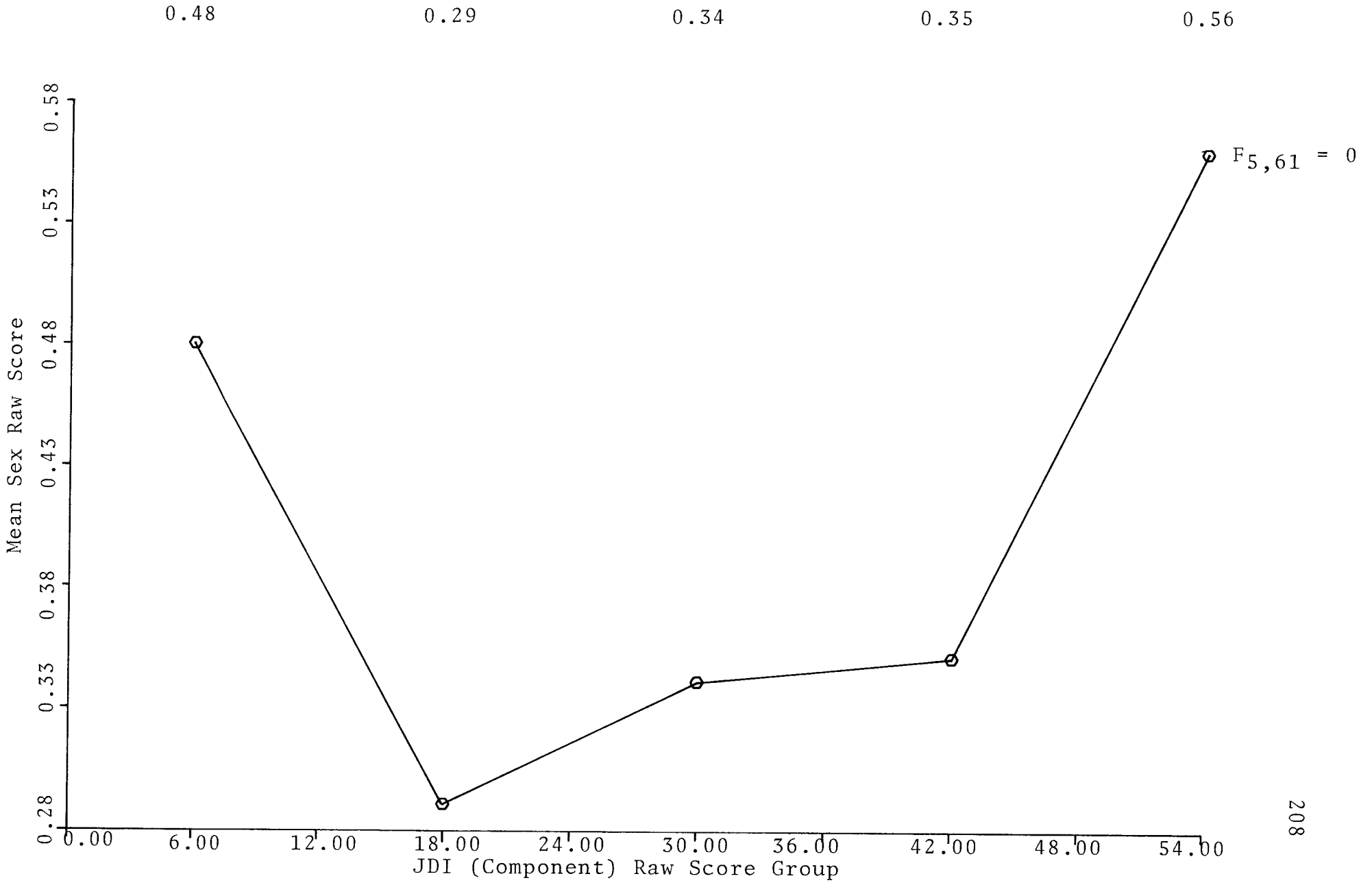


Fig. 45--JDI (Component) (Composite) Sex Means

					F
Wk	15.8	14.7	15.6	16.4	14.0	0.28
Pay	15.2	15.9	17.0	17.0	N.A.	0.17
Pro	15.6	16.2	16.0	13.7	N.A.	0.30
Sup	N.A.	15.6	16.1	14.9	16.3	0.09
Peo	16.0	14.5	16.5	16.0	15.3	0.02
Tot	62.6	76.9	81.2	78.0	45.6	----
Avg	15.7	15.4	16.2	15.6	15.2	0.04

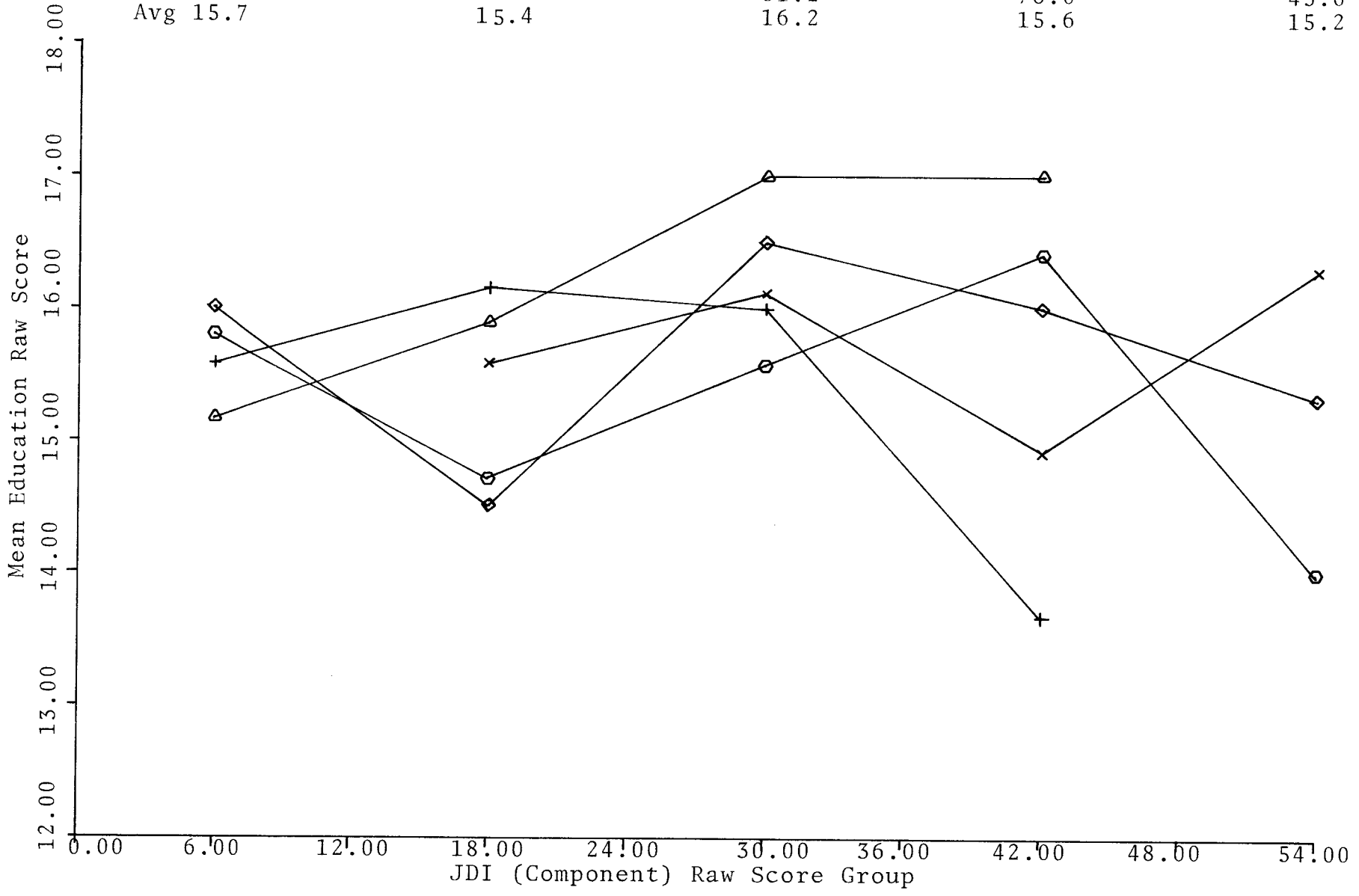


Fig. 46--JDI (Component) Education Means

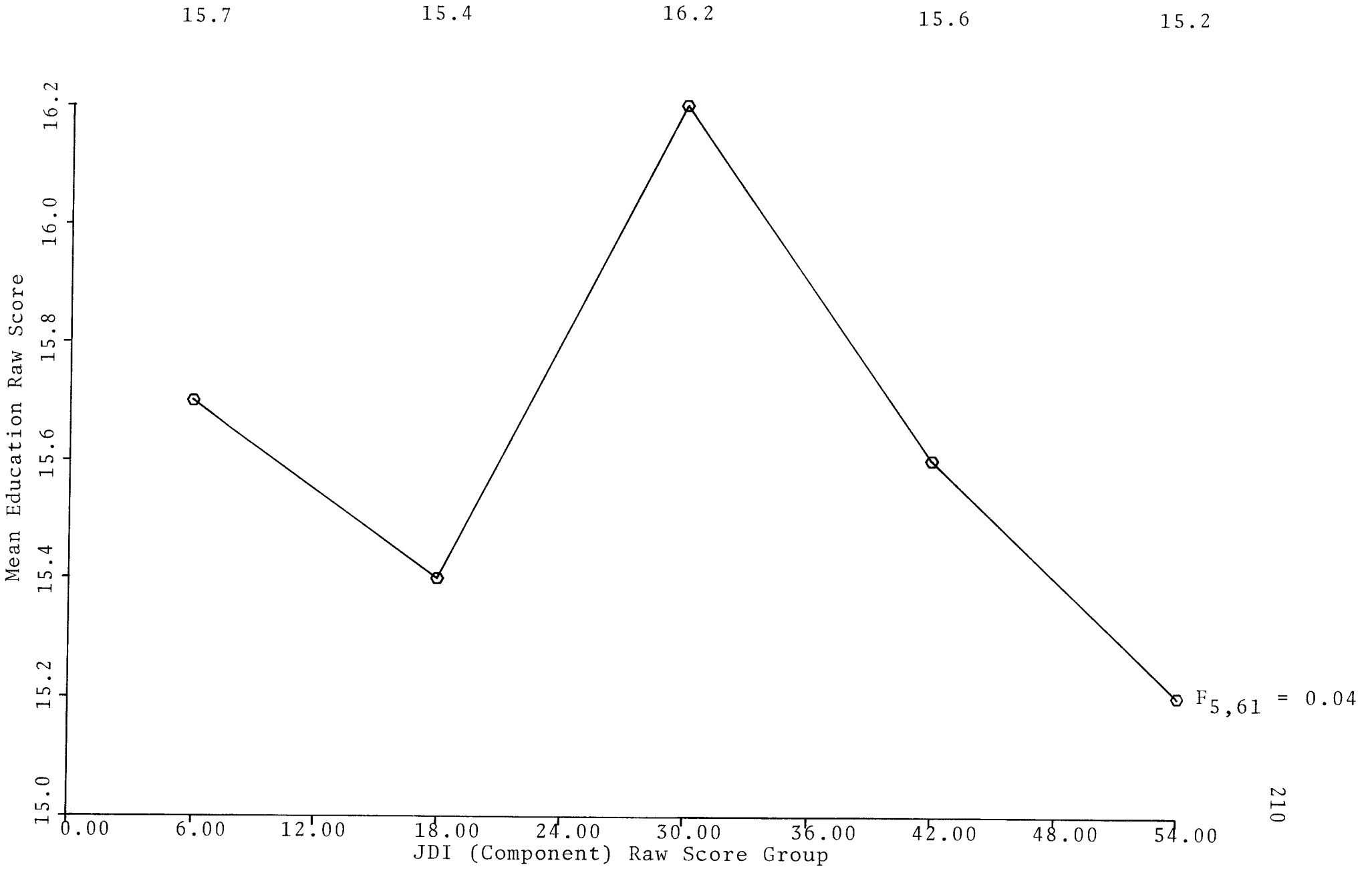


Fig. 47--JDI (Component) (Composite) Education Means

						F
Wk	3.44	4.10	5.44	6.04	6.00	0.42
Pay	4.03	6.24	6.78	6.50	4.59	0.44
Pro	4.59	6.32	5.55	4.67	N.A.	0.15
Sup	N.A.	4.56	5.08	4.72	5.86	0.43
Peo	3.00	3.67	5.71	5.13	5.57	0.59
Tot	15.06	24.89	28.56	27.06	22.02	----
Avg	3.76	4.97	5.72	5.43	5.50	0.19

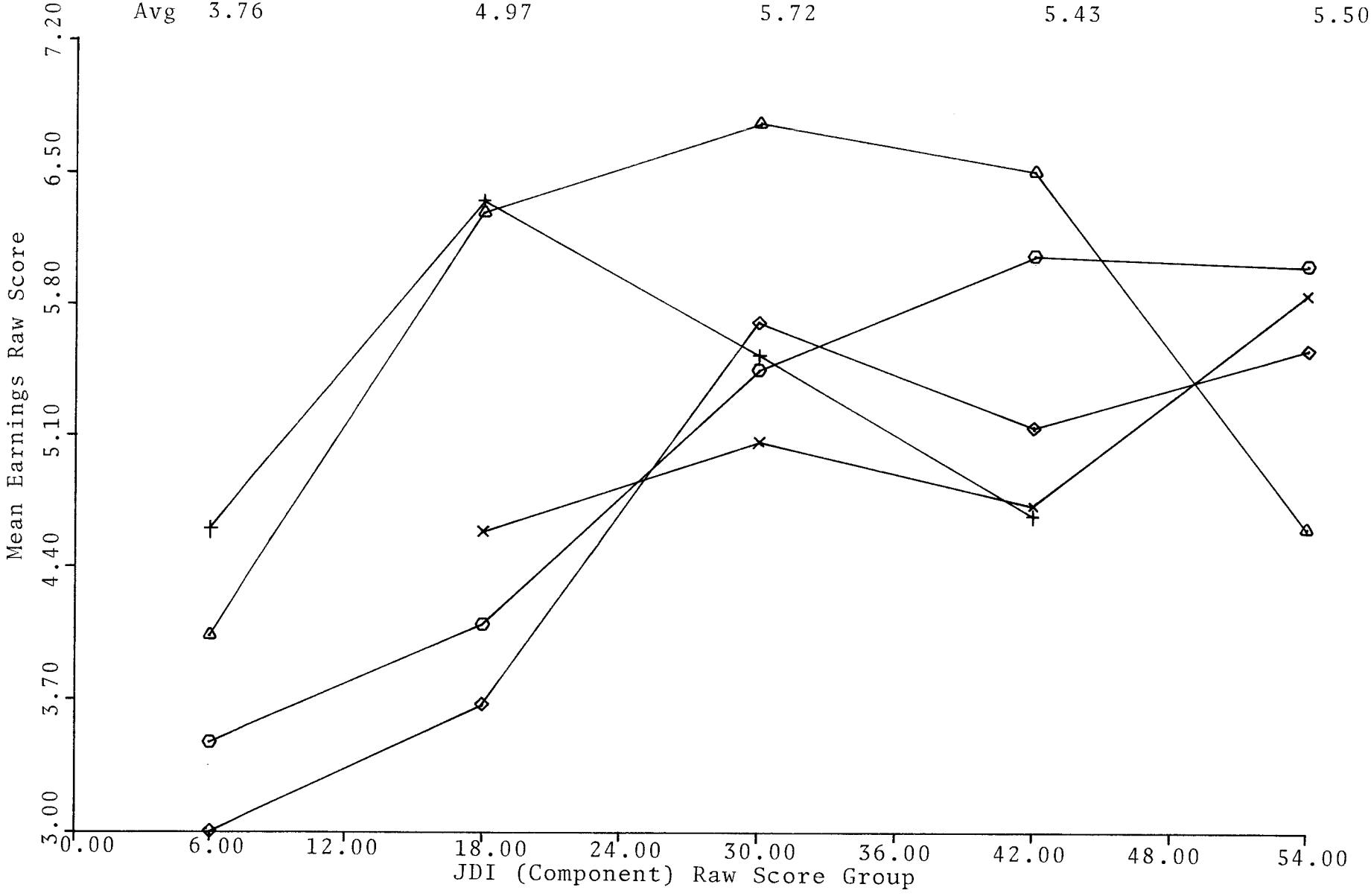


Fig. 48--JDI (Component) Earnings Means

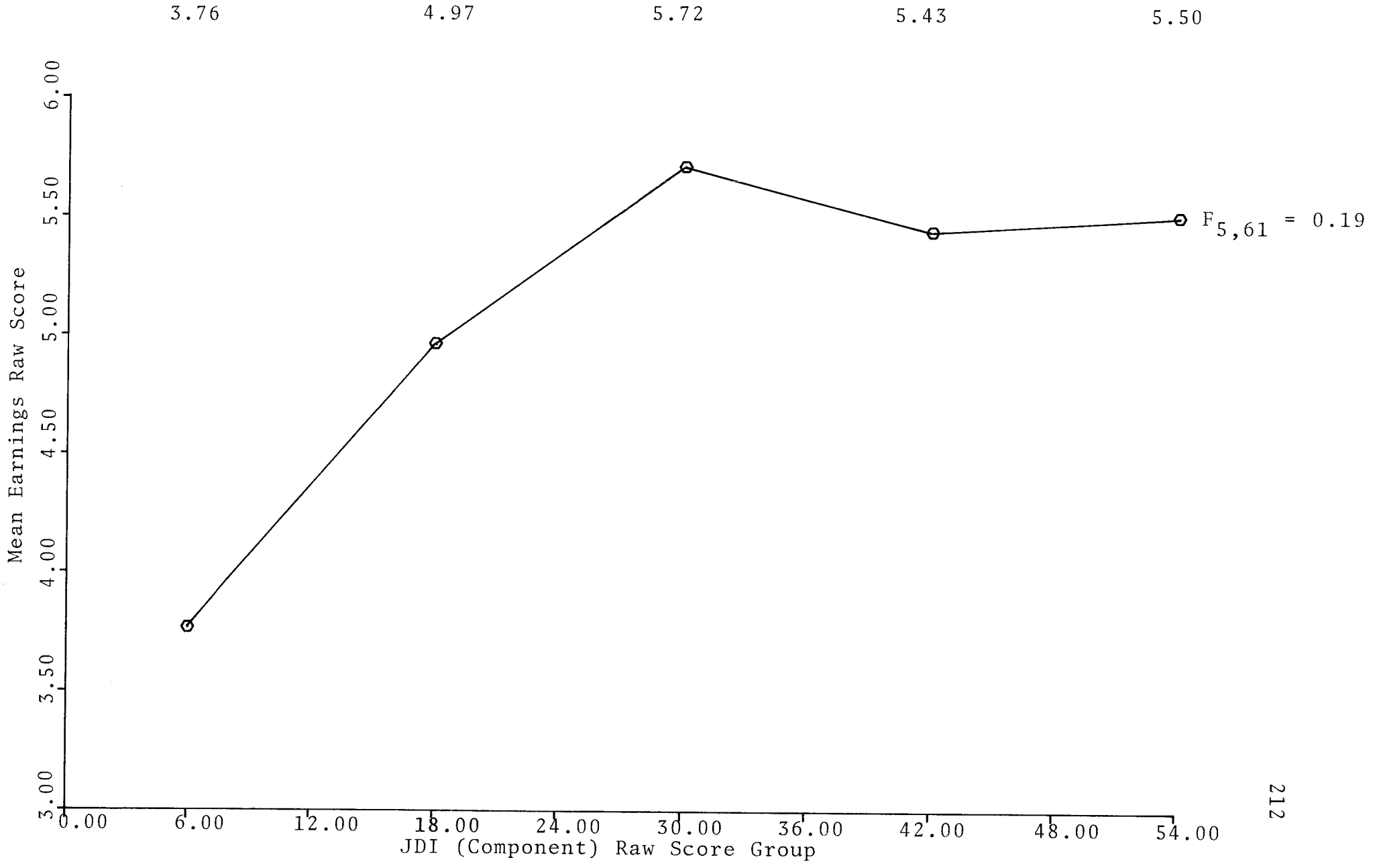


Fig. 49--JDI (Component) (Composite) Earnings Means

						F
Wk	22.8	19.8	30.4	67.1	36.5	109.00***
Pay	24.3	55.8	64.3	87.0	N.A.	146.00***
Pro	36.8	47.9	61.5	21.0	N.A.	64.70***
Sup	N.A.	29.1	62.5	43.6	39.5	44.30***
Peo	10.0	26.2	48.7	27.4	61.9	157.20***
Tot	93.9	178.8	267.4	246.1	137.9	----
Avg	23.5	35.8	53.4	48.8	46.0	0.10

