Relations industrielles
Industrial Relations

Supervisors' Incentives and Job Satisfaction
Les contremaîtres et la satisfaction au travail

C.-Rodrigue Giroux

Volume 10, Number 1, December 1954

URI: https://id.erudit.org/iderudit/1022787ar
DOI: https://doi.org/10.7202/1022787ar

See table of contents

Publisher(s)

Département des relations industrielles de l'Université Laval

ISSN

0034-379X (print)
1703-8138 (digital)

Explore this journal

Cite this article

Giroux, C.-R. (1954). Supervisors' Incentives and Job Satisfaction. *Relations industrielles / Industrial Relations*, *10*(1), 15–39. https://doi.org/10.7202/1022787ar

Article abstract

In the surveys made on the problem of job satisfaction, nobody has really questionned the necessity or the kind of relationship which should exist between the criterion and the attitude response. All the items of an attitude survey should be weighed according to their relative importance if the questionnaire is to be validated. Is there a relationship between the amount of satisfaction received from a group of incentives and the importance attributed to those incentives ? Can the present theories of human motivation explain that relationship ? The purpose of this study is an attempt to answer'the above questions. The author did it investigating operationnally for supervisors the kind of relationship which exists between the satisfaction received from certain incentives and the importance attributed to them.

Supervisors' Incentives and Job Satisfaction

C.-Rodrigue Giroux

In the surveys made on the problem of job satisfaction, nobody has really questionned the necessity or the kind of relationship which should exist between the criterion and the attitude response. All the items of an attitude survey should be weighed according to their relative importance if the questionnaire is to be validated. Is there a relationship between the amount of satisfaction received from a group of incentives and the importance attributed to those incentives ? Can the present theories of human motivation explain that relationship ? The purpose of this study is an attempt to answer the above questions. The author did it investigating operationnally for supervisors the kind of relationship which exists between the satisfaction received from certain incentives and the importance attributed to them.

Introduction

It is often said that perhaps industry's need today is an effective two way communication system between employees and management. Research in group dynamics indicates that downward communications are easier than upward communications. Morale and attitude surveys are conducted for the main purpose of opening communications channels from the employees to management. The survey method furnishes a technique to bridge the grap. (1)

The great volume of publications indicates that morale, attitude, and job satisfaction surveys are becoming a vital industrial instrument. With this new communication channel, management wil be in a much better position to understand and to

GIROUX, C.-Rodrigue, Ph. D. en psychologie de l'Université Purdue, Indiana, à l'emploi de la Consolidated Paper Co. à Grand'Mère et professeur de psychologie industrielle à l'Université Laval.

(1) Voir pages 37 et 38 pour références complètes.

modify the human relations aspects of any situation which could bear upon the efficient operation of the enterprise. The method yields facts which are useful for remedial action. On the same topic, Green (3) reports that two things constitute the core of healthy employee-employer relations: first, management must obtain true facts about conditions in the plant; second, management must take immediately constructive and positive steps based on the data obtained.

One of the problems in attitude and job satisfaction survey is that of validation. In order to validate the data obtained by means of attitude and job satisfaction questionnaires, such criteria as measurements of production, turnover, absenteeism, personal characteristics, grievances, etc., have been used. However, nobody has really questioned the necessity or the kind of relationship which should exist between the criterion and the attitude responses. This situation may be due to the fact that most of the morale surveys are conducted to measure specific opinions, and that results are accepted on the basis of face validity. Another factor may be the lack of adequate human motivation theory.

Many other factors might explain this lack of correlation between the criterion and the results of attitude surveys.

1. Morale is not necessarily related to production. Goode and Fowler (2) found that a plant can function effectively with low morale if it has "clearly defined simple goals, skills are well-known and possessed by the group, functional roles are made clear, and pressures toward conformity are strong outside the group itself." Katz and Kahn (8) discovered that complaining and dissatisfied workers were among the best producers.

2. Too many items not related to the work situation are included in the questionnaire. They produce a masking effect and the results obtained may be less reliable.

3. All the items of the scale are usually given the same weight. That decreases the number of discriminations and consequently the coefficient of validity.

4. All the items are assumed to have the same relative importance in the majority of the scoring systems.

5. Although certain writers such as Campbell (1), Jurgensen (6) and others have measured the relative importance of various areas of

job satisfaction, nobody has really investigated the relationship that may exist between the satisfaction variable and the importance variable, before validating a questionnaire on morale and job satisfaction.

Our contention is that all the items of an attitude survey should be weighted according to their relative importance if the questionnaire is to be validated. But, before doing that, important questions have to be answered. Is there a relationship between the amount of satisfaction received from a group of incentives and the importance attributed to those incentives ? Can the present theories of human motivation explain that relationship ? The purpose of this study is an attempt to answer the above questions, while trying to avoid many of the mistakes mentioned above.

The problem

CONTENT VALIDITY

Usually in order to determine the attitudes of employees toward their jobs a questionnaire or job satisfaction survey is tailor-made to the needs of the company. The items on this questionnaire represent topics of interest to the company. The items to be included in the questionnaire are suggested by company executive personnel and sometime by the supervisors of the employees who will answer it. More rarely the items come from initial interviews or essays which are content analysed to gather material and ideas for the construction of items.

If the items are not suggested through a preliminary survey of the employees or a sample of those being surveyed, the questionnaire may not reveal the real facets of employees' attitudes. To say it in Laird's terms (12), this questionnaire may mask even more "the hidden mechanisms that make the gears snap into action and move the hands." Such a questionnaire evidently will lack content validity, since it has been demonstrated that management, union officials and employees do not know what is going on in the minds of one another (23). Different surveys reported by Jurgensen (6), Katz (7) Katz and Kahn (8) point out effectiviely that management is far from being a good judge of what its employees want.

