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ABSTRACT

A comprehensive plan for job satisfaction research has been developed as an outgrowth of the USAF Occupational Survey Program. The long-range goal of the plan is retention of qualified military personnel. This document reviews the basic steps of the plan and discusses projects and findings to date. Discussion centers on the following: (1) an extensive review of the job satisfaction/work motivation theories developed through Air Force research; (2) an experimental Occupational Attitude Inventory which is being analyzed; (3) task-level performance data and job attitudes on two dimensions of satisfaction which have been collected and combined with data from the personnel files to form an extensive single file for job satisfaction research; (4) individual studies of specific factors which affect job attitudes, as well as studies which determine relationships between specific job content and job attitudes; and (5) relationships between individual job attitudes and career decisions, and the need to identify those attitudes most related to reenlistment actions. (Author/PC)

Review of Air Force Job Satisfaction Research

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Manpower procurement, retention, and utilization requirements under the all volunteer force environment and programs provide the operational requirement for a job satisfaction research program. This paper presents the Air Force satisfaction research program of the Air Force Human Resources Laboratory -- its goals and ongoing studies.

During the last three years, a comprehensive plan for job satisfaction research has developed as an outgrowth of the USAF Occupational Survey Program. The long-range goal of the plan is retention of qualified personnel. To this end, the basic steps of the plan are to (a) define the dimensions of job satisfaction; (b) measure satisfaction levels on these dimensions; (c) identify problem areas which have the greatest potential for improvement through satisfaction research; (d) measure the effects which specific changes in job content have on job attitudes; and (e) implement job reengineering actions and measure their effects on job attitudes and eventual reenlistment decisions.

Current projects and some findings to be discussed are as follows: (a) an extensive review of the job satisfaction/work motivation literature has been completed and implications drawn for Air Force satisfaction research, including formulation of a basic theoretical model; (b) an occupational attitude inventory developed to determine the relevant dimensions of job satisfaction; (c) task-level performance and job attitude data have been combined with data from the personnel files to form an extensive single file for job satisfaction research; (d) individual studies of several specific factors such as critical supervisory experiences and locations of assignment effects on job attitudes are in progress as are studies to determine relationships between specific job content and job attitudes; and (e) the relationship between individual job attitudes and career decisions are being evaluated to identify those attitudes most related to reenlistment actions.

Literature Review

A review of 400 civilian and 284 military publications (Tuttle & Hazel, 1974) led to the following conclusions: (a) Job satisfaction is related to turnover, absenteeism, and sick calls; (b) the relationship between satisfaction and performance is inconclusive; (c) job satisfaction is multi-dimensional with satisfaction and dissatisfaction representing polar ends of a continuous attribute rather than two separate

attributes as presented by the still popular Herzberg (1966) "two-factor" theory; (d) studying specific aspects or dimensions of satisfaction rather than a global measure, are more likely to provide operationally useful results; (e) no satisfaction measurement instruments were found which covered all major aspects of military work environments; (f) job satisfaction is a function of the interaction between work factors and personal needs; (g) very few studies have dealt with specific job content data -- utilizing instead, subjective reports of job attitudes; (h) very few studies have been longitudinal; (i) theories of satisfaction tend to be over simplified with overlapping, frequently conflicting findings.

In addition, a subsequent review of the literature dealing with the popular job enrichment movement and the development of a user's guide to satisfaction studies in the military services is in progress.

Development of the Air Force Occupational Attitude Inventory

The first two steps of the job satisfaction research plan are to define the dimensions of satisfaction and measure satisfaction levels on those dimensions. Lacking a suitable instrument, development of an Occupational Attitude Inventory (OAI) has been undertaken.

In the initial development, 35 potential satisfaction dimensions were identified by behavioral scientists familiar with the military work environment. Items were written for each facet resulting in a final pool of 348 items or approximately 10 items per facet. An 8-point rating scale ranging from Extremely Dissatisfied to Extremely Satisfied was selected for use with the items. The 348 items make operational use of the inventory prohibitive because of examinee attention span and administration time constraints, but they provide a useful experimental instrument. Documentation of the developmental procedures and the resulting instrument has been prepared (Tuttle, Gould, & Hazel, 1974).

