

Research Note 84-48

THE ASSESSMENT OF PERFORMANCE FEEDBACK TO
INDIVIDUALS IN ORGANIZATIONAL SETTINGS

Daniel R. Ilgen, William E. Mattee, Jr.,
Bernard L. Dugoni, Cynthia D. Fisher and M. Susan Taylor
Purdue University

T. Owen Jacobs, Contracting Officer's Representative

Submitted by

Robert M. Sasnor, Director
BASIC RESEARCH



U. S. Army

Research Institute for the Behavioral and Social Sciences

February 1984

Approved for public release; distribution unlimited.

This report, as submitted by the contractor, has been cleared for release to Defense Technical Information Center (DTIC) to comply with regulatory requirements. It has been given no primary distribution other than to DTIC and will be available only through DTIC or other reference services such as the National Technical Information Service (NTIS). The views, opinions, and/or findings contained in this report are those of the author(s) and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other official documentation.

84 02 21 156

AD A138084

DTIC FILE COPY



Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER Research Note 84-48	2. GOVT ACCESSION NO. AD - A138084	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) THE ASSESSMENT OF PERFORMANCE FEEDBACK TO INDIVIDUALS IN ORGANIZATIONAL SETTINGS		5. TYPE OF REPORT & PERIOD COVERED Interim Report Series 1977-1978
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Daniel R. Ilgen, William E. Mattee, Jr., Bernard L. Dugoni, Cynthia D. Fisher, M. Susan Taylor		8. CONTRACT OR GRANT NUMBER(s) DAHC19-76-G-0017
9. PERFORMING ORGANIZATION NAME AND ADDRESS Purdue University West Lafayette, IN 47907		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 2Q161102B74F
11. CONTROLLING OFFICE NAME AND ADDRESS US Army Research Institute for the Behavioral and Social Sciences 5001 Eisenhower Ave. Alexandria, Virginia 22333		12. REPORT DATE February 1984
		13. NUMBER OF PAGES 41
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Expectancy theory, performance feedback, Internal consistency reliabilities, test-retest reliabilities, interrater reliabilities, estimates, specificity of feedback		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Following the review of the performance feedback literature by Ilgen, Fisher, and Taylor (1977), an instrument was developed to measure the dimensions of performance feedback identified in that review. This report describes the development of the instrument and the psychometric properties of it. Two samples of employees participated in the research. One sample was from a large manufacturing company. Members of the sample were randomly selected across all employee groups in that company. The second sample was composed of (continued)		

DD FORM 1 JAN 73 1473

EDITION OF 1 NOV 65 IS OBSOLETE

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

administrative and clerical personnel at Purdue University. Internal consistency and interrator reliabilities were obtained from the former sample, and test-retest reliabilities were obtained from the latter. It was concluded that with some modifications, the instrument processes sufficient reliability to warrant its use. The modifications and qualifications for its use are discussed. This report is second in a 1977-1978 series entitled "Motivational Consequences of Perceived Job Environments: The Critical Role of Feedback in Initial Work Experience."

Session For	
S	GRA&I ☒
TAB	☐
Unannounced	☐
Modification	
Distribution/	
Availability Codes	
Avail and/or	
Dist	Special
AI	



Unclassified

SECURITY CLASSIFICATION OF THIS PAGE(When Data Entered)

THE ASSESSMENT OF PERFORMANCE FEEDBACK TO INDIVIDUALS IN ORGANIZATIONAL SETTINGS

Recently there has been an upsurge of interest in performance feedback and its motivational properties in organizational settings. This interest has developed from three relatively independent sources. The first source is that of job design and the current interest in what is called job enrichment. The theoretical underpinnings of this view are based on Maslow's (1954) higher-order needs as espoused by Herzberg (Herzberg, Mausner, and Snyderman, 1959; Herzberg, 1966) and others. Jobs are assumed to possess a given potential for arousing and meeting higher order needs (Hackman and Oldham, 1975, 1976). As a result, jobs can be redesigned or "enriched" to meet these needs of job incumbents and therefore reduce their alienation from work (Ford, 1969; Maher, 1971).

Recently, Hackman and Oldham (1976) have provided a model for describing how aspects of the job itself influence the psychological processes of individuals and, in turn, their attitudes and behaviors. This model describes three classes of variables essential for enriched jobs. One of these three is feedback. Performance feedback is seen as a necessary condition for the individual to obtain knowledge of results about performance. Presumably with knowledge of results about performance the individual can experience feelings of accomplishment and/or can change or redirect his or her behavior in order to perform in a manner that will lead to feelings of accomplishment.

A second source of interest in feedback is that of expectancy theory. Expectancy theory of work motivation considers each employee as a decision-maker. This view of motivation concentrates on characteristics of the

work environment surrounding an individual's performance which influence his or her decision-making abilities (Porter and Lawler, 1968; Mitchell, 1974; Vroom, 1964). One central variable in this theory is the expectancy that his or her behavior will lead to a given level of performance. In order to develop an expectancy, the individual needs to receive feedback about his or her performance. Without such feedback, it is not possible for the individual to form accurate perceptions of the expectancy that behavior will lead to certain levels of performance.

Finally, feedback is essential to role theory (Katz and Kahn, 1978; Oeser and O'Brien, 1967). Work behavior, from the standpoint of roles, is concerned with describing those behaviors in which the individual will engage. The focus is not so much upon the amount of effort exerted toward a given level of performance as it is on the direction of effort -- e.g., what percent of the time does a sales representative go through orderbooks, direct the behavior of clerks, or sell to customers? From this standpoint, feedback guides and directs the appropriate behaviors.

Job design, expectancy theory, and role theory have all three had a major influence in recent thought about the behaviors of individuals in organizations. Furthermore, all three positions have posited a central role for feedback in the determination and influence of behavior. However, in spite of the importance of feedback in all of these views, performance feedback in organizations is little understood (Ilgen et al, 1977). Part of this is because there is a general tendency to accept feedback as "good" or "necessary" without critically evaluating the nature of feedback.