Since our main problem was to investigate operationally for supervisors the kind of relationship which exists between the satisfaction received from certain incentives and the importance attributed to them,

a questionnaire measuring job satisfaction needed as much content validity as possible. For this reason the items were obtained from a sample of supervisors. The great value of such an approach came from the specific information gained about real sources of friction or dissatisfaction. The procedure will be explained later in Phase I.

JOB SATISFACTION FACTORS

Before constructing a job satisfaction scale for supervisors, it was necessary to study the different dimensions or components of job satisfaction. What should be postulated — one overall job satisfaction factor or many independent factors ?

The lack of experimental data on factors related to job satisfaction is particularly surprising. Kahn and Morse (9) have attempted to measure five dimensions of job satisfaction:

1.—Intrinsic job satisfaction;
2.—Involvement in the immediate work group;
3.—Identification with the large organization;
4.—Satisfaction with the immediate supervisor;
5.—Satisfaction with the reward systems of the company.

Katz and Kahn (8) have isolated through factor analysis four factors of satisfaction and morale:

1.—Satisfaction with supervisors;
2.—Satisfaction with the job;
3.—Satisfaction with the company;
4.—Satisfaction with mobility.

A close study of these factors suggested that is was probably possible to group them differently in order to understand the psychological climate in which supervisors struggle.

HYPOTHESES

After an inspection of the items obtained from the initial survey of a sample of supervisors, a first hypothesis was set up in relation to the dimensions of job satisfaction at the supervisory level. There are two

factors of job satisfaction: personal satisfaction and company satisfaction. Personal satisfaction at the supervisory level reflects psychological concerns or ego-involvment in goals or objectives related principally to the supervisor's job performance. Company satisfaction is more related to the efficiency or to the objectives of the entire organization.

A second hypothesis was also set up concerning the effect of job satisfaction. If, according to conventional theories of motivation (14, 17), the amount of satisfaction received from the reduction of a need or motive determined the amount of importance attributed to it, then, a relationship should be found between job satisfaction scores and importance ratings. Consequently, if different groups of supervisors, manifesting different levels of satisfaction with a group of items, are asked to determine the relative importance of those items, the ratings of importance should be different from group to group. In other words, there should be little agreement among the importance ratings of these groups.

Phase I — Construction of the Job Satisfaction Scale and the Paired-Comparison Deck

OBTAINING ITEMS

The population of supervisors used in the present research was the same which was used by Guion in his research on "The Employee Load of First Line Supervisors". Those first line supervisors constituted a very homogeneous group. A list of 100 different companies with ten supervisors per company was available. This list represented a total of 1000 supervisors who could be surveyed. For further description of the supervisory group and the caracteristics of the companies, the reader may refer to the original article by Guion (5).

Using tables of random numbers the 100 companies were divided in two groups of 50 companies. One group was invited to cooperate in the first phase of the research. The purpose of this first phase was to obtain material from which the items on the job satisfaction list would be developed. Those fifty companies were contacted through a personal letter. The only thing requested from those companies was to give one envelope to each of the ten supervisors whose names or identification numbers were on the enclosed list.

In the addressed envelope given to him, the supervisor found a pink sheet explaining the purpose of the project and describing the procedures to follow, and a yellow sheet on which he was asked to answer this question: "What would you want from an ideal supervisory job ?" He was also instructed to leave a blank space between each listed item.

The assumption was that the needs and motives not satisfied by the work situation would appear in this type of structured essay. Also this approach facilitated the recording of the items.

One hundred and ten or 22 per cent of the questionnaires were filled out by supervisors and returned to the Occupational Research Center. On receipt of each completed form, its items were numbered. When the time limit was reached, a bank of 675 items was available.

CONTENT ANALYSIS TO DETERMINE TWO DIMENSIONS OF JOB SATISFACTION

At this stage a content analysis was made in an attempt to identify empirically the two hypothesized dimensions of job satisfaction: personal satisfaction and company satisfaction. All the items were typed on IBM cards. Then, ten graduate students in industrial psychology were asked to sort the items in four different categories:

A.—Self-oriented statements;

B.—Company-oriented statements;

C.—Mixed statements;

D.—Miscellaneous statements.

A definition of those categories appears in Appendix D. The judgments were gang-punched in the IBM cards. After that operation, it was necessary to decide how many judges should agree before a statement was kept or rejected. Since we were interested in items sorted in only one category, a binomial probability distribution from the binomial expansion of $(\frac{1}{4} + \frac{3}{4})^{10}$ was used to test the null hypothesis that a specific statement did not belong to a category, when a certain number of judges out of ten placed in the same category. Table 6 in Appendix A shows the probability distribution of the binomial expansion. Since this represented only the beginning of a long refining process of the two components of job satisfaction, the null hypothesis that an item

did not belong to a category when placed there by five or more judges, was rejected at the 7% level of confidence. In other words, we kept an item when five judges out of ten placed it in category A or B. The items sorted in the two other categories were discarded. Four hundred eighty items came through that first content analysis.

CONTENT ANALYSIS IN TWENTY-NINE CATEGORIES

A second content analysis was done of the 480 statements in order to obtain pure categories of motives and incentives. Following a preliminary analysis by the writer, 29 categories of motives and incentives were defined. They appear in Appendix D. Two of the categories used together with sample statements classified therein appear below. Four graduate students in psychology were given the arduous task of sorting all the statements among the 29 categories. At this point of the refining process, a statement was retained when three of four judges out of four agreed that the item belonged to a category. Seventy-eight statements or items came through that second content analysis.

