

## **A Comparison of Weighted and Unweighted Intergroup Climate Satisfaction Scores**

### **Étude comparative des résultats pondérés et non-pondérés d'une enquête portant sur la satisfaction à l'endroit des relations entre des groupes**

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Volume 28, Number 2, 1973

URI: <https://id.erudit.org/iderudit/028396ar>

DOI: <https://doi.org/10.7202/028396ar>

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Publisher(s)

Département des relations industrielles de l'Université Laval

ISSN

0034-379X (print)

1703-8138 (digital)

[Explore this journal](#)

Cite this article

Barth, R. T. (1973). A Comparison of Weighted and Unweighted Intergroup Climate Satisfaction Scores. *Relations industrielles / Industrial Relations*, 28(2), 362–379. <https://doi.org/10.7202/028396ar>

Article abstract

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# A Comparison of Weighted and Unweighted Intergroup Climate Satisfaction Scores

Richard T. Barth

*Perceptions of the configuration and quality of intergroup climates by 256 engineer-scientists in ten R & D organizations were factor analyzed. Five reliable dimensions evolved which accounted for 65% of the 68-item total variance. For each of these dimensions, the relationships between three combinations of level of attainment, level of aspiration, and level of urgency are explored separately and the combined impact of each combination on overall satisfaction with intergroup communication is examined. The findings suggest that unweighted scores provide better predictors of overall satisfaction with intergroup communication than do scores weighted by urgency ratings. Results lend empirical weight to studies in which the utility of weighted versus unweighted scores in the prediction of job satisfaction were explored.*

Considerable interest in recent years has focused on the nature of the relationship between the importance (or value) of a job aspect or facet to the individual and his perceived degree of satisfaction with that aspect or facet ratings of overall job satisfaction (Ewen, 1967 ; Fried-

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\* The research reported in this paper was supported by the Army Research Office, the National Aeronautics and Space Administration, and the National Science Foundation as part of a larger study conducted through the Program of Research on the Management of Research and Development, Northwestern University. The author wishes to thank Albert H. Rubenstein, Director of this Program, Ed Lawler (Yale University), and Martin Evans (University of Toronto) for their stimulating comments. In addition, the managers, supervisors, and engineer-scientists in the participating organizations gave willingly of their time : This is greatly appreciated.

\*\* Requests for reprints should be sent to the author, Faculty of Commerce and Business Administration, University of British Columbia, Vancouver 8, B. C., Canada.

lander, 1965 ; Glennon, Owens, Smith & Albright, 1960 ; Mobley & Locke, 1970 ; Spitzer, 1964). In a recent review of the conceptual and operational relationships between overall job satisfaction, level of aspiration, level of attainment, and level of importance, Evans (1969) considered several ways in which the latter three concepts have been combined and related to measures of overall job satisfaction. Evans named the five methods of combining aspects of job satisfaction as follows : 1) simple summation of either job facet satisfaction or goal attainment, 2) summation of the product of either job-facet satisfaction and job-facet importance or goal attainment and goal importance, 3) summation of the difference between the level of goal aspiration and the level of goal attainment, 4) summation of the product of goal importance and the difference between level of aspiration and level of attainment, and 5) summation of the differences between goal importance and goal attainment or goal aspiration (Evans, 1969, pp. 94-95). Of these, the more elegant formulations involving importance ratings do not seem to be better predictors of overall job satisfaction than combinations based only on unweighted (by importance) scores or those in which the level of attainment, rather than the difference between level of aspiration and level of attainment, is multiplied by importance.

The implicit assumption of the multiplication procedures involved in Combinations 2 and 4 reviewed by Evans (1969) is that importance is not included or reflected in ratings of satisfaction and attainment. Evidence supporting this assumption would indicate that a consideration of separate importance ratings is necessary. However, as implied by Mobley & Locke (1970), if importance were indeed reflected in satisfaction or goal attainment ratings « The weighting procedure would add nothing to the satisfaction ratings that was not there already [p. 464]. » While Evans suggests that inconclusive results with respect to the relative merit of weighted vs. unweighted scores may be due to the lack of a well developed measure of importance, the studies included in his review indicate that the intuitive appeal of the various weighting schemes considered remains, especially for Combination 4, which appears to reflect the conceptual framework preferred by Evans.