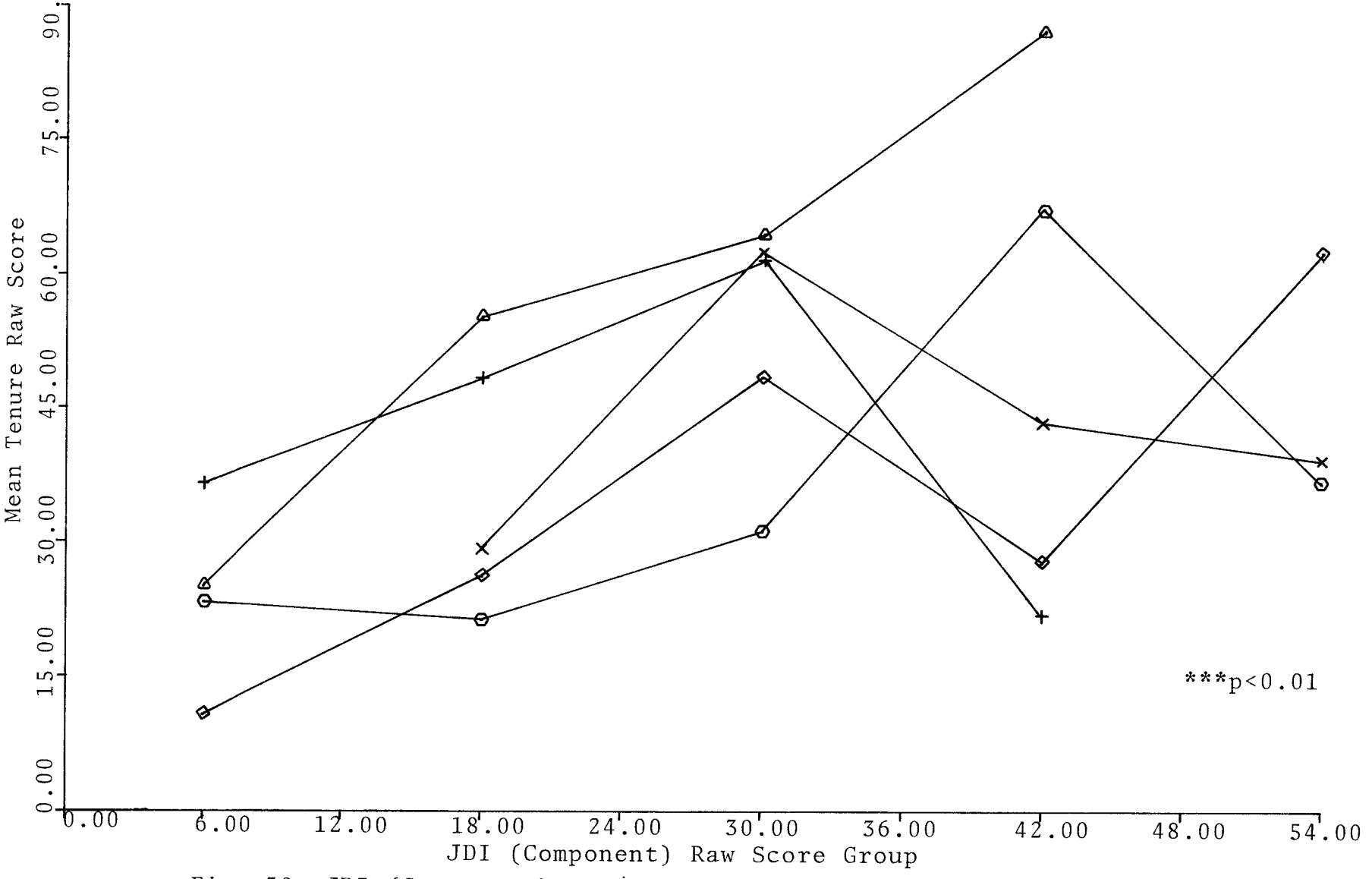


Fig. 50--JDI (Component) Tenure Means

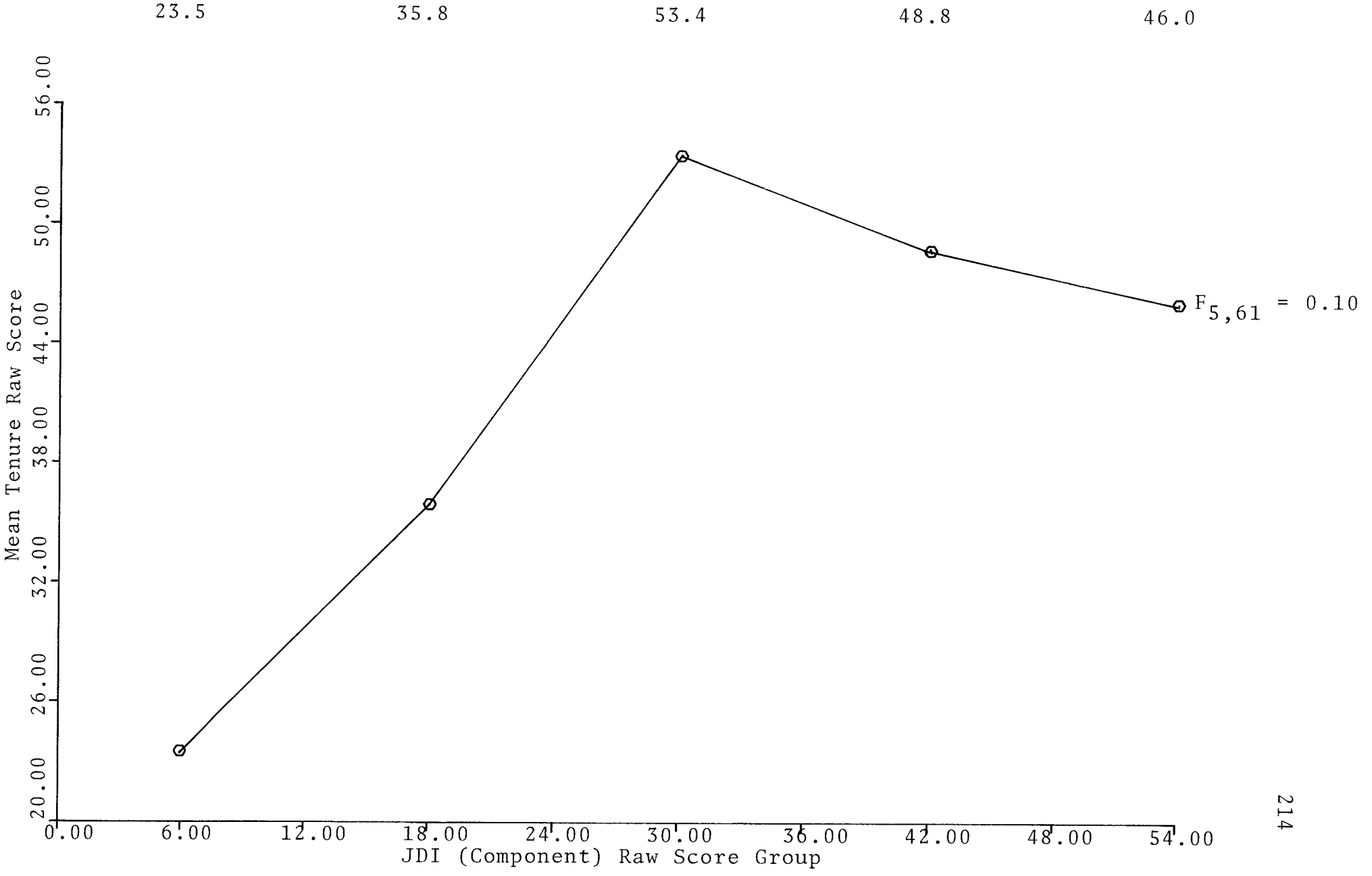


Fig. 51--JDI (Component) (Composite) Tenure Means

						F
Wk	1.0	1.3	2.3	2.9	1.5	0.18
Pay	1.4	2.6	3.9	3.3	N.A.	0.36
Pro	1.8	3.0	2.4	1.0	N.A.	0.22
Sup	N.A.	1.9	2.7	1.6	2.5	0.12
Peo	1.0	1.0	2.9	2.3	2.1	0.28
Tot	5.2	9.8	14.2	11.1	6.1	----
Avg	1.30	1.96	2.84	2.22	2.03	0.12

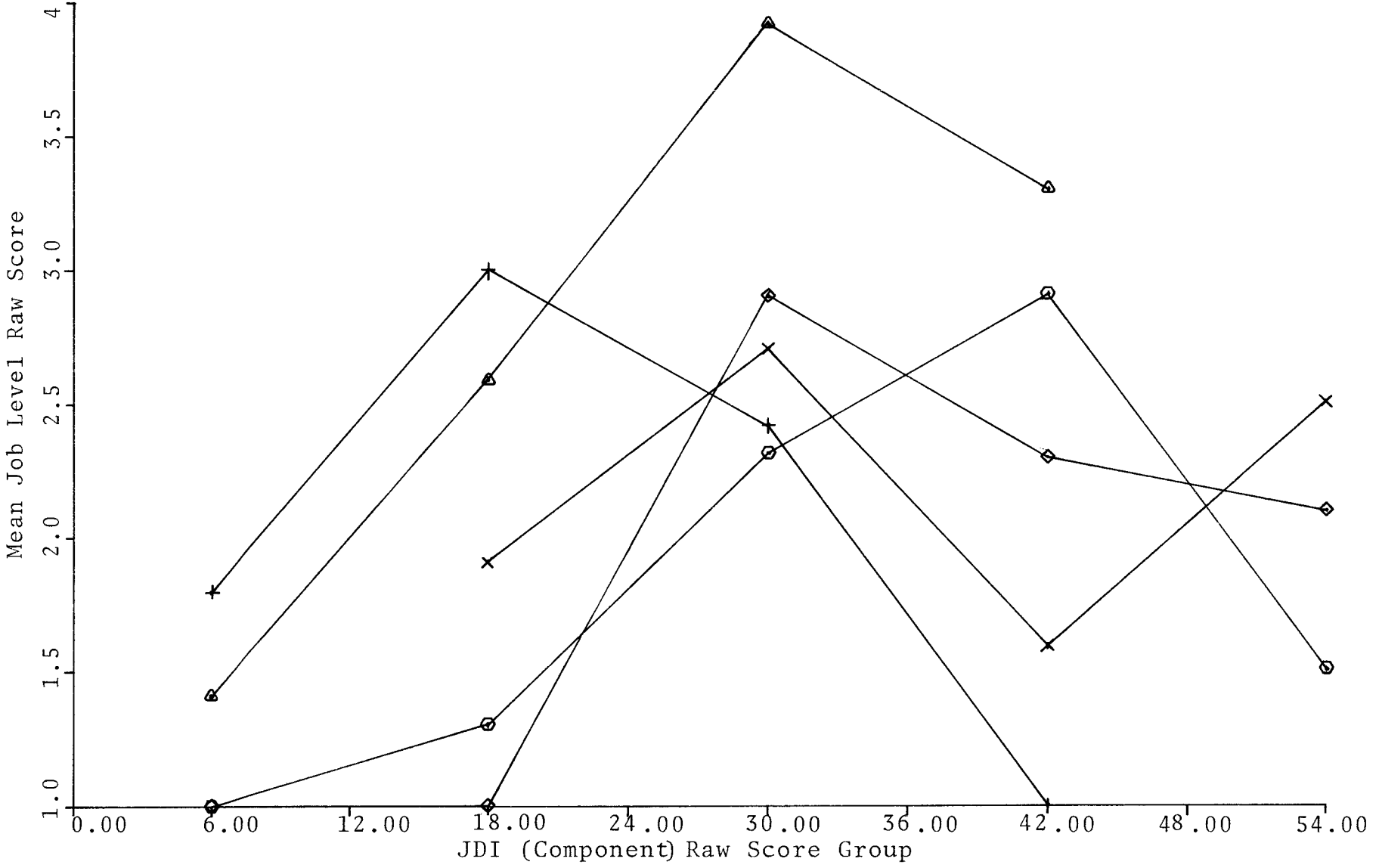


Fig. 52--JDI (Component) Job Level Means

1.30 1.96 2.84 2.22 2.03

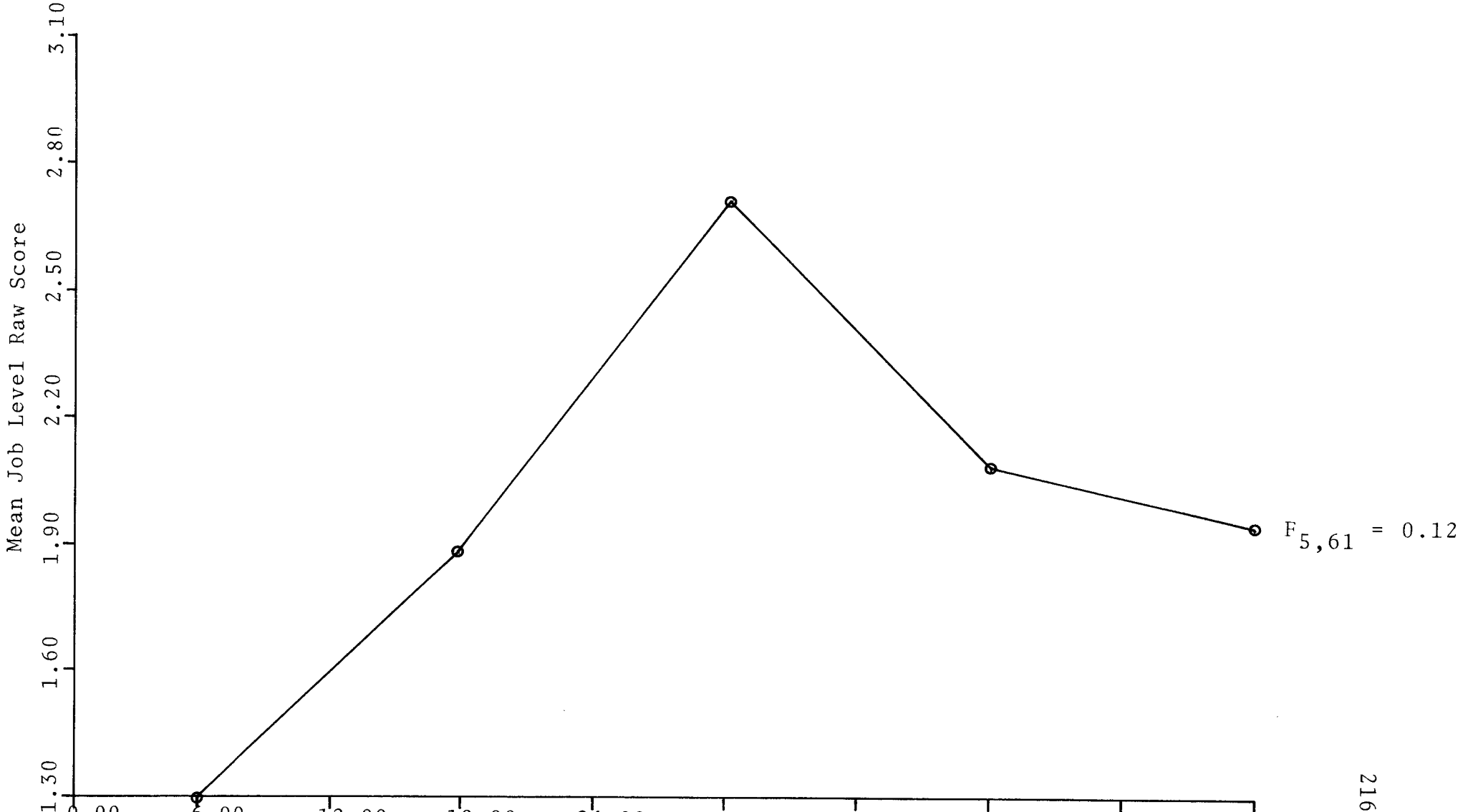


Fig. 53--JDI (Component) (Composite) Job Level Means

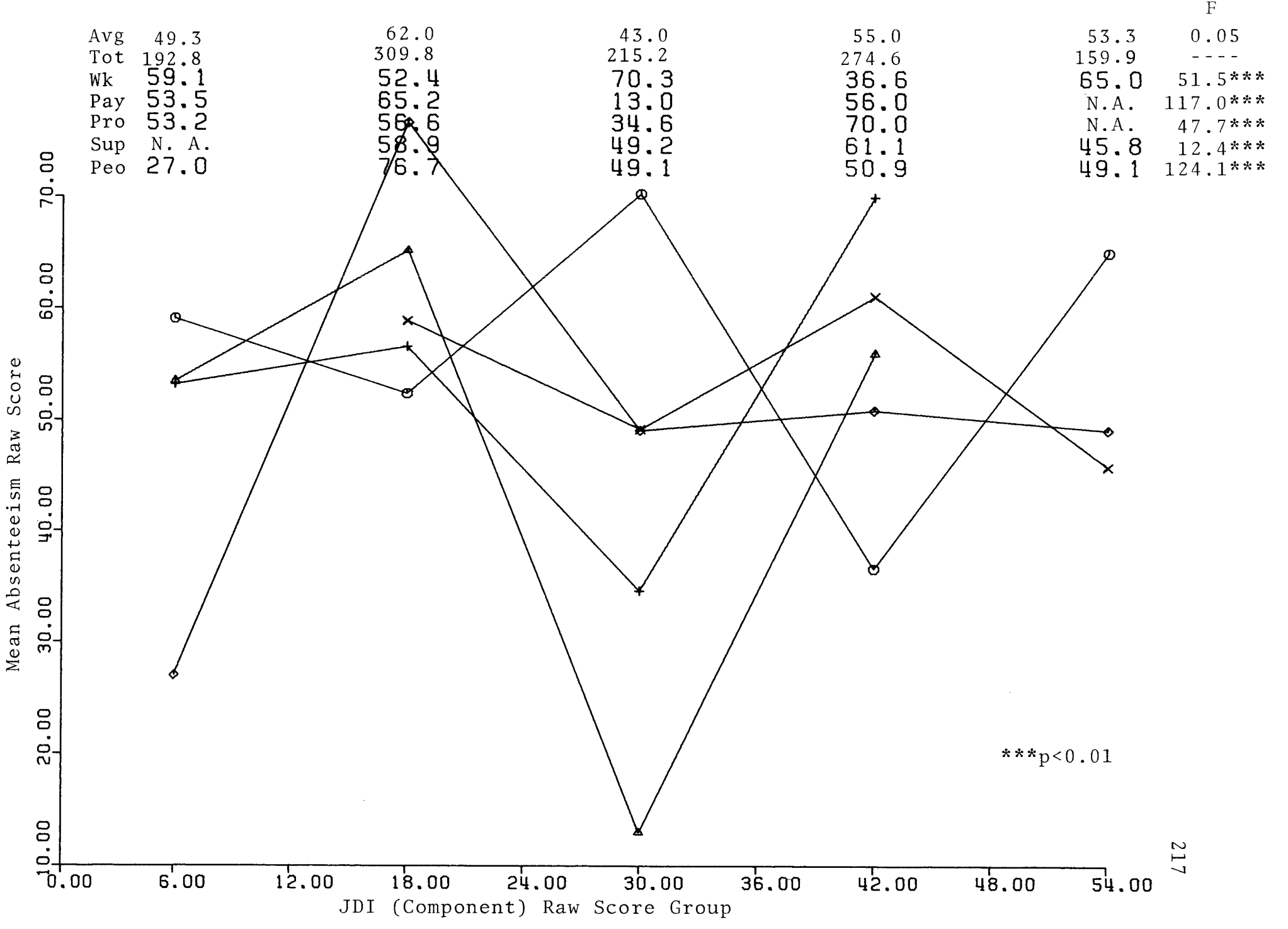


Fig. 54--JDI (Component) Absenteeism Means

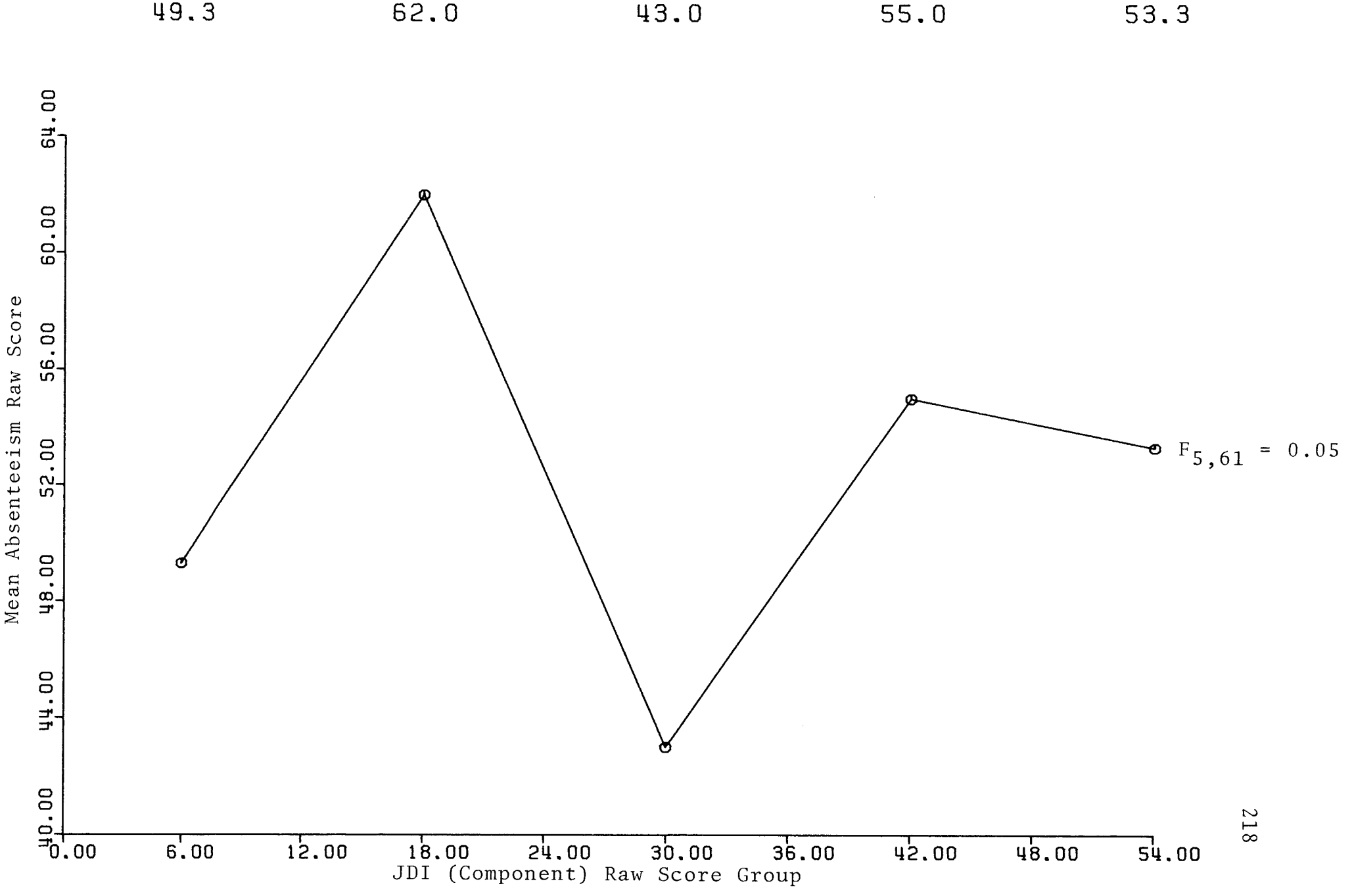


Fig. 55--JDI (Component) (Composite) Absenteeism Means

						F
Wk	0.11	0.20	0.11	0.00	0.50	0.09
Pay	0.12	0.10	0.00	0.00	N.A.	0.00
Pro	0.12	0.11	0.00	0.00	N.A.	0.00
Sup	N.A.	0.00	0.00	0.17	0.11	0.00
Peo	0.00	0.17	0.07	0.09	0.09	0.00
Tot	0.35	0.58	.18	0.26	0.70	----
Avg	0.09	0.12	0.04	0.05	0.23	0.00