Advancement. To have opportunity for promotion based on ability and performance.

Policies. To have clear cut policies concerning personnel matters: seniority, transfer, discipline, foreman's rights, etc.

CONSTRUCTING THE JOB SATISFACTION SCALE

Items related to union activities were put aside because certain companies did not have unions. The same was done with nearly duplicate items. From the original 675 statements, 25 judged as being company items and 36 judged as being personal items remained. The job satisfaction scale was constructed from that sample of items. Special attention was given to the writing of the items. The items had to be as nearly neutral as possible. Any attitudinal content, any satisfaction intensity had to come from the supervisor responding to the scale. This was also necessary in order to be able to compare the items in the paired-comparison procedure to be described later. Finally the job satisfaction scale was composed of 22 items judged as company items and of 29 items judged as personal items. In the situation, fifty-one items was about the maximum number of items which could be used in the re-

search, because the supervisors were going to evaluate those items in relation to two different variables: (a) how satisfied they were with the items, (b) how important they rated those items. A sample of four items appear below.

	(V) (M) (D)	
Training to prepare you for advancement	( )	8
Skill of proficiency of employees	( )	21
Attitude of employees toward you	( )	41
Recognition received for doing your job	( )	49

Supervisors were instructed to indicate if they were very satisfied, moderately satisfied or dissatisfied with each item of the job satisfaction list by marking "V", "M" or "D".

PAIRING THE ITEMS FOR THE IMPORTANCE VARIABLE

New that the job satisfaction variable could be measured, the importance variable remained to be measured. The fundamental problem was to have supervisors rank those 51 items in order of relative importance. This has been done by many authors (6, 7, 23), but not with such a great number of items and not for the purpose of studying the relationship which might exist between those importance ratings and satisfaction scores from the same items. Many ratings methods were available. However, the paired-comparison method was adopted because of its easy applicability and its higher reliability.

Exactly the same 51 items as those used in the job satisfaction scale were printed on IBM cards. A complete deck was composed of 1275 different cards, one pair of items to each card. For partial pairing they could be subdivided into (N-1)/2 or 25 sets, a set being defined as a number of cards in which each item is paired with two other items. In our deck, a set included 51 cards (1275/25). In preparing the original deck, a method described by Kephart and Oliver (11, 19) was followed. Each item received the same code number as the one appearing on the job satisfaction list. While the sets were being prepared a set code number and an item code number were punched into the cards. The original deck of 1275 cards was reproduced 48 times. The decks were also identified by code numbers. The items were printed and the cards

were rearranged in deck order. In order to obtain 25 sets per deck, each deck was sorted according to the set coding.

The partial pairing method was applied in the distribution of sets of pairs. In the light of the findings on partial pairings reported by McCormick and his associates (15, 16), it seemed that sufficiently stable ratings would be obtained by giving each supervisor two sets of cards, i.e., 102 pairs. In this instance, each item would be compared with four different items by each supervisor. Supervisors were asked to determine which of the two items on each card was most important to them by making an "X" under the most important one.

PREPARING THE INDIVIDUAL ANSWER FORMS

In preparing individual answer forms, the following materials were enclosed in an addressed envelope: a white sheet with explanations of the research and with instructions, a Job Satisfaction List, a pink card with specific instructions for answering the cards, and 102 cards of paired items.

Our second group of forty-eight companies were contacted through a personal letter and invited to participate in the proposed research. An outline of the study and a detailed statement of participation requirements were sent with ten individual answer forms. Ninety-six questionnaires were also forwarded to those supervisors in the first phase who had expressed the desire to cooperate in the second phase of the study.

Questionnaires to be answered were mailed out for a total number of 576 supervisors.

Phase II — Item Analyses and Reliability

SETTING UP EXPERIMENTAL GROUPS

A total of 339 answer forms, i.e., job satisfaction lists and cards for importance ratings, were filled in by supervisors and returned to Purdue. Such a high percentage of returns (59%) indicated that both management and supervisors were interested in the research. As soon as it came back, each return was given a code number which was written on the job satisfaction list and on the paired-comparison cards. The cards were put aside for the moment to be analysed at a later stage.

Those forms which were not completed or answered correctly, were discarded. The remaining forms were divided randomly into two groups. One consisting of 140 supervisors' responses, was considered the primary group, the other, including 153 supervisors' responses, became the hold-out group and was retained for later analysis.

ITEM ANALYSIS OF THE SATISFACTION LIST

The 140 papers of the primary group were scored in terms of the twenty-nine personal key and the twenty-two-item company key. A score of two, one, or zero was assigned to answers of very satisfied, moderately satisfied or dissatisfied respectively. This way, each paper yielded a personal total score and a company total score. A double-internal consistency item analysis was done on the 51 items of the scale. Lawshe' and Baker's *"w"* and monograph were employed to obtain indices of discrimination (13). In order to apply this item analysis technique the answers were dichotomized, scores two and one being grouped together and the zero score considered alone.

PERSONAL DISCRIMINATION INDICES

A frequency distribution was made of the total scores of the 140 papers on the 29 personal items. This distribution was cut at the median in order to identify high personal and low personal satisfaction groups. Personal discrimination indices (wp) were computed for each of the 51 items of the scale.