Although Mikes & Hulin (1968), who used turnover as the dependent variable, found that satisfaction scores with unit weights predicted as well as the composite sum based on satisfaction scores weighted by importance, studies of a similar nature (Wollack, Wijting, Goodale, and Smith,

1970) encourage further efforts to examine systematically the conditions under which various weighting procedures are appropriate, and the five studies reported by Mobley & Locke (1970) provide results which yield a plausible explanation for the seemingly inconsistent results of prior studies on this topic. Moreover, the level of importance is reflected in theories of motivation which combine it in multiplicative fashion with the concept of path-goal instrumentality (Evans, 1970a; Graen, 1969; Vroom, 1964).

One of the purposes of his study, which was performed as part of a continuing project concerned with examining factors affecting the « coupling » of task-interdependent technical groups in research and development (R & D) organizations (Barth, 1970; Rubenstein & Douds, 1969), was to compare weighted and unweighted satisfaction scores based on *intergroup climate* dimensions similar to the group interactional dimensions developed by Friedlander (1966) and organizational climate dimensions identified by Litwin & Stringer (1968) and Meyer (1968). However, the comparison offered here does not include a measure of overall job satisfaction. Rather, it first examines, according to Combinations 1, 3, and 4 reviewed by Evans (1969), the relationship between weighted and unweighted (intergroup climate) satisfaction scores for each of five intergroup climate dimensions empirically identified in this inquiry. Weighted and unweighted scores are then used to predict the overall level of « perceived communication problems » (PCP). Also, Combination 4, as used in this study, employed the level of *urgency*, rather than importance, to weight the satisfaction scores of Combination 3. The use of « urgency » (perceived *immediacy of time* to improve the « actual » intergroup climate to the preferred « ideal » level) was predicated on the assumption that, if perceptions of importance are reflected in goal attainment or satisfaction ratings, this concept would provide a stronger indication of an individual's perceived frustrations of his current interactions with members of other groups.

## METHOD

### Research Sites and Respondents

The data used in this study were obtained, through a field study, from 256 engineers and scientists located in one industrial and nine government R & D organizations. The geographical locations of these research sites encompass most of the U.S. Their organizational affiliations are as follows: Four Army agencies, three National Aeronautics and Space

Administration centers, two Environmental Science Services Administration laboratories, and one industrial laboratory. The general activities of these organizations include electronic instrumentation, solid-state electronics and communications technology for both military and industrial applications, nuclear power systems, weapon systems development, investigation of the inner and outer space environment, and aircraft/missile/space systems development and testing. The size of the organizational segments represented by respondents ranged from 1,000 to 10,000 personnel, and respondents were selected such that each would be able to report on the intergroup interactions between his group and *one* specific other group in his organization. The latter group, initially denoted « referenced group », was selected on the basis of the task-interdependence existing between its task activities and those of the respondent's group <sup>1</sup>.

The 256 engineers and scientists had degrees ranging from B.A. or B.S. through Ph.D. or M.D., and their current technical fields ranged from aeronautics/astronautics, chemistry, electronics, mechanical engineering, industrial engineering and engineering management to mathematics, physics, systems engineering, meteorology, biology/life sciences and medicine. The typical respondent was in his early 40's, had worked in his present organization for more than 11 years, and felt he was more than « somewhat » of a specialist.

#### **Development of Instruments**

The intergroup climate data for this study were collected by means of a questionnaire developed from interviews during a pilot study and instruments previously used in studies of organizational climate and group climate (Friedlander, 1966 ; Halpin, 1966 ; Litwin & Stringer, 1968 ; Stephenson, Gantz, & Erickson, 1969). The 68 items selected were modified for applicability to intergroup interactions and expressed in terms which were meaningful to engineers and scientists. Each item referred to a particular aspect or facet of intergroup climate felt to be relevant to the functioning of task-interdependent technical groups, and the questionnaire included a blank line on which this researcher inserted the name of the appropriate referenced group before questionnaire administration. The results reported here are based on three responses to each of the 68

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<sup>1</sup> Each respondent was assigned a code number, and the actual name by which the « referenced group » was known to him was inserted in the questionnaire he later completed.

items. For each item, the respondent was asked to indicate, on a 5-point Likert scale, the extent to which the intergroup climate characteristic described by the item (a) *applied* to the perceived actual intergroup climate, and (b) *would apply* to the preferred ideal intergroup climate; Part (c) of each item referred to the *urgency* the respondent attached to reducing the perceived discrepancy between (a) and (b). Except for Part (c), this scheme is similar to that used in studies of need fulfillment and need satisfaction which essentially focus on « How much is there now ? » and « How much should there be ? » (Cummings & ElSalmi, 1970; Mitchell, 1970; Porter, 1961; Porter & Lawler, 1968; Porter & Mitchell, 1967). The following is a typical item and response :

On joint tasks, there is a tendency to stick  
to the « tried and true » way of doing things.

