

CQWL

An Empirical Examination  
of the Dimensions of  
Quality of Working Life

(CQWL-WP-77-2)

CENTER FOR QUALITY OF WORKING LIFE  
Institute of Industrial Relations (Los Angeles)  
University of California  
Los Angeles, 90024  
(213) 825-8862, 63

INSTITUTE OF INDUSTRIAL  
RELATIONS LIBRARY

JUN 22 1978

UNIVERSITY OF CALIFORNIA  
BERKELEY

  
**An Empirical Examination  
of the Dimensions of  
Quality of Working Life**

James C. Taylor .

**Center for Quality of Working Life  
Institute of Industrial Relations  
University of California  
Los Angeles 90024**

This research was supported by grants to CQWL from the Ford Foundation, and from the Economic Development Administration, U.S. Department of Commerce.

Comments by Lee Cooper and Bill McKelvey are warmly acknowledged. Thanks are also due to Mark Levine for his computational assistance.

Copyright 1977 by  
James C. Taylor  
All Rights Reserved

## ABSTRACT

A factor analysis was undertaken in an effort to investigate the underlying structure of the quality of working life (QWL) construct. The responses of 95 managers to 42 items were used to derive Varimax factors obtained from rotating the first five principal components. Some affinities with existing a priori lists of QWL criteria or categories are noted. But the total structure derived is superior to any of these, since it simultaneously deals with separate criteria which focus on individual and collective QWL concepts. Scales are produced which are explicable on the apparent meaning of the items which cluster. Adequate discriminant validity and internal consistency reliability are reported for the scales. An item-total analysis revealed good scale homogeneity and item discriminability for the items which were included on the basis of high factor loadings.

## INTRODUCTION

Quality of working life is an idea "whose time has come." It has been widely accepted as a unique and useful concept by policy planners, managers, and union leaders, as well as by social scientists. The task of defining quality of working life has begun with a determination of the "qualities" of working life -- utilizing comprehensive lists of attributes presumed to conform to the experiences of people at work. Such lists of qualities attempt to define quality of working life from its input, but researchers have not ignored the question of evaluation of output (i.e., the specific value of the experience on any of those qualities). Furthermore, these listings have not yet been seen as a method for prioritizing or weighting the separate qualities, independent of conventional empirical methods of testing concept values. Instead, these steps -- evaluation of specific qualities in specific circumstances -- have had to await completion of the definitional step of determining the qualities themselves. So far, investigators interested in the quality of working life have responded with the a priori creation of lists of qualities.

Quality of working life, one could say, officially passed from the initial phase of introduction and acceptance to the definitional phase, with the recent publications by Davis and Cherns (1975a,b) and by Biderman and Drury (1976a). These books emphasize the development of indicators for quality of working life and in so doing present the definitional work to date, as well as a forum to compare the various definitions and component lists in the field. This phase also broaches the central issue of measurement, and a review of the various lists makes it clear that only initial mapping has begun. In an editorial comment on the available lists and their contribution, Eilon has pointed out that, "One cannot discuss intelligently ways in which the quality of working life can be improved or how the possible undesirable

effects of certain characteristics of technology and organizational design can be avoided without an explicit measure of the quality of working life and without being able to state whether and in what manner it has changed from one period to another."

Indeed, these lists of "qualities" of working life do not provide explicit measures, but at best represent concepts or constructs from which measures may be devised. The lists of component concepts are wide-ranging and varied. Robinson (1976) compares several lists and concludes that more comprehensive lists have a wider application of some subset of their components than do the less complex and shorter lists. The components of the lists vary from one list to another, but nearly all of them make reference to wages, hours, and working conditions, power in decision making, individual development, security, social integration (e.g., Robinson, 1976; Herrick and Maccoby, 1975); others refer to socially relevant issues, aspects of the work, and due process at the work place as well (Walton, 1975).

The boundaries of quality of working life are treated in a subtle, often unconscious way in the recent literature. Biderman and Drury (1976b) discuss the concept of values as a criterion measure of quality of employment, and discuss the dilemma arising from members' commitment to the employing organization versus the time and energy available for their activities outside of work. Clearly, activities off the job are not a part of working life, but the impact of the job on social relations, and home and family life can be expected to influence employees' feelings on the job, as well as about the job. Seashore (1975) offers an additional perspective concerning the boundaries of quality of working life by looking beyond the viewpoint of the individual organization member. He proposes that quality of working life boundaries be extended to enclose what society considers important and what employers consider important, as well as what the given individual

believes to be important. Such a comprehensive definition blurs the distinction between quality of life and quality of working life. It takes into account both society's belief that quality of working life means improved working conditions and employment rates, and the employers' contention that it is primarily related to worker loyalty and productivity.