COMPANY DISCRIMINATION INDICES

A tabulation was made of total scores of the primary group on the 22 company items. This frequency distribution was likewise cut at the median in order to identify high and low company satisfaction groups. Company discrimination indices (wc) were computed for each of the fifty-one items of the scale.

After this double item analysis, each item had two indices of discrimination: a personal discrimination index (wp) and a company discrimination index (wc). The purpose in computing two different indices of discrimination was to refine the judgments obtained in the first content analysis. If an item had been considered a personal item by the judges, then its personal discrimination index should have been larger

than its company discrimination index: $wp > wc$; Similary, the company discrimination index of a company item should have been larger than the personal discrimination index of the same item: $wc > wp$.

Table 1 presents the 29 personal items and the 22 company items with their two different discrimination indices. Two personal items did not come through the item analysis as personal items and six company items as company items. These reversals are indicated in the table by an asterisk. The null hypothesis that these items did not discriminate between high and low satisfaction groups was tested, and all the items were found to discriminate at the 1% level of confidence.

TABLE 1

Discrimination Indices of Eeach Item as Obtained by Two Internal Consistency Item Analyses

Personal Items			Company Items		
Item	*wp*	*wc*	Item	*wp*	*wc*
2.	100	60	1.	22	52
4.	50	45	3.	27	51
6.	60	32	5.*	69	59
7.	109	55	11.	32	40
8.	78	44	12.	27	45
9.	68	40	13.	53	85
10.	59	22	15.*	51	47
14.	72	44	17.	41	74
16.	59	35	21.	30	50
18.	60	45	23.	33	58
19.	68	41	24.	30	45
20.	88	40	26.	31	60
22.	68	48	29.*	48	41
25.*	39	45	31.*	73	59
27.*	49	53	32.	31	78
28.	90	37	35.	52	67
30.	78	43	37.*	113	53
33.	69	65	40.*	55	48
34.	60	47	42.	00	32
36.	60	47	44.	47	72
38.	95	49	46.	56	83
39.	81	60	50.	61	68
41.	67	65			
43.	71	56			
45.	95	54			

47.	80	55		
48.	62	50		
49.	116	43		
51.	100	45		
N	29			22

* Items for which there is a reversal.
wp Personal Discrimination Indexes from item analysis with the scores on the personal items only.
wc Company Discrimination Indexes from item analysis with the scores on the company items only.

REFINING THE TWO FACTORS OF JOB SATISFACTION

A rigourous inspection of Table 1 disclosed that many of these items were not pure enough, i.e. were not measuring only one factor of job satisfaction, either personal or company satisfaction. In this circumstance another empirical refining process was warranted. A graphic method was adopted for this purpose. A scatterplot was drawn in which the personal discrimination index of each item was plotted against its company discrimination index. Two clusters appear: a cluster of circles representing items judged as personal items and a cluster of X's representing the items judged as company items. If the items were measuring only one factor of job satisfaction, the personal items should be close to the personal axis and the company items close to the company axis. The scatterplot shows that the items were not yielding independent measures of the two components of job satisfaction.

In order to pick up two relatively independent groups of items, two empirical cutting-points, on axes A and B, were drawn in the scatterplot. Before making a final selection, a second double item analysis not reported here was executed where only the 30 highest and 30 lowest papers of the 140 were used to determine the two indices of discrimination. After a comparison of the results of both item analyses, a final decision was reached, and the most stable items were retained. The items appear in Table 2. The 16 personal items and the 13 company items retained were expected to provide two relatively independent measures of job satisfaction.

RELIABILITY

At this point the 140 job satisfaction questionnaires of the primary group were removed from further consideration. The 153 papers of the

hold-out group were now scored in terms of the 13-item company key and in terms of the 16-item personal key. Each paper received a personal total score and a company total score. Reliability coefficients were computed for the two scales.

RESULTS

The odd-even reliability coefficient was determined to be .83 for the personal scale and .69 for the company scale. These r's were stepped-up twice by the Spearman-Brown formula (22, p. 303). These resulting stepped-up coefficients representing the best estimate of the reliability for the complete scales of 16 personal and 13 company items were .91 and .80.

TABLE 2

Items Selected After Item Analyses and Refining of Both Scales

Type of Scale	Number of Items
Personal	16
6. Expression of respect by your superiors	
8. Training to prepare you for advancement	
9. Merit increases	
10. Differential between your wages and those of your employees	
14. Freedom to operate your department	
16. Security of your job	
18. Pay for overtime	
19. Opportunity for advancement	
20. Information on decisions concerning your department	
22. Understanding between you and your immediate superior	
28. Company practice of consulting you before setting policies	
30. Company bonus system	
38. Management's backing in decisions concerning your department	
47. Opportunity to use your abilities	
49. Recognition received for doing your job	
51. Company practice of consulting you on departmental matters	
Company	13
1. Safety program	
3. Quality of work done by employees	
12. Type of equipment or tools in the department	

13. Cooperation between department
15. Procedures for training employees
17. Way the plant is laid out
21. Skill or proficiency of employees
23. Working conditions such as lighting, ventilation, etc.
26. Room or space to work in
32. Methods of inspecting products
35. Method of scheduling production
42. Quantity of scrap lost
44. Communications with other departments

In order to evaluate the extent to which the two scales of job satisfaction were independent, a Pearson product moment correlation coefficient was computed between the total scores on the 16 personal items and the total scores on the 13 company items of the 153 jobs satisfaction lists. This correlation was found to be .49, which meant that the proportion of common variance between the two scales was .24. A correction for attenuation was applied to this intercorrelation to estimate what the correlation between the two components of job satisfaction would have been if the two measuring scales were perfectly reliable (22, p. 304). This corrected correlation became .56 which indicated a proportion of common specific variance of .31. These data appear in Table 3.