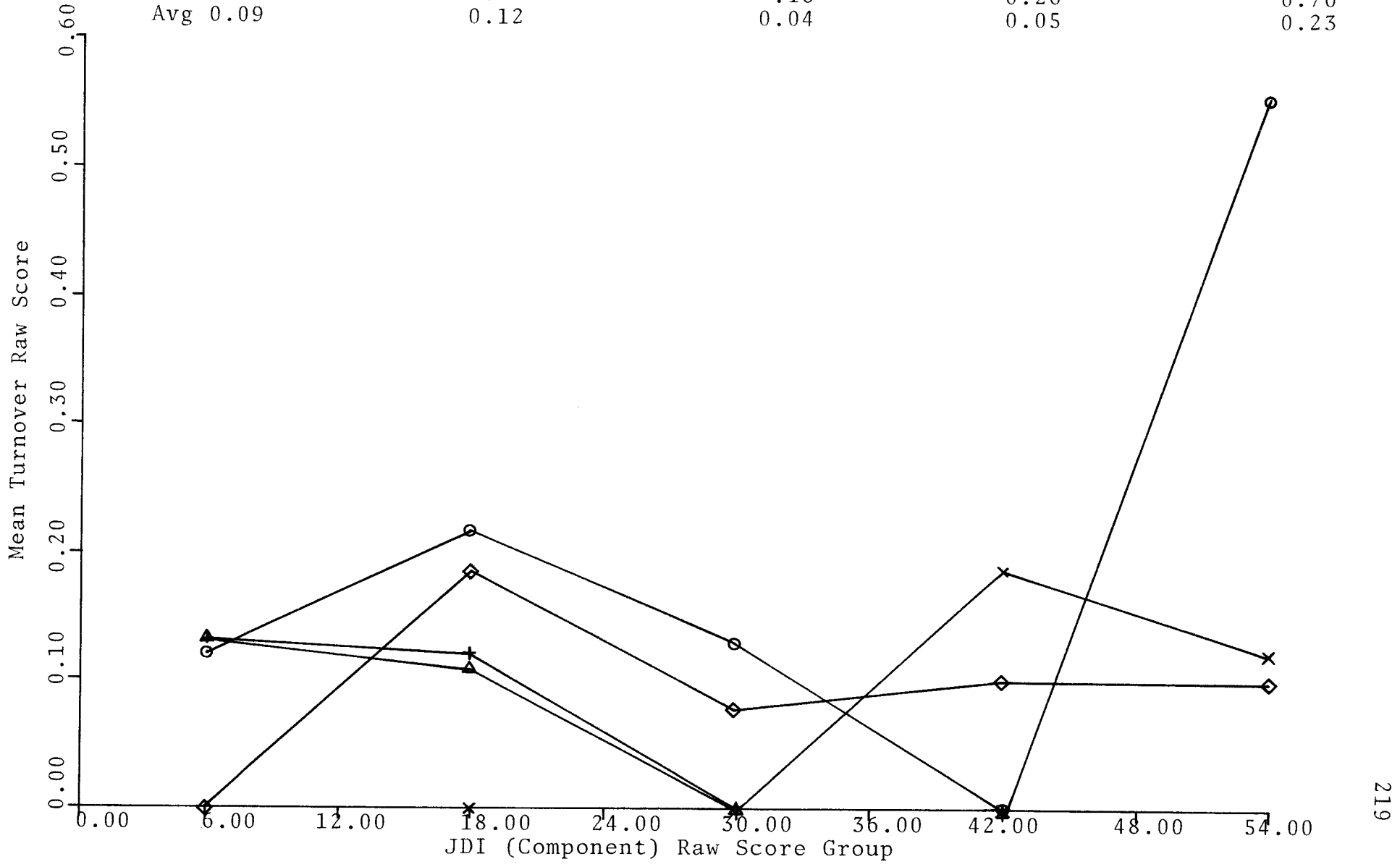


Fig. 56--JDI (Component) Turnover Means

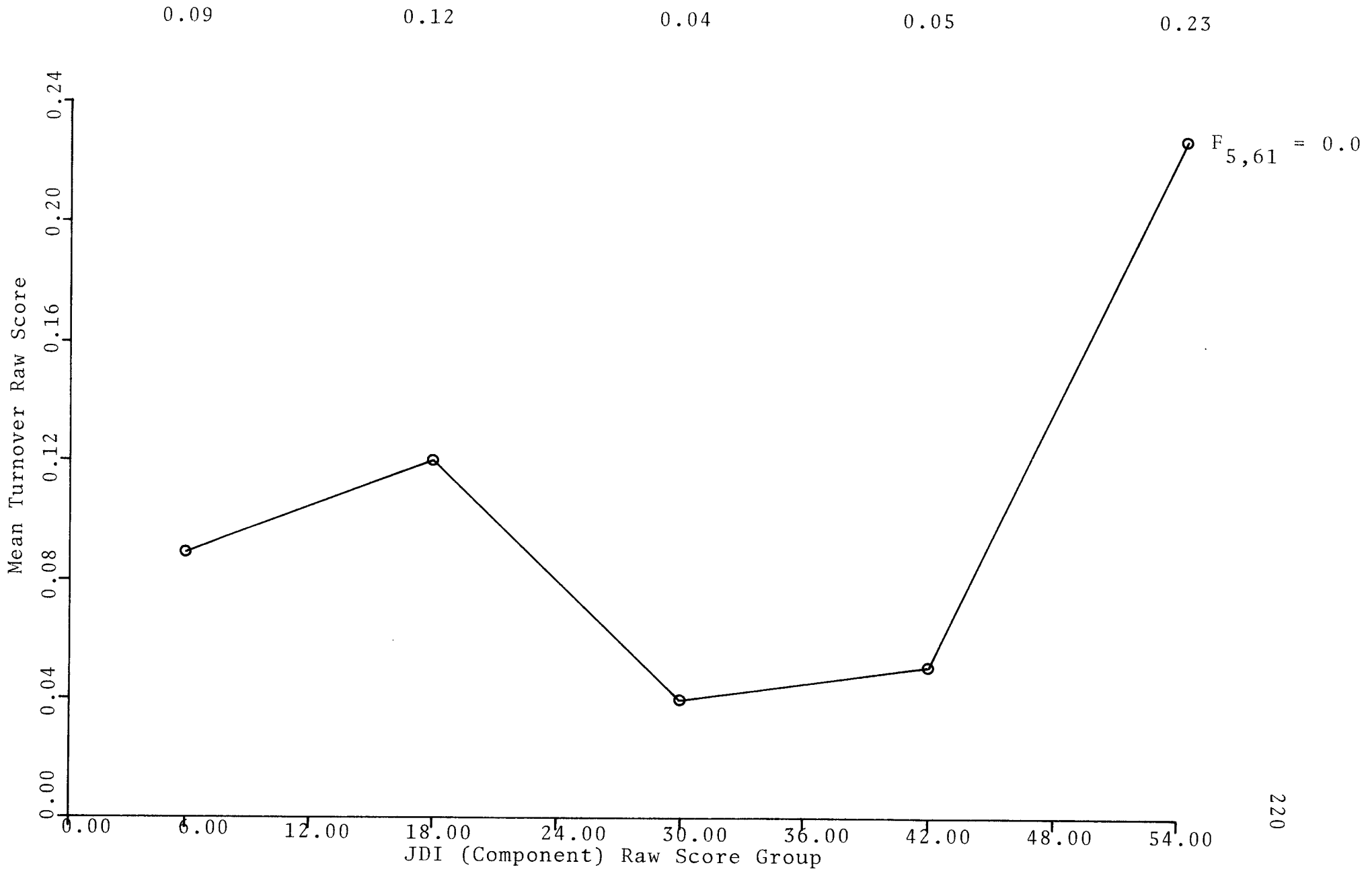


Fig. 57--JDI (Component) (Composite) Turnover Means

APPENDIX G

Satisfaction/Dissatisfaction Density Functions and Indices of Dissatisfaction (D/S Ratios) for Various Stratification Principles, Including Two Composite Charts at End

