

Introduction

HealthWatch Services L.L.C. was contracted by M.T.C. to develop Pre-employment screens (modules) that could provide predictive validity for applicants desiring employment for their clients. The modules described in this study are overt integrity test (Sockett and Wanek, 1996), which asks job applicants about their attitudes towards various counter productive behaviors and the frequency in which counter productivity occur.

In order to evaluate the predictive validity, HealthWatch Services L.L.C. collected data from several employment sources though out the United States. Applicants were instructed their participation was not mandatory and would in no way affect a decision to hire or not to hire. For the modules combined to create Insights™, counter productive behaviors were categorized into one of the eight categories listed below.

Table 1 Counter Productive Behavior Category

1. Honesty
2. Drug/Alcohol Use
3. Risk/Safety
4. Emotional/Violence in Workplace
5. Values/Dependability
6. Attitude Towards Authority (Supervision-Customer)
7. Turnover/Tenure
8. Diversity

Description of Sample

The validation of this instrument (Insights™) involved the assessment of 1,865 applicants and active employees in the Chicago metropolitan area and Green Bay, Wisconsin. Of these 1,865 applicants 1,176 were African American, 293 were Caucasian, 43 were Asian American, and 353 were of Latino decent. Also, of the 1,865 assessed 831 were female and 1,034 were male. This demographic information was obtained through voluntary information disclosure of ethnic and gender information on the survey questionnaire.

Once assessed results were computed, the information was entered into a data base. Record was kept of scores, work status, test status, signatures, disciplinary comments, felonies, and drug screen results. The information regarding gender and ethnicity were used to determine if the survey had an adverse impact on hiring practices. The information regarding felonies, drug screens, and disciplinary comments by supervisors were utilized to determine correlation between scores and actual negative (counter productive) activities.



All 1,865 applicants were placed into a position or were already in a position within the corporation.

The ethnicity of the overall sample is outlined in Table 2

Table 2 Ethnicity and Sex of Respondents			
	Responded	Female	Male
African American	1185	540	345
Caucasian	293	135	158
Asian	34	7	27
Latino	353	149	204
Total	1865	831	1034



Analysis

HealthWatch Services L.L.C first checked to ensure the true principal groups in the analysis (i.e. those engaging and those not engaging in counter productive behaviors) were matched in terms of their ethnic and gender composition. Tables 4 and 5 shows the equivalency of the two groups on these two variables. As seen in Table 3, some categories of counter productive behaviors are better represented than others.

Table 3 Counter Productive Behaviors		
Behavior Category	Frequency	Percent
Absenteeism	213	22%
Aggression/Violence Walk off Job	125	13%
Supervision/Customer Relations	106	11%
Drugs	155	16%
Quality	89	9.2%
Theft	78	8.1%
Workers' Comp Claims Unsafe Act-OSHA	203	20.70%
Total	969	100%

Table 4 Counter Productive by Gender			
Gender	NO	YES	Total
Female	419	412	831
Male	477	557	1034
Total	898	969	1865



Table 5
Counter Productivity by Ethnic Groups

Ethnic Group	NO	YES	Total
African American	545	640	1185
Latino	176	177	353
Caucasian	149	144	293
Asian	31	3	34

In accordance with the scoring methodology, we examined item level statistics and theme level statistics. Each of the 55 questions was a component of one or more of eight job related themes Insights™ purports to measure. All items were coded for analysis on a three part scale; lower scores are ideally obtained by applicants possessing attitudes associated with a lower propensity to engage in counter productivity behaviors. The mean standard deviation, univariate F-ratio and corresponding significance level and eta-square were examined for each Insights™ item for both counter productive and not counter productive groups to gain a cursory familiarity unit with the data. A review of item means and standard deviations suggested significant differences between applicants ultimately engaging in counter productive behaviors and applicants who did not. The means of 7 of the 8 Insights items were consistent with Insight scoring methodology in that counter productive group while the other theme (Diversity) was slightly different at the .05 level.

Effect size, also know as eta-squared, is a statistic which often helps in data interpretation by shedding light on the magnitude or strength of a certain statistical relationship. In the current analysis, this statistic was used to assist in interpreting how much of the item variance could be attributed to group members----(i.e. counter productive vs. not counter productive). While not all researchers agree on an exact value which makes an effect size meaningful, a value less than .02 may mean a relationship is not that strong. For selection purposes (as opposed to research purposes), where hiring decisions are at state, a higher value is always more desirable. Two had effect sizes at or over .02 (item number 13 and 32), one item had an effect size of .03 (item # 30) while the rest of the items had effect size at or over .08. Taken together, these findings indicated that the items on the Insight™ showed a strong ability to differentiate between applicants who engaged in counter productive behaviors and those who did not.



Table 6
Mean Theme Scores by Group & Corresponding Significance

Theme	Mean Theme Score Counter Productive	Mean Theme Score Not Counter Productive		Eta-Squared
Honesty	20.69	8.58	-6	.08
Drugs	10.60	4.61	-3	.06
Diversity	6.56	2.56	-2	.04
Safety	51.16	22.32	-14.42	.09
Violence	27.11	13.58	-6.77	.08
Values & Dependability	11.64	5.77	-2.94	.07
Supervision Customer Relations	11.00	4.13	-3.44	.06
Tenure	14.32	6.01	-4.16	.05

$T \geq 1.3$ or $T \leq -1.3$ Significance .05



Table 7 shows the correlation (r) between each of the Insight themes and counter productivity. A correlation coefficient is a measure of linear association between two variables which ranges from -1 to 1. Values closer to these two extremes indicate stronger relationships, while values closer to zero indicate weaker relationships.