In the light of these results it appeared that the first hypothesis was sustained and that two components of job satisfaction could be measured with a fair degree of independence.

TABLE 3

Odd-Even Reliabilities and Intercorrelation of the Two Scales

Type of Scale	Numbers of Items	Reliability		Inter correlation		Proportion of Common Variance	
		r_{nn}	$2r_{nn}$	r_{xy}	r'_{xy}	r^2_{xy}	r'^2_{xy}
Personal	16	.83	.91				
Company	13	.69	.80				
Pers. vs Co.				.49	.56	.24	.31

Phase III — Evaluating the Effects of Job Satisfaction Upon the Ratings of Importance

DETERMINING FOUR GROUPS OF JOB SATISFACTION

To evaluate the effect of job satisfaction upon the ratings of importance, it was necessary to select groups defined by different degrees, types or combinations of job satisfaction. It might be recalled here that the 153 questionnaires of the hold-out group had been scored on the 16 personal items and on the 13 company items. Each paper was designated by a personal total score and a company total score. A tabulation was made of the 153 personal total scores and was dichotomized at the median. This yielded two groups of satisfaction which were called high personal satisfaction and low personal satisfaction. The same procedure was followed with company total scores, and, a high company satisfaction group and a low company satisfaction groups were obtained. The 153 questionnaires were classified in such a way that four combinations of satisfaction were obtained. All the papers of which the company total scores were below the median of the distribution of the company total scores and of which the personal total scores were above the median of the distribution of the personal total scores were put in the Group I. If the company total scores were above the median and the personal total scores below the median, the papers were put in Group II. If both total scores were below the medians, they were placed in Group III. Group IV was composed of all the job satisfaction lists of which the personal total scores and the company total scores were above the medians. Thus, four groups with different combinations of satisfaction were obtained:

Group I — LH: low company and high personal satisfaction
Group II — HL: high company and low personal satisfaction
Group III — LL: low company and low personal satisfaction
Group IV — HH: high company and high personal satisfaction

Each group had respectively 21, 24, 55 and 53 papers.

SETTING UP SCORES FROM THE RATINGS ON THE IMPORTANCE VARIABLE

The paired-comparison cards which had been laid aside up to now, were used here for the first time. On those cards all the 51 items were

compared with each other in order to determine their relative importance. The 21 packages of cards which had code numbers corresponding to the 21 papers of Group I were sorted out. In each package (one foreman) every item was compared with four other items. Consequently the maximum rating of importance assigned by one foreman was four, and 84 for the 21 packages. A tally was made of the number of times each of the fifty-one items was selected over another item by the twenty-one supervisors of Group I.

The same procedure was repeated for the three other groups. The sums of the importance ratings of each of the fifty-one items were tabulated separately for the four groups. The tally of each group was transformed to rank order. The item with the largest sum of ratings was assigned the first rank in importance and the item with the smallest sum, the fifty-first rank.

RESULTS

At this stage of the research the data necessary to examine the second hypothesis and to investigate the effect of job satisfaction upon the ratings of importance were available.

COMPARING THE RANKINGS

The second hypothesis was that if there is a relationship between the amount of satisfaction received from an item and the importance attributed to that item, i.e., if the amount of satisfaction determines the importance of the item, there should be a significant difference among the importance ratings of the same items by groups manifesting different amounts of satisfaction.

If the above hypothesis were tenable, there should be little agreement among the rankings established from the ratings of the four groups of satisfaction. Instead of averaging six rank correlations, a formula proposed by Kendall was applied (10).

$$W = \frac{S}{1/12m^{2}(n3 - n) - m \lessgtr T^{1}}$$

$$T^{1}$$

If the ranks differ very much among themselves, the coefficient of concordance tends towards 0; but, if there is not much difference among the ranks, i.e., if the raters agree among themselves, then W increases. If all the rathers agree W = 1. The coefficient of concordance found among the four rankings was .85. This W is significant beyond the 1% level of confidence.

Such a coefficient of concordance indicated a high level of agreement among the ratings of importance provided by the four groups. It also meant that if supervisors' motives, incentives and goals were not provided for satisfactorily, this had little influence upon the importance attributed to them. In other words, in the present situation, the job satisfaction variable did not influence the importance variable. The second hypothesis was not sustained by the analysis of the data.

TABLE 4

Correlation Between the Satisfaction Variable and the Importance Variable for Different Groups *

	I	II	III	IV	Hold-Out Group	Total Group	N
r	-.05	-.21	-.23	.17	-.07	.02	51

* None of these correlation is significant at the 5% level of confidence.

INTERCORRELATION OF THE TWO VARIABLES

In the light of the above result could it still be postulated that a certain relationship existed between the job satisfaction variable and the importance variable ? If so, what kind of relationship — positive or negative ? According to the theories of motivation it should be a negative one, since a satisfied need becomes less important.

In order to find what kind of relationship existed between the two variables a product moment correlation was computed between the satisfaction total scores and the importance total rankings of the fifty-one items for each of the four groups. The satisfaction score of each item was obtained through a cumulative addition of the high and

moderate satisfaction scores. This was done for the four groups separately. Group I and Group II being based upon a combination of high and low satisfaction should have shown such relationship if it had existed. Table 4 presents the correlations found. None of them were significant, the highest being -.23, even when all the satisfaction and importance scores were pooled together and a correlation computed from the hold-out group and from the total group of returns.