<i>Not at all</i>	<i>To a very little extent</i>	<i>To a mod- erate extent</i>	<i>To a consi- derable extent</i>	<i>To a very great extent</i>
<i>I</i>	—	—	<i>A</i>	<i>U</i>

Response *A*, *I*, and *U* refer, respectively, to the actual intergroup climate, the ideal intergroup climate, and the urgency felt in connection with improving the intergroup climate to the ideal level. Weights from 1 to 5 were assigned to the response choices for scoring purposes.

Data for the variable of PCP were obtained through an instrument modified for this study and a parallel one performed in the same field sites, and with the same respondents, by Douds (1970)<sup>2</sup> The modified instrument, in which the name of the appropriate referenced group is inserted before questionnaire administration, contains 15 items which refer to six areas of intergroup information exchange. The six areas, with a representative item for each included, can be described as follows : 1) how adequately the respondent's group is informed of the referenced group's current work status, completion targets, and input expectations (« How adequately is your group informed of the status of those aspects of their current activities relevant to your work ? »); 2) delays in general, and delays in receiving from the referenced group information about changes

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<sup>2</sup> The development of the PCP instrument and its items was initiated in 1965 in connection with Phase II of Project HINDSIGHT conducted by the Program of Research on the Management of Research and Development with support from the Office of Naval Research. Phase II work on this project is described in Rubenstein (1966).

on some aspect of a project (« When they make a change in their work that significantly affects you, how long does it usually take for your group to find out about it ? » ; 3) letting the other group know in advance that something unusual or different than planned is expected to occur (« To what extent do they make changes affecting your work that come unexpectedly ? ») ; 4) the clarity of information content (« When you receive requests, recommendations, or instructions from the other group, generally to what extent is it clear as to what is needed, what to do, etc. ? » ; 5) perceived restriction in the amount and accuracy of information provided by the referenced group (« In terms of your group's needs, how accurate has the content of what they tell your group usually turned out to be ? » ; and 6) the perceived utility of the information provided and the scepticism with which it is received (« If they were to make a somewhat unusual request or provide a somewhat unexpected response to you — in their assigned area of responsibility — to what extent would you seek to confirm it ? ») A PCP score was computed for each respondent by summing the weights corresponding to the response categories he checked and reversing the direction of scoring on several items<sup>3</sup>.

### Collecting the Data

Several visits were made to each field site. The first of these usually occurred after management had indicated interest in the study in reply to an initial letter from the researcher. Each of the ten organizations contacted by letter and through the initial orientation visit agreed to participate in the study. Field trips devoted to questionnaire administration and interviews included an orientation session attended by the engineer-scientist respondents as well as their managers. During these sessions, the purpose of the study was explained again, the general affiliation of the participating organizations was revealed (no organization was identified by name), prior work of Northwestern's Research Program in the area of research-on-research was summarized, and respondents were assured

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<sup>3</sup> With the exception of items in the latter two areas, which were rated on a 7-point scale, the respondent indicated his answer on a 5- or 6-point Likert scale which also allowed him to respond in terms of « Does not apply » or « Don't need to know. » Responses indicated on the 7-point scale, which ranged from « very much more than usual » or « extremely complete » (1) to « not at all more than usual » or « extremely limited » (7) were reverse-scored and adjusted to a 5-point scale. Copies of the PCP instrument and details of scoring procedures are available in Technical Reports No. 70/32 and 70/34 from The Program of Research on the Management of Research and Development, Dept. of Industrial Engineering and Management Sciences, Northwestern University, Evanston, Ill., 60201.

of confidential treatment of data. At the conclusion of this introductory session each respondent was handed a questionnaire package which he proceeded to complete during the following 90 minutes. Managers received a relatively shorter questionnaire which asked for group effectiveness ratings, but results based on this questionnaire are not included in the findings reported here. The researcher was present during questionnaire administration in order to answer any question that might arise. Across organizations, interviews were held with 100 of the engineer-scientists and 54 managers after questionnaires had been completed.

