

## A COMPARATIVE STUDY OF PERFORMANCE SCORES ON THE VALPAR COMPONENT WORK SAMPLES

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**ABSTRACT:** This study focused on an analysis of performance scores on the Valpar Component Work Samples (VCWS) numbers 1, 4, 5, 6, 8, 9 and 11 of local handicapped individuals compared with normative data obtained from Valpar using their standards of two populations, the Skill Center and San Diego Employed Worker norms. Results identified a general trend in which the vocationally handicapped individuals performed significantly slower on time parameters and where applicable, accuracy measurement than the competitive group norms. These results have relevance to the motivation, aspirations and degree of disability limitations of clients to enter those skill occupations as assessed by the VCWS.

Competitive work sample norms offer the opportunity to describe the level of performance attained by vocationally handicapped individuals. As a reference group, competitive norms introduce a measure of employability used as a basis for comparing clients and competitive norm groups, comparing a client's level of performance with industrial and/or training school norms has elected a controversial debate (Allan & Sax, 1972; Gibertson, 1973; Hansen & Menz, 1979; McCray, 1979, 1980; Parker & Hansen, 1976). Berven & Maki (1982) indicated that:

Use of client norms may overestimate potential for competitive employment, where the performance of the client is well below that of employed workers .... On the other hand, use of industrial norms may underestimate potential due to client inexperience as an industrial worker, or to disability and associated functional limitations, or both. (p.22).

Thus, client norms are potentially more lenient toward satisfactory performance requirements. Consequently, competitive norms with restrict satisfactoriness of performance for even those clients that performed well when compared to other clients.

The concern that competitive norms could be prejudicial to clients was also discussed in a Research and Training Center conference on critical issues in vocational evaluation (Dunn, Korn, & Andrew, 1976) where attention was drawn to the fact that the full percentile range of industrial norms are considered acceptable to the labor market. Thus, even the first percentile of these norms are deemed satisfactory. Eventually, the debate of using clients vs. competitive norms was resolved by the adoption of a work sample standard developed by the Vocational Evaluation and Work Adjustment Association (VEWAA) and the Commission on Accreditation of Rehabilitation Facilities (CARF)

which declared that "Competitive norms or industrial standards shall be established and used" (CARF, 1978, p. 28).

Alternatively, maintaining and updating client norms can be used to assess strengths and weaknesses of the population served. For descriptive purposes, comparing sets of norms from subgroups of clients enables practitioners to clarify functional characteristics related to the population's demographic variables. In addition, such norms provide baseline data for measuring the extent to which client norms differ from competitive norms. If it is expected that client norms overestimate potential for competitive employment, then measuring this overestimation would have relevant impact to program evaluation.

The purpose of this study was to compare the performance of vocationally handicapped individuals on selected Valpar Component Work Sample with normative data obtained from the Valpar manufacturers on the San Diego Employed Worker Group and the Skill Center Low Income unemployed group. The intention of the comparison was to verify and examine the assumption that client norms are different than competitive norms.

## Method

### Subjects

Baseline data were obtained from 400 disabled clients undertaking a vocational assessment program at the Resource Development Center (RDC) in Calgary, Alberta, Canada. Depending on the Valpar Component Work Sample (VCWS) administered sample size ranged from 38 to 397 clients with varying proportions between demographic variables.

The majority of clients were of Caucasian descent (approximately 90%) with mean age of 26.7, education level of 10 years and men/women ratio of 2:1. Clients' disabilities were grouped into four categories. In

category one, clients were diagnosed as emotionally/psychiatrically disabled. A second category comprised those clients experiencing some type of learning disability in school systems. A third category included those clients medically diagnosed as having a physical dysfunction. A fourth category (miscellaneous) was given to those clients who did not easily fit the above disability grouping but experienced difficulties procuring or staying with employment.