Phase IV — Establishing T-Scores for Each Item on the Two Variables

TRANSFORMING RAW SCORES

The purpose of this phase was to determine the relative importance and satisfaction of the fifty-one items used in the research. For this reason the data of the primary group were pooled with those of the hold-out group.

At this point it became necessary to test the stability of the ratings of the 293 surpervisors. The ratings of 146 supervisors were extracted randomly from the ratings of the whole group. Those importance ratings were correlated with those of the remaining 147 supervisors. The r was .96. This r was stepped-up twice by the Spearman-Brown formula and became .98 Such an r indicates that the ratings of the 293 supervisors were highly reliable and that the relative importance of each item is extremely stable.

For each item a total importance raw score was computed by adding the ratings of the 293 supervisors. Similarly, a total satisfaction raw score was computed from the satisfaction scores. The items were ranked in order of importance. The raw scores were also transformed in rank order. This permitted the comparison of the relative place of each item in both variables. The standard deviations were computed from the distribution of the four, three, two, one or zero choices given by the raters to each item. As was expected, the most important and the less important items are less variable.

T-scale equivalents on both variables were derived from the raw scores of the fifty-one items. A table from Guilford (4, p. 299) was

used to calculate the T scores. This yielded two sets of scores each with a mean of 50, a standard deviation of 10, and equal units for the importance and the satisfaction scales. These T scores were useful in comparing items among themselves in both scales. However, those scores were required in order to get a psychological meaning from the interaction of both variables in each item. For this purpose an index, called index of gratification was developed. This index can be computed from the following formula:

$$\frac{\text{Satisfaction T score}}{\text{Importance T score}} \times 100$$

This index can be interpreted this way. If the index is around 100 for any item, it means that the rewarding qualities of the job situation are mediocre. It might indicate a situation which is becoming more stable. This situation should be checked upon once in a while to be sure that it is satisfying. Indices well above 100 are a sign of a very healthy and favorable situation. The situations that they represent, are rewarding to supervisors and they can be forgotten for the time being. The touchy items are those where the indices are far below 100. They represent states of psychological tension, inducing friction, frustration and unrest. The situation should be improved if at all possible. The lowest indices are symptoms of great dissatisfaction. Remedial action is most urgent. These items are badly hurting the morale of supervisors. These indices were computed for all items and appear in Table 12. Such an approach to the problem of job satisfaction provided results quite different from those obtained in previous studies. For instance, among the seven items presently causing perhaps the greatest unrest and dissatisfaction three of them were related to financial matters: (a) merit increases, (b) differential between your wages and those of your employees, (c) company bonus system. Two other items were indirectly related to financial rewards: (a) training to prepare you for advancement, (b) opportunity for advancement. As to job security it did not seem to worry supervisors as much as many other items.

COMPARING THE ITEMS ON SATISFACTION AND IMPORTANCE

A glance might have suggested that the personal items had been rated as being more important, since out of the twenty most important items fourteen were personal items. However, it may be seen from Table 5 that in general the personal items were not rated as being

more important than the company items. Similarly the average T scores of the company items did not differ significantly from the average T scores of the personal items on the satisfaction variable.

TABLE 5

Difference Between the Average T Scores of Personal and Company Items on Both Variables

	Personal Items		Company Items		t *
	M	S.D.	M	S.D.	
Satisfaction	51.41	12.16	49.95	7.01	.17
Importance	50.95	10.75	50.46	9.58	.49
N	29		22		

* Not significant.

Discussion

Evidence has been provided by the results of this research that the present theories of motivation could not explain or help to understand the motivational pattern of supervisors. It has been shown operationally, at least for supervisors, that the importance attributed to an item, i.e., need, motive or incentive was independent of the amount of need-reduction or degree of satisfaction. Then, the question arises, what factor or factors determine the importance attached to a specific item ?

According to Lewin (14) any need induces a state of tension and directs behavior toward a goal. Interest or effort to reach this goal ceases with satiation of the need. A very urgent need produces a tension system with a high valence. For this reason this need becomes preponderant in the perceptual field. When certain activities caused by the valence lead to a satisfaction of the need or to a satiation process, then, the tension is lowered, and the tension system evolves to a state of equilibrium.

Instead of explaining human motivation in terms of tension systems, Maslow (17) resorts to another concept: he assumes "that the basic human needs (motives) are organized into a hierarchy of relative prepotency." Five sets of goals also called needs are described by

Maslow: physiological needs, safety, love, esteem and self-actualization. The less satisfied goal or need becoming most dominant will monopolize the perceptual consciousness and of itself will recruit the capacities of the organism. Since reduced needs and attained goals cease to be active motivators, the next higher need comes to the fore of the perceptual field and dominates the conscious life in order to organize and direct most of the behavior. It is understood that this hierarchy of needs functions in degrees of relative satisfaction, because nobody is ever completely satisfied or dissatisfied with a need or a goal.

From those two theories of motivation it can be postulated that the importance of a need or a goal is a function of how much the individual is satisfied. A highly satisfied need is less important than a need which is not yet satisfied. Then, why was there no relationship between the satisfaction variable and the importance variable in this study ? The usual behavioristic model of motivational processes assumes internal drives, tensions and motives which under proper conditions of stimulation culminate in action. The intensity of the stimulation or of the need would determine its importance and how much reward-seeking behavior will follow the stimulation.