This issue of considering quality of working life as either an "individual" or collective concept is not unique in the development of social indicators. Gerson (1976) has discussed this bounding problem of the individual versus the "transcendental" perspective in the context of quality of life concepts. Gerson points out that the distinction between individual and transcendental (or collective) perspectives on quality of life has had a long history. He begs the question of choosing one or the other, declaring that both are useful and should be considered complementary.

Proposed indicators of quality of working life are either the result of the various authors' personal observations and a priori assumptions about work, or confirmatory reviews of the literature (e.g., Taylor, 1973). Virtually no empirical tests of any of the various lists per se have been reported.

Although speculative and a priori, the work already done provides a basis for empirical test. The present study was conducted to examine the latent structure of the comprehensive lists available. The responses of managers to a questionnaire listing of 42 separate elements of quality of working life, were factor analyzed and examined in order to study the extent and nature of the structure underlying the list.

#### METHOD

The respondents in this case were 95 engineering and FDP managers who returned questionnaires sent to a random sample of 240, selected from the

lists of Factory and Datamation Magazines' California subscriber lists. These respondents were selected to participate in a larger mail survey dealing with job design criteria of which the 42-item list was one part. The return rate of nearly 40 percent to the mail survey was considered an adequate response, given the somewhat sensitive nature of the overall questionnaire in an unsolicited poll.

### Measures

The list of 42 items comes essentially from a combination of Walton's list of conceptual categories (1975), which represent the "individual" point of view, and the collective quality of working life perspective of employers and society at large, described by Seashore (1975).

Walton's list, it was felt, gave adequate coverage to the aspects or categories proposed in other individual lists, as well as to the unique category of "constitutionalism," which includes equity and due process. Twenty-six items which were felt to measure the categories of quality of working life exemplified by Walton, were generated. Since none of the lists recently reported included measures exclusively collective from either the employer's or the larger society's point of view, several items (following Seashore) designed to measure those aspects, were created, and they were included in the questionnaire list of 42 items.

Table 1 displays the 42 items and their ad hoc categories.

-----  
 Table 1 about here  
 -----

This list of 42 items was presented to the respondents as a set of separate items to the general question: "To what extent do you think your company, organization, or government agency should be concerned with each of the following considerations?" The respondent was asked to check one point on a five-point scale, ranging from "a very great extent" to

Table 1

<u>Questionnaire Items</u>	<u>Representative "Individual" QWL Categories (after Walton, 1975)</u>
1. <sup>1</sup> Good Pay	
11. Good fringe benefits plans	
36. Availability to individuals of different types of financial compensation	1. Adequate and Fair Compensation
<hr/>	
2. Convenient working hours	
4. Safe working conditions	
7. Low work-related stress	2. Safe and Healthy Working Conditions
12. Low work-related disease	
<hr/>	
20. Job security	
28. Opportunities to use knowledge and skills	
38. Opportunities for employees to grow and learn	
39. Availability of choices between challenging jobs	4. Opportunities for Growth and Security <sup>2</sup>
40. Providing opportunities for careers	
<hr/>	
10. Joint management-employee consultation <sup>3</sup>	
15. Minimizing social discrimination	
19. Good social relations at work	
29. Elimination of status differences	
31. Joint consultation <sub>3</sub> between management and employees on job content	
32. High employee self-esteem	5. Social Integration in the Work Organization
33. Better trust among members of the organization at all levels	
35. Honest communication among all levels of the organization	
41. Minimizing sex discrimination	
<hr/>	
6. Standards of fairness and equity applied to all members of the organization	
21. Promoting free speech on organizational issues	6. Constitutionalism in the Work Organization
42. Ensuring due process to all members of the organization	
<hr/>	
3. Adequate transportation to and from work	
23. Opportunity to enjoy life outside the job	7. Work and the Total Life Space
27. High employee interest in community affairs	
<hr/>	
30. Opportunity to relate job activities to product user benefits	
37. Confirmation that work performed is socially desirable	8. Social relevance of Work Life

Table 1 (continued)

<u>Questionnaire Items</u>	Representative "Collective" QWL Perspectives (after Seashore, 1975)
8. Minimizing time lost during working hours	
13. High product/service quality	
14. Reducing theft or sabotage	
16. Loyalty to the organization	
17. Improving employee motivation	Employers
18. Eliminating scrap and waste	Quality of Working Life
24. Improving productivity	
25. High employee morale	
26. Minimal abuse of equipment	
<hr/>	
5. Providing available recreational facilities	
9. Low community unemployment rates	
22. Loyalty to the union	Societal
34. Promoting effective and active unions	Quality of Working Life

<sup>1</sup> Items are numbered in accordance with their presentation sequence in the questionnaire.