The Ilgen et al (1977) review was a critical evaluation of the feedback literature. It provided a description of several dimensions of feedback. The report also emphasized the often overlooked fact that

3

feedback originates from some source. This source can influence considerably the nature of the feedback message received by the individual. The extent to which feedback is accepted and is responded to by the individual is strongly influenced by this source. Therefore, any adequate treatment of feedback must consider the source from which it is received. Four dimensions of feedback were identified. In addition, two dimensions dealing with the way in which sources administered feedback, were seen as important. The four primary dimensions of feedback were its sign, the timing of the feedback, its specificity, and the frequency with which it is received. The fifth and sixth dimensions dealt with the manner in which the feedback was administered by a source.

In any setting the sources of possible feedback vary. However, in most work settings there exists a relatively common set of sources which make it reasonable to consider these sources across a wide variety of organizations and jobs. The sources most frequently encountered are: the individual's supervisor, co-workers, subordinates, and the job itself. In addition, many jobs have other individuals who do not appear in the normal chain-of-command. For example, a sales representative receives feedback from customers even though these customers do not appear in the organization per se. For such jobs, these other individuals are extremely important. Therefore, it is necessary to consider other individuals outside the normal chain-of-command.

A final source, and perhaps the most important one, is the individual himself or herself. In many work settings the individual can judge performance without any intervention from an outside source. At the simplest level the individual may not be able to complete the task and it is obvious. For example, the plumber may replace the faucet, turn on the

water to the faucet, and watch the water continue to drip. No outside feedback is needed in such a case. However, it does illustrate an interesting dilemma. Is the dripping faucet feedback from the self (in this case feedback the plumber gives himself or herself) or is it feedback from the task itself? Most would say it is feedback from the task. However, the individual must recognize what the task cues (dripping faucet) mean and this in a sense is the feedback. Therefore, the most direct agent in the process is the individual.

As we attempted to write clear and concise items for the instrument, the distinction between self and task was extremely perplexing. In fact pilot work showed that we could not keep them apart. As can be seen later, the end result was a combination of self and task with items similar to the following: "On a job like mine I can tell when I have done a good job."

The purpose of the present research was to develop an instrument to measure the dimensions of feedback and the sources from which the feedback was obtained. An instrument was developed to be administered to employees and supervisors in order to assess the feedback environment of the employees. This report describes the research designed to assess the psychometric properties of such an instrument.

METHOD

Item Development

The items for the instrument were generated and pretested in three phases. The first phase involved the creation of items by the investigators to fit the categories identified by the review. Those items which could be reliably sorted into categories were maintained for the preliminary

feedback instrument. This instrument was then administered to two samples. The first consisted of approximately 150 students at Purdue University who were asked to complete the questionnaire with reference to a summer job. All participants selected had held a summer job the summer immediately preceding administration of the questionnaire. These participants were paid for their participation and responded to the items with reference to their summer jobs. They also provided information about the clarity of the items and the instructions.

A second sample consisted of 36 supervisors in a large automobile manufacturing plant. These supervisors completed the questionnaires on company time and mailed their responses to the investigators.

Analyses of these data were conducted for two purposes. First, items or instructions which were unclear were revised or eliminated. Second, correlations among items were calculated in order to select groups of items that clustered into the categories defined. On the basis of these preliminary analyses, the final feedback questionnaire was assembled. This questionnaire appears as an appendix to this report.

Samples

Two samples were used for the main body of the research. The first consisted of employees of a large manufacturing plant in the midwest. Participants were selected randomly with two restrictions. First, each participant was required to have worked with his or her supervisor long enough to have received at least one formal appraisal from the supervisor. The second restriction was that two employees from each selected work group were included in the sample. (The reasons for the latter restriction are outlined in Technical Report No. 3, 1978.) In total 104 employees were identified for the sample. Of these 100 actually completed the

questionnaires. In addition, the 52 supervisors of these 104 employees were asked to provide several sets of data. Fifty returned questionnaires.

The second sample consisted of 42 employees from the administrative offices of a large midwestern university. These employees were primarily from the clerical staff but also included a number of administrative personnel.

Procedure

Sample 1: Once selected for participation in the study, employees were sent a letter from the researchers at Purdue describing the nature of the questionnaire to be completed and asking for their participation. Those employees who agreed to participate were scheduled to report to a large auditorium in one of the nine plant locations within the city. Employees were given a time to report to this location and no one refused to participate in the research.

At the scheduled time, employees reported to a large auditorium, were instructed on the nature of the research, and were allowed to fill out the questionnaire. The researchers remained in the room and answered questions as they arose. Upon completion of the questionnaire the participants signed a statement giving permission to use their data for research purposes and were dismissed.

Sample 2: Letters were sent to approximately 200 employees working in administrative positions at the university. These letters described the nature of the questionnaire and asked participants to volunteer to fill out the questionnaire on two occasions one month apart. Participants were informed of the dates of their participation and were told they would be paid ten dollars for their participation. The one restriction was that the employee should have been in the present position long

enough to have received a supervisory evaluation on at least one occasion.

Responses to these questionnaires resulted in 42 participants who reported to the assigned location at the prescribed time. At that time the researchers again described the study and distributed the questionnaires.

Approximately one hour was needed to complete these. When the questionnaires were completed participants returned them and signed a statement allowing the use of the data for research. The second session repeated the procedures of the first and occurred one month later. The participants filled out exactly the same questionnaire at that time. When they had completed it, they turned in the questionnaire and received their payment of ten dollars.

Dimensions of the Feedback Instrument

Table 1 lists the dimensions of feedback and the nature of the items used to measure them. Two things should be noted specifically from that table. First, note that each of the dimensions on the far left is measured for both positive and negative feedback. Column two indicates this. Second, note that with two exceptions each dimension is also paired with every source. The two exceptions are the dimensions dealing with manner and with public versus private information. For the latter two only interpersonal sources were included.

From Table 1 it is obvious that the sign and the source is always paired with a particular dimension. This is because the dimension itself cannot be considered without considering the sign of the feedback or the source from which it was received. Therefore, it was necessary to write items that include three elements in each of the items. Finally, the

last column of Table 1 identifies the items that were included to comprise the dimension as listed. The item numbers in the last column refer to the item numbers listed on the questionnaire which appears in the appendix.