Table 1

RDC Population Description for Each of the Valpar Work Samples

VCWS *	Sample Size	Mean Age	Sex		Disability **				NS
			Men	Women	ED	LD	PH	NS	
1-Small Tools	38	23.3	94.7	5.3	34.2	31.6	2.6	31.6	
4-UERM	346	25.7	76.1	32.9	39.3	24.3	12.4	24.0	
5-CCA									
Tel.	64	27.4	38.9	61.1	43.7	17.2	14.1	25.0	
MS	65	27.3	33.8	66.2	43.1	18.5	13.8	24.6	
Fil	62	27.6	30.6	69.4	45.2	19.4	12.8	22.6	
BK	55	28.6	37.0	63.0	40.7	20.4	11.1	27.8	
typ	35	27.2	14.3	85.7	48.6	20.0	14.3	17.1	
6-Problem									
Solving	131	24.6	57.8	42.2	32.8	32.1	10.7	24.4	
8-Simulated									
Assembly	238	25.9	67.2	32.8	36.2	30.7	11.3	21.8	
9-WBRM	361	26.1	65.4	34.6	39.6	28.5	10.0	21.9	
11-EHFC	397	26.1	65.7	34.3	40.6	25.2	11.0	23.2	

Note: \*VCWS UERM - Upper Extremity Range of Motion; CCA - Clerical Comprehension and Aptitude (Tel - Telephone Answering; MS - Mail Sorting; Fil - Filing Letters; BK - Bookkeep Typ - Typing); WBRM - Whole Body Range of Motion; EHFC - Eye/Hand/Foot Coordination.  
 \*\*Disability ED - Emotional; LD - Learning; PH - Physical; NS - Non-Specific

Agency files reported that 21% of the 400 clients were known to have obtained gainful employment upon completion of the program. The demographic profile of these subsequently employed clients resembled the total sample population.

## Instrumentation

The Valpar Component Work Samples were administered following the directions and procedures outlined in the Valpar Manual.

Seven components of the Valpar Work samples were used in this study and administered to selected groups of clients based on their interests and aptitudes.

VCWS #1 - Small tools (mechanical). Performance is scored on speed and accuracy.

VCWS #4 - Upper Extremity Range of Motions. Performance is scored on speed.

VCWS #5 - Clerical Comprehension and Aptitudes. Performance is scored on speed and accuracy.

VCWS #6 - Independent Problem Solving. Performance is scored on speed and accuracy.

VCWS #8 - Simulated Assembly. Performance is scored on the number of assemblies completed during the time interval.

VCWS #9 - Whole Body Range of Motions. Performance is scored on speed.

VCWS #11 - Eye Hand Foot Coordination. Performance is scored on speed and accuracy.

## Results

T-test analysis indicated significant differences in the comparison of mean time and accuracy scores between the RDC clients and the San Diego Employed Worker and the Skill Center low income group on most of the Valpar Components.

Specifically, significant differences were obtained on the VCWS #1, 4, 5 (except for typing errors), 6 (excluding time scores compared with the San

Diego Employed Worker Group), 8, and the total points scores of the Skill Center group for work sample #11. On these aforementioned work samples, clients performed significantly slower and/or less accurately than the competitive groups.

Subsequent analysis of performance between subgroups within the RDC client population delineated by age, sex, education, type of disability and employment status revealed significant differences between men-women performance

Table 2

Mean Scores and Comparisons Between RDC Clients and Valpar Norm

Groups for Selected VCWS

VCWS	RDC Clients		San Diego Employed Workers		Skill Centre Low Income	
	Mean	Mean <sup>(a)</sup>	T-Value	Mean <sup>(a)</sup>	T-Value	
<b>#1 Small Tools</b>						
Time						
Assembly	6232.42		- **	3799.34	5.06 *	
Disassembly	2645.17			1518.24	5.04 *	
Errors	5.92			.82	2.21 *	
<b>#4 Upper Extremity Range of Motions</b>						
Time						
Dominant Hand	614.07	361.51	9.42 *	344.68	10.24 *	
Other	724.86	397.87	11.56 *	399.26	10.44 *	
Disassembly	850.88	494.29	18.76 *	449.26	18.93 *	
<b>#5 Clerical Comprehension</b>						
Telephone Answering	37.28		- **	50.92	2.85 *	
Mail Sorting						
- Time	1251.03			680.12	4.97 *	
- Errors	7.06			2.32	4.90 *	
Filing Letters						
- Time	1623.10			1066.59	4.82 *	
- Errors	6.47			3.10	2.42 *	
Bookkeeping						
- Time	2806.67			1969.44	4.21 *	
- Errors	11.15			8.48	1.90 *	
Typing Words	121.36			146.60	3.25 *	
- Errors	13.74			10.98	1.01	

Note: \* = p < .05

\*\* = Not Available

(a) = Source: Valpar (1974). Evaluators' Handbook. Arizona: Valpar

Note: \* = P < .05

\*\* = Not Available

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Table 2 - Cont'd.