<sup>2</sup> Items were not generated to measure Walton's third category -- "Immediate opportunity to use and develop human capacities"

<sup>3</sup> "Joint consultation" is not specifically mentioned by Walton although it is implied in the "Democracy" category of Herrick and Maccoby (1975).

"a very little extent" for each of the 42 items.

### Analysis

The factor analysis reported here employed a principal components analysis and orthogonal rotation (Varimax Solution) which was not undertaken until separate analyses using the two sample components (engineering managers from the Factory list, n = 42; and EDP managers from the Datamation list, n = 53) had been separately analyzed and examined, using oblique rotation. Individual oblique solutions for the two subsamples varied only in detail and in the strength of a fifth factor from the combined orthogonal solution reported here, indicating that factor structures derived from the two samples differed little, and further, that those factors are not highly interrelated. The separate oblique solutions showed no consistency between the subsamples for factors above five.

The scales derived from the orthogonal rotation were checked for discriminant validity, and internal consistency. An item analysis, testing item discriminability and factor homogeneity was also performed.

## RESULTS

### Factor Analysis

The principal components solution for the combined sample yielded an unrotated general factor accounting for 23 percent of the total scale variance, while the next four factors together accounted for nearly 25 percent additional variance. Initial communality estimates were obtained using the iterative method.

Table 2 presents the results of the orthogonal rotation of those first five factors, together with the Eigenvalues and variance accounted for by the principal components before rotation. Item communalities shown in

Table 2 are the results achieved after factor rotation.

-----  
 Table 2 about here  
 -----

Factor loading of .3848 or greater was used as the criterion for including specific items in Table 2. This loading represents the significance threshold for  $p < .001$  with an  $n = 95$ . A comparison between Table 2 and Table 1 reveals some but by no means, total correspondence between the clustering of the combined Walton/Seashore lists and the empirical results.

#### Factors Derived

The first factor contains items which focus on what could be described as "current issues." The items include "due process" and "equity" from Walton's constitutionalism category; "safety" and "disease" from his working conditions category; and the current social issues of racial and sex discrimination, originally assigned by Walton to his "social integration" category. The attention currently given to these forms of racial discrimination can be traced to the influence of Affirmative Action legislation. The due process, equity, and sex discrimination items may reflect the current prominence of the Equal Rights Amendment and related issues. The safety and disease concerns are probably the result of recent activity in OSHA (Occupational Safety and Health Act) legislation.

Items concerned with the reduction of "theft" and "sabotage" and "employment abuse" were expected to fall within the "employer's quality of working life" set, yet they too loaded highly on the first factor. Worker alienation is, and has been an important issue for managers, with particular reference to negative motivation. Their concern is reflected in the worker alienation bills introduced during the 90th and 94th Congress, and in the establishment of the New National Center for Productivity and Quality of Working

Table 2

Factor Analysis - Quality of Working Life  
(Orthogonal Rotation) Technical Designers' Views of What Their  
Employing Organizations Should Be Concerned With