The inventory thus far developed has been administered to a sample of 3,000 airmen and is being analyzed to reduce the instrument to the smallest subset of items which will measure the attitude domain variance captured by all items. Validation of the satisfaction dimensions is another major goal of these preliminary analyses. Since primary concern is with airmen in their first years of enlistment, initial analyses are being restricted to airmen still in their first enlistment. Since first-term airmen are being used and their likelihood of serving as supervisors is small, 18 supervisory items are not included in the analysis.

A principal components factor analysis with varimax rotation of the responses to 330 items has identified 35 factors. The factors are not entirely the same 35 dimensions hypothesized in development of the inventory. For example, hypothesized work dimension such as Achievement, Importance, Interest, Job Design, Responsibility, Job Change,

Utilization of Abilities, and Variety are all represented by one factor, the Work Itself. Similarly, supervision received, "technical," and supervision received, "human relations," are represented by one factor, Supervisor's Competence. While these dimensions combined to form single factors, the items in the hypothesized dimension of Air Force and Unit Policies and Practices separated into separate factors for Unit's Safety Program, Unit's Time-off Policies, TDY Costs and Conditions, PCS and Travel Requirements, Medical and Other Care, and Availability of Information on Policies and Procedures. In summary, hypothesized separate facets of the work or tasks performed combined to form a single factor while a generalized Air Force policies dimension separated into several specific factors. This is a departure from better known civilian job satisfaction inventories such as the Minnesota Satisfaction Questionnaire (Weiss et al., 1967) where most of these facets represent independent factors. These findings further support the requirement for using an inventory developed for the military setting rather than using an established civilian inventory.

For the item reduction phase of the inventory development, the problem is one of selecting items in the absence of an external criterion. A program has been developed for the AFHRL UNIVAC 1108 which uses multiple linear regression techniques to select the items. The program starts with a selected item or subset of items and iteratively selects additional items having the greatest unique variance of all the remaining nonselected items until the combined pool of selected items can predict the variance measured by each nonselected item. In this case, 70 items representing the 35 factors were used in the starting pool and an additional 130 items were selected. The final inventory contains 200 items.

Subsequent plans regarding the use of the OAI are the identification of those facets of satisfaction related to reenlistment decisions and to pinpoint problems in career ladders showing signs of excessive dissatisfaction.

Airmen Assignment Location Preference Study

The importance of one of the OAI identified factors, Characteristics of Assignment Location, has been demonstrated in recent AF surveys. When airmen were asked to indicate factors which were most important in producing satisfaction or dissatisfaction, geographic locations of assignment was the most frequently selected cause of both satisfaction and dissatisfaction. A study was launched to develop a feasible method for obtaining geographic location preference ratings, to determine strength and variability of location assignment preferences, and to examine certain factors in terms of their influence on geographic location preferences.

A questionnaire was developed, administered to about 500 basic airmen, and refined for field testing. Respondents rated their

assignment preferences for 150 CONUS Air Force assignment locations, both when base names are given and where locations are described only in terms of 22 geographic and environmental characteristics such as: (1) base and civilian community populations; (2) distances to the nearest large city, mountains, deserts, ocean, lakes and rivers; (3) cost of living; (4) availability of educational facilities; (5) average July and January temperature.; (6) average summer and winter humidity, rainfall, and sunshine; and (7) annual snowfall. An 18-point rating scale of -9, meaning extremely undesirable, to +9, extremely desirable, was used for both ratings. The development of the questionnaire has been documented (Tuttle, Brockhaus, & Hazel, 1974).

A revised version of the environmental preference survey has been administered to an Air Force-wide sample of some 5,000 airmen and returns are being analyzed. Comparing base name ratings of the 30 most, intermediate, and least prefered bases, Florida, Colorado, and California bases are the most preferred, bases in the mid-west and southwest received intermediate ratings, and the north-central-western bases are least preferred. With regard to the geographical and environmental variables, for 19 of the 22 variables, significant differences between the least and most preferred bases were found. The most preferred locations had larger base and civilian community populations, were closer to the ocean and deserts, had a 2-year college readily available, the average winter and summer temperatures were higher and the snowfall very much less (except for Colorado), and the percent of daily sunshine was greater.