Mean Scores and Comparisons Between RDC Clients and Valpar NormGroups for Selected VCWS

VCWS	RDC Clients		San Diego Employed Workers		Skill Centre Low Income	
	Mean	Mean <sup>(a)</sup>	T-Value	Mean <sup>(a)</sup>	T-Value	
#6 Problem Solving						
Time	1212.56	1089.23	1.54	795.00	4.76 *	
Errors	4.11	.81	5.88 *	2.35	2.50 *	
#8 Simulated Assembly						
Units	197.33		- **	240.82	4.69 *	
#9 Whole Body Range of Motions						
Time	1670.80	1326.53	8.01 *	1352.83	5.67 *	
#11 Eye-Hand-Foot Coordination						
Total Points	137.90	158.00	1.49	162.59	1.85 *	
Time	532.90	565.15	0.78	576.45	1.33	

Note: \* =  $p < .05$ 

- \*\* = Not Available

(a) = Source: Valpar (1974). Evaluators' Handbook. Arizona: Valpar

on Valpar Component #4, 9, and 11 where men performed faster than women. Physically disabled clients performed slower on Valpar Component #8, 9, and 11 when compared with the emotional and learning disability groups. No other consistent significant differences were noted between pair wise comparison of subgroups based on age, education, employment status and disability groupings. However, the subsequently employed clients of the RDC population evinced lower time and quality scores when compared with the San Diego Employed Worker norms.

### Discussion

The description of norm groups provided by Valpar offers limited demographic information to establish similarities and differences between characteristics of those groups and the RDC population. Valpar gives no descriptive statistical data pertaining to age, sex and education distributions. The bulk of the information focuses on the qualitative traits of the groups.

The San Diego Employed workers are related to selected worker traits arrangements which emphasize an employment value to the assessment of competitive

performance. Even if quantitative allocation of workers by trait are omitted, the occupation listing of the Employed Worker Group includes: sorter, machine operator, assembler, fork lift operator, duplication clerk, cashier, bagger, rigger, cableman, warehouseman, electronic assembler, and secretary (Evaluator's Handbook, 1974). These workers held their occupations with satisfactory performance for a minimum of six months.

The Skill Center group comprised unemployed, low income, non-handicapped individuals entering a vocational training program with emphasis placed on mechanical areas.

The two major distinctions which appear to be responsible for performance differences between the client group and the competitive groups are: first, the employee and trainee status of the competitive groups in regards to the rehabilitant status of clients. Second, the competitive groups are non-handicapped where most clients are grouped in either the emotional, learning or physical disability classification.

When considering Valpar's focus on physical ability and coordination for work sample number 1, 4, 8 and 9, factors such as motivation, concentration, tolerance and manual proficiency determine performance efficacy. The labor market or training school settings enable the development of steadiness, precision, ability and stamina for those range of motions of the upper torso and whole body. Thus the competitive group's familiarity with such physical activities augments stringency of performance standards (McCray, 1979, 1980). Although RDC clients were instructed to work as fast and accurately as they could, the competitive groups proved more adept. RDC clients were believed to be less accustomed to the physical demands assessed by the aforementioned VCWS and, consequently experienced slower execution of physical motions. In the case of physically disabled clients, limitations of body mechanics

impede the ability to meet the rigors of these manual tasks. The much slower performance evinced by women clients appears to be attributed to the influence of sex stereotyping favoring men in manually oriented tasks.

Valpar work sample number 5 and 6 emphasize attention, retention of instructions, productivity and cognitive abilities for accurate processing of clerical details. On such work samples, clients required more time and performed less accurately than the competitive groups. In general, the RDC clients have not been previously exposed to such skill requirements in a work or training environment, thus mitigating their abilities to assimilate the rudiments of vocational performance.

The inferior level of performance of clients stems mainly from inexperience. However, their vocational handicaps incur problems related to work performance, not only limited to aptitudes and abilities but extending to personality, attitudes, educability, trainability and employability which prevent them from functioning adequately in work settings (Pruitt, 1977). Because of such limitations, they can also be bereft of vocational goals and motivation.

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