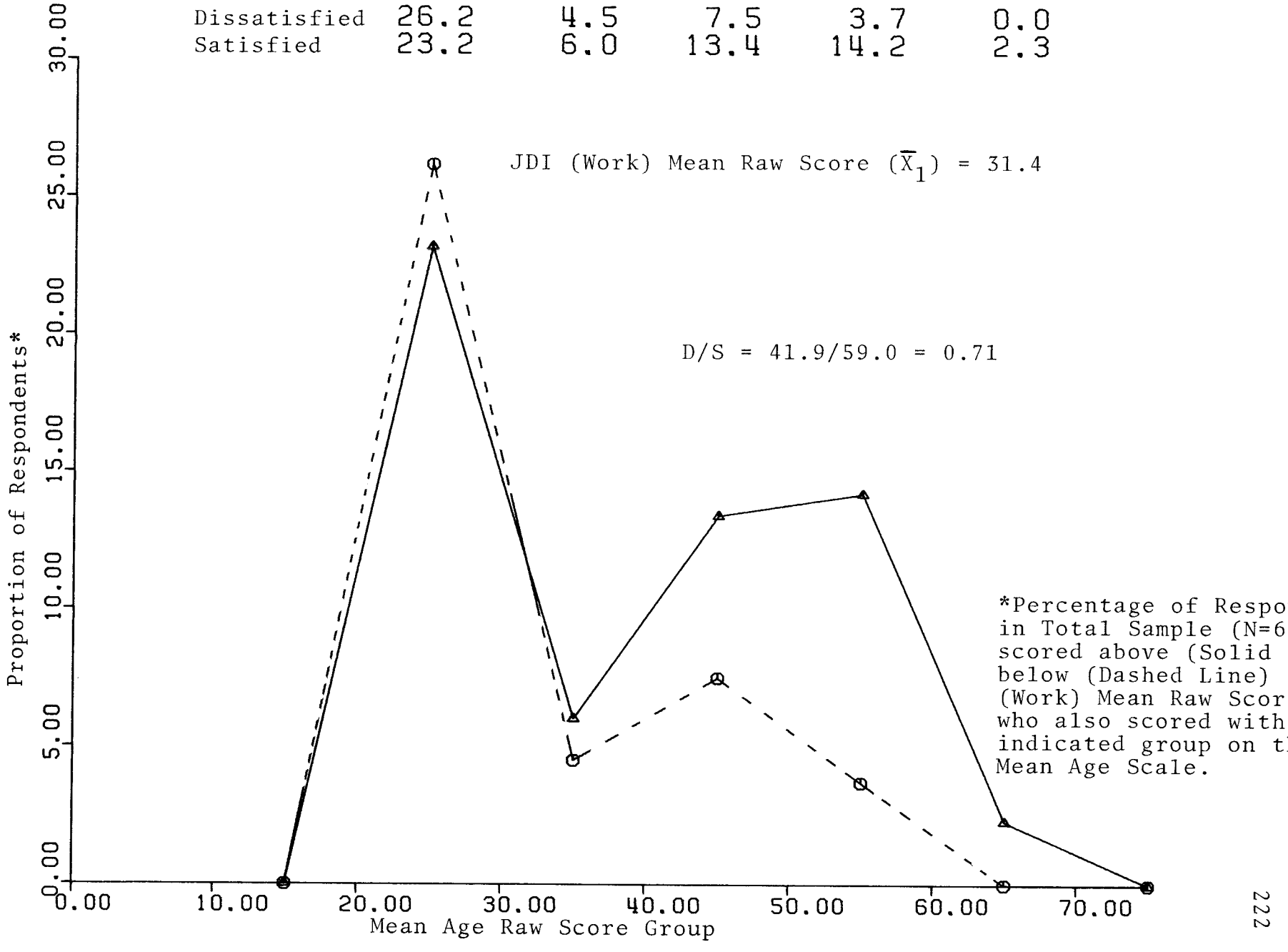


Fig. 58--D/S (Work) for Age

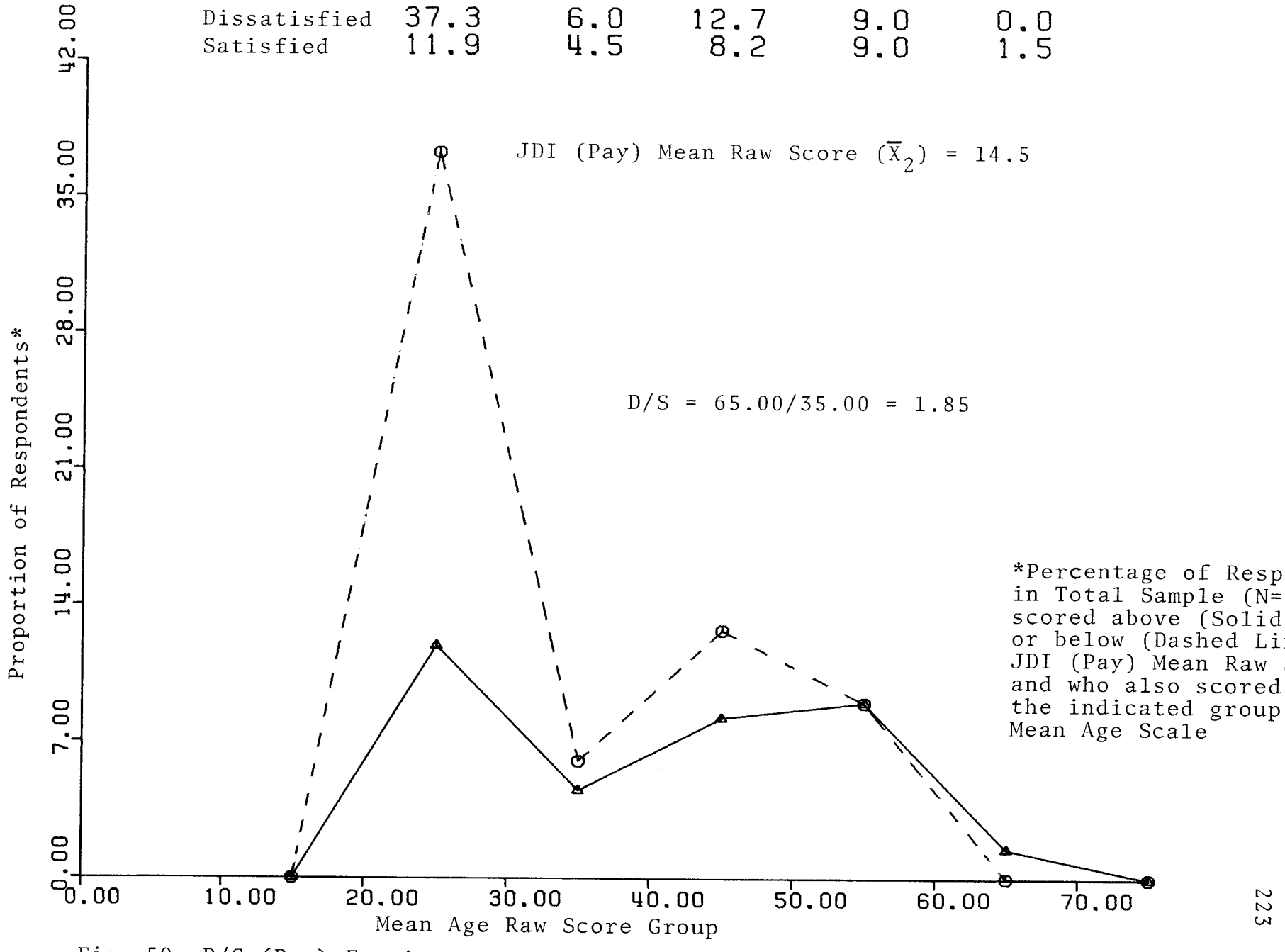


Fig. 59--D/S (Pay) For Age

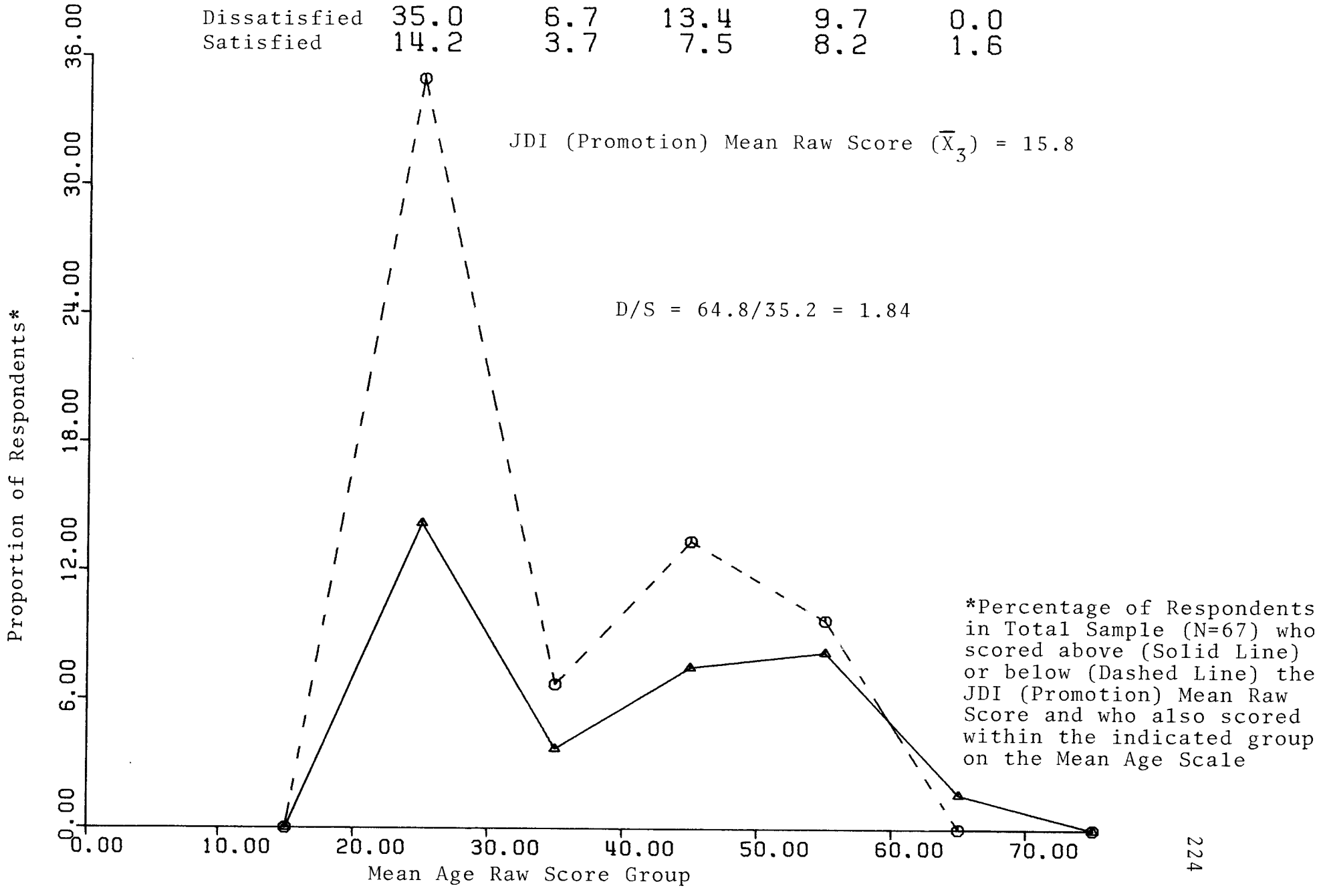


Fig. 60--D/S (Promotion) For Age

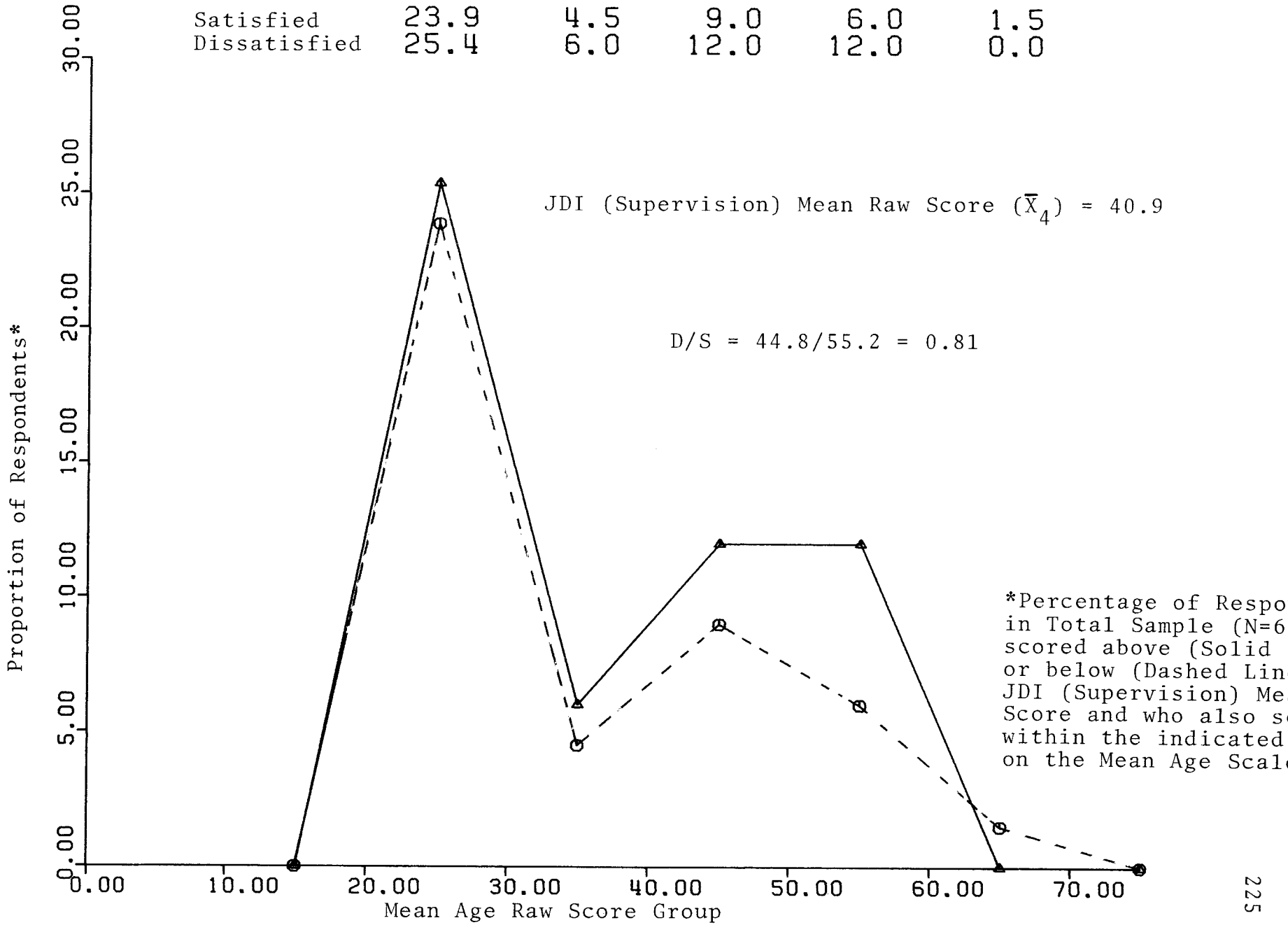


Fig. 61--D/S (Supervision) For Age

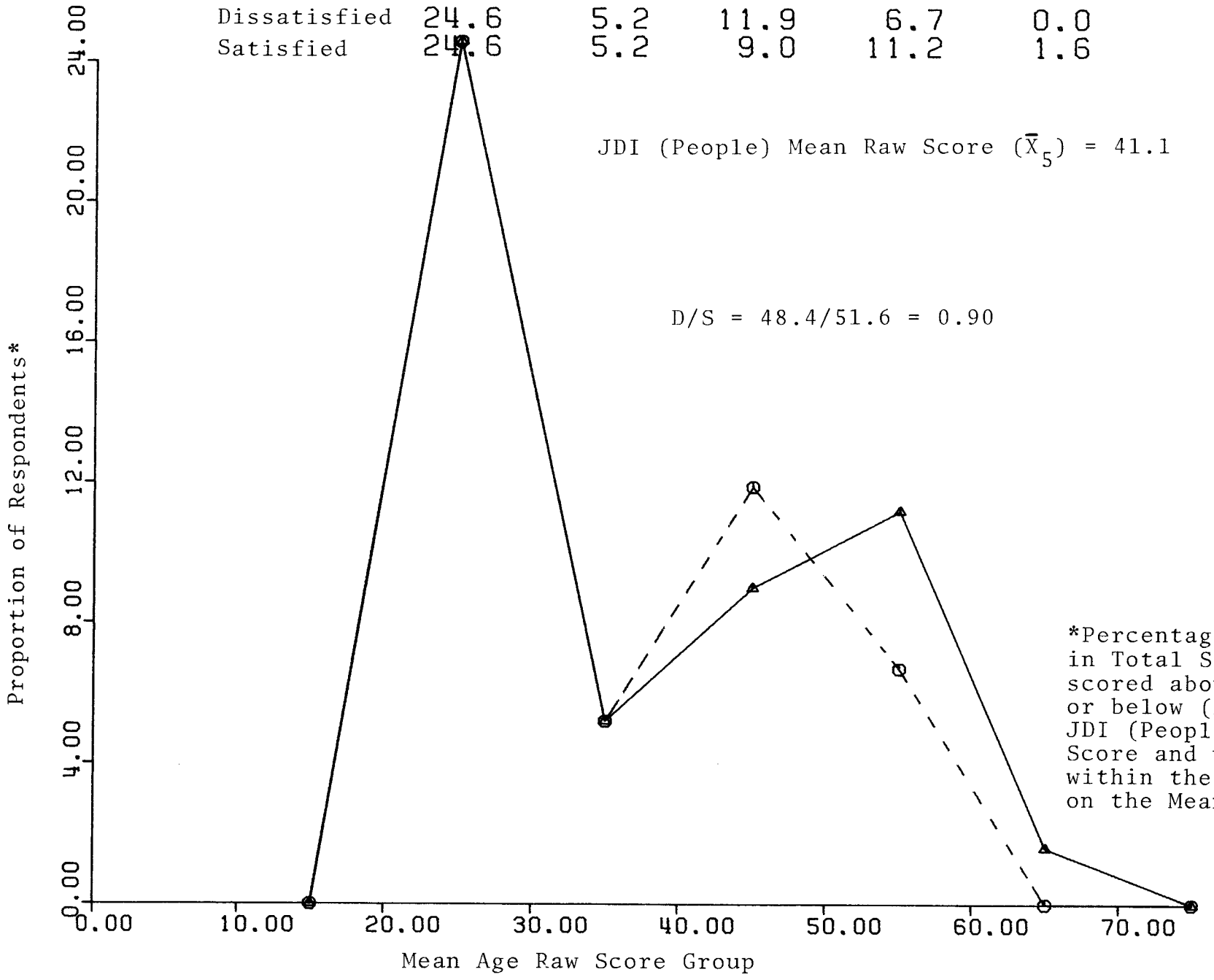


Fig. 62--D/S (People) For Age

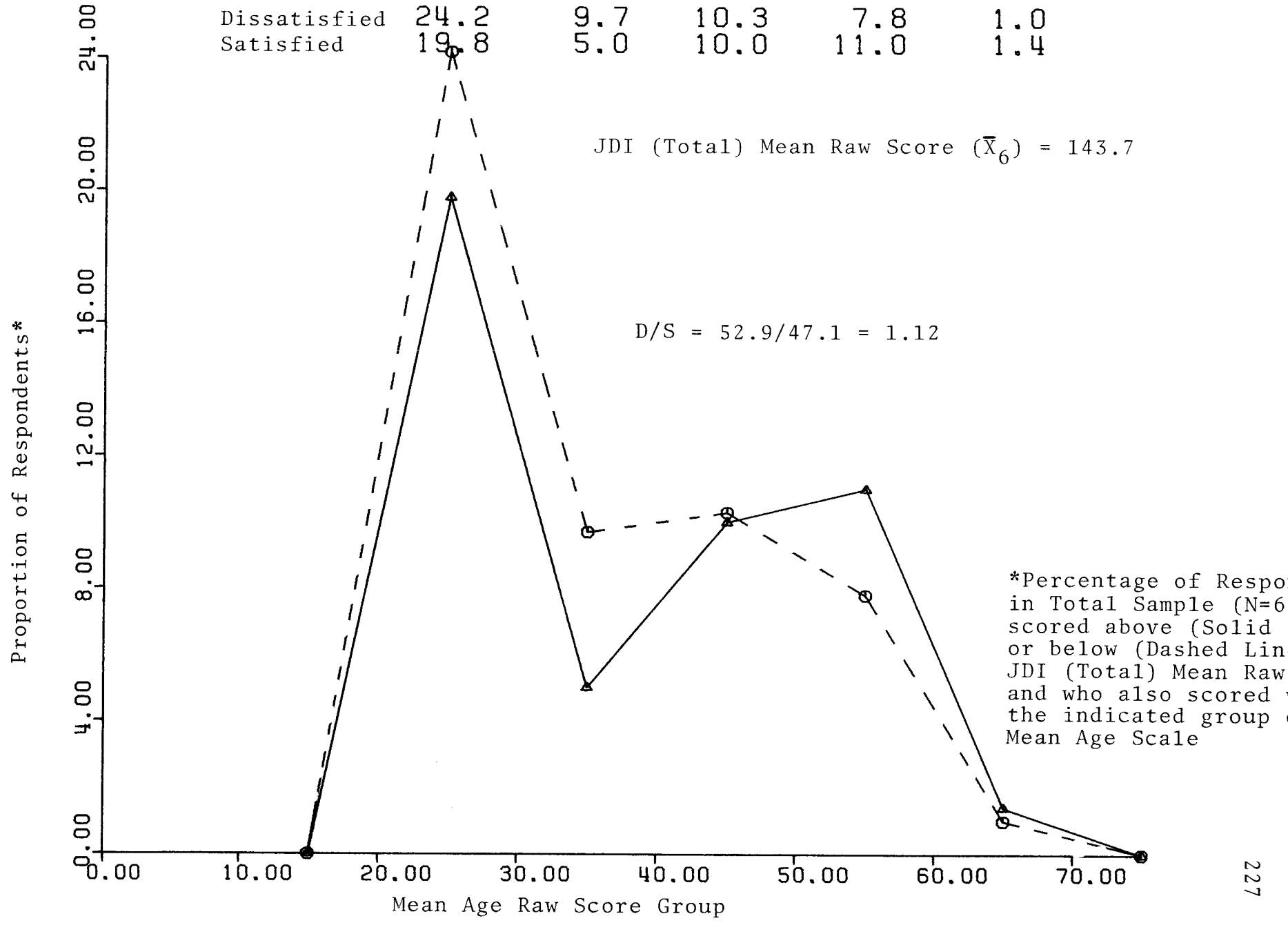
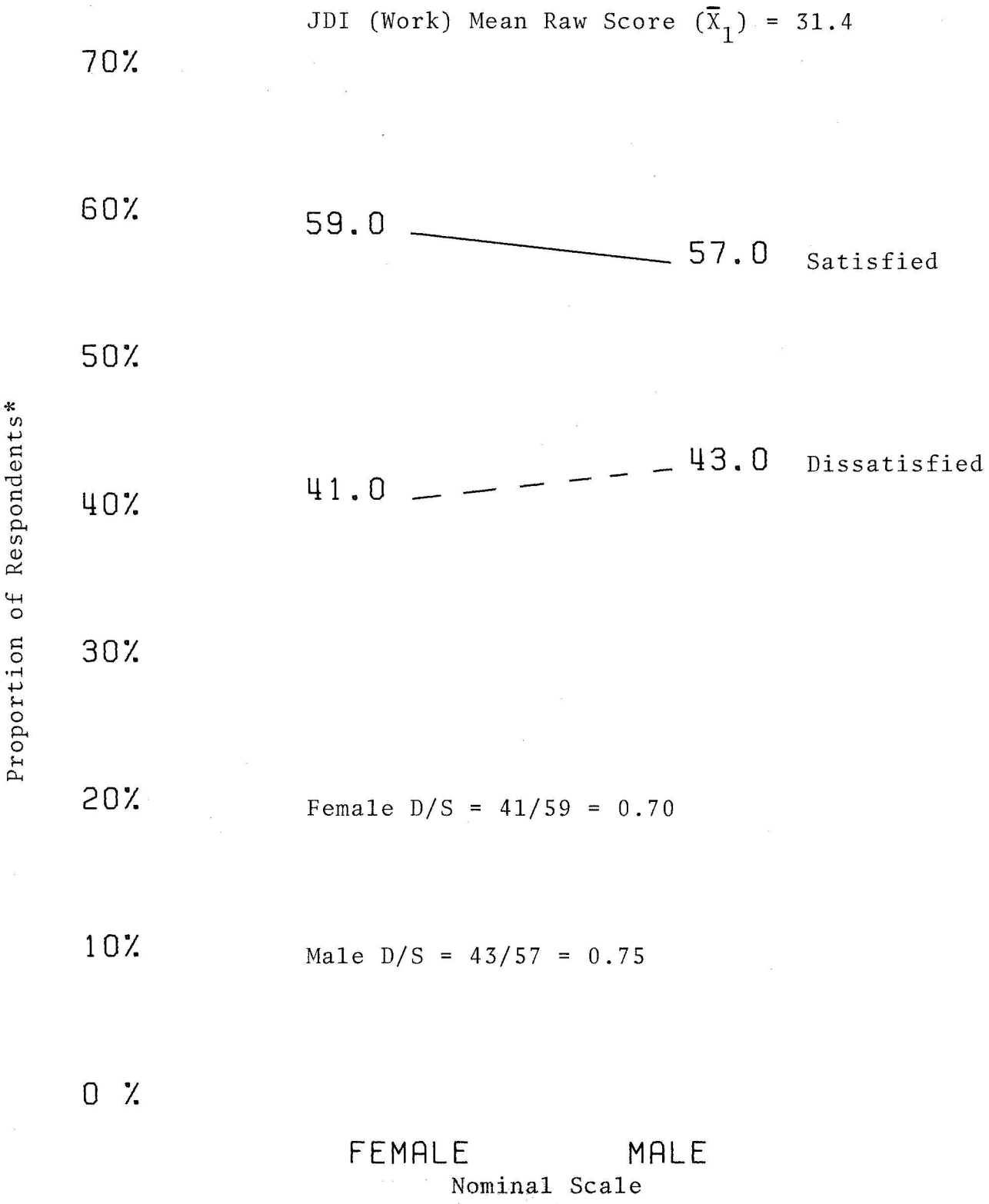
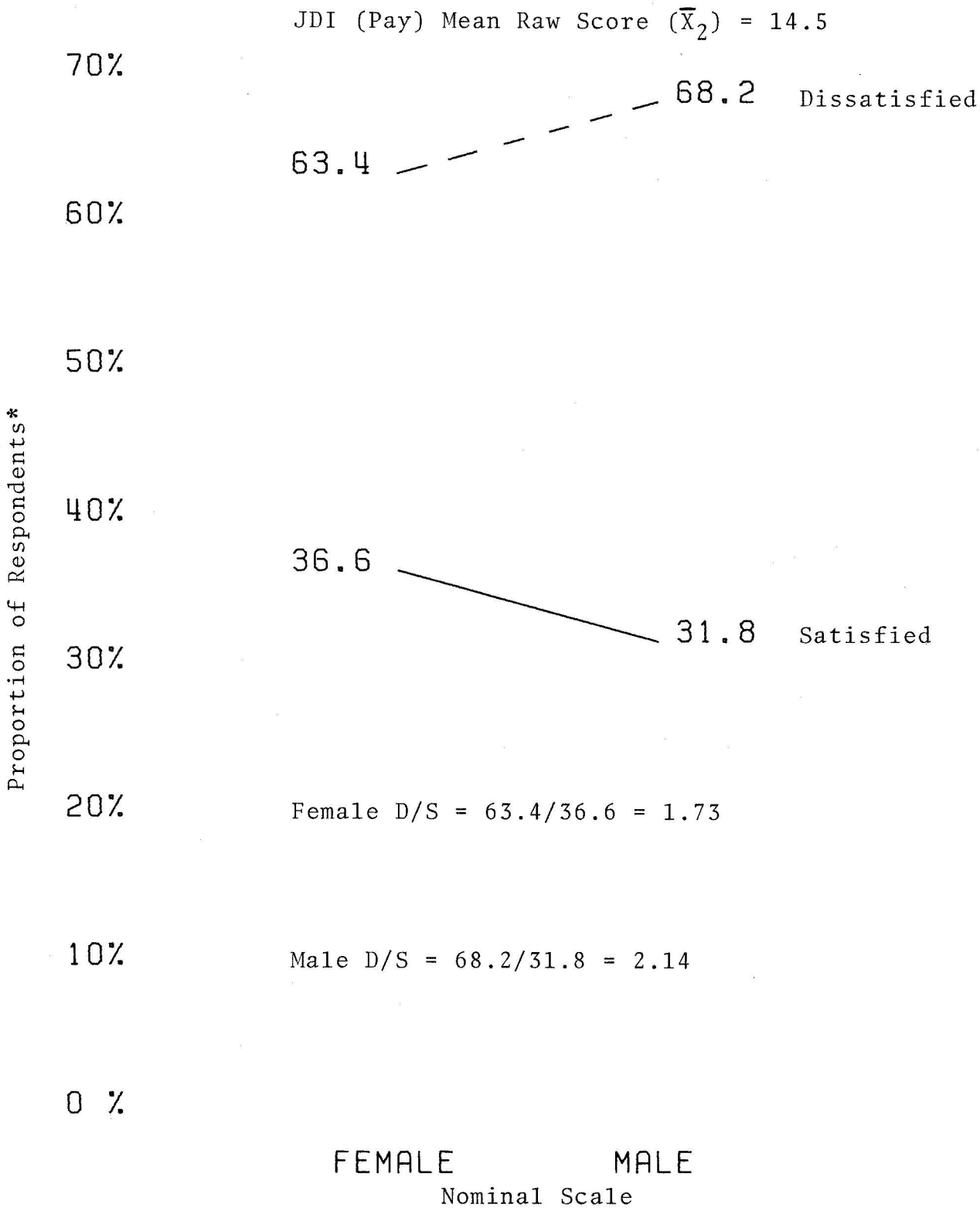


Fig. 63--D/S (Total) For Age



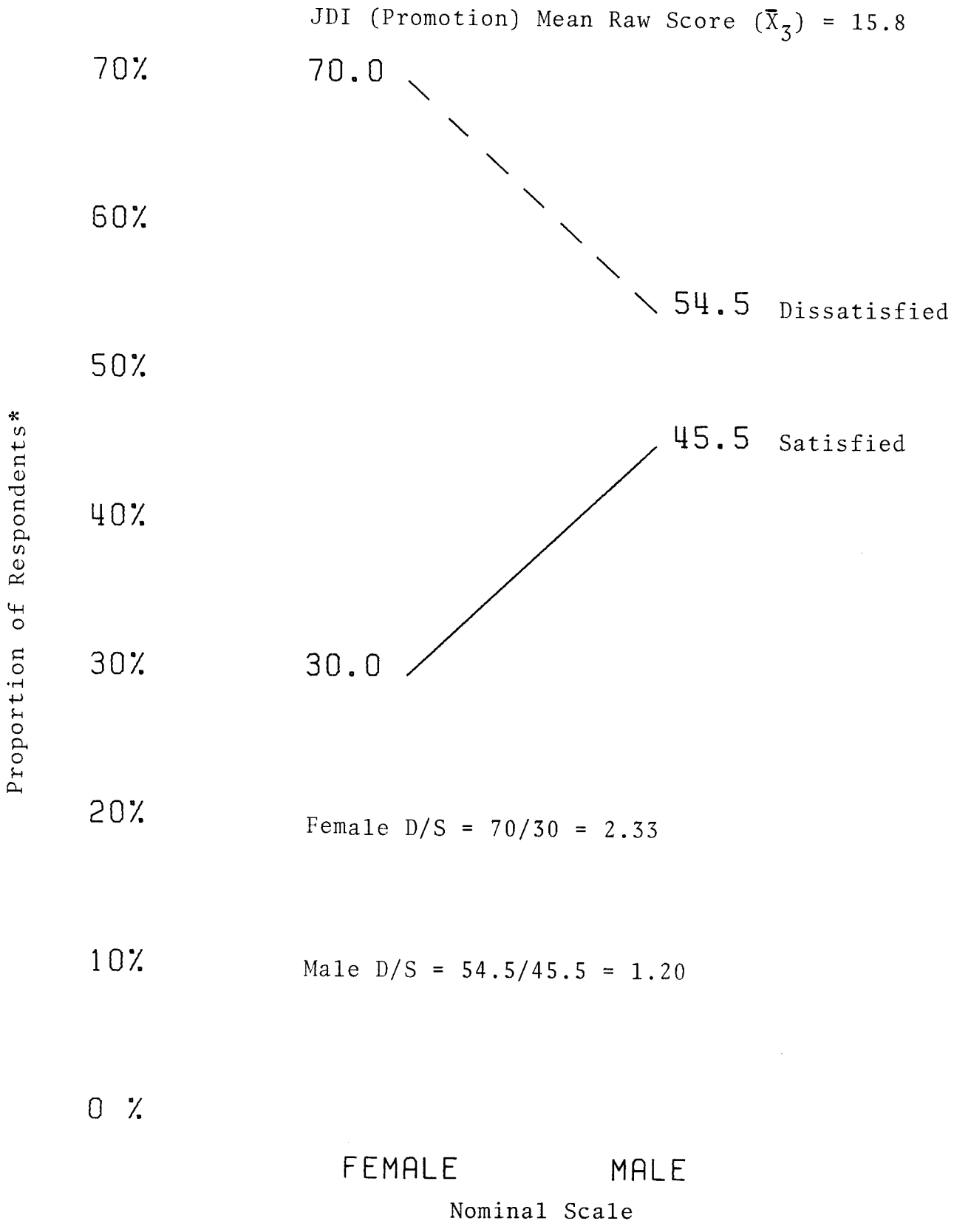
*Percentage of Respondents in Total Sample (N=67) who scored above (Solid Line) or below (Dashed Line) the JDI (Work) Mean Raw Score and who were classified as Male or Female

Fig. 64--D/S (Work) for Sex

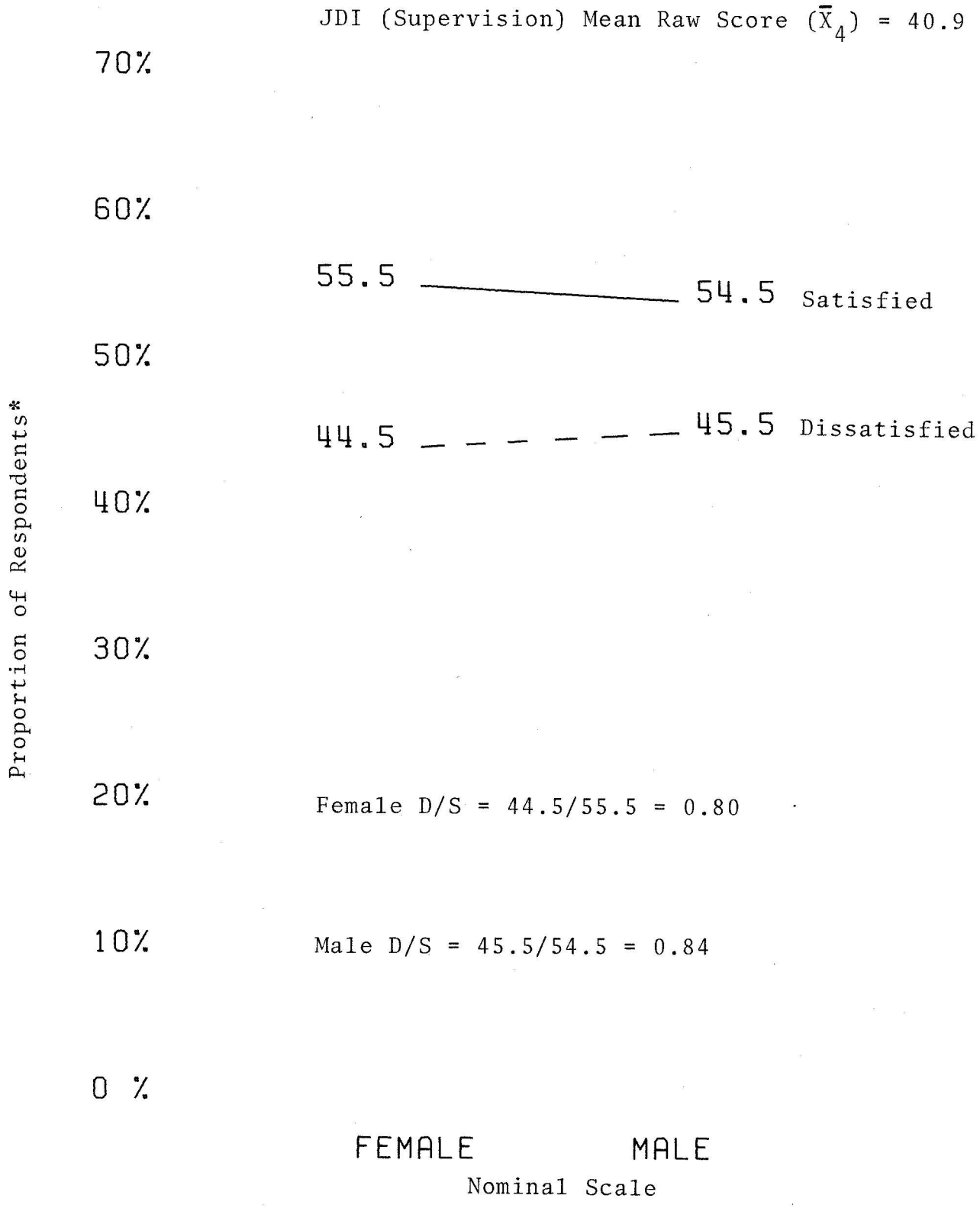


*Percentage of Respondents in Total Sample (N=67) who scored above (Solid Line) or below (Dashed Line) the JDI (Pay) Mean Raw Score and who were classified as Male or Female