Interim findings indicate that among some airmen there is considerable environmental ignorance illustrated by differences in rating bases with and without identifying names. The current airman assignment system only considers positive assignment location preferences and these preference ratings may be made with considerable lack of environmental-geographical information. From the pattern of preference responses there are indications that it may be as important to not assign an individual to an area of extreme dislike as to give him his most preferred assignment.

Data Base and Identification of Specialties for Indepth Study

A crucial aspect of the Air Force satisfaction research program is the development of an exrensive data base which permits the systematic identification of specialties for indepth study. The development and some uses of such a data base are next described, along with some findings from several indepth studies of airmen specialties.

The Air Force Occupational Survey Program has routinely collected job attitude data with each survey administered since 1966. Of

approximately 220 Air Force enlisted specialties, survey data exist for about 195,000 airmen in 175 specialties. This provides a substantive data base for the satisfaction research program.

To further the study of satisfaction between and within specialties, a project was undertaken to develop a single large data file for the the study of airmen job satisfaction. Thus far, the occupational survey data of 130,000 airmen in 142 career ladders has been matched with certain personnel records and placed in a single data file. The file contains task-level performance, job attitude, personal background, aptitude, and loss-gains data. It constitutes the largest existing data file with task performance data, to this investigator's knowledge, constructed for job attitude research. An additional 65,000 cases covering 54 career ladders are being added to the file.

One of the first uses made of the file was the preliminary identification of career ladders exhibiting the greatest potential return for indepth job satisfaction study. For example, Figure 1 shows regression curves for four career ladders. Here a job attitude dimension, in this case job interest, is represented by the vertical (Y) axis, and months of Total Active Federal Military Service (TAFMS) is indicated on the X axis. In predicting interest, the actual predictors used are career status (1st-term or career airmen), time-in-service for 1st-term airmen, service time for career airmen, aptitude, and the TAFMS values squared. Aptitude is included in the regression model for several reasons. We have data which indicate that aptitude levels are strongly related to job attitudes and these levels vary with time. Since we are here interpreting cross-sectional data in a longitudinal fashion, the effects of aptitude differences across time must be held constant.

Insert Figure 1 about here

Compare the profile of the Medical Materiel ladder in the upper left corner of Figure 1 with the Operating Room Technicians in the lower right. Job interest decreases for the 1st-term Medical Materiel airmen as they progress in their career and approach the reenlistment decision point at the 48th month. The jump from the 48th to the 49th month suggests that those reporting uninteresting jobs did not reenlist. The magnitude of the jump indicates the degree of relationship between job interest and the reenlistment decision. Note the positive acceleration of the curve from the 49th to the 100th month which suggests some type of perceived job progression. A ladder exhibiting such a profile has a high likelihood of impact on positive job attitudes and career decisions through job reengineering or other corrective actions. Such

actions could reverse the trend by the 24th month and produce a positive acceleration in job attitude as the reenlistment decision point is approached.

Ladders with profiles such as the Dental Technicians show high positive job interest with little relationship between interest and reenlistment. If reenlistment quotas are not being met in this ladder, the solution is probably in monetary or other such incentives. The ladder shows little potential return for effort made to improve job satisfaction.

The data base has also been useful in the comparison of dissatisfaction-satisfaction across career ladders as well as for detailed follow-on studies of selected airmen specialties. For example, job attitudes have been compared and extensive differences found both within and between specialties (Gould, 1972). Rank ordering the specialties according to satisfaction levels and comparing those most and least satisfied, there are no readily apparent explanations for the differing attitudinal reports. At either end of the continuum there are specialties with high and low aptitude entrance requirements and there are very diverse content areas, e.g., electronics, equipment repair, security, and medical specialties. This suggests that there are few universal explanations for reported job dissatisfaction.

Of those specialties with highest percentages of dissatisfied airmen, indepth studies indicate that major factors related to dissatisfaction are essentially unique to each specialty. For example, in one such specialty it was found that over half of the tasks airmen were trained to perform in the mandatory 30-week entry-level technical school were never performed in the field. The nonperformed tasks were very technical and required high aptitudes for efficient learning. This had the dual effect of increasing required aptitude entry levels and preparing individuals to perform demanding jobs which they never encountered. The training has since been adjusted and the aptitude requirements brought more in line with actual requirements.