## RESULTS

Intercorrelations were computed among the responses to Part *a* of the intergroup climate questionnaire items, and the results were subjected to a principal components analysis and Varimax rotation. This procedure yielded seven rotated factors. Using an arbitrary criterion of .30 as a minimum factor loading, one of these factors was dropped for lack of sufficient items to adequately define the factor space. To estimate the reliability of the remaining six factors, the internal consistency measure as computed by Kuder-Richardson Formula 20 was used. The internal consistency reliability of one of the factors was judged too low for further statistical analysis. The remaining set of five factors contained 55 items which accounted for approximately 65% of the 68-item total variance, were clearly interpretable, and were named Warmth/Interteam Spirit, Risk-Taking, Intergroup Clarity, Responsibility, and Conformity. In subsequent analysis these factors were considered dimensions by which the perceived configuration of the intergroup climates reported by respondents could be depicted. Table I gives the internal consistency reliability and proportion of total variance accounted for by each of the five factored scales on which these dimensions were based.

**TABLE 1**  
**Intergroup Climate Scales : Reliability Coefficient**  
**and Proportion of Variance Accounted for**

<i>Dimension</i>	<i>r<sub>KR20</sub></i>	<i>% variance</i>
Warmth/Interteam Spirit	.95	34
Risk-Taking	.73	10
Intergroup Clarity	.72	8
Responsibility	.70	7
Conformity	.70	6

Note : — N = 256



Table 2 presents the correlations between the set of weighted intergroup climate satisfaction scores (Combination 4) and unweighted scores (Combinations 1 and 3). The degree of satisfaction according to Combination 1 (see Evans, 1969, p. 94) was obtained by summing, for each dimension, responses to Part *a* of each defining item (« To what extent does the characteristic described by the item *apply to the present intergroup climate* ? »). The second set of unweighted scores was obtained according to Combination 3 (see Evans, 1969, pp. 94-95): Responses to Part *a* of each defining item were subtracted from Part *b* of each item.

TABLE 2

**Correlations Between Weighted (By Urgency : Combination 4) and Unweighted (Combinations 1 and 3) Intergroup Climate Satisfaction Scores**

<i>Intergroup Climate Dimension</i>	<i>Correlation Between Combination 4 and</i>	
	<i>Combination 1</i>	<i>Combination 3</i>
Warmth/Interteam Spirit	$r = -.62 *$	$r = .83 *$
Risk-Taking	$r = -.73 *$	$r = .92 *$
Intergroup Clarity	$r = -.53 *$	$r = .70 *$
Responsibility	$r = -.34 *$	$r = .79 *$
Conformity	$r = -.61 *$	$r = .74 *$

Note : - N = 216

\*  $p < .001$

(« To what extent the characteristic described by the item *would apply to the preferred ideal intergroup climate* ? »). Thus, the greater the perceived discrepancy between « ideal » and « actual » intergroup climate, the greater the dissatisfaction. Here the respondent was assumed to make judgments for himself about his aspirations with respect to the ideal intergroup climate and his present level of attainment as reflected in responses to Part *a*. Weighted satisfaction scores (Combination 4) were computed by multiplying the difference scores of Combination 3 by responses to Part *c* (« What *urgency* do you attach to reducing the difference between the response to Part *a* and Part *b* ? »).

The internal consistency reliability of the PCP scale was found to be .82. Intercorrelations between the PCP score and the three types of satisfaction scores are shown in Table 3. The table indicates that the

**TABLE 3**  
**Correlations Between PCP and Intergroup  
 Climate Satisfaction Scores**

<i>Intergroup Climate Dimension</i>	<i>Correlation Between PCP and</i>		
	<i>Combination 1</i>	<i>Combination 3</i>	<i>Combination 4</i>
Warmth/interteam Spirit	$r = -.60 *$	$r = .43 *$	$r = .40 *$
Risk-Taking	$r = -.54 *$	$r = .38 *$	$r = .39 *$
Intergroup Clarity	$r = -.55 *$	$r = .37 *$	$r = .23 *$
Responsibility	$r = -.33 *$	$r = .34 *$	$r = .31 *$
Conformity	$r = -.34 *$	$r = .22 *$	$r = .20 *$

Note : - N = 216

\*  $p < .01$

weighted and unweighted satisfaction scores for each intergroup climate dimension are significantly related to the level of perceived communication problems. In fact, all of the correlations were found to be significant at the .01 level.

In order to ascertain the degree of association of each of the three sets of satisfaction scores with PCP, three stepwise multiple regression analyses were performed. In the three multiple regression equations generated PCP was regressed, respectively, on Combination 1, Combination 3, and Combination 4 scores. Thus, in each equation all five scores derived according to one of the three formulations considered here were included as independent variables. The results of this analysis, presented in Table 4, indicate that in each case the regression of PCP on intergroup

**TABLE 4**  
**Multiple Correlation Coefficient Between Overall Level of PCP and  
 Aspects of Intergroup Climate Satisfaction (Weighted And Unweighted)**

<i>Aspect</i>	<i>R</i>
Unweighted (Combination 1)	.68*
Unweighted (Combination 3)	.47 *
Weighted (Combination 4)	.45 *

Note : - N = 216;  $df_1 = 5$ ,  $df_2 = 210$

for each regression.