Table 1

Dimensions of Feedback Measured with
the Feedback Questionnaires as well as
a Listing of the Items Comprising Each Dimension

<u>Dimension</u>	<u>Source</u>	<u>Sign</u>	<u>Item Numbers</u> ^a
Timing	Supervisor	Positive	1, 11, 21
"	"	Negative	2, 16, 26
"	Co-workers	Positive	3, 12, 22
"	"	Negative	4, 17, 27
"	Subordinates	Positive	5, 13, 23
"	"	Negative	6, 18, 28
"	Others	Positive	7, 14, 24
"	"	Negative	8, 19, 29
"	Self	Positive	9, 15, 25
"	"	Negative	10, 20, 30
Specificity	Supervisor	Positive	31, 41, 51
"	"	Negative	32, 46, 56
"	Co-workers	Positive	33, 42, 52
"	"	Negative	34, 47, 57
"	Subordinates	Positive	35, 43, 53
"	"	Negative	36, 48, 58
"	Others	Positive	37, 44, 54
"	"	Negative	38, 49, 59
"	Self	Positive	39, 45, 55
"	"	Negative	40, 50, 60
Frequency	Supervisor	Positive	61, 71, 81
"	"	Negative	66, 76, 86
"	Co-workers	Positive	62, 72, 82
"	"	Negative	67, 77, 87
"	Subordinates	Positive	63, 73, 83
"	"	Negative	68, 78, 88
"	Others	Positive	64, 74, 84
"	"	Negative	69, 79, 89
"	Self	Positive	65, 75, 85
"	"	Negative	70, 80, 90

Table 1 Continued

<u>Dimension</u>	<u>Source</u>	<u>Sign</u>	<u>Item Numbers^a</u>
Manner	Supervisor	Positive	91, 99, 107
"	"	Negative	92, 103
"	Co-workers	Positive	93, 100, 108
"	"	Negative	94, 104
"	Subordinates	Positive	95, 101, 109
"	"	Negative	96, 105
"	Others	Positive	97, 102, 110
"	"	Negative	98, 106
Public vs. Private	Supervisor	Positive	111, 119, 127
"	"	Negative	112, 123, 131
"	Co-workers	Positive	113, 120, 128
"	"	Negative	114, 124, 132
"	Subordinates	Positive	115, 121, 129
"	"	Negative	116, 125, 133
"	Others	Positive	117, 122, 130
"	"	Negative	118, 126, 134

RESULTS

Three sets of analyses were used to evaluate the quality of the feedback instrument. The first set addressed the internal consistency reliabilities of the subscales described in Table 1 and also combinations of subscales created by collapsing subscales over sign, over sources, and over both sign and sources. Internal consistency was assessed with Cronbach's coefficient alpha.

One issue did arise when calculating coefficient alpha. All items included a set of numerical scales and also a category labeled "does not apply" which allowed the rater to omit cases that were not applicable. This category was coded zero and included in the calculation of internal consistency for it was felt that if the dimension actually did not apply, the respondent should choose "does not apply" on all items. The degree of agreement for this case was just as important as agreement on other scale values. Therefore, "does not apply" was coded zero and included in the calculation of coefficient alpha. However, this procedure created one problem. This arose when large numbers of participants existed for which the dimension did not apply. For example, nearly half of the sample had no subordinates. These participants so dominated the variance in response to dimensions dealing with subordinates that the coefficient alpha was artificially high. Therefore, coefficient alpha was also calculated with and without the individuals who chose "does not apply" for all items in the subscale.

A second estimate of reliability was the correlation between responses at time one and time two for the administrative staff sample. In

this case test-retest reliabilities were reported with the time interval equal to one month.

Finally, an interrater reliability estimate was assessed for the primary dimensions listed in Table 1 by correlating supervisor descriptions of the feedback received by the chosen focal person with the focal's responses. Exactly the same items were used for both raters except for the fact that the target person was the self for focals and the focal subordinate for superiors.

Tables 2 through 6 report coefficient alphas, test-retest reliabilities, and interrater reliabilities for the feedback dimensions assessed using three subsamples. Internal consistency statistics are based upon the sample of subordinates of which approximately 100 persons were available. Test-retest reliabilities were based upon the 42 employees from the administrative departments at Purdue University, and the interrater correlations were obtained from forty pairs of supervisors and subordinates in the manufacturing sample for which the supervisor described the feedback of a particular focal subordinate. The data and conclusions from them are described in the discussion section that follows.

Table 2

Timing of Feedback Subscale: Means, Standard Deviations,
and Reliabilities from Incumbent Responses

Timing of.....	Reliabilities							
	Cronbach's Alpha			N for Test- Retest	Superior with Subordinate (max n=45)			
	With "Not Applicable" Items	Without "Not Applicable" Items						
$\bar{X}$	S.D.	a	N	Test- Retest**				
Positive Fdbk from Supervisor	2.97	1.22	100	.75	.84	.53***	38	.05
Negative Fdbk from Supervisor	2.60	1.35	100	.54	.80	.63***	42	.36**
Positive Fdbk from Co-workers	2.96	1.43	89	.72	.63	.18	34	.04
Negative Fdbk from Co-workers	2.78	1.64	91	.66	.61	.60***	29	-.02
Positive Fdbk from Subordinates	2.90	1.34	58	.86	.47	.56***	20	-.11
Negative Fdbk from Subordinates	2.28	1.49	58	.87	.64	.61***	20	.20
Positive Fdbk from Others	3.12	1.44	84	.81	.66	.63***	33	.13
Negative Fdbk from Others	2.92	1.52	83	.77	.33	.45**	31	.14
Positive Fdbk from Self	1.81	0.80	100	.64	.64	.58***	42	.19
Negative Fdbk from Self	1.64	0.71	100	.65	.37	.38**	42	.07
All Fdbk from Supervisor	5.57	2.18	95	.76	.79	.58***		
All Fdbk from Co-workers	5.68	2.41	89	.84	.79	.23		
All Fdbk from Subordinates	5.17	2.51	54	.93	.74	.66***		

Table 2 Continued

Timing of....	Reliabilities					
	Cronbach's Alpha		a	S.D.	a	Superior with Subordinate (max n=45)
	With "Not Applicable" Items	Without "Not Applicable" Items				
$\bar{X}$			N		Test-Retest**	N for Test-Retest
All Fdbk from Others	6.03	.90	82	2.59	.44***	
All Fdbk from Self	3.45	.79	95	1.39	.49***	
All Positive Fdbk	13.80	.75	49	3.45	.34**	
All Negative Fdbk	11.37	.72	48	3.20	.36**	