Studies of other ladders with high dissatisfaction have found that some jobs are mundane and repetitious, highly sophisticated training for tasks not usually performed for several years after training, highly restricted jobs where only a few tasks are performed, and specialties where the major complaint centers on the available assignment locations. As stated before, factors related to dissatisfaction reports are essentially unique to each career ladder. There are, however, a few relationships which have been consistently found. Those job incumbents whose jobs are more demanding and varied and are most related to their aptitude, education, and Air Force training are more satisfied with their jobs and tend to express positive predispositions toward Air Force careers. Regression studies indicate that job diffi-

culty, number of tasks performed, and aptitude requirements of the job are positively related to job attitude while aptitude, education, and TAFMS for 1st-term airmen are negatively related.

For most of the specialties selected for indepth study thus far, many of the problems encountered have had solutions requiring a combination of job reengineering and management decisions. However, the cost of studying such specialties is high and not all specialties studied have produced recommendations for operational remedies. The search continues for more cost-efficient approaches for indepth study of specialties, and some studies have provided insight regarding job enrichment research.

Another use of the data base has been validation of statements of career intent with actual reenlistment decisions. Extensive match-ing of cases with longitudinal data files identified 53,000 1st-term airmen who subsequently have reached a reenlistment decision point. A comparison of reported intent to reenlist (i.e., 2=no to 4=yes) with actual "in-out" decisions reflected a very definite relationship, with a large percentage of those saying "yes" staying and those saying "no" leaving. In terms of future satisfaction research, the important finding here is that career intent statements are sufficiently valid to permit their use as criterion for measuring effects of job reengineering actions on eventual career decisions rather than waiting for lengthy longitudinal followup studies to assess their effects.

The data base also permits assessment of relationships of job attitudes and career decisions such as shown in Figure 2. Responses to a 7-point job interest scale (1=Very dull; 7=Very interesting) are plotted against actual reenlistment actions and a strong positive relationship does exist. Twenty-six percent of those reporting interesting jobs in their fourth year of service actually reenlisted. Only 6% of the 4-year airmen reporting dull jobs reenlisted.

Figure 3 illustrates a consistent finding concerning the validity of attitudinal statements and the year in which the statements were made. Past studies (Gould, 1973) have found that reports of negative job attitudes have been increasing with each successive year since 1966. The longitudinal data now indicates that those statements are also becoming more valid as reenlistment predictors. Fifteen percent of airmen reporting that their jobs were very interesting in 1966 and 1967 subsequently reenlisted. Almost 40% of airmen making the same statements in 1971 subsequently reenlisted. The same pattern of relationships were found for statements of career intent as reflected in Figure 4. This figure gives the percent of reenlistees across career ladders surveyed from 1966 to 1971, for various levels of reported intent (2=no to 4=yes - reenlistment). The increases both in reports of dissatisfaction and the

validity of those attitudinal statements for reenlistment actions may be a reflection of a growing "tell it like it is" attitude of younger military personnel.

Insert Figures 2, 3, & 4 about here

Additional Research Projects

In addition to studies closely connected with the extensive occupational information data base, a variety of other job satisfaction research projects using different data and approaches, are in progress. Some of these other relationships currently being studied are: the identification of critical task experiences necessary for first-line supervisors; utilization and comparative attitudes of minority groups; background characteristics, sports participation, and leisure time activities of satisfied versus dissatisfied personnel; and the effects of homesteading (long-term assignment to the same base) on attitudes and performance. Also cross-lag panel correlations from longitudinal data are being used to study the direction of causality relationship between satisfaction and performance.

Preliminary findings from these studies suggest that critical tasks can be identified which first-line supervisors must have experience on to eliminate potential satisfaction problems for both themselves and their subordinates. Minority group personnel appear to be given jobs at least as demanding as non-minorities and are reporting the same or higher levels of job satisfaction (Christal, 1972). Satisfied personnel have a greater preference for western music and spend more time fishing than dissatisfied personnel who like rock music and play more tennis. Personnel who have spent longer periods of time on the same base (homesteading) tend to receive performance evaluations as high or higher than other personnel and report the same or more positive job attitudes.