\*  $p < .001$

climate satisfaction scores produced a multiple correlation which was statistically highly significant. Comparisons within this table reveal that the  $R = 0.68$  yielded by regressing PCP on unweighted scores formed according to Combination 1 is higher than the multiple correlations from the regression of PCP on Combination 3 or 4 scores. However, the difference between the three coefficients of multiple correlation is not significant.

## DISCUSSION

The high correlations found between unweighted and weighted satisfaction scores (see Table 2) for Combinations 3 and 4 are of the same order as those obtained by Spitzer (1964) between goal attainment scores with unit weights and goal attainment scores weighted by importance. Spitzer's results, which are based on Combinations 3 and 4, are reproduced in Table 5 for the nine goals considered in his study<sup>4</sup>.

**TABLE 5**

**Intercorrelations Among Goal Attainment and Goal Attainment Weighted by Importance**

<i>Goals</i>	<i>Correlation</i>
Opportunity to develop and try new ideas	$r = .88 *$
Job security	$r = .94 *$
Opportunity for making more money in the long run	$r = .82 *$
Approval from your subordinates	$r = .18 *$
Control over your job	$r = .94 *$
Approval from your supervisor	$r = .81 *$
Chance for advancement	$r = .82 *$
Approval from your fellow managers	$r = .82 *$
Opportunity for personal growth and development	$r = .76 *$

Note : - From Spitzer (1964, Table 4, p. 70),  $N = 96$ ; goal attainment scores derived according to Combination 3 reviewed by Evans (1969), i.e. based on the difference, for each goal, between how much S feels he should obtain and how much he does obtain.

\*  $p < .01$

<sup>4</sup> Spitzer's unweighted « attainment » scores are derived according to Combination 3, rather than Combination 1 (See Spitzer, 1964, p. 47).

As indicated by the correlations between PCP and the three types of satisfaction scores (see Table 3), the multiplicative model on which Combination 4 is based received little empirical support in this study. These data reveal that, while the relationship between PCP and Combination 3 and 4 scores is of the same order, a relatively stronger relationship seems to exist, for each of the five intergroup climate dimensions, between PCP and the Combination 1 score. The similarity of Combination 3 and 4 correlations with PCP appears to be due to the same psychometric consideration discussed by Mikes & Hulin (1968) on the basis of Ewen's (1967) findings. What was done here, as in the Mikes & Hulin study, was to weight a number of variables using idiosyncratic, individually determined weights (urgency ratings). Ewen, while using overall job satisfaction as the dependent variable, obtained extremely high correlations (.98, .99, .99 for the three samples) between the sum of the unweighted job-facet satisfaction variables measured by the Cornell Job Descriptive Index (Hulin, Smith, Kendall, & Locke, 1963) and the weighted sum of the same variables. Mikes and Hulin conclude that such high correlations reduce « drastically the chances of demonstrating the superiority of one measure over another [p. 397]. » Correlations in excess of .90 between weighted and unweighted scores also indicate a relatively stronger relationship than found in this study (see Table 2) or reflected in Spitzer's (1964) results (see Table 5). Based on the trend indicated in Table 2 and the results shown in Table 3, it appears that the use of urgency measures as multiplicative weights in Combination 4 does not yield as strong a relationship between intergroup climate and PCP than do unweighted scores.

The results of the multiple regression analysis (see Table 4) would seem to add further empirical weight to the tentative conclusion that weighting intergroup climate components by using urgency measures does not appear to be warranted. The sum of intergroup climate satisfaction scores with unit weights (Combination 1 and 3 scores) did better than the composite sum of satisfaction scores when weighted by urgency in the prediction of PCP. As in Ewen's (1967) and Mikes and Hulin's (1968) studies of importance and job satisfaction, the intuitively appealing notion that urgency is important in the study of intergroup climate satisfaction received no support.

