

**Summary of Research on the Work Team Simulator**

**March, 2000**

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## **VALIDITY OF THE WORK TEAM SIMULATOR**

The Work Team Simulator consists of five problem scenarios. Each scenario involves some interaction or problem situation that occurs among team members and/or team members and their supervisor. For each problem scenario, candidates are asked three questions. They are provided three or four lines in a test booklet format to enter their response, consisting of what they would say or do in the problem scenario.

The study reported below for Columbia Gas was conducted by Management & Personnel Systems, Inc. (MPS). The Tampa Electric study was conducted by Tampa Electric Psychologist, Dr. Bill Waldron who has supplied us a summary of his research results.

### **Columbia Gas Study Conducted by MPS**

Subjects consisted of employees involved in the installation, repair or servicing of gas lines, as well as some lower-level clerical or white collar employees involved in scheduling or other support activities. Employees were encouraged to see themselves as a team with a common mission.

Ratings on five skills were supplied by immediate and next-higher-level supervisors of work team members. The five skills were: Teamwork, Leadership/Group Decision Making, Interpersonal Relations, Planning & Organizing, and Oral Communications.

Ratings on the five skills were summed to form an overall measure of job success. Two additional "overall" measures were obtained by asking raters to rate candidates on their overall performance and their overall potential for success in the organization.

The results of this study indicated that the Work Team Simulator has significant validity in predicting each of the five skills as well as overall success and overall potential.

Table 1 gives the results for each rater on the overall measures of performance. Table 2 consists of the validity coefficients obtained when ratings made by each rater were summed. Tables 3 and 4 provide the obtained validity coefficients for each of the five skills that were rated by the immediate and next-higher-level supervisors.

Table 5 provides estimated true validity coefficients for the overall measures of performance based on the sum of the ratings made by the two raters (i.e., based on data contained in Table 2). The estimates are based on an assumed criterion reliability of .60 (consistent with reported research). As will be noted, the estimated true validity coefficients are quite substantial, indicating that the Work Team Simulator has very high utility as an employee selection device. In short, its use should significantly improve the selection process.

**TABLE 1**  
**OBTAINED VALIDITY COEFFICIENTS FOR WORK TEAM SIMULATOR**

<b>RATING</b>	<b>OBTAINED COEFFICIENT</b>	<b>DESCRIPTION OF CRITERION VARIABLE</b>
<b>Overall Performance</b>	<b>.43*** (n = 41)</b>	<b>Rating of Overall Performance by immediate supervisor</b>
<b>Overall Potential</b>	<b>.34* (n = 41)</b>	<b>Overall Potential rating by immediate supervisor</b>
<b>Overall: Sum of 5 Skills</b>	<b>.39*** (n = 41)</b>	<b>This is a sum of ratings on five skills, by immediate supervisor</b>
<b>Overall Performance</b>	<b>.21 (n = 37)</b>	<b>Rating of Overall Performance by 2<sup>nd</sup> level supervisor</b>
<b>Overall Potential</b>	<b>.28* (n = 37)</b>	<b>Overall Potential rating by 2<sup>nd</sup> level supervisor</b>
<b>Overall: Sum of 5 Skills</b>	<b>.29* (n = 37)</b>	<b>This is a sum of ratings on five skills, by 2<sup>nd</sup> level supervisor</b>

\* p < .05    \*\* p < .01    \*\*\* p < .005

**TABLE 2**  
**VALIDITY COEFFICIENTS BASED ON SUMMING RATERS 1 AND 2**

Overall Performance Rating	.41** N = 36
Overall Potential Rating	.47*** N = 37
Sum of Rating on 5 skills	.47*** N = 37

\* p < .05    \*\* p < .01    \*\*\* p < .005

**TABLE 3**  
**OBTAINED VALIDITY COEFFICIENTS FOR FIVE SKILLS**  
**PERFORMANCE RATINGS BY IMMEDIATE SUPERVISOR**

<u>Skill</u>	<u>Validity</u>
<b>Teamwork</b>	<b>.38** N=41</b>
<b>Leadership/Group Decision Making</b>	<b>.34* N=41</b>
<b>Interpersonal Relations</b>	<b>.19 N=41</b>
<b>Planning &amp; Organizing</b>	<b>.29* N=41</b>
<b>Oral Communications</b>	<b>.44** N=41</b>

\* p < .05    \*\* p < .01    \*\*\* p < .005

**TABLE 4**  
**OBTAINED VALIDITY COEFFICIENTS FOR FIVE SKILLS**  
**PERFORMANCE RATINGS BY NEXT-HIGHER-LEVEL SUPERVISOR**