Fig. 65--D/S (Pay) For Sex

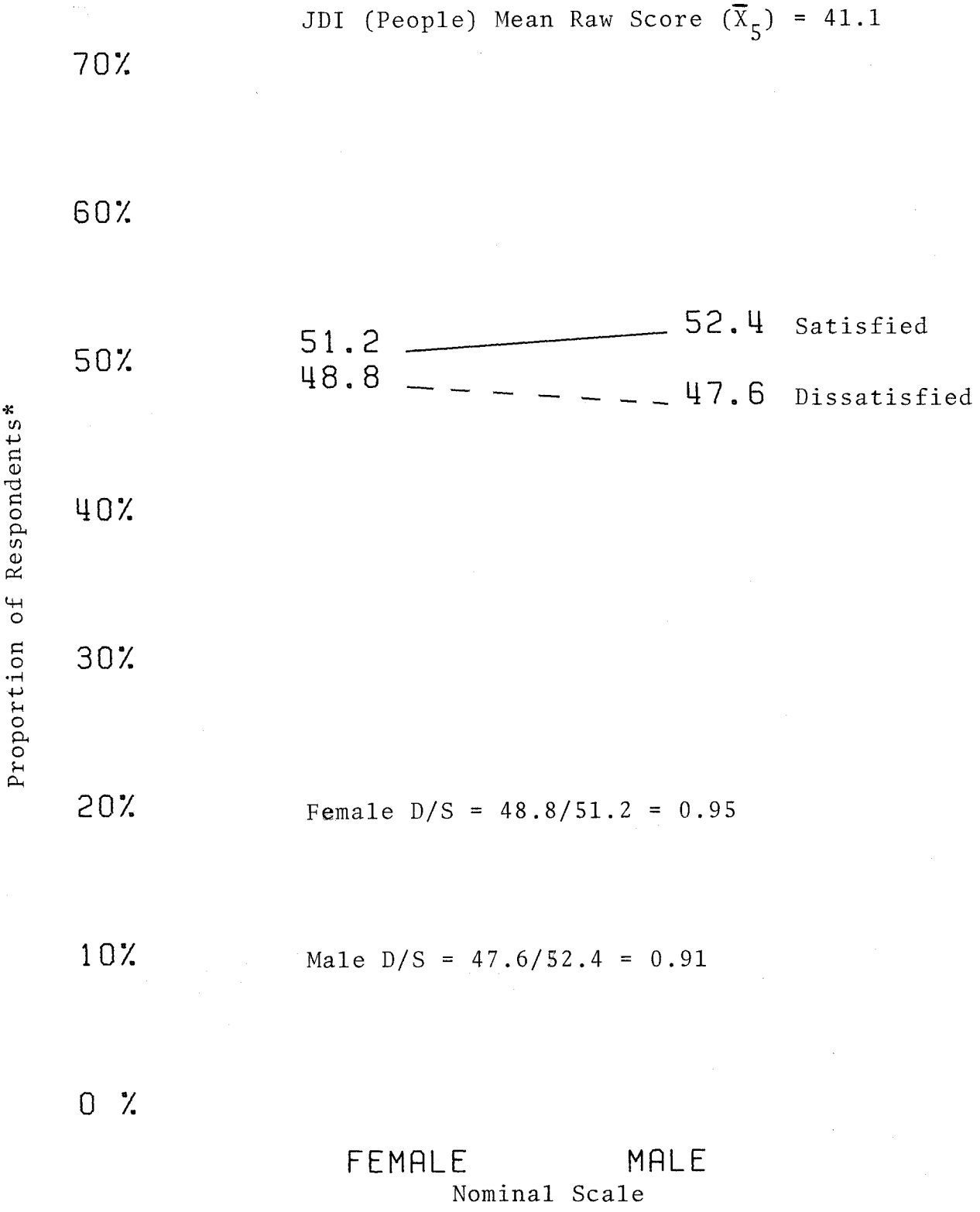


*Percentage of Respondents in Total Sample (N=67) who scored above (Solid Line) or below (Dashed Line) the JDI (Promotion) Mean Raw Score and who were classified as Male or Female



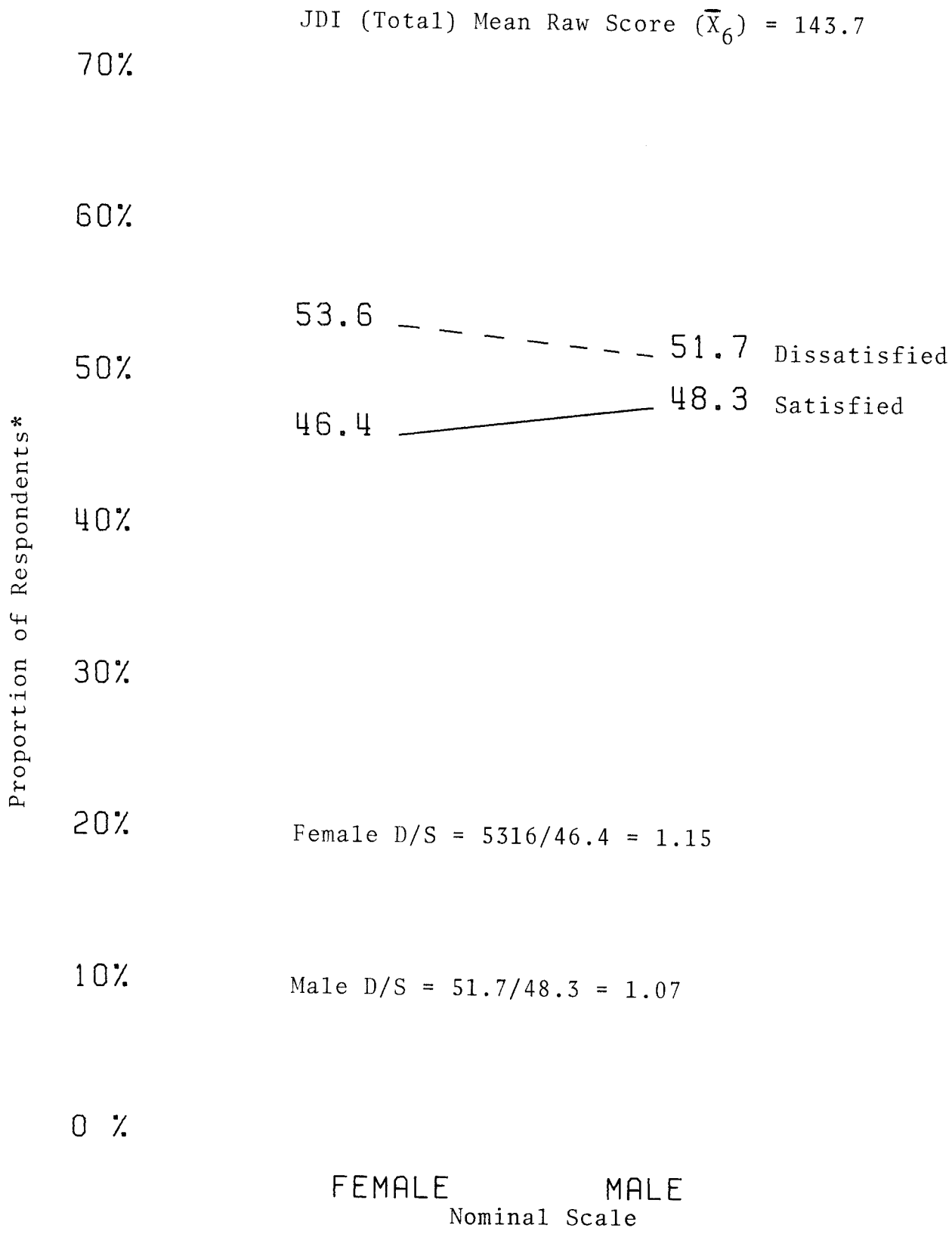
*Percentage of Respondents in Total Sample who scored above (Solid Line) or below (Dashed Line) the JDI (Supervision) Mean Raw Score and who were classified as Male or Female

Fig. 67--D/S (Supervision) For Sex



*Percentage of Respondents in Total Sample who scored above (Solid Line) or below (Dashed Line) the JDI (People) Mean Raw Score and who were classified as Male or Female

Fig. 68--D/S (People) For Sex



*Percentage of Respondents in Total Sample (N=67) who scored above (Solid Line) or below (Dashed Line) the JDI (Total) Mean Raw Score and who were classified as Male or Female