Factor 1 - "Current Issues"	Factors					Communality
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	
(41) Min. Sex Discrimination	.72					.57
(4) Safe Working Conditions	.65					.47
(12) Low Work Related Disease	.64					.48
(15) Min. Racial Discrimination	.63					.45
(26) Min. Abuse of Equipment	.60					.58
(14) Reduced Theft & Sabatoge	.59					.46
(42) Ensuring Due Process	.52					.47
(6) Standards of Fairness & Equity	.49					.39
<b>Factor 2 - "Social Work Environment"</b>						
(31) Joint Consultation Regarding Job Content		.69				.53
(35) Honest Communication		.62				.46
(10) Joint Emp./Mgt. Consultation		.60				.51
(33) Better Trust		.60				.56
(21) Promote Free Speech		.41				.35
(32) High Employee Self-Esteem		.40				.29
<b>Factor Three - "Growth &amp; Development"</b>						
(40) Opportunities for Careers			.72			.61
(38) Opportunities to Grow & Learn			.67			.50
(39) Choices Between Challenging Jobs			.65			.57
(28) Opportunities to Use Knowledge & Skills			.45			.30
(11) Good Fringe Benefits			.44			.29
<b>Factor 4 - "Employer's QWL"</b>						
(16) Loyalty to Organization				.65		.55
(18) Eliminating Scrap & Waste	.40			.63		.61
(24) Improving Productivity				.60		.43
(8) Min. Time Lost During Working Hours				.50		.42
(19) Good Social Relations			.42	.47		.45
(25) High Employee Morale				.42		.39
(17) Improved Employee Motivation				.42		.43
<b>Factor Five - "Society's QWL"</b>						
(90) Low Community Unemployment Rates				.59		.44
(3) Adequate Transportation to Work				.56		.34
(34) Promoting Effective Unions				.56		.37
(37) Confirmation of Socially Desir- able Work				.42		.51
(23) Opportunity to Enjoy Life Outside Work	.39			.42		.42
(22) Loyalty to Union				.42		.21
<b>Eigenvalues</b>	<b>9.57</b>	<b>3.68</b>	<b>2.46</b>	<b>2.17</b>	<b>1.80</b>	
<b>Percent Variance</b>	<b>23%</b>	<b>9%</b>	<b>6%</b>	<b>5%</b>	<b>4%</b>	

N. Respondents = 95  
N. Items = 42

Life, in Washington, D.C.

The second factor, here called "social, work environment" includes those items from the Walton social integration category -- "trust," honest communications" and "self esteem" -- as well as two additional items on joint consultation (which belong in the broadest sense to the social integration category, but are not specifically mentioned by Walton), and the item "free speech" which Walton assigns to his "constitutionalism" category.

Factor three is quite a good representation of Walton's category dealing with growth and development. The four items with the highest loadings on this factor are from the five items categorized a priori.

Factor four incorporates six of the eight items assigned to the "employer's quality of working life" in Table 1. "Good social relations" loads almost as highly on Factor three as it does on Factor four, and may be an equally appropriate complement of either. Factor four may be considered a good representation of that aggregative perspective.

Factor five contains three of the four items which are designed to relate directly to societal concerns: low unemployment rates, loyalty to unions, and promoting effective unions. The other three items loading on Factor five have general relevance to Walton's "individual" categories of "work and total life space" and the "social relevance of work life," but are also pertinent to the collective concern. In addition to accounting for the lowest variance (4% in the unrotated solution), this factor among the five, is the only one not well replicated between the two subsamples in the separate analyses undertaken prior to the factor analysis reported here. In the earlier comparison, the EDP managers data did show this factor quite strongly, while data for the engineering managers did so to a lesser degree.

The three items intended to measure Walton's first factor -- "adequate and fair compensation" -- did not load either separately or together in a single factor. Given the apparent contemporary emphasis on the "hot" social issues in the first factor, pay may be seen as satisfactory, and therefore relatively unimportant to the managerial respondents in the present study.

Other respondents (perhaps nonsupervisory employees or union officials) might well generate another factor structure in this case.

Table 3 shows the correlations among the five scales, constructed using the items with factor loadings of .38 and higher. The coefficients range from .26 to .53 (Median = .39) and can be considered adequate evidence for separate scales.

-----  
 Table 3 about here  
 -----

Although the total factors were subjected to orthogonal rotation, their subsets relate at a level as high as .53 between the first factor -- "basic rights" -- and factor four -- "employer's quality of working life." In all, the pattern in Table 3 seems appropriate and the correlations are low enough to allow the conclusion that the factors are measuring different concepts.

#### Internal Consistency Reliability

The measure of inter-item, or internal, consistency of the five factors reveals the degree to which the different items within each factor give the same results. Items which give the same result are said to be measuring the same characteristic, and the combination of a set of items in each factor is justified. "Coefficient Alpha" was applied in the present case and the results are reported in Table 4.

-----  
 Table 4 about here  
 -----

The internal consistency of scales from factors one through four is well established with Alpha Coefficients ranging from .78 to .85. Scale five with the lowest Alpha (.71) and six items must be considered a less reliable measure in view of the number of items it contains. Factor five was the only factor not confirmed in both individual factor analyses, being found only for the EDP managers group.