In summary, the Air Force is three years into its program of job satisfaction research. The goal is to sustain an all-volunteer force through making maximum use of available talent. The operational concern is to identify the dimensions of job satisfaction, to measure the satisfaction levels of these dimensions, to identify problem areas which have the greatest potential for improvement, to measure the complex interplay of specific job content, changes in job content, and characteristics of individuals on job attitudes, and finally, to reengineer jobs accordingly.

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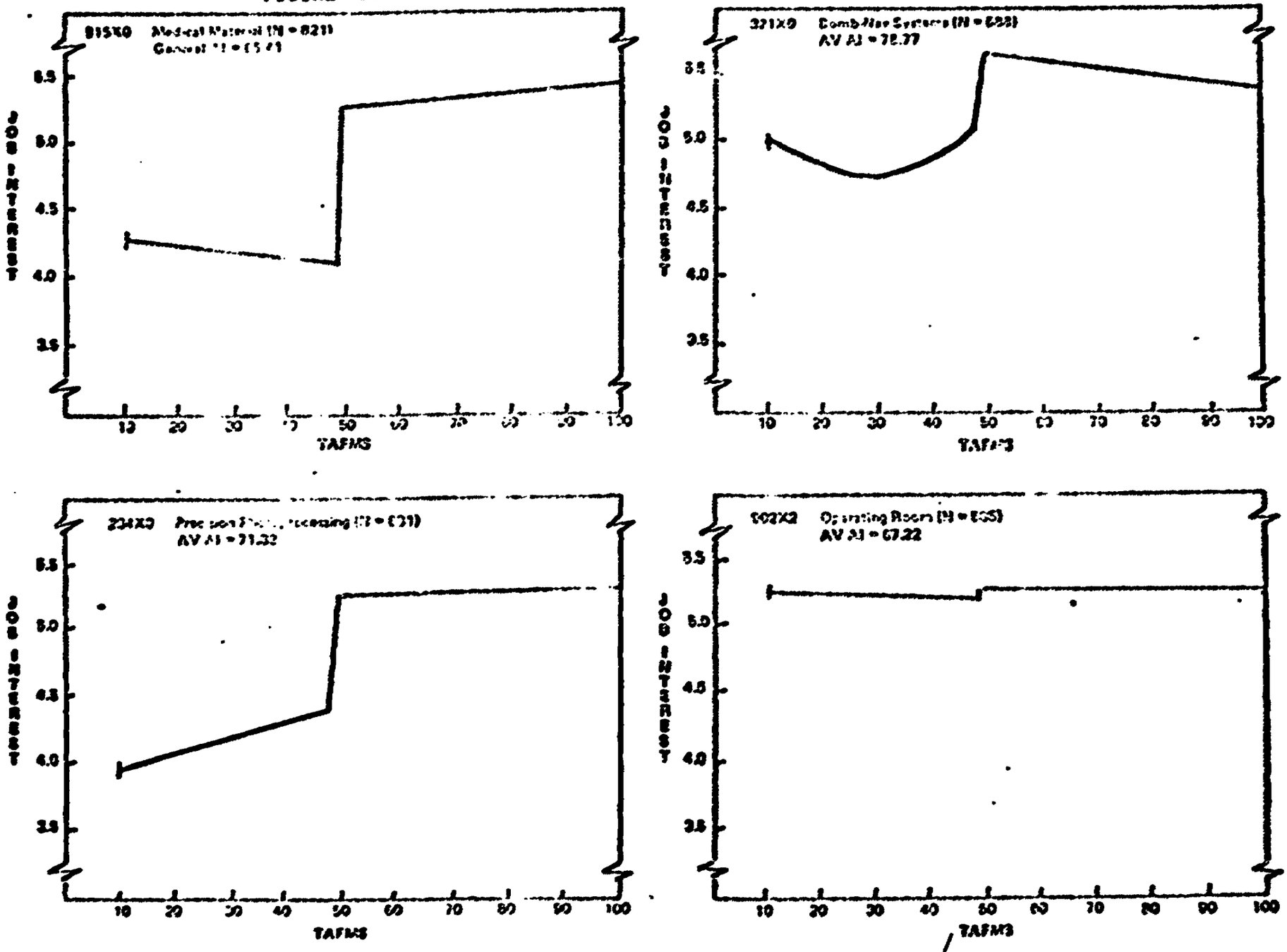
FIGURE 1. JOB INTEREST VS TAFMS (HOLDING APTITUDE CONSTANT)