Fig. 69--D/S (Total) For Sex

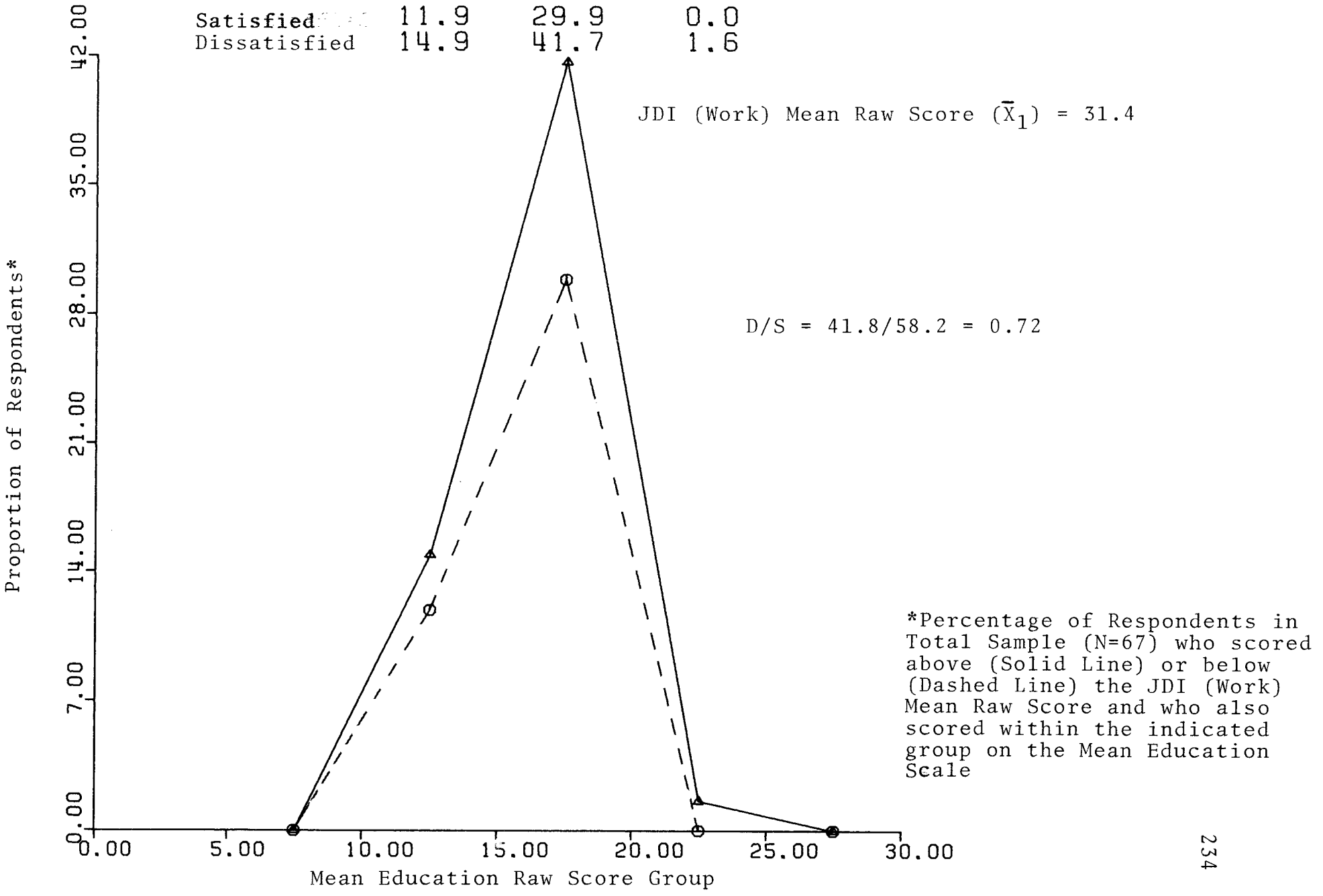


Fig. 70--D/S (Work) For Education

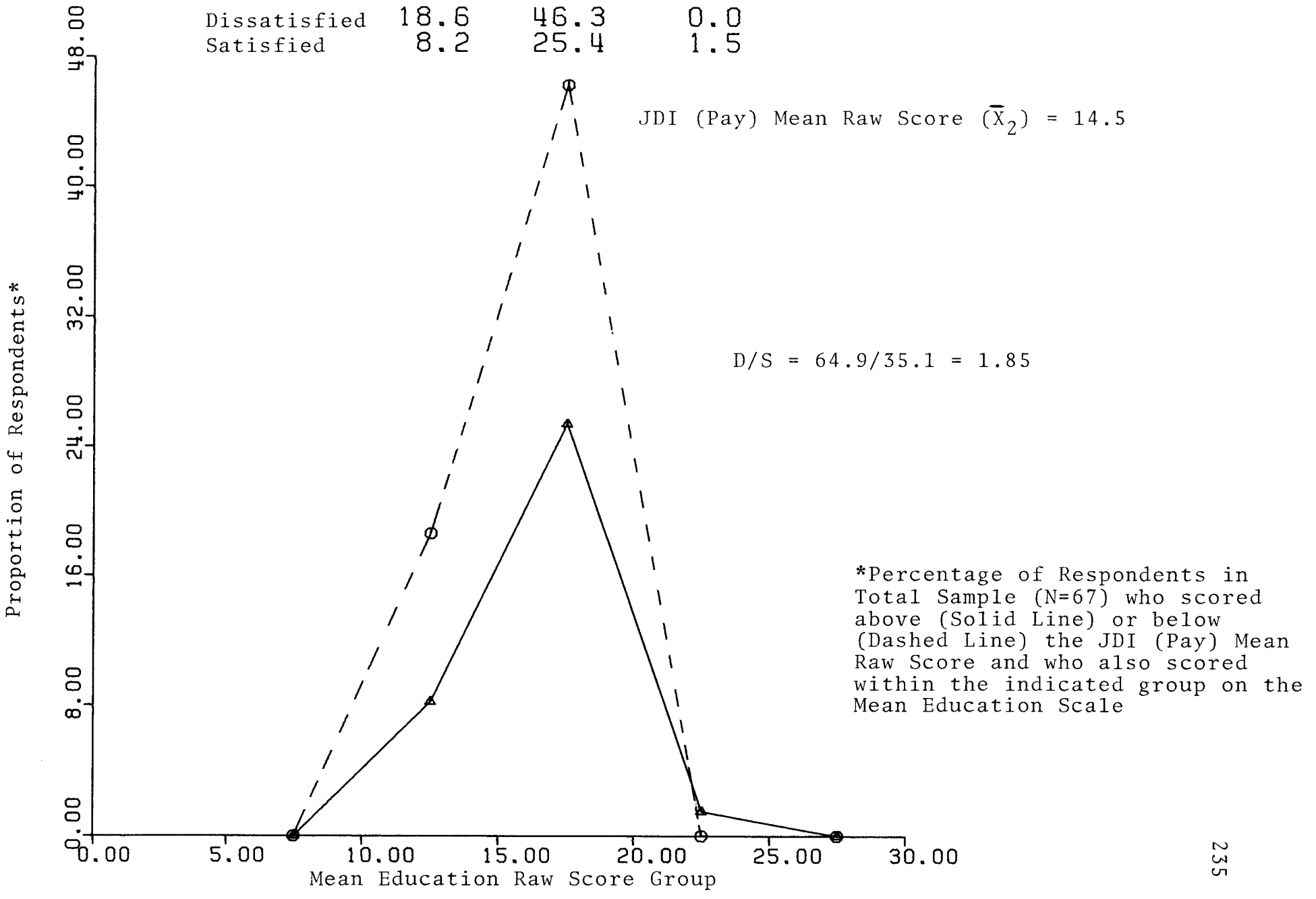


Fig. 71--D/S (Pay) For Education

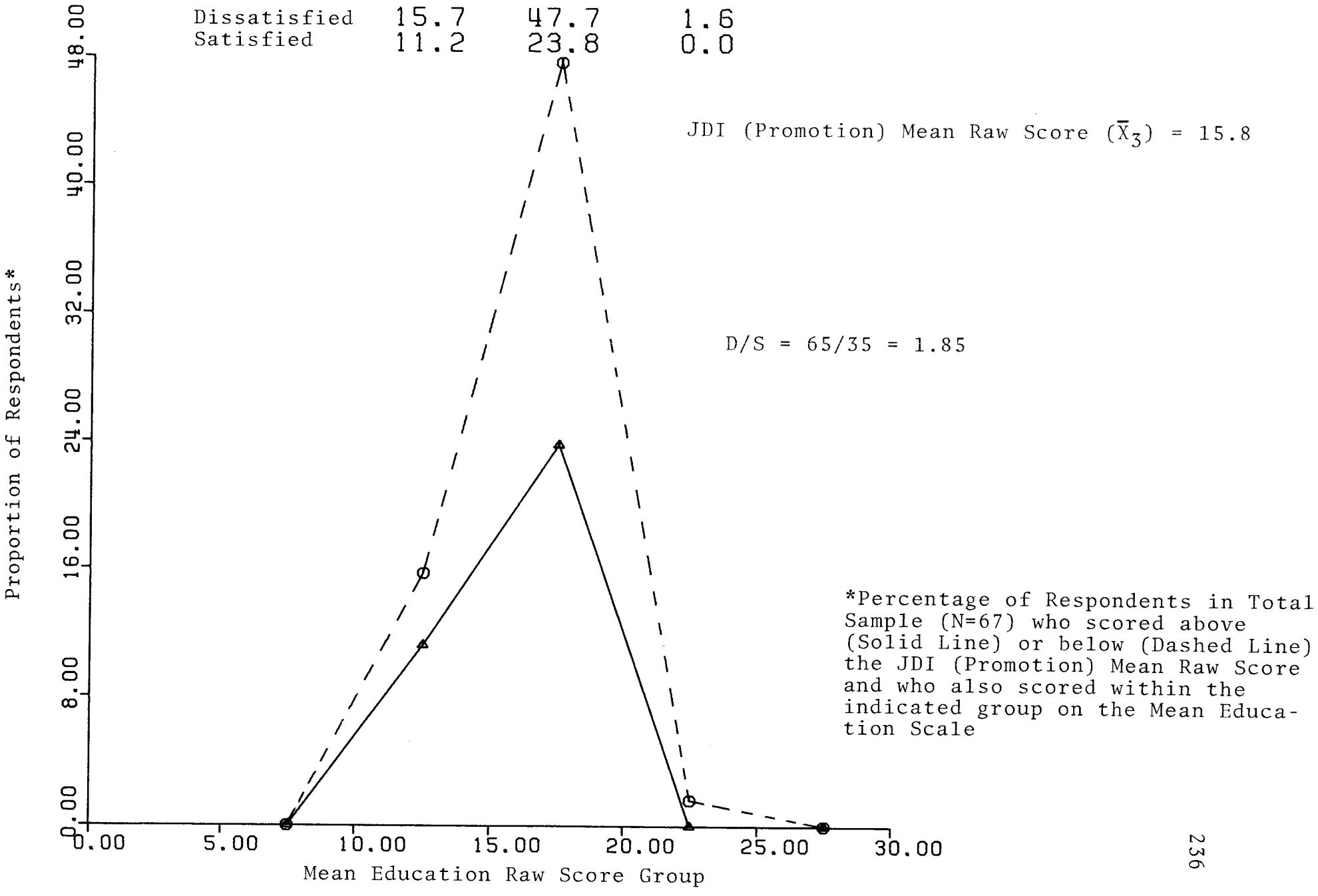


Fig. 72--D/S (Promotion) For Education

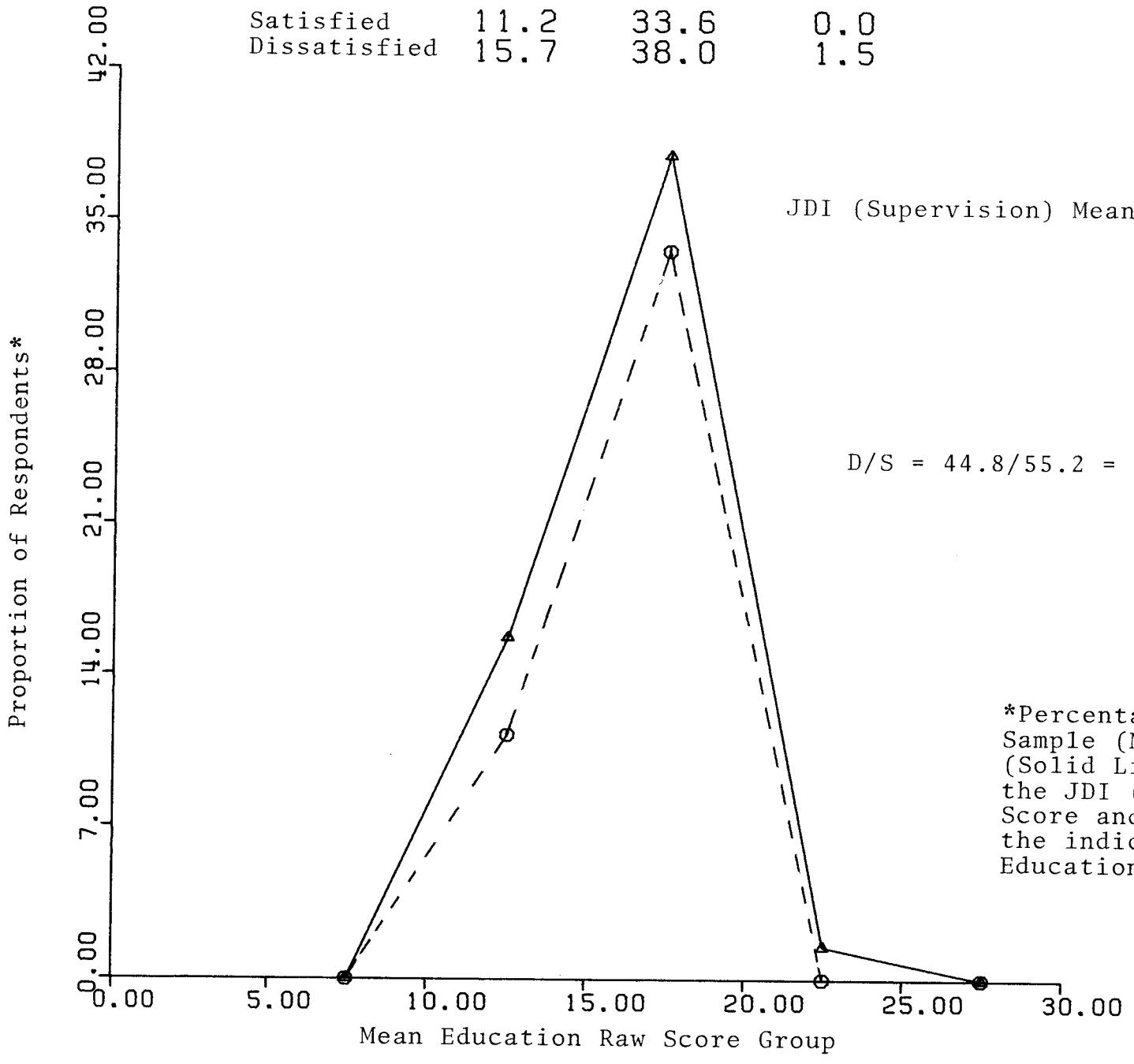


Fig. 73--D/S (Supervision) For Education

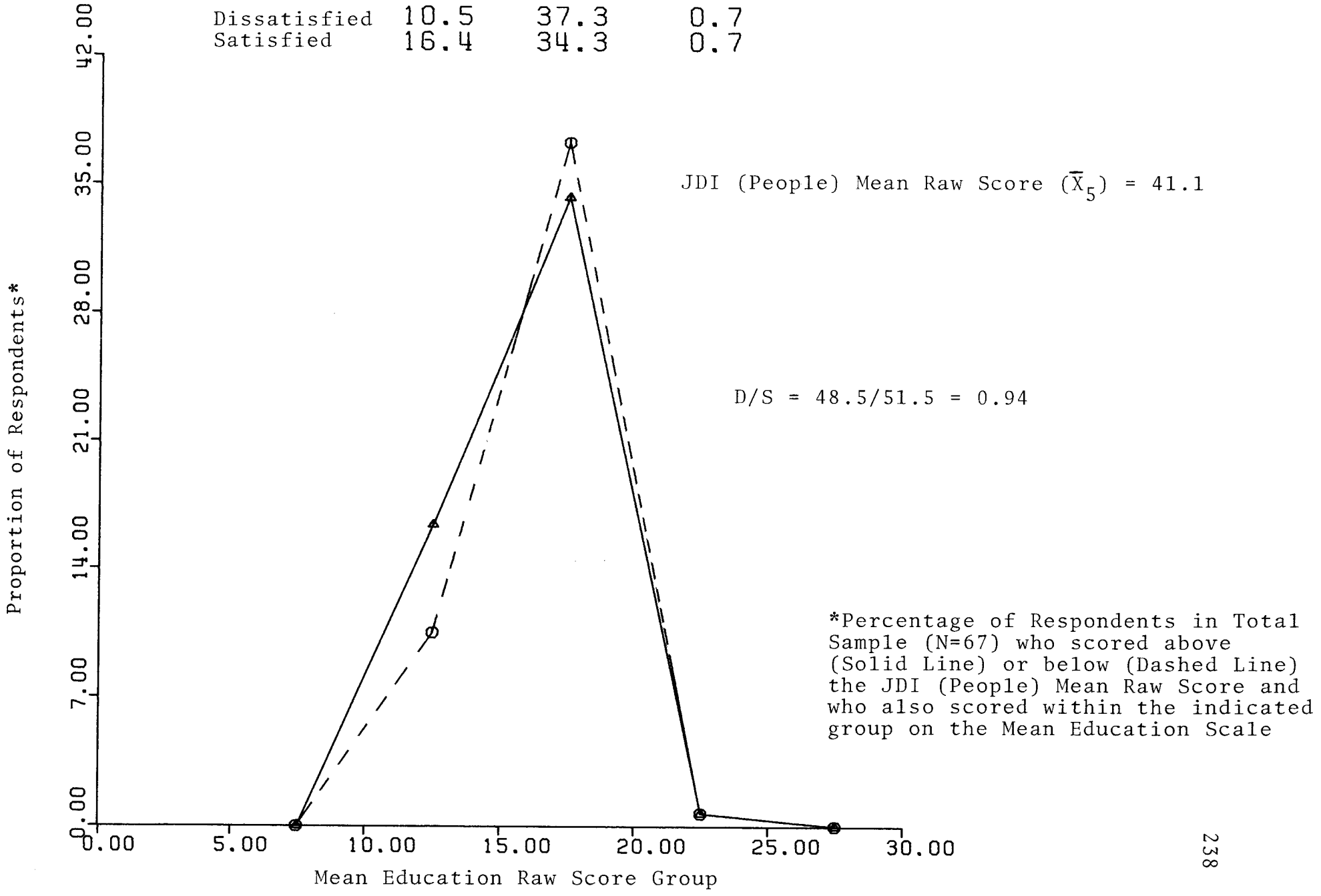


Fig. 74--D/S (People) For Education

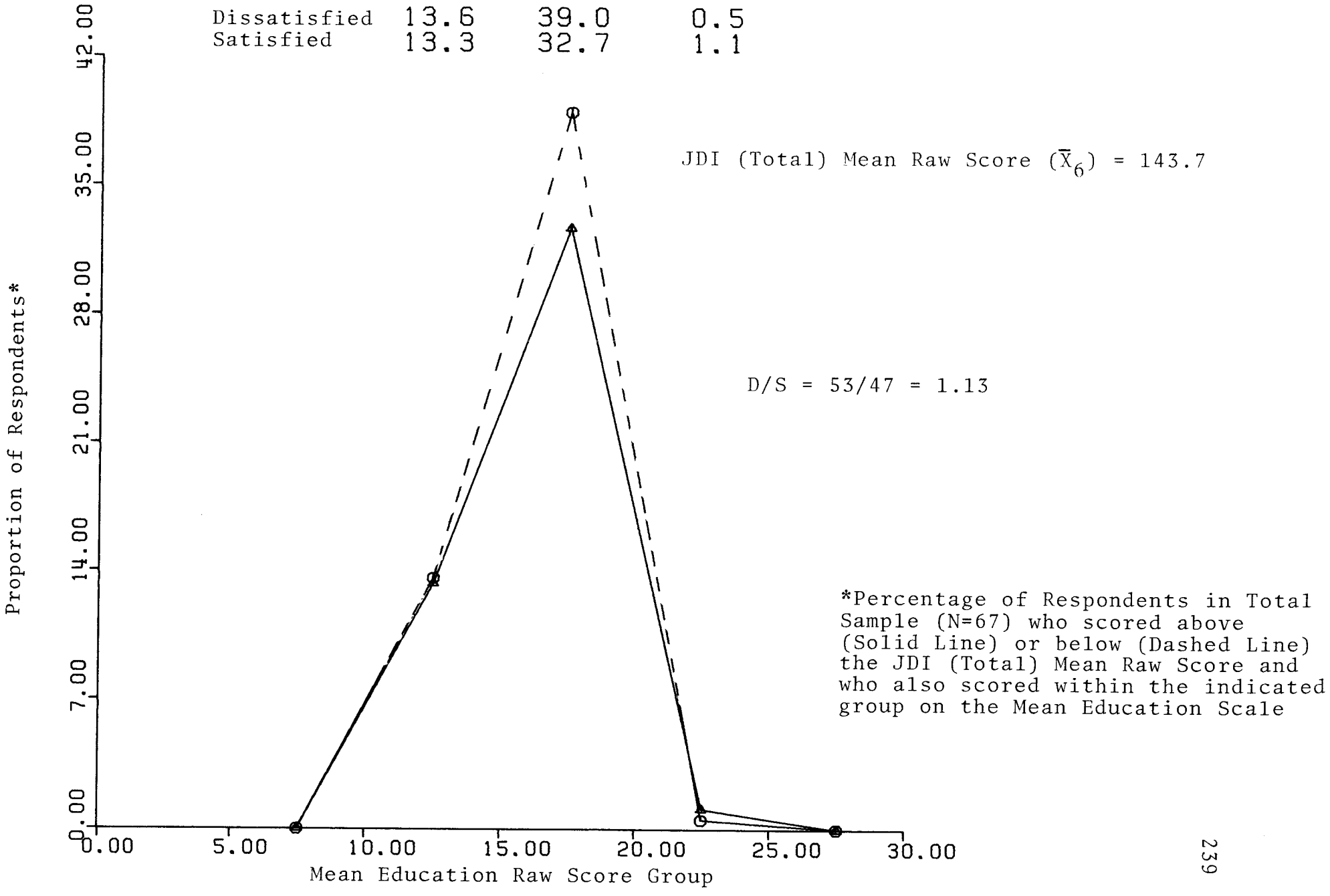
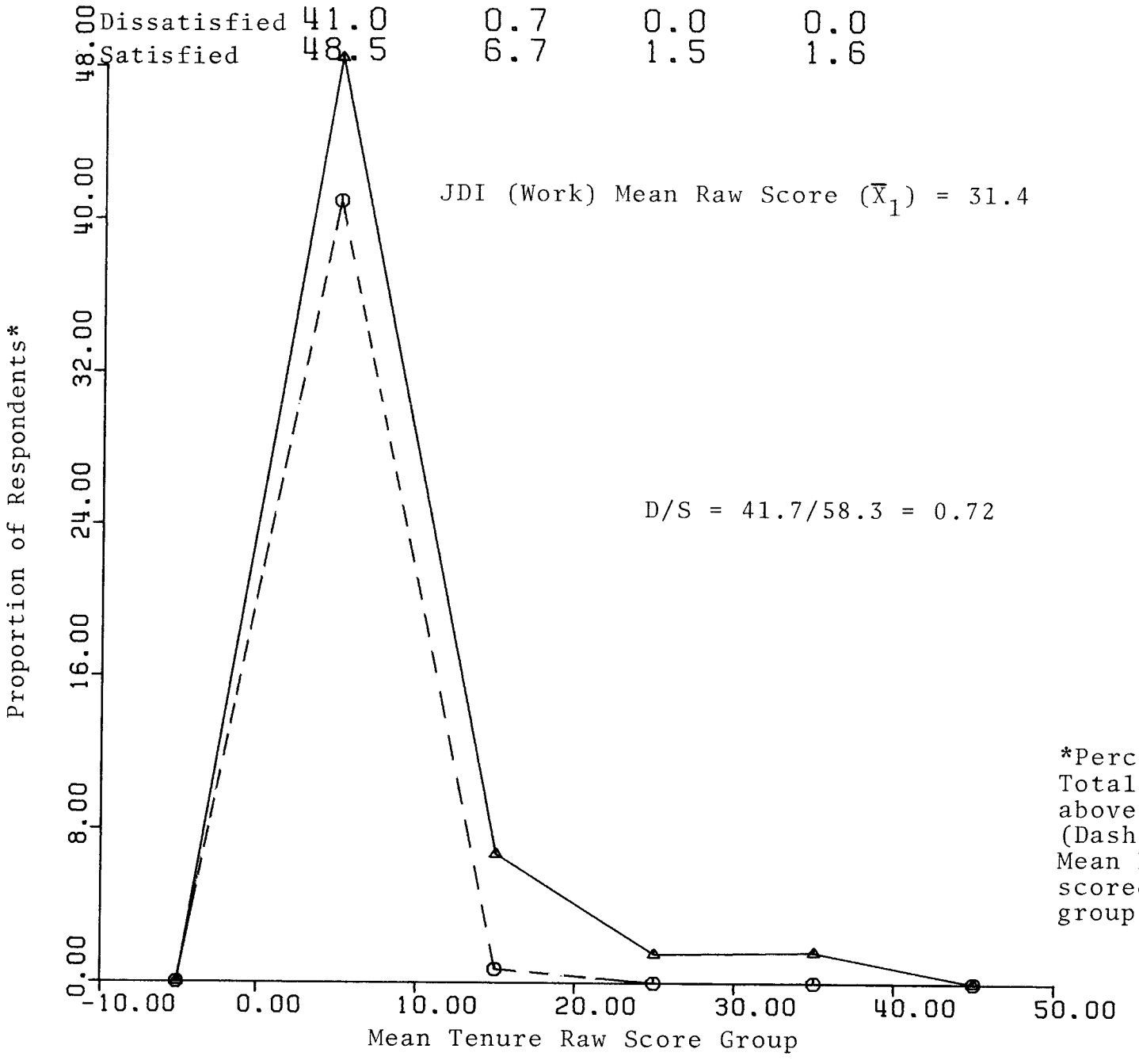
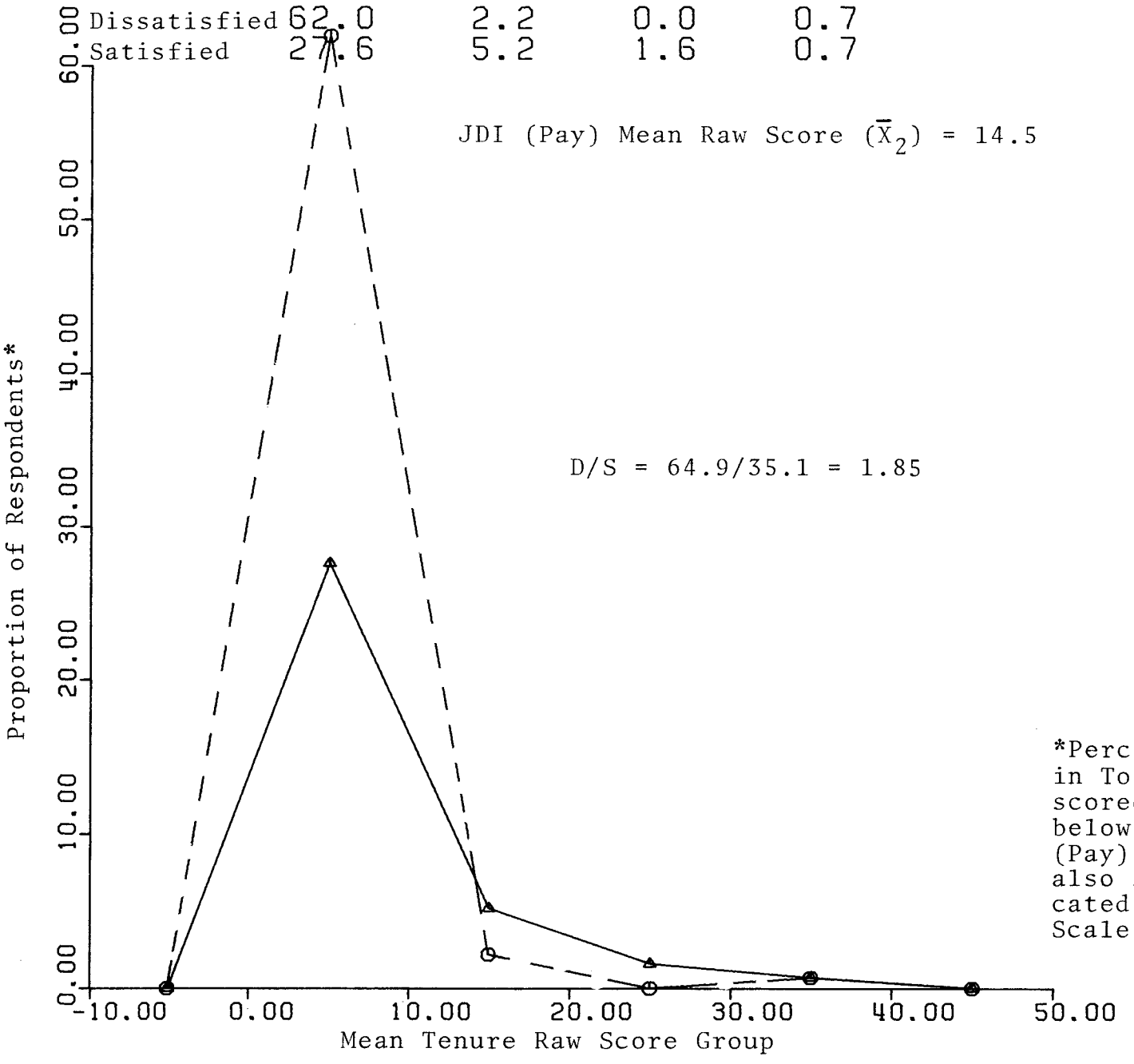


Fig. 75--D/S (Total) For Education



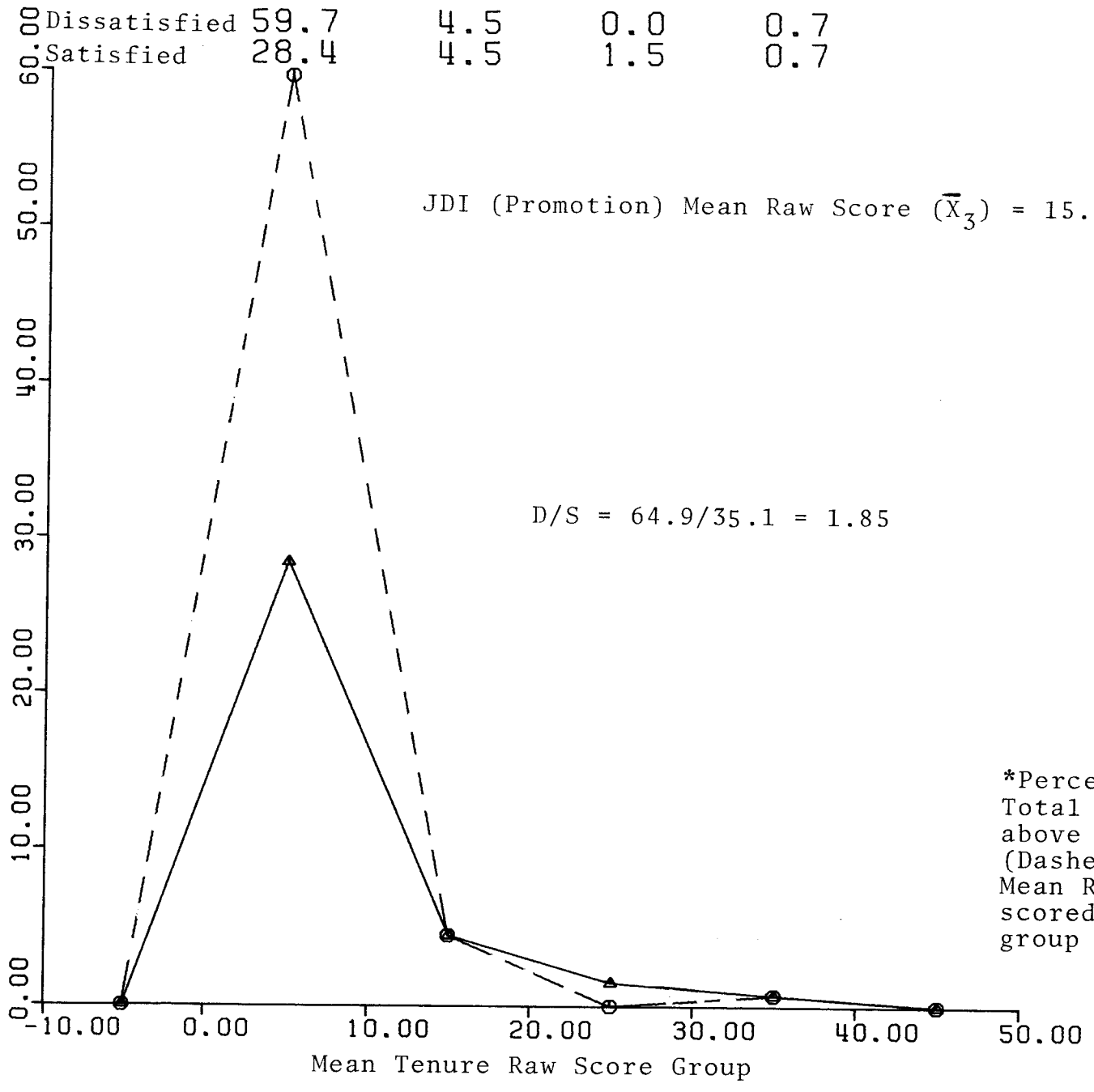
*Percentage of Respondents in Total Sample (N=67) who scored above (Solid Line) or below (Dashed Line) the JDI (Work) Mean Raw Score and who also scored within the indicated group on the Mean Tenure Scale.

Fig. 76--D/S (Work) for Tenure



*Percentage of Respondents in Total Sample (N=67) who scored above (Solid Line) or below (Dashed Line) the JDI (Pay) Mean Raw Score and who also scored within the indicated group on the Mean Tenure Scale.

Fig. 77--D/S (Pay) for Tenure



*Percentage of Respondents in Total Sample (N=67) who scored above (Solid Line) or below (Dashed Line) the JDI (Promotion) Mean Raw Score and who also scored within the indicated group on the Mean Tenure Scale