^a Based on exclusion of "Not Applicable" response

* $p \leq .10$

** $p \leq .05$

*** $p \leq .01$

Table 3

Specificity of Feedback Subscale: Means, Standard Deviations,
and Reliabilities from Incumbent Responses

Specificity of....	Reliabilities									
	$\bar{x}$	a	S.D.	a	N	Cronbach's Alpha		Test- Retest**	N for Test- Retest	Superior with Subordinate (max n=45)
						With "Not Applicable" Items	Without "Not Applicable" Items			
						Items	Items			
Positive Fdbk from Supervisor	2.47		1.06		99	.86	.81	.56***	39	.00
Negative Fdbk from Supervisor	2.37		1.15		98	.85	.84	.70***	41	.06
Positive Fdbk from Co-workers	2.76		.82		89	.88	.73	.44**	30	-.15
Negative Fdbk from Co-workers	2.97		1.39		87	.89	.79	.24	30	-.21
Positive Fdbk from Subordinates	2.98		1.18		59	.93	.80	.55**	19	.04
Negative Fdbk from Subordinates	2.59		.72		55	.95	.71	.50***	35	.42
Positive Fdbk from Others	2.84		.95		82	.91	.63	.50***	35	-.16
Negative Fdbk from Others	2.80		.94		78	.89	.75	.42**	42	.09
Positive Fdbk from Self	1.91		.69		100	.41	.42	.20	42	.10
Negative Fdbk from Self	2.02		.89		100	.69	.59	.54***	42	.36**
All Fdbk from Supervisor	2.41		.97		99	.90	.90	.63***		
All Fdbk from Co-workers	2.86		1.02		90	.93	.88	.28		
All Fdbk from Subordinates	2.86		1.13		61	.96	.80	.59***		

Table 3 Continued

Specificity of....	Reliabilities					
	Cronbach's Alpha			N for		Superior with Subordinate (max n=45)
	$\bar{X}$	S.D.	a	With Applicable" Items	Without "Not Applicable" Items	
All Fdbk from Others	2.83	.94	82	.95	.80	.55***
All Fdbk from Self	1.96	.74	100	.78	.75	.41***
All Positive Fdbk	2.52	.55	100	.78	.75	.64***
All Negative Fdbk	2.53	.77	100	.81	.78	.51***

^a Based on exclusion of "Not Applicable" response

* $p \leq .10$

** $p \leq .05$

*** $p \leq .01$

Table 4

Frequency of Feedback: Means, Standard Deviations,
and Reliabilities from Incumbent Responses

Frequency of....	$\bar{X}$	S.D.	a	N	Reliabilities			
					Cronbach's Alpha		N for Test- Retest	Superior with Subordinate (max n=45)
					With "Not Applicable" Items	Without "Not Applicable" Items		
Positive Fdbk from Supervisor	3.00	1.16	.99		.74	.70	.77***	41
Negative Fdbk from Supervisor	2.92	1.07	.98		.64	.53	.69***	41
Positive Fdbk from Co-workers	2.99	.77	.92		.81	.73	.56***	32
Negative Fdbk from Co-workers	2.93	.77	.91		.74	.49	.55***	31
Positive Fdbk from Subordinates	3.11	.72	.93		.96	.72	.34	22
Negative Fdbk from Subordinates	2.90	1.20	.93		.93	.71	.56***	22
Positive Fdbk from Others	3.00	.76	.92		.88	.58	.32*	36
Negative Fdbk from Others	3.08	1.39	.90		.81	.39	.33*	33
Positive Fdbk from Self	2.20	1.13	.90		.29	.33	.68***	41
Negative Fdbk from Self	2.27	1.07	.90		.08	-.22	.86***	42
All Fdbk from Supervisor	2.97	1.03	.99		.76	.74	.72***	
All Fdbk from Co-workers	2.97	.66	.92		.86	.71	.16	
All Fdbk from Subordinates	3.00	.77	.99		.96	.66	.27	

Table 4 Continued

Frequency of....	Reliabilities					
	Cronbach's Alpha		With "Not Applicable" Items		Without "Not Applicable" Items	
	$\bar{X}$	S.D.	a	N	Test-Retest**	N for Test-Retest
All Fdbk from Others	3.05	.84	.82	82	.91	.50
All Fdbk from Self	2.23	.97	100	100	.52	.48
All Positive Fdbk	2.85	.80	100	100	.75	.75
All Negative Fdbk	2.81	.75	100	100	.72	.68

^aBased on exclusion of "Not Applicable" response

* $p \leq .10$

** $p \leq .05$

*** $p \leq .01$

Superior with Subordinate (max n=45)

Table 5

Manner in which Feedback was Given: Means, Standard Deviations,
and Reliabilities from Incumbent Responses

Manner in which....	Reliabilities					
	Cronbach's Alpha		With "Not Without "Not		Test- Retest**	N for Test- Retest
	$\frac{a}{X}$	S.D.	Applicable" Items	Applicable" Items		
Positive Fdbk given by Supervisor	2.28	.78	.80	.67	.42***	39
Negative Fdbk given by Supervisor	2.16	.81	.85	.72	.88***	40
Positive Fdbk given by Co-workers	2.72	1.31	.82	.58	.49***	32
Negative Fdbk given by Co-workers	2.62	.77	.71	.70	.84***	33
Positive Fdbk given by Subordinates	2.65	.62	.94	.61	.67***	21
Negative Fdbk given by Subordinates	3.16	.91	.93	.78	.76***	17
Positive Fdbk given by Others	2.66	.71	.92	.58	.93***	36
Negative Fdbk given by Others	2.78	.80	.92	.71	.82***	32
Fdbk given by Supervisor	2.22	.75	.88	.82	.47***	
Fdbk given by Co-workers	2.67	.91	.88	.74	.75***	
Fdbk given by Subordinates	2.91	.77	.95	.73	.74***	
Fdbk given by Others	2.71	.67	.95	.76	.89***	
Positive Fdbk given	1.94	.51	.79	.78	.55***	
Negative Fdbk given	1.95	.55	.75	.81	.78***	

19

^aBased on exclusion of "Not Applicable" response

*p ≤ .10

**p ≤ .05

Table 6

Public or Private Feedback: Means, Standard Deviations,
and Reliabilities from Incumbent Responses