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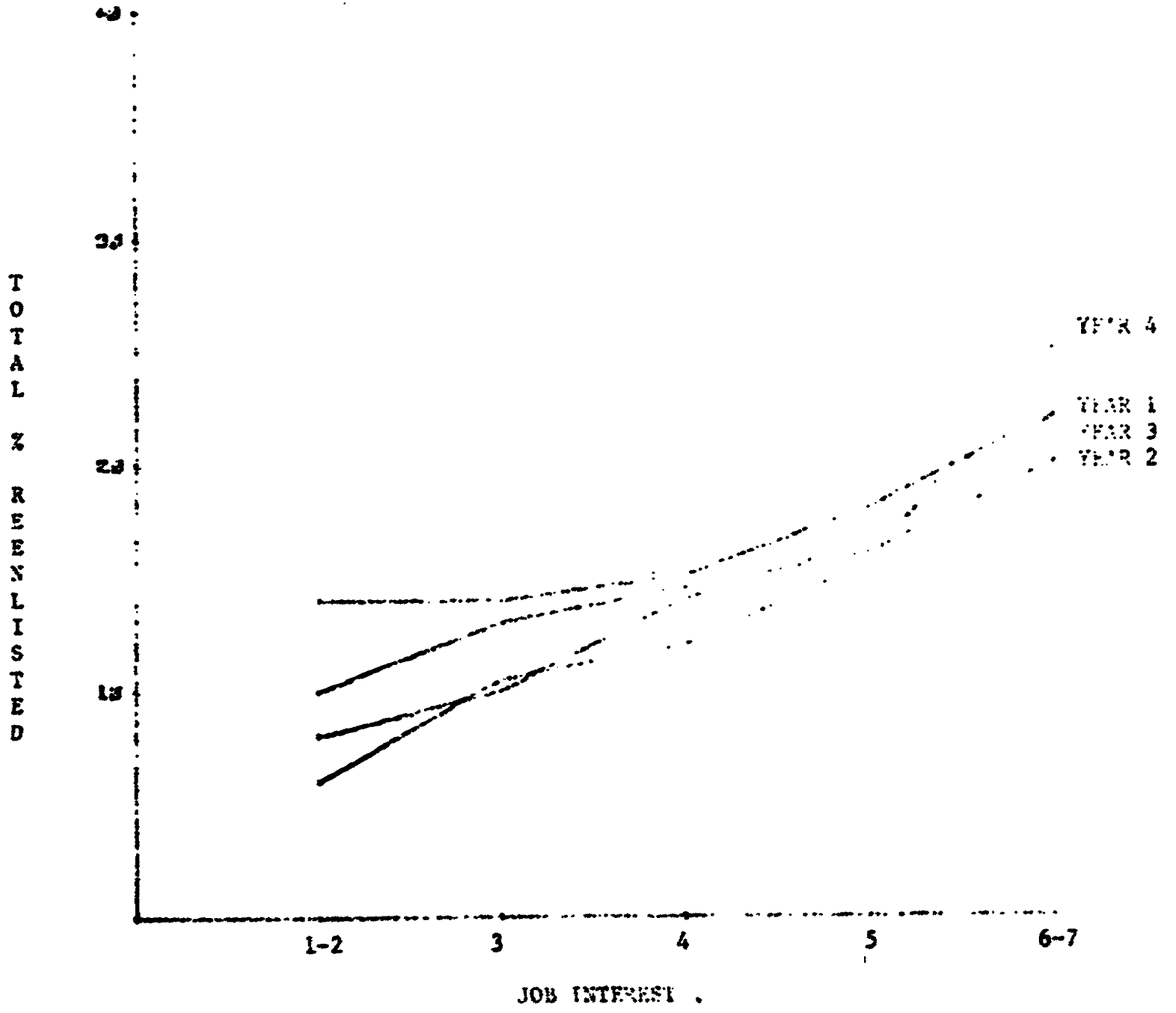