Fig. 78--D/S (Promotion) for Tenure

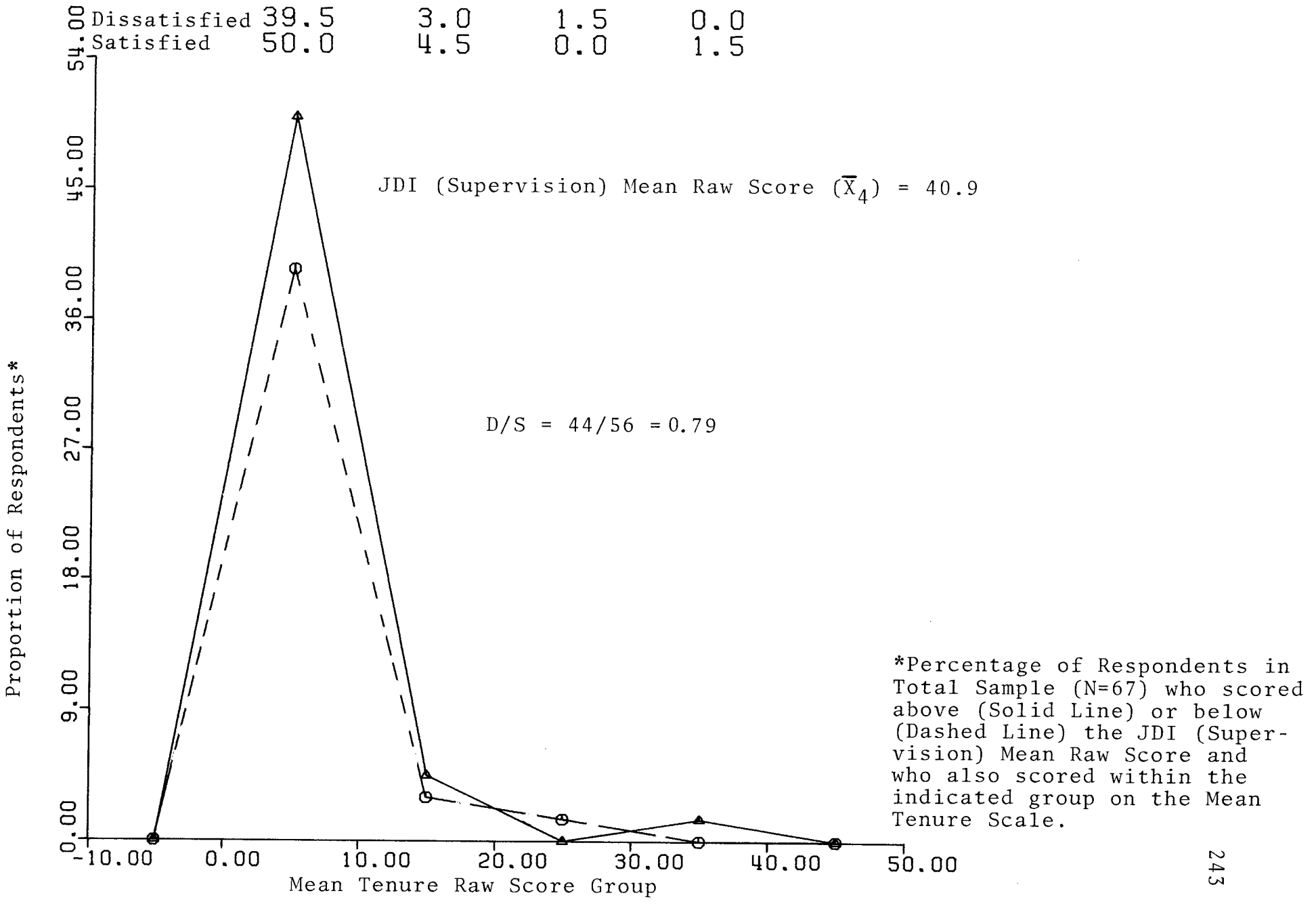
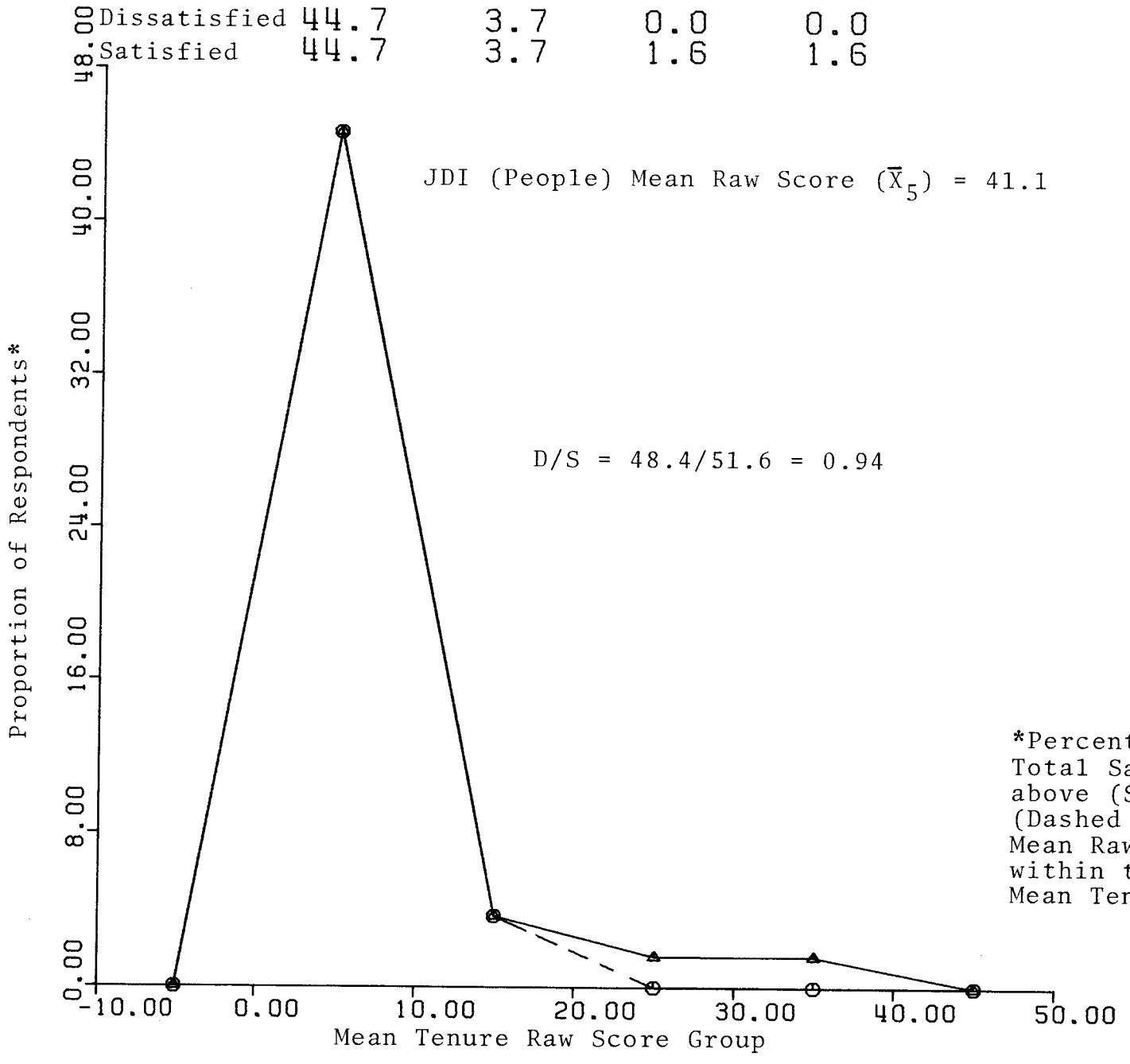


Fig. 79--D/S (Supervision) for Tenure



*Percentage of Respondents in Total Sample (N=67) who scored above (Solid Line) or below (Dashed Line) the JDI (People) Mean Raw Score and who also scored within the indicated group on the Mean Tenure Scale.

Fig. 80--D/S (People) for Tenure

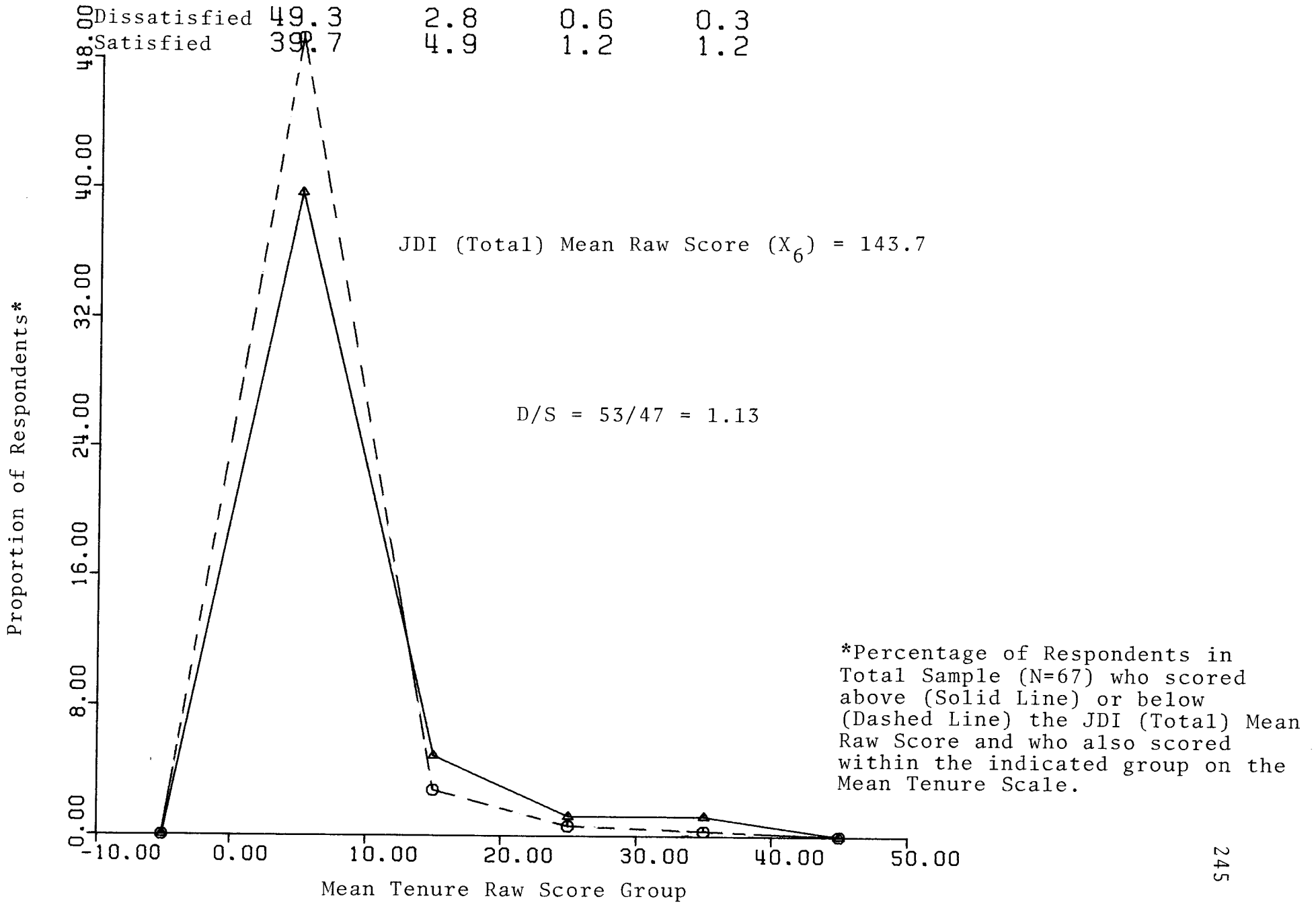


Fig. 81--D/S (Total) for Tenure

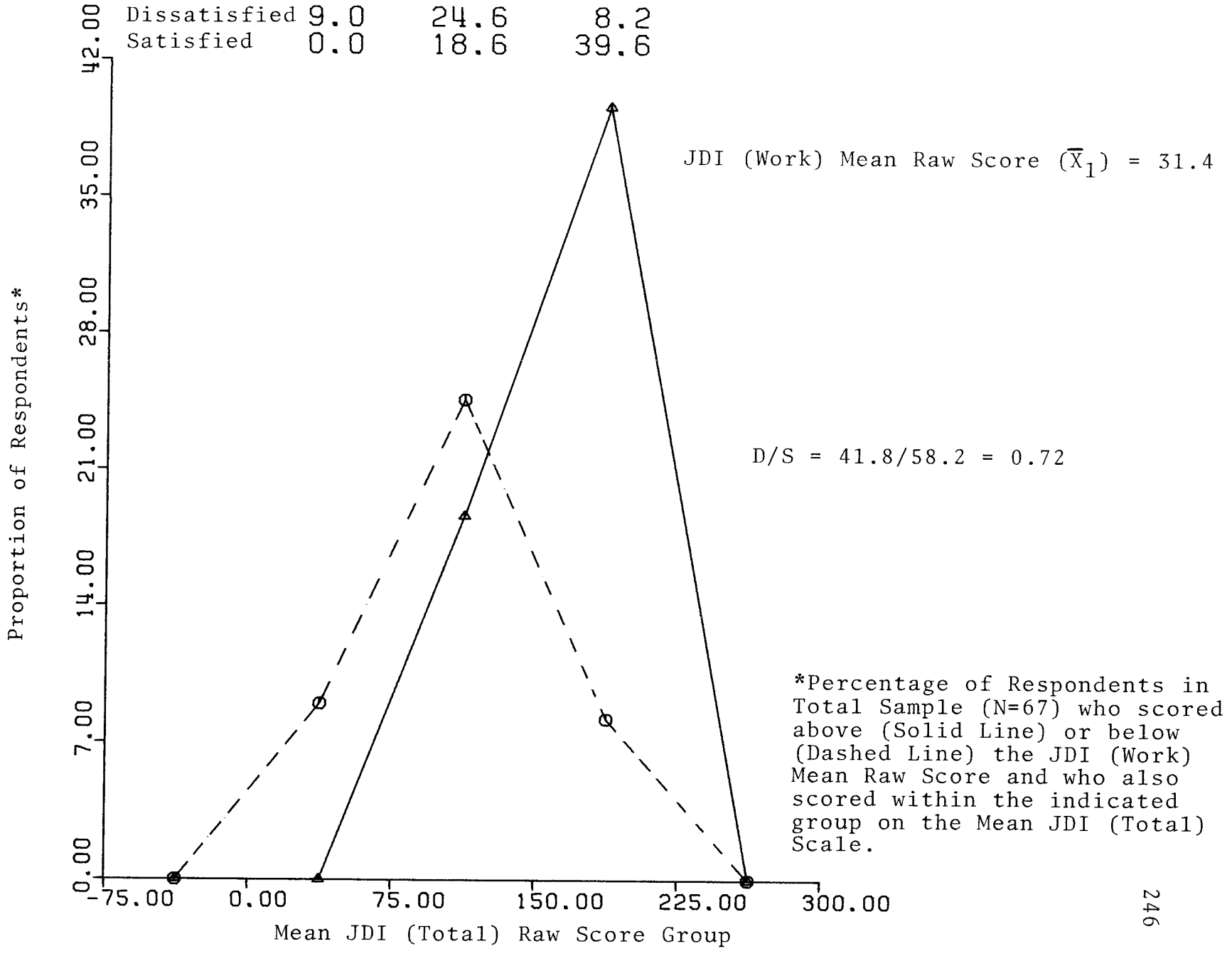


Fig. 82--D/S (Work) for JDI (Total)

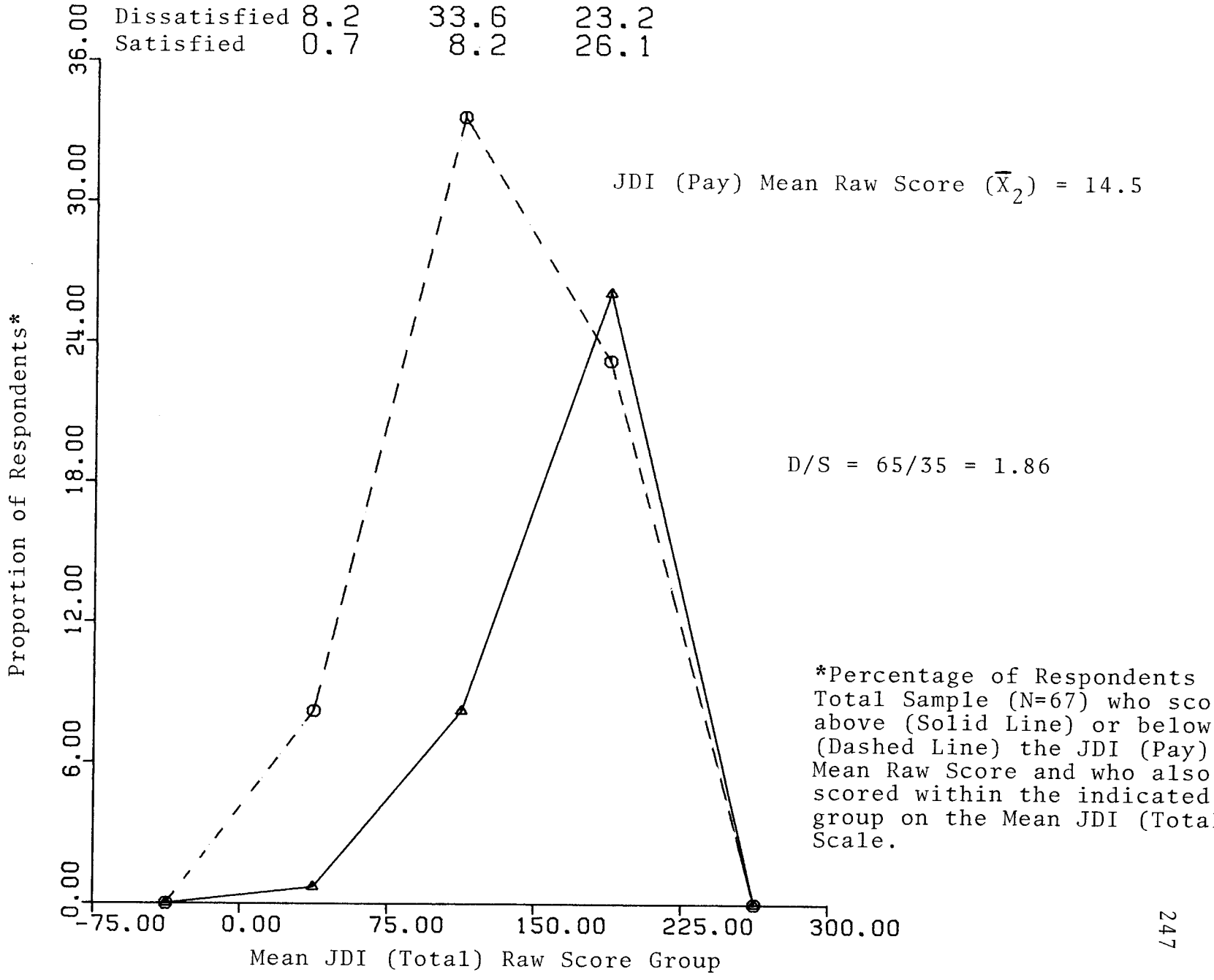


Fig. 83--D/S (Pay) for JDI (Total)

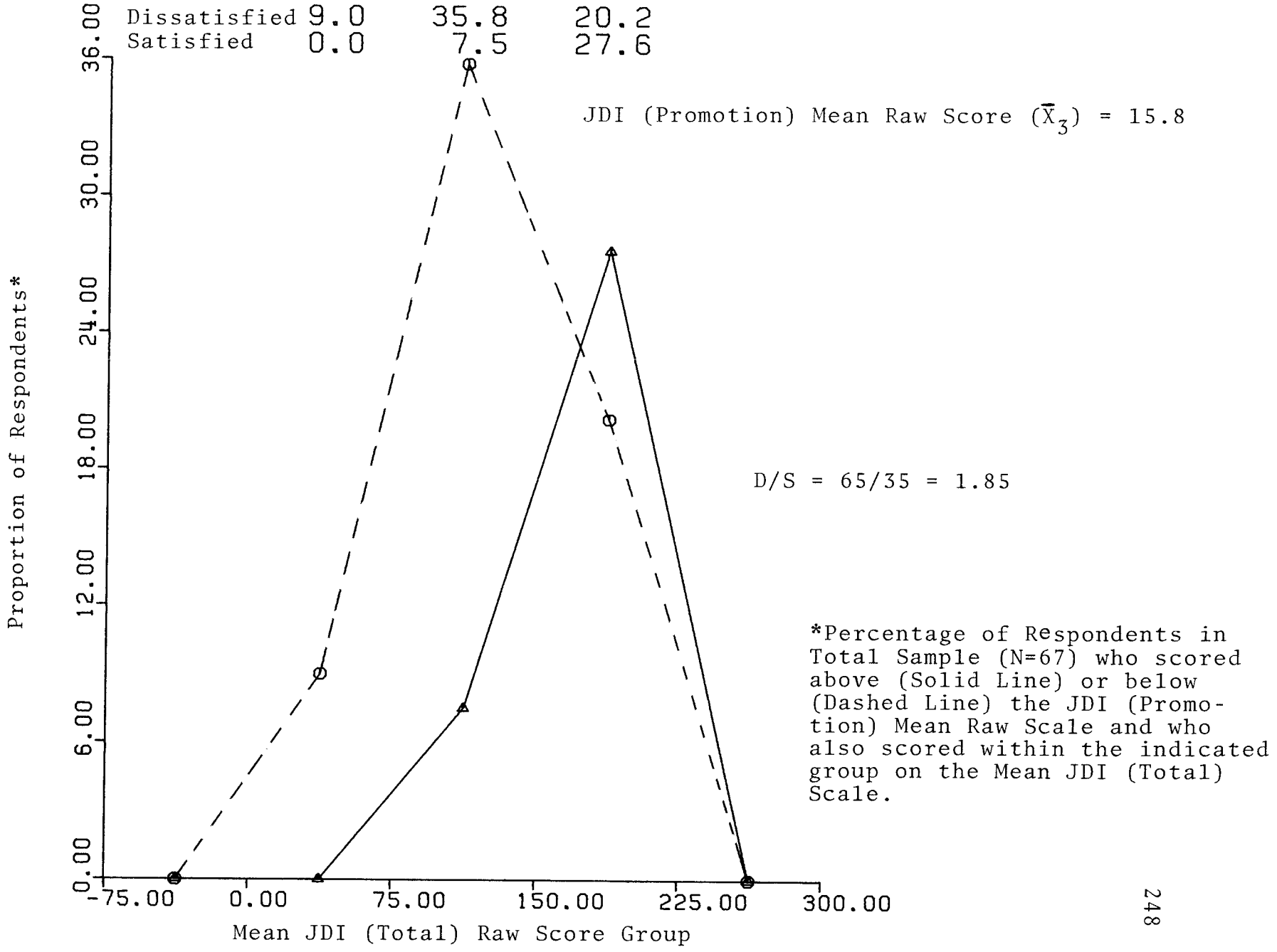


Fig. 84--D/S (Promotion) for JDI (Total)

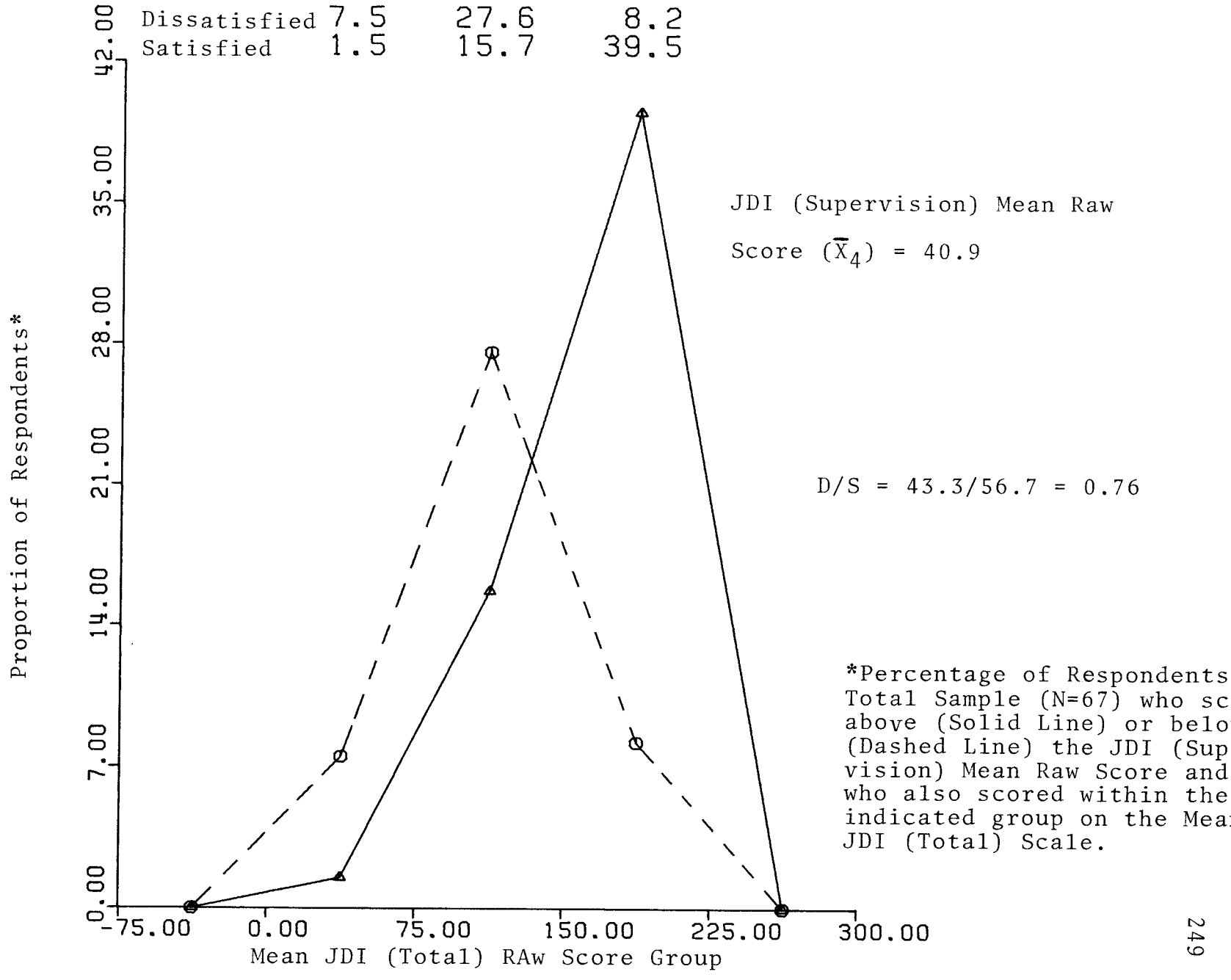


Fig. 85--D/S (Supervision) for JDI (Total)