Table 7 Correlations between Insight™ Theme and Counter Productivity	
Insight Theme	(r)
Honesty	.8
Drugs	.7
Diversity	.6
Safety	.9
Violence	.8
Values	.65
Supervision	.75
Tenure	.78

Insights™ Conclusion

The federal and many state governments require nondiscrimination in employment testing by reason of race, color, religion, sex, national origin, age, or disability condition. Therefore only properly validated employee selection procedures that comply with recognized standards shall be used. Guidelines recognize three specific methods of determining validation: Criterion-related, Content-related and Construct-related. This study, at different stages, has utilized all three approaches with Criterion-related relationships being more dominate. In addition, adverse impact was also analyzed base on “4/5” rule and by applying that landmark rule, the Insights™ Instruments posed no adverse impact on protected groups. The ability of this instrument to predict which applicants would be likely to engage in counterproductive behaviors was reviewed in multiple ways. Based on a review of data collected for the analysis, it is concluded that the efficacy of this instrument for predicting those applicants likely to engage in counterproductive behaviors is strong and recommends its use in making selection decisions with traditional human resource interviews, reference and criminal background checks.



Productive Behaviors

The next set of themes were evaluated across many areas within the job performance settings, but with a lower number (N) of subjects as compared to Insights™. These categories were evaluated as whole themes rather than as individual items (applicant questions) because sample size suggested that “collapsing” the data into themes (models) presented a more appropriate way to evaluate predictive validity. Data was collected on personnel who took the questions and were evaluated against supervisor review and self reporting by the employee. The behaviors noted below in Table 8 are generally accepted as desirable traits of employees by their employer (supervisor), although some are more specific to the sales profession versus other professional positions. Each employer must determine what modules (themes) apply to them with the best hire based on performance needs and culture norms.

Table 8 Productive Behaviors Categories

1. Gestalt
2. Energy
3. Kinesthetic
4. Influence
5. Customer Service
6. Dependability
7. Sales Inventory (General & SASI)
8. Working Well With Supervision (Authority Relationship)

Analysis

The validation involved the review of 50 active employees as well as 25 active employees strictly in the sales profession in the Chicago metropolitan area, Green Bay, Wisconsin and Dayton, Ohio. The next step involved having active employees take the modules and compare scoring results with supervisor review to determine if there was a high level of significance and linear correlation. Table 9, 10 and 11 shows the behavior categories, employee score results and supervision score of employee (evaluation).



Table 9
Excellent Evaluation
Mean Theme Score (Likert Scale) and Correlation

Theme	Score	Supervisor Evaluation	(r)
Gestalt	4.1	4.0 excellent	.9
Energy	4.3	4.1 excellent	.8
Kinesthetic	4.2	4.1 excellent	.9
Influence	4.6	4.2 excellent	.7
Customer Service	4.1	4.01 excellent	.9
Dependability	4.7	4.3 excellent	.7
Sales Inventory	4.5	4.4 excellent	.9
Authority Relationship	4.4	4.1 excellent	.8



Table 10
Average Evaluation

Theme	Score	Supervisor Evaluation	Correlation
Gestalt	3.2	3.0 average	.8
Energy	3.4	3.3 average	.9
Kinesthetic	3.4	3.3 average	.9
Influence	3.6	3.2 average	.78
Customer Service	3.5	3.2 average	.8
Dependability	3.7	3.5 average	.8
Sales Inventory	3.4	3.2 average	.8
Authority Relationship	3.2	3.0 average	.8

Table 11
Below Average Evaluation

Theme	Score	Supervisor Evaluation	Correlation
Gestalt	2.6	2.4 below average	.8
Energy	2.5	2.3 below average	.8
Kinesthetic	2.6	2.3 below average	.78
Influence	2.0	1.8 below average	.8
Customer Service	1.8	1.5 below average	.8
Dependability	1.6	1.4 below average	.8
Sales Inventory	1.9	1.7 below average	.8
Authority Relationship	1.9	1.8 below average	.9



The next reviews indicate sales prediction based on sales revenue levels per sales professional. The Sales modules were given to all sales professionals and the mean score was 50 with a standard deviation of 10. Our research wanted to investigate the theory that higher revenue producing sales professionals (80% revenue levels or higher) score higher on the sales module than the average sales employee. 1% level of significance.

Null hypothesis Alternative Critical Region	$\begin{aligned} \mu &= 50 \\ \mu &\geq 50 \\ Z &\geq +2.33 \end{aligned} \qquad Z = \frac{\bar{X} - \mu}{\sigma/\sqrt{n}}$
The mean score of the sales professionals who were top producers (80% revenue levels or higher) was 5.5	$Z = \frac{55 - 50}{(10/\sqrt{100})} = 5$

The results are significant.

Module Conclusion

Based on a review of data collected for this analysis, it is concluded that the efficiency of this instrument for predicting those applicants likely to engage in productive on the job behaviors is strong and recommends its use in making selection decisions combined with traditional human resource interviewing, references and background checks.