FIGURE 7. RELATIONSHIP OF JOB INTEREST AND CAREER DECISION FOR FIRST-TERM AIRMEN

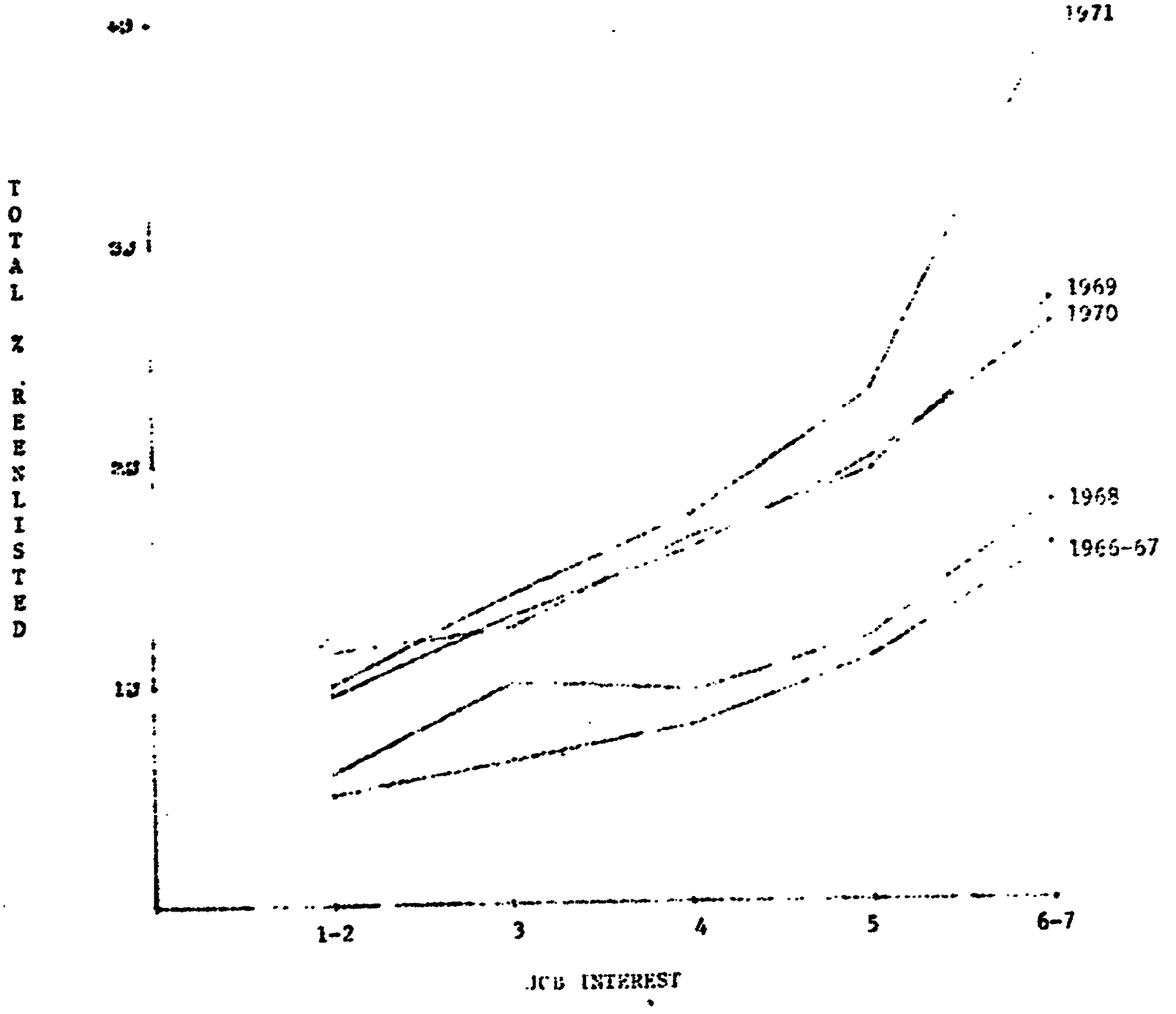

FIGURE 3. [illegible] OF JOB INTEREST STATEMENTS, DATE STATEMENT WAS MADE, AND [illegible] REENLISTMENT DECISION