<u>Skill</u>	<u>Validity</u>
<b>Teamwork</b>	<b>.32* N=38</b>
<b>Leadership/Group Decision Making</b>	<b>.23 N=38</b>
<b>Interpersonal Relations</b>	<b>.16 N=38</b>
<b>Planning &amp; Organizing</b>	<b>.28* N=38</b>
<b>Oral Communications</b>	<b>.32* N=38</b>

\* p < .05    \*\* p < .01    \*\*\* p < .005

**TABLE 5**  
**ESTIMATED TRUE VALIDITY COEFFICIENTS**  
**BASED ON SUMMING RATERS 1 AND 2**

<b>Overall Performance Rating</b>	<b>.53</b>
<b>Overall Potential Rating</b>	<b>.61</b>
<b>Sum of Ratings on 5 Skills</b>	<b>.61</b>

## **Tampa Electric Company Study Conducted by Dr. Bill Waldron**

Dr. Waldron researched the Work Team Simulator in conjunction with staffing a new power plant. Subjects were blue-collar employees. The organization was actively promoting the team concept and teamwork, and desired employees who could function effectively as team members.

Dr. Waldron used an Interaction Simulation as the criterion measure. The Interaction Simulation measured four skill areas: oral communications, listening, problem solution, and teamwork.

It was hypothesized that the Work Team Simulator would predict scores on the problem solution and teamwork skills. The results were confirmatory, as illustrated in Table 6.

**TABLE 6  
VALIDITY OF THE WORK TEAM SIMULATOR IN PREDICTING  
TWO CRITERION MEASURES**

<b><u>Skill</u></b>	<b><u>Validity</u></b>
<b>Problem Solution</b>	<b>.37** N = 196</b>
<b>Teamwork</b>	<b>.33** N = 196</b>

\*\* p < .01    \*\*\* p < .005

Estimated True Validity coefficients for these results are given in Table 7, once again based on an assumed inter-rater reliability coefficient of .60.

**TABLE 7  
ESTIMATED TRUE VALIDITY COEFFICIENTS IN PREDICTING  
TWO CRITERION MEASURES**

<b>Problem Solution</b>	<b>.48</b>
<b>Teamwork</b>	<b>.43</b>

## **Other Correlational Validity Evidence**

The Work Team Simulator was correlated with the MPS Customer Service Simulator and the Employee Reliability Inventory published by the Wonderlic Corporation. These results are provided in Table 8.

**TABLE 8**

**Correlations of the Work Team Simulator Test With  
The Employee Reliability Inventory (ERI) and  
The Customer Service Simulator Test**

	WT1	WT2	WT	CSR1	CSR2	CSR	ERI
WT1	---	.36	.88	.31	.34	.36	.35
WT2		---	.76	.10	.36	.25	.49
WT			---	.27	.42	.38	.49
CSR1				---	.65	.91	.19
CSR2					---	.90	.28
CSR						---	.26
ERI							---

N = 18 Variables are specified below.

WT1	Work Team Simulator, Factor 1
WT2	Work Team Simulator, Factor 2
WT	Work Team Simulator Total Score
CSR1	Customer Service Simulator, Factor 1
CSR2	Customer Service Simulator, Factor 2
CSR	Customer Service Simulator Total Score
ERI	Employee Reliability Inventory Total Score

**Inter-Rater Reliability**

The Work Team Simulator is scored according to highly explicit criteria developed by MPS. Two trained raters scored 48 Work Team Simulators. Total scores were correlated. The obtained inter-rater reliability was .97. While this value seems extremely high, it should be understood that earlier research by MPS on the use of objective scoring systems for assessment exercises and simulation tests, principally research on the General Management In-Basket, has found inter-rater reliabilities on the order of .95 for far more complex tests than the Work Team Simulator.

The approaches innovated by MPS for these kinds of tests have been proven to work, routinely leading to inter-rater reliability coefficients that were considered virtually impossible as recently as the mid 1980's.

## **Summary**

The Work Team Simulator has demonstrated significant validity, with substantial obtained and estimated true validity coefficients. The Work Team Simulator is designed to be content valid for organizations that desire employees who demonstrate the ability to function effectively as a member of a team. This philosophy works to the detriment of candidates who demonstrate a pattern of desiring close, autocratic supervision in which there is a high degree of structure. The research results to date suggest that employees who work more effectively in a participative framework that seeks to empower employees, offering them greater decision making capabilities and more involvement in solving work-related problems, are perceived as more effective on the job. The research also provides support for the Work Team Simulator in effectively identifying these individuals.