Public or Private Feedback which is....	Reliabilities					
	Cronbach's Alpha			Test-Retest**		Superior with Subordinate (max n=45)
	$\bar{X}$	S.D.	a	With Applicable" Items	Without "Not Applicable" Items	
Positive from Supervisor	2.54	.71	99	.74	.73	.39**
Negative from Supervisor	2.03	.61	98	.74	.53	.45***
Positive from Co-workers	3.07	1.10	92	.83	.64	.43**
Negative from Co-workers	2.84	1.21	92	.85	.71	.49***
Positive from Subordinates	3.09	.84	56	.96	.55	.14
Negative from Subordinates	3.19	.86	56	.98	.79	.73***
Positive from Others	3.16	1.22	83	.91	.60	.66***
Negative from Others	3.05	1.17	79	.93	.58	.43**
From Supervisors	2.29	.49	99	.67	.62	.19
From Co-workers	2.95	1.05	92	.89	.51	.64***
From Subordinates	3.17	.69	57	.96	.68	.35
From Others	3.14	1.17	83	.94	.60	.64***
Positive	2.20	.60	100	.81	.81	.75***
Negative	2.04	.64	100	.82	.76	.52***

^aBased on exclusion of "Not Applicable" response

*p < .10

**p < .05

***p < .01

DISCUSSION

The discussion that follows will evaluate each of the feedback dimensions presented in tables two through six. However, before treating each individually, one generalization stands out. It is clear from the tables that supervisors and subordinates simply do not agree on the nature of the feedback received by the subordinate.

This disagreement is consistent with previous research. For example, Hackman and Lawler (1971) found no correlation between supervisor and subordinate descriptions of the amount of feedback available in the subordinate's job. Nevertheless, the lack of agreement found in our research is somewhat more disconcerting. Feedback was assessed by a variety of items tapping several dimensions rather than a single item dealing with a global aspect of feedback. We reasoned that if the dimensions of feedback were spelled out explicitly, agreement would be more likely. In addition, although disagreement may exist on global descriptions, specific descriptions would allow for the discovery of those dimensions on which agreement did exist as well as those on which it did not. Only in one case was substantial agreement found. This was with regard to the manner in which positive feedback was given by subordinates ($r = .64$, $p \leq .01$). However, given the large number of insignificant correlations, little confidence can be placed in this finding. It is most parsimonious to conclude that supervisors and subordinates do not agree on the nature of feedback received by subordinates.

The lack of covariation between the two is best attributed to different perspectives due to differences in roles. Boreman (1975) made the same point with regard to performance appraisals. He pointed out that low convergent validity among peers, superiors and subordinates did not necessarily

reflect the fact that the ratings of one or more of the sets were invalid. It only implied that each group dealt with different aspects of the incumbent's performance. As a result, valid ratings on all dimensions probably were not possible across the diverse sets of groups.

With regard to our feedback measure, such an interpretation would argue that supervisors may not be able to judge feedback from sources other than themselves. Their ratings on these other dimensions should not agree with incumbents. Nevertheless, we would expect some convergence on descriptions of supervisory feedback. Of the ten correlations dealing with supervisor feedback significant correlations were found on two. Although the ratio of significant correlations for supervisors (2 of 10 or .20) is greater than for all others (2 of 40 or .05), it is hardly impressive.

The disagreement between supervisors and incumbents, while not unexpected, is perplexing from the standpoint of prescriptive recommendations for improving feedback. Changes in feedback must be made by agents external to the job incumbent in most cases. These changes are accomplished either by altering task designs or by altering the practices of supervisors, subordinates, co-workers, or others. Unfortunately, without a reference of whose descriptions were more correct, as is the case with field research such as this study, we are unsure about what to change. This uncertainty points out the need to conduct further research in settings where the objective nature of the feedback is known. In such settings supervisor and subordinate descriptions must be obtained in order to compare them to the standard known feedback as well as to each other.

Turning our attention from the interrater to the intrarater data in Tables 2 through 6, several generalizations can be made. First of all, the quality of all five feedback dimensions (timing, specificity, frequency, manner, and public versus private) is extremely good when all feedback is

considered. The internal consistency reliabilities are around .80 or above and the test-retest correlations, with the exception of the timing of feedback are quite high considering the length of the time period between questionnaire administration (one month).

The same general pattern held for feedback dimensions when considered within sign. That is, when positive feedback was separated from negative. However, the magnitude of the internal consistency correlations dropped to the mid to lower .70's. This drop reflects the fact that the number of items was reduced to one-half the number used in the overall measure. Furthermore, correlations over time dropped for all but the manner in which negative feedback was given. Further discussion of the results needs to focus upon each individual scale. The discussion that follows treats each scale separately.

Timing. Only the timing of feedback from supervisors tended to show good psychometric properties for both positive and negative feedback as well as the combination based upon responses collapsed over sign. In all cases, the coefficient alphas were in the high seventies or eighties and over one month the test-retest correlations were in the mid .60's. Therefore, it seemed reasonable to conclude that the scale does a reasonable job of measuring the timing of feedback from supervisors.

With regard to sources other than supervisors, the conclusions were less strong. The measure of timing from co-workers showed low internal consistency and did not hold up over time for positive feedback ($r = .18$, $p = n.s.$). This low correlation is perplexing because many alternative explanations tend to be eliminated on logical grounds. One might expect that using a stimulus like co-workers which is composed of more than one individual might lead to unreliable ratings if the rater used different

persons as a reference at each time. For example, co-worker X might have been salient the first time whereas co-worker Y was used as the person the second time. However, if this were the case, one would expect negative feedback from co-workers not to demonstrate convergence over time and also other multi-person groups such as subordinates and others should have displayed drop. They did not. Furthermore, the stem of the items comprising these other items and those for supervisors were the same as they were for co-workers with the exception of the name of the source who provided the feedback. If the items were confusing, again all other sources should have had low test-retest correlations. Such was not the case.

Measures of the timing of feedback from the remainder of the sources other than self displayed moderate test-retest correlations but poor internal consistency ones. In all cases the large number of responses of "not applicable" meant that these cases should be excluded from calculations of coefficient alpha. With regard to the self as a source it was not necessary to exclude any individuals, but neither was the reliability acceptable when sign was kept distinct.