It is quite possible that had this study used a behavioral measure, rather than PCP, as its criterion, the results might have been more supportive of a multiplicative model. The linking of intergroup climate to PCP essentially taps affective responses with respect to two states of nature. It might be expected that  $r$ 's between perceptions of two states

of nature (i.e., correlations between Combination 1 scores and PCP) would be higher than  $r$ 's between satisfaction with one state of nature (as measured by Combination 3 scores) and perception of the other state of nature (Evans, 1970b). Such a trend was clearly apparent in this study (see Table 2). Taken as a whole, these results are somewhat more conclusive than those reported by Beer (1966) for another study in which the relationship between two states of nature were examined. Beer related two measures of need satisfaction (in present terms, measured according to Combinations 1 and 5) to leadership behavior (Initiation of Structure and Consideration). For both measures of satisfaction with the five needs (security, social, esteem, autonomy, self-actualization) tapped by Beer, the relationships were not strong. However, the correlations between Combination 1 need satisfaction scores and leadership did appear to be stronger and more were statistically significant, than in the case of Combination 5 satisfaction scores.

Another alternative conclusion which seems relevant on the basis of the findings reported is the following. It is possible that the interactive model of intergroup climate satisfaction is valid but that either the satisfaction measures or urgency measure used in this study are invalid. Such a conclusion appears possible as validity data on the organizational climate measures from which items were assembled and modified for this study are *not* available in the original sources (see Friedlander, 1966 ; Halpin, 1966 ; Litwin & Stringer, 1968 ; Stephenson, Gantz, & Erickson, 1969). Evans (1969) has suggested that contradictory results based on comparisons of the relative utility of unweighted scores vs. scores weighted by importance may be due to the lack of a well developed measure of importance. The same criticism may apply to the measure of urgency as used here (perceived *immediacy of time* to improve the « actual » intergroup climate to the « ideal » level). A more basic consideration, however, relates to the choice of urgency over importance. The use of urgency was predicated on the assumptions that 1) perceptions of importance would be subsumed within the concept of urgency, and 2) the respondent would be able, on the basis of his perceived levels of attainment and aspiration, to make judgments about the urgency he attached to reducing the perceived gap between attainment and aspiration. Even so, however, the difference between long-term and short-term factors may not have been clear to participants (Evans, 1970b), or, although this was explained to respondents during the orientation sessions, it was still not clear to them what was meant by urgency. In this sense, and as further pointed out by a number of respondents during interviews, it may be

assumed that urgency judgments were not easy for them to make. A similar suggestion was offered by Mobley & Locke (1970) with respect to importance judgments.

A final point, also brought out by Mobley & Locke (1970), seems to apply to the measurement of both importance and urgency. Instructions in the experiments reported by Mobley & Locke were intended to yield « ratings of the importance of various job aspects or outcomes in general — that is, regardless of the actual nature of the individual's present job or of the present outcomes attained [p. 482]. » In contrast, and as supported by Friedlander's (1966) results that environmental factors of extreme satisfaction *or* dissatisfaction are rated more important by the individual, urgency responses of this study are more likely to reflect some combination of the respondent's values and frustrations of his *current* job situation with regard to interactions with members of the referenced group.

Despite the somewhat disappointing results obtained so far with weighted scores, this researcher encourages future empirical efforts to examine systematically not only the utility of the combinations reviewed by Evans (1969) and considered in this study, but also the relative usefulness of level of importance vs. level of urgency when combined with path-goal instrumentality. A future project is being planned by the author with this in mind.

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## ÉTUDE COMPARATIVE DES RÉSULTATS PONDÉRÉS ET NON-PONDÉRÉS D'UNE ENQUÊTE PORTANT SUR LA SATISFACTION À L'ENDROIT DES RELATIONS ENTRE DES GROUPES

Au cours des dernières années, on a manifesté beaucoup d'intérêt pour l'importance qu'a pour un individu une dimension particulière de sa tâche \* reliée au degré de satisfaction effective qu'il en retire de même qu'à l'évaluation d'une satisfaction globale à l'endroit de son travail. Dans une recension récente des rapports conceptuels et opérationnels entre la satisfaction globale, le niveau d'aspiration, le niveau de réalisation et le niveau d'importance, Evans (1969) a retracé plusieurs façons d'établir une relation entre ces trois niveaux et diverses mesures de la satisfaction globale. Evans a établi une liste des méthodes qui servent à combiner différents aspects de la satisfaction au travail :

