AXIOMETRICS™
Partners

Axiometrics™ Validity Studies

Prepared by Axiometrics International Inc

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Introduction

Unlike other assessment instruments that are based on interpreted behaviour, the Axiometrics™ Profile is derived from the fundamental principles of the science of axiology.

Axiology is not subjective influenced by the interpretative opinions of a behaviourist or other observer. Instead, it is derived from scientifically defined, mathematical models that have been proven over time and validated by many independent studies carried out by academic and commercial researchers. Axiology is demonstrably agnostic with regard to age, sex or race and, cross cultural (calibrated against a universal norm), may be deployed can be made anywhere in the world without bias.

Axiometrics™ is able to adapt its software to different business applications, as well as personal development and coaching. These products can be applied to various situations to allow companies and individuals the ability to make decisions based on data that has not been readily available before now.

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This paper includes a sample of the findings of validation studies undertaken over 4 decades by both academic and commercial institutions in the USA. A list of other validity studies may be found at Appendix.

Axiometrics™ Validity Studies

Contents

Axiology – the science of 'value'

Dr. Hartman constantly reminded his students, "The proof of the pudding is in the eating." In other words, regardless how logical, rigorous or beautiful a system of thinking might be, if the system does not provide usable and testable results, then it does not have the right to be called a science. There are four keys to a science.

A science is:

1. Based on objective observations, which are independent of any one subject's perspective.
2. Based on a mathematical measuring system.
3. Universally applicable.
4. Subject to empirical testing to confirm the observations.

As a result, the applications of science must be valid and reliable.

The science of axiology, founded by Dr. Hartman, meets all four of these conditions. The science is based on formal value theory generated by Hartman's value mathematics. The Hartman Value Profile (HVP) is an application of Dr. Hartman's axiology. As such, it is based on value mathematics. Moreover, the norm for the profile is generated prior to statistical evaluation of profile responses and results from the logical relations of the value system.

The primary task of the value scientist is to establish the validity of the Hartman Norm as a measure of reality and to substantiate the reliability of the instrument. Value Resource Group has participated in a variety of research projects to validate The Hartman Value Profile, substantiate the reliability of the test instrument, and demonstrate the usability of the results from the profile. In addition, other value scientists axiologists—have conducted studies to examine and confirm the validity of the HVP.

The Hartman Value Profile has been used since 1965 in many different countries and has applications for businesses, coaches and counselors. Businesses use the information from the HVP for selection, onboarding, continued development and group selection. Coaches can use it to pinpoint an individual's strengths and limits and increase self-awareness. Psychologists and Counselors use it to understand the biases in an individual's thinking to help address corrective action and improve self-esteem and awareness.

Standard statistical validation consists of three types of validation studies: construct validity, concurrent validity, and criterion validity. Construct validity examines the instrument itself and determines that all of the items on the instrument are relevant and have the prescribed effect on the area or concept that they measure. In other words, does the profile measure what it is supposed to measure? Concurrent validity is obtained by correlating an instrument to other industry-accepted instruments. Criterion studies demonstrate that the instrument can be used as a valid predictive measure within a specific application or discipline.

Confirmation studies in all three of the major areas of validation have been conducted, both internally by axiologists and psychologists at Value Resource Group, and externally by scientist and statisticians outside Value Resource Group. In addition, internal and external studies have been conducted to confirm that The Hartman Value Profile and its results are reliable and do not discriminate either by age, race, or sex.

This report is a summary of some of the key studies that have taken place to date. First, the report examines The Hartman Model to provide a brief introduction to the components of Hartman's Value Mathematics as it applies to the HVP. Next, the report examines the results of a series of validity studies that provide strong statistical confirmation that Hartman's model is in fact a real and accurate interpretation of the way we make value judgments.

On the pages that follow there will be brief descriptions of the different types of studies that have been performed to demonstrate that the Hartman Value Profile (HVP) that runs the Axiometrics meets the following tests of validity for EEOC compliance. The studies have also met The Standards for Educational and Psychological Testing.