Table 3

Intercorrelations Among Scale Indices

Scale	<u>Scale</u>				
	1	2	3	4	5
1		.40	.31	.53	.26
2			.49	.49	.45
3				.38	.37
4					.32
5					

Table 4

Internal Consistency Reliability

<u>Factors</u>	<u>Alpha (<math>\alpha</math>)</u>
1	.85
2	.82
3	.78
4	.81
5	.71

### Item Discriminability and Scale Homogeneity

Item-to-total-score analysis is one of the more frequently used methods of determining the scalability of individual items. Correlations between individual items and total factor indices constructed from Table 2 above (minus the particular item in question) were calculated for each relevant item-total pair. If a factor index is homogeneous, we would expect the item-total correlations to be large and positive. Each item-total correlation coefficient would reflect the discriminability of that item or its relative strength in contributing to the overall measurement of the factor index. This item analysis, presented in Table 5, reveals acceptable item-total correlations for all items and factor totals.

-----  
 Table 5 here  
 -----

Consistent with the previous tests applied to the factor indices, factors one through four show generally greater homogeneity than factor five. Indeed, the individual item-total correlations in factor five are no higher than the lowest correlations in any of the other four factors. This suggests that the primary items in factor five, as determined by highest loadings in the Varimax Solution, are not discriminant enough in their contribution to the factors, and that the addition of more items (with lesser loadings) would improve the reliability ( $\alpha$ ) of the factor index only slightly in proportion to the increase in questionnaire length.

### DISCUSSION

Data presented in the previous section show that quality of working life categories aggregated from the a priori listings of a number of investigators, can be approximated by examining the network of relationships among empirically measured subscales. The factors derived from the present study do not validate the a priori listing of any one author.

Table 5  
Item to Total Correlations

Items *	Scales				
	1	2	3	4	5
1	.75	.68	.69	.48	.40
2	.58	.55	.63	.63	.52
3	.63	.63	.58	.66	.46
4	.60	.66	.43	.53	.48
5	.63	.48	.40	.44	.41
6	.59	.46	—	.52	.38
7	.57	—	—	.52	—
8	.52	—	—	—	—
<b>Median</b>	.60	.59	.58	.52	.44

\* The order of the items for each scale is the same order in which the items are arranged in Table 2.

The myriad lists currently available in general require further elaboration; their definitions still beg semantic questions, and the resulting criteria will inevitably overlap (Eilon, 1976). This exploration demonstrates (1) that separable factors can be derived, that the resulting index scales have satisfactory psychometric characteristics, and (2) that these factors relate generally as predicted, to a combination of the criteria proposed by the various authors.

This analysis will need to be repeated with a more systematic and comprehensive sample selection. The strength of the first four factors and their component items, however, strongly suggests that similar factors will result from wider testing.

## References

- Biderman, A.D., and Drury, T.F. (Eds.), Measuring work quality for social reporting. New York: John Wiley & Sons, 1976 (a).
- Biderman, A.D., and Drury, T.F., Social and moral qualities of work as social indicators. In A.D. Biderman and T.F. Drury (Eds.), Measuring work quality for social reporting. New York: John Wiley & Sons, 1976 (b).
- Davis, L.E., and Cherns, A.B. (Eds.), The quality of working life, volume one: problems, prospects, and state of the art. New York: The Free Press, 1975 (a).
- Davis, L.E., and Cherns, A.B., (Eds.), The quality of working life, volume two: cases and commentary. New York: The Free Press, 1975 (b).
- Eilon, S., Editorial: The quality of working life, Omega, 1976, 4, 367 - 373.
- Gerson, E.M., On the quality of life, American sociological review, 1976, 41, 793 - 806.
- Herrick, Neal Q., and Maccoby, M., Humanizing work: a priority goal of the 1970's. In L.E. Davis and A.B. Cherns (Eds.), Quality of working life, volume one. New York: The Free Press, 1975.
- Robinson, J.P., Some approaches to examining quality of employment indicators for disaggregate segments of the work force. In A.D. Biderman and T.F. Drury (Eds.), Measuring work quality for social reporting. New York: Joh Wiley & Sons, 1976.
- Seashore, S.E., Defining and measuring the quality of working life. In L.E. Davis and A.B. Cherns (Eds.), The quality of working life, volume one. New York: The Free Press, 1975.
- Taylor, J.C., "Concepts and problems in studies of quality of working life." A report prepared for the Manpower Administration, U.S. Department of Labor, June 1973; Contract No: 81-06-72-09, 67 pp.
- Walton, R.E., Criteria for quality of working life. In L.E. Davis and A.B. Cherns (Eds.), Quality of working life, volume one. New York, The Free Press, 1975.



**CQWL**

CENTER FOR QUALITY OF WORKING LIFE