1. l'addition simple des notes obtenues sur l'un ou l'autre des aspects de la satisfaction au travail et celles obtenues pour un niveau de réalisation d'un but ;
2. la somme des notes obtenues sur l'un ou l'autre des aspects de la satisfaction au travail multipliées par un indice d'importance attaché à cet aspect et celles obtenues pour un niveau de réalisation d'un but ;
3. la somme des différences entre les notes obtenues sur l'un ou l'autre des aspects de la satisfaction au travail et celles obtenues pour un niveau de réalisation d'un but d'une part ; et celles obtenues pour un niveau d'aspiration, d'autre part ;
4. la somme des notes obtenues sur l'un ou l'autre des aspects de la satisfaction au travail multipliées par un indice d'importance attaché à cet aspect et la différence entre les notes obtenues pour un niveau d'aspiration et celles obtenues pour un niveau de réalisation ;

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\* « Job satisfaction » dans le texte anglais est une expression qui déborde la notion de satisfaction à l'endroit de la tâche pour rejoindre celle de « work satisfaction » (satisfaction au travail).



5. la somme des différences entre les notes obtenues pour l'importance accordée à un but et la réalisation du but ; ou pour le degré d'aspiration à un but et celles obtenues sur l'un ou l'autre des aspects de la satisfaction au travail.

Les formulations les plus élégantes qui utilisent des cotes d'importance ne semblent pas fournir de meilleurs « prédicteurs » de la satisfaction globale que les combinaisons basées sur des notes non-pondérées ou celles qui se servent d'un niveau de réalisation multiplié par un cote d'importance, au lieu de la différence entre niveau d'aspiration et niveau de réalisation.

Plusieurs études sont arrivées à des résultats apparemment incohérents ; et le niveau d'importance se retrouve dans des théories de la motivation qui le combine d'une façon multiplicative avec la notion d'instrumentalité « cheminement vers un but ». Cette dernière se fonde sur l'hypothèse que l'attitude d'une personne à l'endroit d'un résultat anticipé dépend de la relation qu'elle établit entre ce résultat et l'obtention d'autres résultats qui revêtent plus ou moins d'importance pour elle à l'intérieur de son schème de préférences.

Le but de cette étude, qui s'inscrit dans un projet de recherche visant à élucider les facteurs qui affectent le couplage des groupes dont les tâches sont interdépendantes et prennent un caractère technique dans des unités de recherche et de développement, consiste en une comparaison de notes pondérées et non-pondérées obtenues sur des dimensions de climat intergroupal qui s'apparentent aux dimensions interactionnelles de groupe et à celles du climat organisationnel qu'on a retenues dans d'autres études. Cependant, les comparaisons que nous présentons ici n'incluent aucune mesure de la satisfaction globale qu'un individu peut retirer de son travail. Conformément aux associations 1, 3 et 4 recensées par Evans (1969), cette étude cherche plutôt à préciser la relation entre des notes pondérées et non-pondérées de satisfaction à l'endroit d'un climat intergroupal.

Pour chacune des cinq dimensions identifiées d'une façon empirique, on utilise alors des résultats pondérés et non-pondérés pour prédire le niveau général des problèmes de communications tels que perçus par les individus. De plus, avec la quatrième méthode, on utilise le niveau d'urgence au lieu du niveau d'importance pour pondérer des notes de satisfaction obtenues par l'emploi de la troisième méthode. Le niveau d'urgence se caractérise par une incitation à réduire le décalage possible entre le climat intergroupal actuel et le niveau idéal recherché. Cette incitation est déclenchée par la perception de la pression du temps qui pousse les individus à se rapprocher d'un niveau idéal de satisfaction. Ce niveau d'urgence repose sur l'hypothèse suivante : si les perceptions de l'importance sont incluses dans la réalisation d'un but ou dans des cotes de satisfaction, ce concept devrait fournir une indication beaucoup plus forte des frustrations qu'un individu éprouve au cours de ses interactions avec des membres de d'autres groupes.

#### POPULATION ÉTUDIÉE

Cette étude utilise des données qu'on a recueillies au cours d'une recherche empirique auprès de 256 ingénieurs et scientifiques au service d'organisations de recherche et de développement dont neuf se trouvent dans le secteur public et une

dans le secteur manufacturier. Leur affiliation à des unités plus grandes se présente comme ceci :

- quatre agences militaires
- trois centres de la NASA
- deux laboratoires en sciences de l'environnement
- un laboratoire industriel.

L'équipement électronique, l'électronique de l'état solide et la technologie des communications pour usages industriels et militaires, les systèmes d'énergie nucléaire, le développement de systèmes d'armement, la recherche sur l'environnement interne et externe, le développement et la vérification des systèmes espace-projectile-aviation constituent les principales activités de ces services. Le choix des répondants s'est fait de façon que chacun puisse donner un compte rendu sur le jeu des interrelations entre son groupe et un autre groupe particulier à l'intérieur de son service. Ce dernier groupe identifié au préalable comme groupe de référence est choisi sur la base d'une interdépendance au niveau des tâches entre les activités du groupe et celles du groupe dont fait partie le répondant.