These motivational models operate perfectly in a laboratory context, where psysiological and primary needs are studied. At that level the hierarchy or relative importance of those needs and incentives may be determined by the amount of satisfaction. As shown by Postman (20) motivational factors influence perception. However, it seems that the laboratory model cannot explain human motivation, at least in the present study. Above the basic level, the motivation-perception relationship may be analysed in terms of interaction effect. Furthermore, at the higher level of needs and goals, the hierarchy or relative importance may have nothing to do with motivation or with satisfaction per se. The perception of the situation in which the behavior will take place might very well determine the hierarchy or relative importance of needs and goals. Then, the hierarchy is a resultant not of the intensity of drives but of the environment, the job situation for instance. If such a model is compared to the primary need model, the pattern is reversed. In the latter, motivation modifies perception, while in the former, it is perception which modifies motivation. This approach to the intricate problem of human motivation seems more logical. In a highly socialized civilization with a good standard of living, behavior in terms of a simple set of instinctual or basic drives is not conceivable. The normal adult behaves in terms of a pattern of derived and learned needs. In

order to adjust his behavior, an adult has to consider closely the situation or environment in which he will perform. If he cannot adjust his needs and goals to the rewarding qualities of the situation, this may cause personality maladjustment and even neurosis.

The above theory is sustained to a certain extent by a research reported by Morse (18, p. 27). The answers to "How much chance do you think you have to be promoted ?" were correlated with the answers to "How satisfied are you with your chances for promotion ?" The conclusions were that "those who are receiving less return from the environment are somewhat more likely to be neutral, and those receiving more are somewhat more likely to be satisfied."

Similarly, the present study suggests a separation between the conditions of need-production and those of need-fulfillment. Such a high level of agreement among the relative importance ratings of supervisors expressing different degrees of job satisfaction leads to the assumption that the environment or the job situation induces those ratings and not the satisfaction level.

Supervisory workers represent a very homogeneous group because of certain factors which tend to structure the job and its environment. Those pressures can be divided in three classes; legal pressures, familial pressures and organizational pressures. The Taft-Hartley Act discourages supervisors' unionization. Social pressures and familial status keep foremen on the job. Above all this supervisors have to perform smoothly even under the constant pressures of the demands from management, the union and the employees. Under such circumstances, there is no doubt that they clearly perceive the job situation and the relative importance of those things which can bring them job satisfaction.

The same line of thought seems to prevail lately in the literature according to Robinson and Hoppock (21):

> Many researches in the area of job satisfaction appear now to accept the thesis that such factors as job security, wages, physical working conditions, etc., are symptoms of job satisfaction or dissatisfaction but are not causes in themselves. The trend seems to be in direction of a probing for individual-adjustment and group-adjustment causes.

Conclusions

On the basis of this study the following conclusions may be reached.

1. Two dimensions of job satisfaction were defined and measured by two reliable and relatively independent scales: a thirteen-item company scale and a sixteen-item personal scale.

2. Four groups of job satisfaction levels were derived from the answers to these two scales. The fifty-one items of the job satisfaction list were rated according to their relative importance by these four groups. The four sets of ratings were compared among them, and a high coefficient of agreement was found indicating that the satisfaction variable had no influence upon the importance variable.

3. No relationships were found between job satisfaction scores and importance ratings. It was postulated that the amount of satisfaction had no influence upon those ratings and did not determine the hierarchy of needs and goals. It was also postulated that the perception of the job situation influenced that hierarchy.

4. All the items were listed in order of their relative importance. Such a list may prove to be useful to management for training purposes and for weighting items in validation procedures.

5. An index of gratification was developed which permits the combination of satisfaction scores and importance scores. Such an index constituted a new approach to the problem of job satisfaction and indicates the areas which require immediate attention.

REFERENCES

1. CAMPBELL, J.W. An attitude survey in a typical manufacturing firm, *Person. Psychol.*, 1948, 1, 31-39.
2. GOODE, B.A. and FOWLER, I. Incentive factors in a low morale plant. *Amer. Sociol. Rec.*, 1949, 14, 618-624.
3. GREEN, H.E. 21 steps for obtaining opinions and facts from employees. Ptr. Ink., 1947, 221, 35-37.
4. GUILFORD, J.P. Fundamental statistics in psychology and education. New York: McGraw-Hill, 1950.
5. GUION, R.M. The employee load of first line supervisors. *Person. Psychol.*, 1953, 6, 223-242.
6. JURGENSEN, C.E. Selected factors which influence job preferences. *J. appl. Psychol.*, 1947, 31, 553-564.
7. KATZ, D. Morale and motivation. In W. Dennis (Ed), *Current trends in industrial psychology.* Pittsburgh: Pittsburgh Univ. Press, 1949, pp. 145-171.
8. KATZ, D., and KAHN, R.L. Some recent findings in human relations research in industry. In T.M. Newcomb and E.L. Hartley (Ed.), *Readings in social psychology.* New York: Henry Holt, 1952.