When positive and negative feedback were combined, the result was more positive. Under this condition, the measure did well for supervisors, poorly for co-workers when test-retest was considered but well when internal consistency was used, and moderately well for all other sources on both criteria. Thus, it was concluded that the scale measured timing reasonably well if one were not interested in distinguishing between positive and negative feedback and if one were to proceed with caution if interested in the timing of feedback from co-workers.

Specificity. The pattern of the specificity measures is quite similar to that of timing. Measures based upon combinations of items across sign or

across sources of feedback possess moderately good internal consistency and moderate stability over time. The exception to the latter again is the specificity of feedback from co-workers with the lower correlation occurring with negative rather than positive feedback.

If, however, measures are desired which separate the feedback on the basis of sign, fewer subscales appeared to be acceptable. In this case all feedback from supervisors and subordinates, and positive feedback from co-workers appeared reasonable. On the other hand, measures of the specificity of feedback from others were moderate to low and those for self were totally unacceptable.

The failure of self measures to show any consistency either within sets or over time may mean that a construct of specific feedback to oneself may have little meaning. Perhaps one never considers self feedback in specificity terms. One either does or does not give oneself feedback but if it is given it is by nature specific. Obviously our data cannot speak to the issue of why. Nevertheless, they do question the extent to which specific self feedback is a reasonable construct. The issue deserves further research.

Frequency. The quality of the measures of frequency was considerably more mixed than the other two sets of measures. While measures of the frequency of feedback from superiors tended to be quite good as well as the frequency of positive feedback, the other measures varied in quality. In fact, this was also true to some extent for feedback from supervisors. Ratings of negative feedback from supervisors possessed moderate test-retest reliability ($r = .69$) but internal consistency was unacceptable ($r \leq .70$).

Considering each source in turn we find that positive and negative feedback from co-workers were moderately well measured both from the

standpoint of internal consistency and stability but when the two were combined it was not stable. The frequency of feedback from subordinates was only moderately internally consistent and stable when the feedback measure was for negative feedback. The frequency from others lacked both internal consistency and stability over time. Finally, feedback to oneself lacked acceptable internal consistency but showed quite good stability over time. Therefore, with the exception of overall, positive, and negative feedback scores, the quality of the instrument for measuring the frequency of feedback varied across and within sources.

Manner of Giving Feedback. Measures of the manner in which feedback was given all met criteria for good psychometric qualities reasonably well. Interestingly, feedback from supervisors, which, for the other sets of items, tended to be better measured than feedback from other sources, had the lowest test-retest correlations (r_{tt} for positive feedback from supervisors = .42 and for all feedback from supervisors = .47). However, the internal consistency coefficients were acceptable (r = .80 and .88 when not applicable items were included). Therefore, it was concluded that the manner in which feedback was given was well measured.

Public versus Private. Measures of the degree to which feedback was public or private were acceptable when subscales were combined to form measures of positive, negative, and overall feedback. Beyond that point, all other scales either lacked acceptable internal consistency and/or stability. Therefore, it was best to conclude that only at the more global levels did the measures hold up. This is unfortunate because changes in the public or private nature of the feedback must be made at the more specific levels than at the global ones.

CONCLUSIONS

To a large extent the instrument was able to measure satisfactorily the dimensions of feedback identified by the Ilgen et al (1977) review. The instrument was particularly successful when dimensions of feedback were measured without differentiating according to both sign and source, and criteria of internal consistency were used for evaluation. In addition, for four of the five dimensions (timing, specificity, frequency, and manner) one or more of the source by sign dimensions also provided an acceptable measure. This was particularly true when the supervisor was the source of feedback. The only feedback not adequately measured for most subscales was that of the public versus private nature of the feedback.

When the quality of the instrument was evaluated in terms of the convergence between supervisor and subordinate descriptions of feedback, no convergence existed. This lack of convergence is understandable but disturbing. It is our belief that no measure is going to find agreement between supervisors and subordinates on the subordinate's feedback in most organizational settings. This fact does not seem to reflect upon the nature of our instruments, but rather it describes the nature of the perceptual discrepancies between supervisors and their subordinates with regard to feedback. It seems clear to us that incumbents in these two roles have vastly different perspectives and views of the feedback environment of the subordinate. As a result, the lack of correlation between supervisor and subordinate descriptions that we observed simply reflects the extent of the disagreement.

In spite of this disagreement, we do not mean to imply that what is is what should be. If changes for improvements in subordinate feedback are

to be made by superiors some consensus must exist between these two groups. Our instrument only documented the existing differences. Future research should work to obtain convergence in the perceptions. The existence of an instrument such as the one described here which possesses reasonable psychometric properties on several of the dimensions deemed relevant for feedback, provides a starting place for constructing and measuring feedback environments, and then working to eliminate some of the areas of disagreement between supervisors and their subordinates.

Table 7
Correlations between Supervisor and Focal Subordinate
Description of Feedback Dimensions

I. Timing

	Focal Ratings									
	1	2	3	4	5	6	7	8	9	10
1. Positive-Supervisor	.05	.11	.03	-.04	.23	.35*	.01	.06	-.06	-.06
2. Negative-Supervisor	.28*	.36**	.11	-.04	.18	.34*	-.01	-.03	-.06	-.05
3. Positive-Co-workers	-.02	.05	.04	.21	-.33	-.09	-.05	.10	-.20	.04
4. Negative-Co-workers	.28*	.05	.40**	-.08	-.19	-.17	-.14	-.10	-.02	-.06
5. Positive-Subordinates	.18	.26	.40**	.13	-.15	.22	-.16	-.16	-.15	.02
6. Negative-Subordinates	.21	.40**	.46**	.46**	.65***	.20	.16	-.02	.39*	.28
7. Positive-Others	-.02	.24	.09	.37**	.17	.06	.13	.22	.02	-.07
8. Negative-Others	.18	.22	.05	.10	.10	.28	-.06	.14	.04	-.21
9. Positive-Self	.17	.41***	.01	.18	.06	.46**	-.06	-.13	.19	.12
10. Negative-Self	.23	.54***	.07	.10	.10	.11	-.03	-.07	.12	.07

* $\leq .10$

** $\leq .05$

*** $\leq .01$

Supervisor
Ratings

Table 7

Correlations between Supervisor and Focal Subordinate
Description of Feedback Dimensions