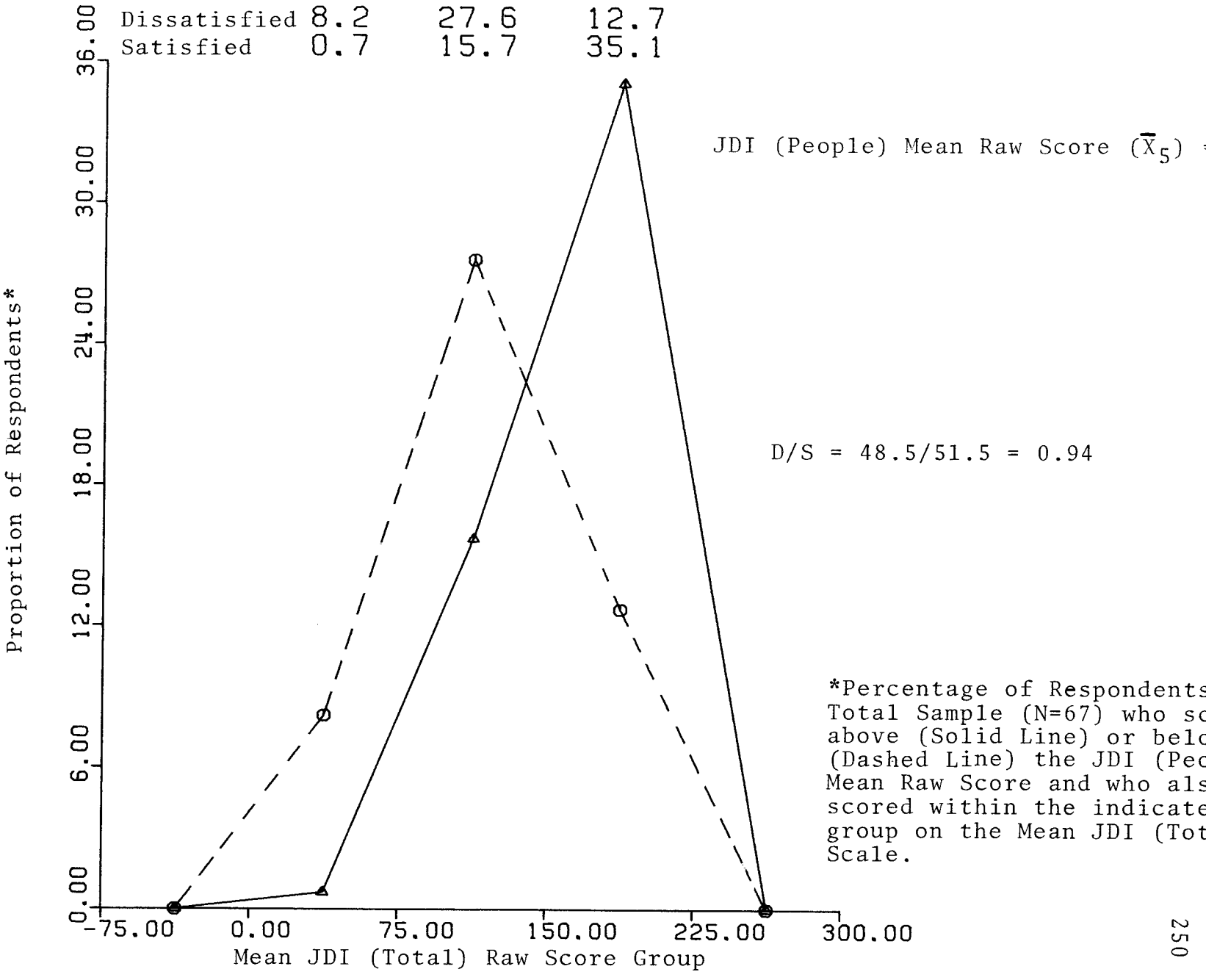


Fig. 86--D/S (People) for JDI (Total)

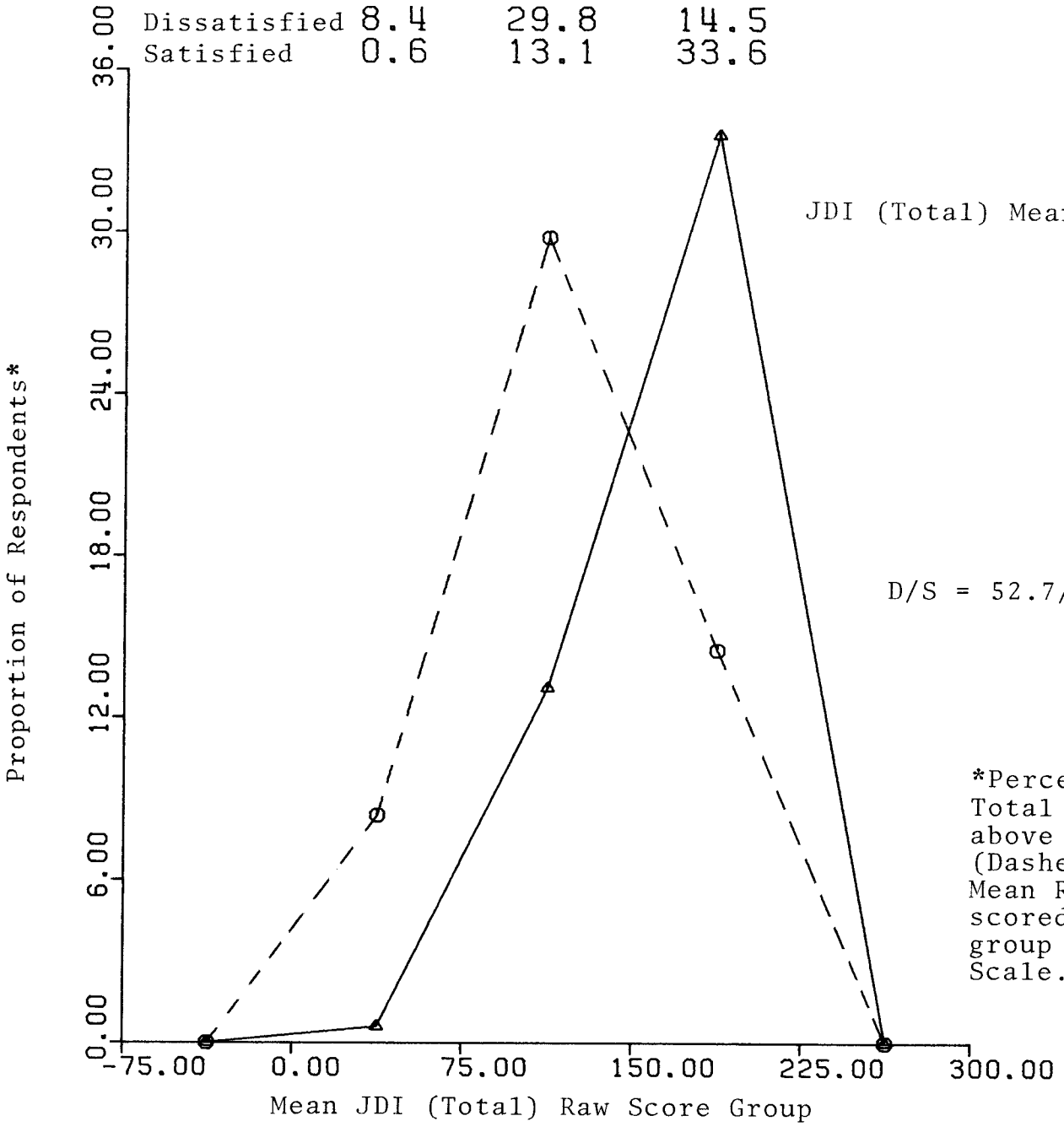


Fig. 87--D/S (Total) for JDI (Total)

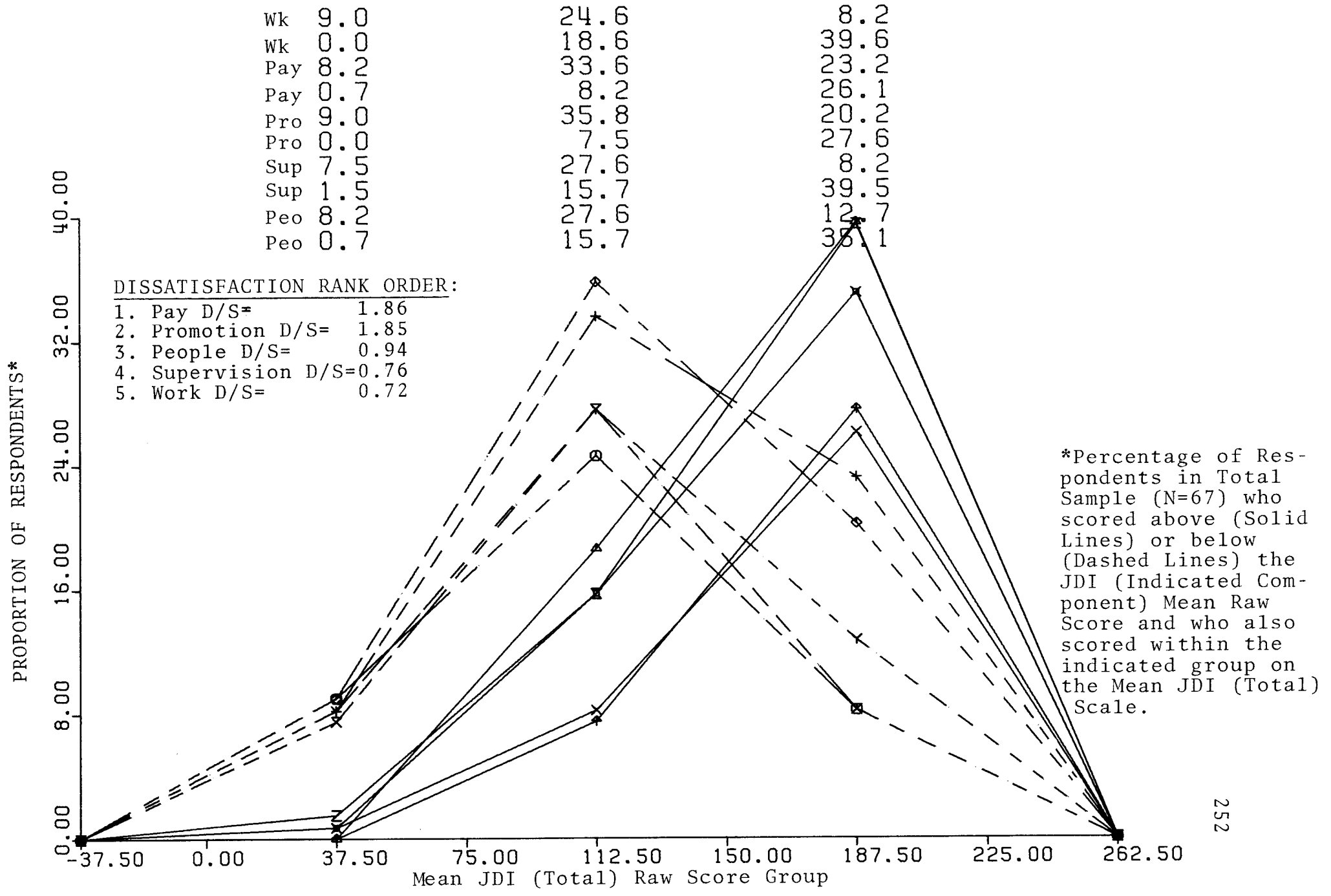


Fig. 88--JDI (Component) D/S's for JDI (Total)

Wk	0.0	0.0	3.0	7.5	13.4	16.4	16.4	10.5	4.5
Pay	0.0	0.0	0.0	0.0	3.0	3.0	7.5	3.0	3.0
Pro	0.0	0.0	0.0	0.0	1.5	3.0	6.0	4.5	6.0
Sup	3.0	4.5	9.0	9.0	14.9	13.4	17.9	9.0	7.5
Peo	3.0	4.5	7.5	10.5	16.4	14.9	17.9	9.0	6.0

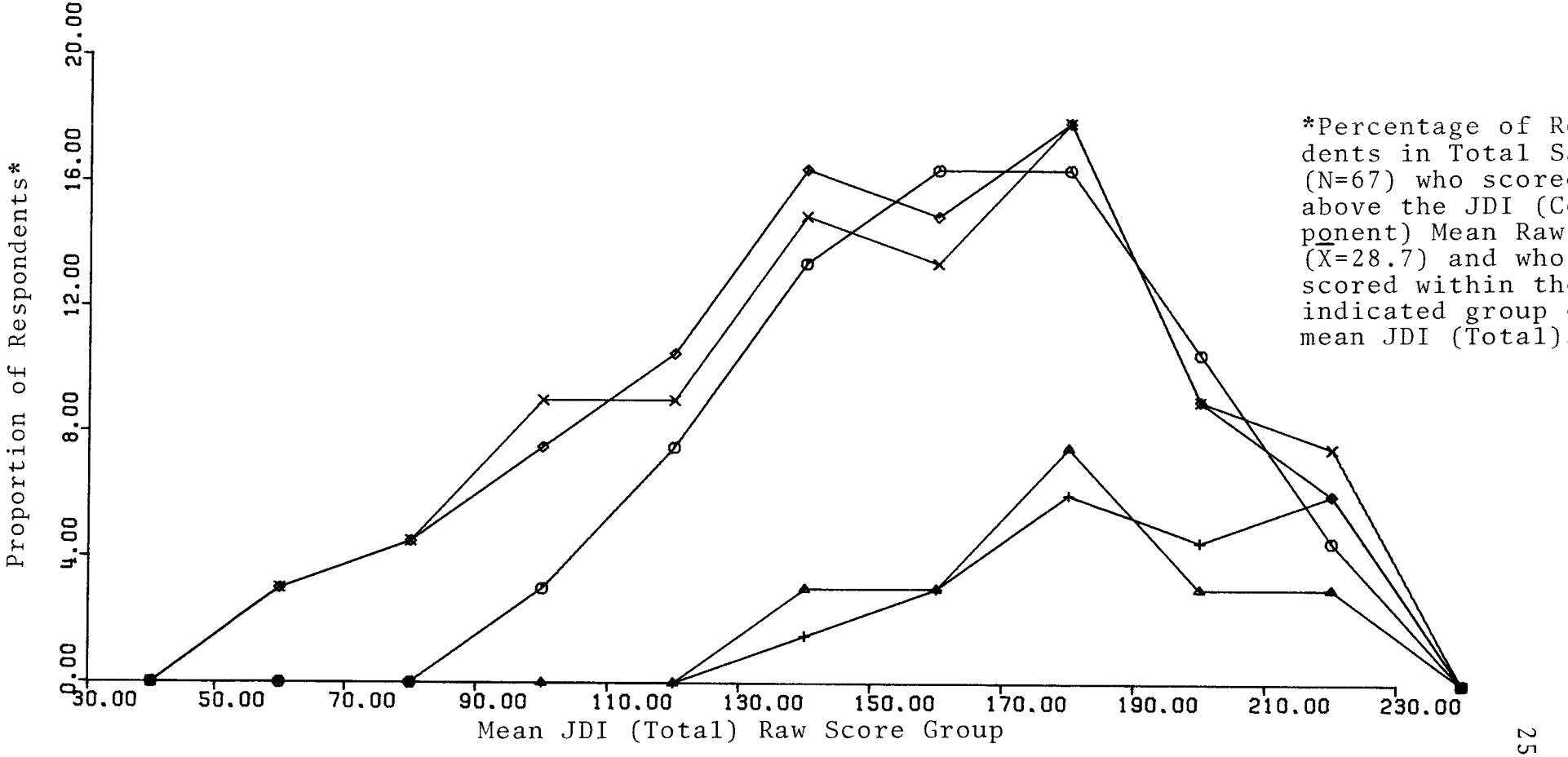


Fig. 89--Relative Frequency Diagram for Satisfied Employees on the JDI (Component) Dimensions

APPENDIX H

Job Descriptive Index (JDI)

DESCRIPTIONS OF JOBS

Name_____
(please print)

Company_____

CONFIDENTIAL

Please fill in the above blanks and then turn the page.....

Exhibit 1--Job Descriptive Index (JDI). Used by permission.

Think of your present work. What is it like most of the time? In the blank beside each word given below, write

_y_ for "Yes" if it describes your work
_n_ for "No" if it does NOT describe it
_?_ if you cannot decide

.....

WORK ON PRESENT JOB

_____Fascinating

_____Routine

_____Satisfying

_____Boring

_____Good

_____Creative

_____Respected

_____Hot

_____Pleasant

_____Useful

_____Tiresome

_____Healthful

_____Challenging

_____On your feet

_____Frustrating

_____Simple

_____Endless

_____Gives sense of accomplishment

Go on to the next page.....

Think of the pay you get now. How well does each of the following words describe your present pay? In the blank beside each word, put

_y_ if it describes your pay

_n_ if it does NOT describe it

_?_ if you cannot decide

.....

PRESENT PAY

Income adequate for normal expenses_____

Satisfactory profit sharing_____

Barely live on income_____

Bad_____

Income provides luxuries_____

Less than I deserve_____

Highly paid_____

Underpaid_____

Now please turn to the next page.....

Think of the opportunities for promotion that you have now. How well does each of the following words describe these? In the blank beside each word put

_y_ for "Yes" if it describes your opportunities for promotion

_n_ for "No" if it does NOT describe them

_?_ if you cannot decide

.....

OPPORTUNITIES FOR PROMOTION

_____Good opportunities for promotion

_____Opportunity somewhat limited

_____Promotion on ability

_____Dead-end job

_____Good chance for promotion

_____Unfair promotion policy

_____Infrequent promotions

_____Regular promotions

_____Fairly good chance for promotion

Go on to the next page.....

Think of the kind of supervision that you get on your job. How well does each of the following words describe this supervision? In the blank beside each word below, put

_Y_ if it describes the supervision you get on your job

_n_ if it does NOT describe it

_?_ if you cannot decide

.....

CHAIRMAN OF DEPARTMENT (Division)

Asks my advice _____

Hard to please _____

Impolite _____

Praises good work _____

Tactful _____

Influential _____

Up-to-date _____

Doesn't supervise enough _____

Quick tempered _____

Tells me where I stand _____

Annoying _____

Stubborn _____

Knows job well _____

Bad _____

Intelligent _____

Leaves me on my own _____

Around when needed _____

Lazy _____

Please go on to the next page.....

APPENDIX I

Library Correspondence

To: All Full-Time Employees
From: David A. Webb, Director of Libraries

The library at North Texas State University has been selected as a pilot program in a study of employee satisfaction. This research project will eventually encompass all libraries in Texas, public as well as private. The decision to begin with the North Texas library was heavily influenced by such significant factors as the size, quality and state-wide reputation of its staff. Currently, the quality of our staff ranks our library among the top libraries of the nation in terms of public service and excellence.

While no one is required to participate in the survey, it is hoped that a maximum response will occur. May I emphasize that your individual response will be strictly confidential. Only group data will be reported. Please complete the JDI immediately. This will take only a few minutes of your time. Though simple, this instrument has been thoroughly tested by Patricia Cain Smith, Professor of Psychology, Bowling Green University. The information collected by this pilot program will be forwarded to her at a later date.

Please complete the enclosed Job Descriptive Index (JDI). Return it directly to the project director, through campus mail, in the self-addressed envelope attached.

The JDI questionnaire has been pre-coded for your convenience. Please do not sign your name to the form.

David A. Webb

Exhibit 2--Initial Cover Letter (December 8, 1971) to Accompany the Job Descriptive Index (JDI).

January 26, 1972

To: Joe H. Bailey, Associate Director Public Services
Velma Cathey, Assistant Director Collection Services
Louise Evans, Assistant Director Acquisitions Services
Sarah Hogan, Assistant Director Cataloging Services
George D. Mitchell, Assistant Director Central Services
G. R. Rawley, Associate Director Technical Services

Mr. Bill Vaughn is writing his dissertation on the North Texas State University Library (Predictors, Correlates, and Consequences of Job Satisfaction in a University Library). He has already administered the Job Descriptive Index (JDI) in the library and is in the process of administering other questionnaires having relevance to the library study.

In connection with the contemplated administration of the Leadership Opinion Questionnaire (LOQ) it is desirable to break the employees down into supervisory and non-supervisory categories. The supervisors will then receive and fill out the LOQ.

For purposes of the LOQ the breakdown of employees into supervisory/non-supervisory categories need not be a rigid process. If any employee supervises other employees as much as 10 to 20 per cent of his (her) time or more, then, for the purposes of the LOQ this employee can be classified a "supervisor."

Please furnish a listing of "supervisory" employees (as loosely defined above) which includes name, job title, and level of job in the library. The list should cover all employees in your department and may be returned to Dr. Webb's secretary. The Research Director (Vaughn) of these continuing library studies thanks you very much for your cooperation. Any questions can be directed to him at his home phone, 387-3191.

David A. Webb

Dr. David A. Webb
Director of Libraries

Exhibit 3--Letter Defining Supervisory/Non-supervisory Employees

February 29, 1972

In a continuing study of the library involving several managerial dimensions related to overall effectiveness and general climate we are requesting the cooperation of all librarians in making this study a meaningful contribution to the profession of librarianship.

In order to maximize the effectiveness of this study it would be extremely desirable to have as high a return/response ratio as possible. In order to encourage everyone to return the "Study of Values" questionnaire (described below) permission is granted to fill the questionnaire out during regular duty hours.

The "Study of Values" questionnaire is a highly respected research tool developed in 1931 that continues to serve the needs of researchers engaged in a variety of organizational inquiries into the nature and underlying structure of employee motivation. May we emphasize that the anonymity of each and every librarian will be fully respected in these continuing studies. No one will see your responses except the Research Director and his interest is strictly research-oriented, i.e., normative group patterns are the primary research goal.

Please fill out the "Study of Values" questionnaire at your earliest convenience and mail directly back to the Research Director in the enclosed, self-addressed, stamped envelope. Thank you very much for your cooperation in these continuing library studies.

Note: Any questions regarding how to answer the "Study of Values" questionnaire should be directed to Dr. Terrell Dilley, Director of Guidance and Counseling or Bruce Thomas, Guidance and Counseling Staff: ph. 788-2207 or 788-2177.

David A. Webb

Dr. David A. Webb
Director of Libraries

P.S. If you have not yet returned the JDI, please do so immediately. Contact Vaughn at 387-3191 for extra copies if you have misplaced the original one.

Exhibit 4--Study of Values Cover and Follow-up Letter for the Job Descriptive Index (JDI)

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