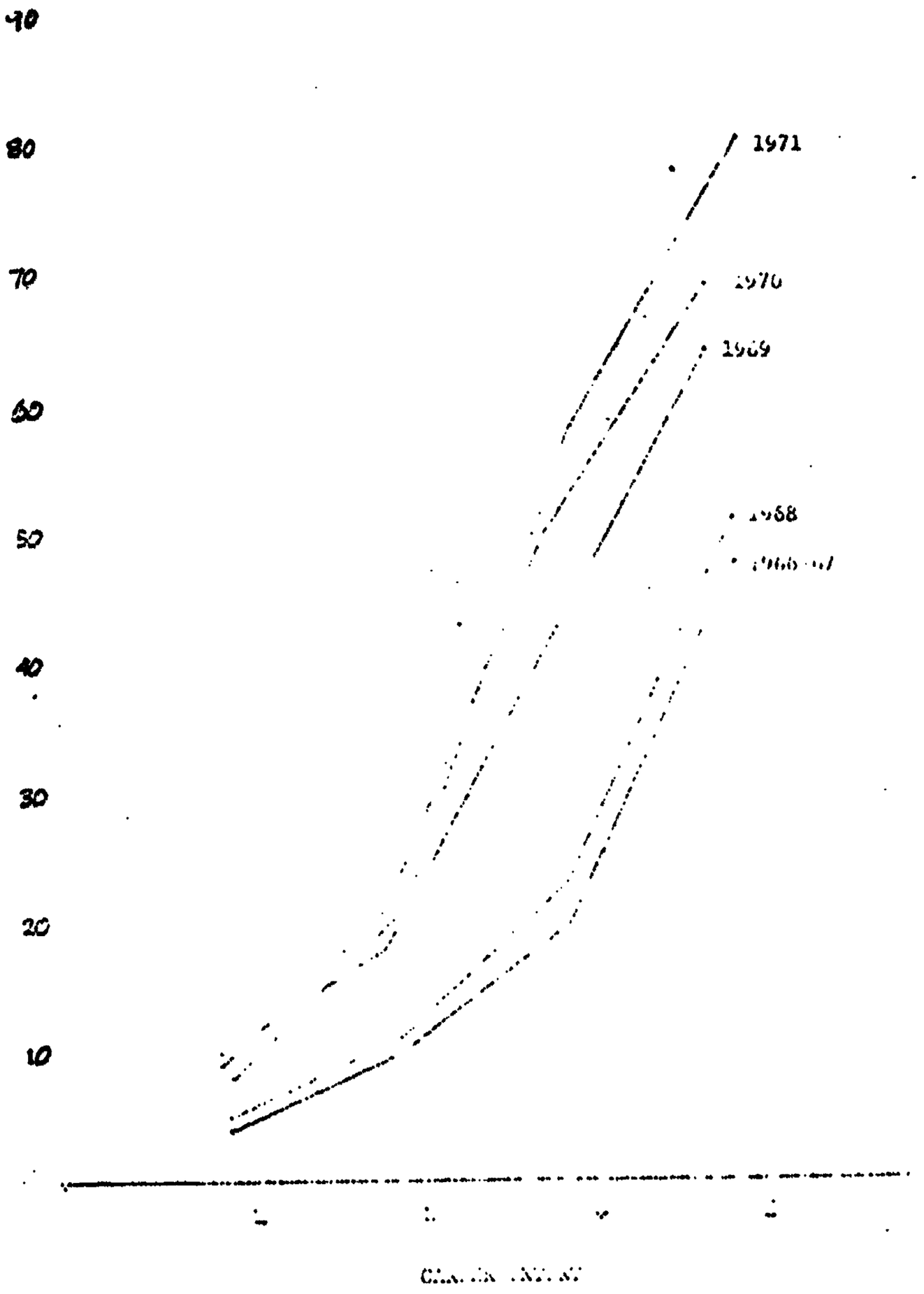

FIGURE 4. RELATION OF STATED INTENT TO PERCENT REENLISTED ACROSS YEARS