II. Specificity

	Focal Ratings									
	1	2	3	4	5	6	7	8	9	10
1. Positive-Supervisor	-.00	-.01	-.16	-.14	-.03	-.18	-.12	-.16	.21	.27*
2. Negative-Supervisor	-.01	.06	-.16	-.15	.04	-.18	-.24	-.22	-.04	.09
3. Positive-Co-workers	-.02	-.07	-.15	-.24	.10	-.03	.14	-.13	-.24	-.22
4. Negative-Co-workers	-.07	-.09	-.16	-.21	.12	-.24	-.00	-.12	-.18	-.20
5. Positive-Subordinates	.00	-.18	-.42*	-.26	.04	.16	-.14	-.06	-.12	-.04
6. Negative-Subordinates	.09	.12	-.22	-.23	.33	.42	.04	-.04	-.14	.07
7. Positive-Others	-.10	.03	.35	-.20	.02	-.19	-.16	.11	-.30**	-.30**
8. Negative-Others	-.04	.20	.16	-.27*	.14	-.08	-.13	.09	-.07	.01
9. Positive-Self	.07	.02	.05	-.07	.04	-.01	.27	.04	.10	.10
10. Negative-Self	-.10	-.04	.10	.06	-.14	-.09	.11	-.00	.25*	.36**

* $\leq .10$ ** $\leq .05$ *** $\leq .01$

Table 7

Correlations between Supervisor and Focal Subordinate
Description of Feedback Dimensions

III. Frequency

	Focal Ratings									
	1	2	3	4	5	6	7	8	9	10
1. Positive-Supervisor	-.08	-.13	-.11	-.10	-.04	-.18	.00	-.04	-.22	-.18
2. Negative-Supervisor	.09	.14	.07	-.10	-.05	.08	-.10	.16	-.05	-.03
3. Positive-Co-worker	.08	.08	.11	-.01	.19	-.08	.23	.07	.04	.09
4. Negative-Co-worker	.20	.05	-.00	-.20	.03	-.03	.03	-.02	.21	.18
5. Positive-Subordinates	.09	.07	.08	.08	.19	-.06	.20	-.26	.07	-.08
6. Negative-Subordinates	.02	.07	.33	.20	.31	-.01	.34	.04	-.15	-.12
7. Positive-Others	.14	.27*	.22	.12	.24	.16	.03	.23	-.26*	-.04
8. Negative-Others	.32**	.47***	.34**	.07	.35	.20	.23	.20	-.02	.05
9. Positive-Self	-.19	.03	-.12	-.05	-.14	.17	-.20	.06	.05	.07
10. Negative-Self	-.05	.01	-.11	.02	.07	.28	-.19	.11	.03	.06

* $\leq .10$ ** $\leq .05$ *** $\leq .01$

Table 7

Correlations between Supervisor and Focal Subordinate
Description of Feedback Dimensions

IV. Manner

	Focal Ratings							
	1	2	3	4	5	6	7	8
1. Positive-Supervisor	.28*	.26*	-.06	-.11	.31	.26	.30*	.22
2. Negative-Supervisor	.14	.22	-.03	-.05	.16	.27	.23	.32*
3. Positive-Co-worker	-.03	.00	-.00	-.08	.03	.17	.04	.03
4. Negative-Co-worker	-.06	.02	.20	.01	-.00	-.05	.24	-.03
5. Positive-Subordinates	.67***	.69***	.40*	.31	.64***	.40	-.11	.02
6. Negative-Subordinates	.14	.24	.29	-.33	.51**	-.17	.10	-.49**
7. Positive-Others	.13	.22	.16	.04	.10	.12	-.23	.01
8. Negative-Others	-.21	-.08	.04	-.07	-.17	-.18	.25	-.09

* $\leq .10$ ** $\leq .05$ *** $\leq .01$

Table 7

Correlations between Supervisor and Focal Subordinate
Description of Feedback Dimensions

V. Public-Private

	Focal Ratings							
	1	2	3	4	5	6	7	8
1. Positive-Supervisor	-.02	.26*	.22	.01	-.01	-.02	.10	.06
2. Negative-Supervisor	-.10	.17	-.17	-.22	-.01	.13	-.09	-.04
3. Positive-Co-worker	.01	.23	-.21	-.02	.18	.01	-.13	-.04
4. Negative-Co-worker	.01	-.03	-.10	-.09	-.02	-.02	-.04	.05
5. Positive-Subordinates	-.03	.57***	.03	.39	.34	.48*	.43*	.43
6. Negative-Subordinates	-.11	.17	.31	-.19	.11	.28	-.01	-.10
7. Positive-Others	-.13	.12	-.08	.04	.26	.36*	-.11	-.06
8. Negative-Others	-.01	-.06	-.19	.08	.04	.28	-.11	-.13

Supervisor
Ratings

* $\leq .10$
 ** $\leq .05$
 *** $\leq .01$

Correlations between Supervisor and Subordinate Descriptions of Feedback Dimensions Collapsed over Sources

[illegible]

Table 8 Continued

23	24	25	26	27	28	29	30
-.09	-.21	-.64*	-.36	-.52	-.01	.01	-.05
.18	.22	-.30	-.24	-.25	.05	.13	.09
.08	.08	-.40	-.22	-.20	.01	.22	.08
-.26	-.38	-.60**	-.26	-.30	.31	.32	.32
-.33	-.24	-.50	-.18	-.25	.28	.46	.37
-.20	-.20	-.70	-.32	-.42	.33	.39	.37
.10	-.10	-.54*	-.51	-.70**	.42	.34	.44
.07	.07	.08	.46	.35	-.08	.21	.07
.08	-.05	-.21	.04	-.13	.25	.46	.40
-.10	.22	.45	.29	.35	.14	.34	.26
-.24	.01	.26	-.17	.04	-.00	.17	.09
-.32	.05	.36	-.04	.11	.08	.27	.19
.25	.24	.00	.65**	.49	.16	.39	.25
.17	.23	-.18	-.28	-.44	.11	-.12	.07
-.06	-.08	-.13	.33	.08	.19	.32	.24
.16	.25	.30**	.33**	.33**	.05	.29*	.19
.40***	.52***	.57***	.51***	.57***	.55***	.32**	.49***
.33**	.45***	.50***	.48***	.52***	.37**	.33**	.40***
.10	.26*	.24	.24	.26*	.02	-.10	-.05
.12	.23	.42***	.27*	.37**	-.05	-.24	-.17
.12	.26*	.36**	.28**	.34**	-.02	-.19	-.13
.57***	.94***	.46***	.37***	.44***	.23	.04	.16
----	.82***	.18	.08	.14	.13	.17	.18
	----	.40***	.30**	.17	.22	.10	.18
		----	.78***	.95***	.46***	.18	.36**
			----	.93***	.44***	.31**	.43***
				----	.47***	.26*	.41***