9. KAHN, R.L. and MORSE, NANCY C. Morale and productivity. *J. Soc. Issues*, 1951, 7 (3), 8-17.
10. KENDALL, M.G. *Rank correlation methods.* London: Charles Griffin, 1948.
11. KEPHART, N.C. and OLIVER, J.E. A punched card procedure for use with the method of paired-comparison. *J. app. Psychol.*, 1952, 36, 47-48.
12. LAIRD, D.A. What do your workers think? *Person.* J., 1950, 28, 319-325.
13. LAWSHE, C.H. and BAKER, P.C. Three aids in the evaluation of the significance of the difference between percentages. *Educ. Psychol. Measmt.*, 1950, 10. 263-271.
14. LEWIN, K. *A dynamic theory of personality.* New York: McGraw-Hill, 1935.
15. MCCORMICK, E.J. and BACCHUS, J.A. Paired comparison ratings. I. The effect on ratings of reduction of pairs. *J. appl. Psychol.* 1952, 36, 123-127.
16. MCCORMICK, E.J. and ROBERTS, W.K. Paired comparison ratings. II. The reliability of ratings based on partial pairings. *J. appl. Psychol.*, 1952, 36, 188-192.
17. MASLOW, A.H. A theory of human motivation. *Psychol. Rev.*, 1943, 50, 370-396.
18. MORSE, NANCY C. Satisfaction in the white-collar job. Ann Arbor: Univ. of Michigan Press, 1953.
19. CLIVER, J.E. A punched card procedure for use with partial pairing. *J. appl. Psychol.*, 1953, 37, 129-131.
20. POSTMAN, L. The experimental analysis of motivational factors in perception. In *Current theory and research in motivation.* Lincoln: Univ. of Nebraska Press, 1953.
21. ROBINSON, H.A. and HOPPOCK, R. Job satisfaction researches of 1951. *Occupations*, 1952, 30, 595-599.
22. WALKER, HELEN M. and LEV. J. *Statistical Inference.* New York: Henry Holt, 1953.
23. Your employee wants you to know him; ratings of factores in employee morale. *Person. J.*, 1939, 17, 357-363.

SOMMAIRE

LES CONTREMAITRES ET LA SATISFACTION AU TRAVAIL

La présente recherche avait un but pratique et un but théorique. D'abord, il fallait mesurer combien les contremaîtres sont satisfaits de certains aspects de leur travail et évaluer à quel point cette satisfaction influence l'importance qu'ils attribuent à ces mêmes aspects. Ensuite, il s'agissait de vérifier si les théories actuelles de la motivation humaine ont une certaine valeur quand elles sont appliquées à des situations concrètes.

Vingt compagnies acceptèrent de coopérer à la première phase de cette recherche. Deux cents contremaîtres remplirent un questionnaire initial d'une page, où ils avaient décrit ce qu'ils entendaient par un poste de contremaître idéal. Le matériel obtenu par ce premier sondage fut analysé afin d'en classifier le contenu. Par la suite, une liste de 51 item fut construite. Vingt-neuf item furent appelés item personnels parce qu'ils sont liés à la satisfaction personnelle de l'individu: reconnaissance pour un travail bien exécuté, sécurité financière, etc. Vingt et un item furent appelés item de compagnie parce que la satisfaction qu'ils expriment dépend de l'efficacité de l'organisation: inspection des produits, entretien des machines, etc.

Ces 51 item servirent à construire deux tests différents. Le premier test était un questionnaire auquel les contremaîtres devaient répondre en indiquant à chacun des 51 item s'ils étaient très satisfaits, modérément satisfaits ou non satisfaits. Le

deuxième test consistait en 102 cartes d'IBM sur lesquelles étaient imprimées des paires d'item. Les mêmes item que ceux du questionnaire avaient été comparés entre eux selon la méthode des paires comparées. Une différente paire d'item étaient imprimée sur chaque carte. Le contremaître devait y répondre en marquant un "X" sous l'item jugé le plus important pour son travail.

Dans la deuxième phase de la recherche, on envoya les questionnaires et les cartes à 576 contremaîtres de 48 compagnies. Sur ce nombre 339 contremaîtres répondirent. Les questionnaires furent séparés en deux groupes: primaire et secondaire.

Une double analyse d'item fut appliquée au groupe primaire. Seize item personnels et treize item de compagnie survécurent à cette analyse. Le groupe secondaire servit à déterminer la fiabilité de ces deux groups d'item. Elle se situait à .91 pour les 16 item personnels et à .80 pour les 13 item de compagnie. La corrélation de .49 entre ces deux sortes d'item suggérait une variance commune de .24 (en d'autres termes seulement 25% du même facteur est mesuré communément par ces deux sortes d'item).

Le groupe secondaire fut subdivisé en quatre groupes selon le total des points accordés pour les réponses aux deux sortes d'item du questionnaire. Les cartes d'IBM correspondant aux quatre sous-groupes furent combinées séparément. Ces cartes mesuraient l'importance relative attribuée aux 51 item. Pour chaque item quatre cotes furent calculées selon le total des points des quatre sous-groupes. Les quatre cotes des 51 item furent comparée entre elles simultanément; il en résulta un coefficient de concordance de .85. Un tel accord entre quatre sous-groupes qui éprouvaient des sentiments de satisfaction si différents, indiquait que ces sentiments de satisfaction avaient eu peu d'influence sur l'importance relative attribuée aux 51 item.

Après la réunion des sous-groupes, on calcula deux séries de cotes dont l'une se basait sur les questionnaires (satisfaction) et l'autre sur les cartes (importance). Aucune corrélation n'apparut entre ces deux séries. Par la suite une seule échelle d'importance fut construite pour tous les item.

La présente recherche donna les conclusions suivantes:

1. Il ne semble pas y avoir de relation bien établie entre le facteur satisfaction et le facteur importance.

2. Les théories actuelles sur la motivation humaine ne semblent pas fournir d'explications adéquates sur le comportement humain tel qu'étudié ici.

3. A cause de sa grande stabilité, l'échelle d'importance des 51 item peut être considérée comme représentative de la pensée de la majorité des contremaîtres.

4. Cette échelle peut servir à orienter l'entraînement des contremaîtres et le questionnaire à évaluer leur moral.