#### TECHNIQUE DE MESURES

Pour opérationnaliser la notion de climat groupal, nous avons utilisé 68 items. À chacun de ces items, il était possible de donner trois réponses. Les résultats dont nous donnons le compte rendu ici découlent d'une compilation de ces réponses.

Pour chacun des items, on demandait au sujet d'indiquer, sur une échelle à 5 points de type Likert dans quelle mesure une caractéristique du climat décrit par l'item s'appliquait au climat intergroupal actuel tel que perçu par le répondant et indiquer aussi dans quelle mesure cette même caractéristique s'appliquerait au climat intergroupal que le répondant préférerait.

La partie (c) de chaque item permettait au répondant d'exprimer l'urgence qu'il attachait au désir de réduire le décalage entre la situation vécue et celle qu'il préférerait.

À l'aide d'un instrument comprenant 15 items, on obtint les données touchant la perception effective des problèmes de communications. Ces items couvraient six dimensions de l'échange d'information entre les groupes. Ces dimensions sont les suivantes :

1. Dans quelle mesure le groupe du répondant est-il informé d'une façon adéquate de l'état des travaux entrepris par le groupe de référence, des objectifs au plan de la réalisation et des attentes en termes d'« input ».
2. Les délais en général, les délais dans la réception de l'information venant du groupe de référence et concernant les changements apportés à un aspect quelconque du projet.
3. Dans quelle mesure fait-on connaître à l'avance à l'autre groupe que quelque chose d'inhabituel ou d'imprévu est sensé survenir ?
4. La clarté du contenu de l'information.
5. Une restriction dans l'exactitude et la quantité de l'information fournie par le groupe de référence.

6. L'utilité de l'information fournie et le degré de scepticisme qui accompagne sa réception.

#### DISCUSSION DES RÉSULTATS

Les réponses à la partie (a) du questionnaire sur le climat intergroupe ont été soumises à une analyse des principaux items et à une analyse factorielle du type orthogonal. Cette procédure et des considérations sur la consistance interne des éléments nous ont permis de déceler 5 dimensions du climat intergroupe en ne retenant que 55 items, c'est-à-dire environ 65% des items qui devaient rendre compte de la variance totale. Ces cinq dimensions sont :

1. Chaleur et esprit inter-équipe ;
2. sens du risque ;
3. Clarté intergroupe ;
4. Responsabilité ;
5. Conformité.

En établissant une moyenne des réponses aux quinze items du « Perceived Communications Problems » (PCP Instrument), on obtient un résultat concernant la perception effective des problèmes de communication.

Toutes les corrélations entre l'ensemble des notes pondérées de satisfaction à l'endroit du climat intergroupe (arrangement no 4) et les notes non-pondérées (arrangements 1 et 3) se sont avérées significatives au niveau .001 (voir Table 2). Les inter-corrélation entre le résultat obtenu avec PCP et les notes de satisfaction sont significatives à un niveau de .01 (voir table 3).

Pour vérifier le degré d'association des trois ensembles de notes de satisfaction avec le PCP, nous avons effectué trois analyses de régression multiple. Les résultats montrent que dans chaque cas le lien de régression entre les résultats obtenus au PCP et ceux obtenus pour le degré de satisfaction quant au climat intergroupe constitue une corrélation multiple qui est très significative. Des comparaisons à l'intérieur de cette table (4) révèlent que le coefficient  $R = 0.68$  obtenu par une régression du PCP sur des notes non-pondérées formées selon la méthode 1 est plus élevé que les corrélations multiples qu'on obtient par une régression du PCP sur des notes obtenues avec la méthode 3 ou 4. Cependant, la différence entre les trois coefficients de corrélation multiple n'est pas significative. Les résultats de cette analyse sembleraient ajouter plus de poids à l'idée qu'il est prématuré de conclure à la supériorité de la technique de pondération de notes de satisfaction par des mesures du degré d'urgence.

Comme le démontre cette étude et d'autres antérieures, l'idée que le degré d'urgence est important dans l'étude de la satisfaction à l'endroit du climat intergroupe ne reçoit aucun appui. Cependant, il est tout à fait possible qu'en utilisant une mesure de type « behavioral » au lieu du PCP, les résultats offrent un meilleur appui à un modèle de type multiplicatif.