					----	.51***	.86***
						----	.88***

Table 9

Correlations between the Focal and the Other Member of the Same Work Group on
Descriptions of Feedback Dimensions Collapsed over Sources

Focals Rating of....	1	2	3	4	5	6	7	8	9
1. Timing of Positive Feedback	----	.59**	.86***	.45***	.52***	.52***	.26*	.16	.25
2. Timing of Negative Feedback		----	.92***	.48***	.50***	.52***	.50***	.40***	.52***
3. Timing of Feedback			----	.52***	.57***	.58***	.94***	.33**	.45***
4. Specificity of Positive Feedback				----	.74***	.92***	.30**	.10	.26*
5. Specificity of Negative Feedback					----	.94**	.26*	.12	.23
6. Specificity of Feedback						----	.30**	.12	.26*
7. Frequency of Positive Feedback							----	.57***	.94***
8. Frequency of Negative Feedback								----	.82**
9. Frequency of Feedback									----
10. Manner of Positive Feedback									
11. Manner of Negative Feedback									
12. Manner of Feedback									
13. Public-Private Positive Feedback									
14. Public-Private Negative Feedback									
15. Public-Private Feedback									
Other Group Member's Rating of....									
16. Timing of Positive Feedback									
17. Timing of Negative Feedback									
18. Timing of Feedback									
19. Specificity of Positive Feedback									
20. Specificity of Negative Feedback									
21. Specificity of Feedback									
22. Frequency of Positive Feedback									
23. Frequency of Negative Feedback									
24. Frequency of Feedback									
25. Manner of Positive Feedback									
26. Manner of Negative Feedback									
27. Manner of Feedback									
28. Public-Private Positive Feedback									
29. Public-Private Negative Feedback									

Table 9 Continued

23	24	25	26	27	28	29	30
-.04	-.10	-.22	-.06	-.16	-.20	-.00	-.11
.08	-.03	-.34	-.22	-.30	-.49***	-.26*	-.42***
.04	-.07	-.33	-.18	-.28	-.42***	-.18	-.34**
-.00	-.07	.09	.16	.12	-.22	.02	-.11
.26*	.17	.15	.12	.14	-.16	-.06	-.12
.13	.05	.13	.15	.14	-.20	-.02	-.12
.13	.06	.14	.19	.17	-.14	.12	-.01
.12	.13	.07	.07	.07	-.32	-.14	-.26
.14	.10	.12	.15	.14	-.24	.01	-.12
.06	.05	.09	.26	.18	.01	.27*	.17
.05	.07	-.04	.23	.09	.14	.24	.22
.06	.06	.04	.27*	.16	.07	.29*	.21
-.05	-.04	-.21	-.16	-.20	.14	.16	.17
.03	.05	.06	.23	.14	.30*	.34*	.37**
-.01	.00	-.10	.03	-.04	.26*	.29*	.31**
.37**	.39***	.25	.21	.26*	-.09	-.10	-.11
.67***	.59***	.31**	.10	.29*	.17	-.15	.01
.63***	.58***	.32**	.22	.32**	.07	-.15	-.04
.65***	.53***	.30**	.29*	.33**	.05	.11	.10
.48***	.38**	.29*	.15	.26*	.20	.06	.15
.61***	.50***	.32**	.24	.32**	.13	.09	.13
.66***	.94***	.41***	.50***	.50***	-.02	.24	.13
----	.87***	.14	.20	.19	-.03	-.03	-.03
	----	.33**	.42***	.41***	-.02	.14	.07
		----	.59***	.93***	.37**	.47***	.49***
			----	.84***	.29*	.66***	.56***
				----	.38**	.61***	.58***
					----	.43***	.85***
						----	.83***

REFERENCES

- Ford, R.N. Motivation through the work itself. New York: American Management Association, 1969.
- Hackman, J.R., & Lawler, E.E., III. Employee reactions to job characteristics. Journal of Applied Psychology (Monograph), 1971, 55, 259-286.
- Hackman, J.R., & Oldham, G.R. Development of the Job Diagnostic Survey. Journal of Applied Psychology, 1975, 60, 159-170.
- Hackman, J.R., & Oldham, G.R. Motivation through the Design of Work: Test of a Theory. Organizational Behavior and Human Performance, 1976, 16, 250-279.
- Herzberg, F. Work and the nature of man. Cleveland: World Publishing Company, 1966.
- Herzberg, F., Mausner, B., & Synderman, B. The motivation to work. New York: John Wiley and Sons, 1959.
- Ilgen, D.R., Dugoni, B.L., Matte, W.E., Jr., Fisher, C.D., & Taylor, M.S. Effects of performance feedback in organizational settings. Purdue University, Department of Psychological Sciences, Technical Report No. 3, 1978.
- Ilgen, D.R., Fisher, C.D., & Taylor, M.S. Performance feedback: A review of its psychological and behavioral effects. Technical Report No. 1, Department of Psychological Sciences, Purdue University, West Lafayette, Indiana, February, 1977.
- Katz, D., & Kahn, R.L. The Social Psychology of Organizations, second edition. New York: Wiley, 1978.
- Maher, J.R. (Ed.) New Perspectives in Job Enrichment. New York: Van Nostrand, 1971.

- Maslow, A.H. Motivation and personality. New York: Harper and Row, 1954.
- Mitchell, T.R. Expectancy models of job satisfaction, occupational preference, and effort: A theoretical, methodological, and empirical appraisal. Psychological Bulletin, 1974, 1053-1077.
- Oeser, O.A., & O'Brien, G. A Mathematical model for structural role theory, III, Human Relations, 1967, 20, 57-68.
- Porter, L.W., & Lawler, E.E., III. Managerial attitudes and performance. Homewood, IL: Dorsey Press, 1968.
- Vroom, V.H. Work and motivation. New York: Wiley, 1964.