- ➢ For Concurrent Validity
- ➢ For Construct Validity
- ➢ For Content Validity
- ➢ For Reliability
- ➢ For Predictive Validity *(A business Requirement)
- ➢ For Criterion Validity *(A business Requirement)
- ➢ For Age
- ➢ For Race / Ethnicity
- ➢ For Sex

It is noted that these types of studies take thousands of hours to compile by many different researchers. Most of these studies can be found in the library at the University of Tennessee where Robert S. Hartman taught. Work is being done by the Robert Hartman Institute to get them published again and to provide current support as well for the continued use of the HVP and other applications of Hartman's work.

The Hartman Model

According to Dr. Robert S. Hartman's system for measuring "value," value is a phenomena or concept, and the value of anything is determined by the extent to which it meets the intent of its meaning. For example: a chair that has all of the natural properties contained within the definition of chair is by definition a "good chair." A chair that has only a few of the natural properties contained within the definition of a chair is by definition a "less than good" or "not as good" chair, a fair chair, a poor chair, etc.

A "good chair," according to Hartman, fulfills the intention of its definition. Given that premise, Hartman's theories set forth a system of mathematics to establish and prove the accuracy and utility of his theories.

Hartman discovered that every concept has three dimensions and that every concept has the following types of value:

1. The value of its uniqueness.
2. The value of its function or role.
3. The value of its meaning and purpose.

These three "Dimensions of Value" are referred to as the following concepts:

1. Intrinsic Value
2. Extrinsic Value
3. Systemic Value

Hartman's model objectively measures the relative clarity and level of development of each of these value dimensions. For Hartman, this measures the structure and dynamics of a person's value system relative to each unique concept being measured.

In addition to measuring value and personal value systems, the Hartman system measures a person's value judgments—their valuations. According to Hartman, when a person makes a judgment about any conceptual phenomena, they make judgments in terms of value combinations within and between dimensional sets.

For example, the three Value Dimensions outlined above can be combined in 18 different ways when one is making a value judgment.

Consider the concept "wife." The intrinsic value of "wife" is a wife's value resulting from being a unique, one-of-a-kind, authentically original individual.

"Wife" has value because she is unique. This uniqueness constitutes her INTRINSIC value. However, what happens when we make a value judgment about "wife"? What are our options?

The value is: the uniqueness of wife.
When making a judgment about a wife's uniqueness, I can:

Value the Intrinsic Value Intrinsically	=	I love my wife's uniqueness.
Value the Intrinsic Value Extrinsically	=	I enjoy my wife's uniqueness.
Value the Intrinsic Value Systemically	=	I find my wife's uniqueness meaningful.
Disvalue the Intrinsic Value Intrinsically	=	I hate my wife's uniqueness.
Disvalue the Intrinsic Value Extrinsically	=	I dislike my wife's uniqueness.
Disvalue the Intrinsic Value Systemically	=	I think my wife's uniqueness is crazy.

The Value Dimension of the concept "wife" that I am making value judgments about is her INTRINSIC VALUE.
There are at least six different value judgments or evaluations I can make about her INTRINSIC VALUE.

I can make the same six judgments for the EXTRINSIC and SYSTEMIC Dimensions of Value.

By combining the INTRINSIC, EXTRINSIC, and SYSTEMIC judgment combinations, there are 18 different evaluations about the value of "wife" that can be made.

The fascinating discovery that Hartman made was that the 18 valuation possibilities are not made randomly, because their relative value is not relative in nature. The relative value of each judgment is built into the structure and dynamics of the conceptual system that generates decisions.

As a result of Hartman's research, he discovered that the relative value of each one of the 18 valuation possibilities is different and that the hierarchical arrangement of their relative value is constant across concepts. He demonstrated that the relative value of the intrinsic valuation of the Intrinsic Value is more valuable than any one of the other 17 valuation possibilities, and the intrinsic devaluation of the Intrinsic Value is less valuable than any of the other 17 valuation possibilities. He also discovered that regardless whether one uses symbolic logic, the theory of types, set theory, or transfinite set theory, any quantification of the 18 valuation possibilities would always arrange the items in the same hierarchical order.

Hartman discovered that there is a value norm in the natural universe, in the phenomenal world of concepts. This value norm enables us to objectively measure and study the unique characteristics of

the structure and dynamic of any person's value and valuations concerning any conceptual phenomena.

Value profiles based on The Hartman Model measure the deviation of a subject's ranks, given to each of the 18 items in a profile, from the ranks that the model stipulates to each item. The model and its internal logic determine the correctness or incorrectness of an individual's value judgments. The profile measures a person's capacity for making value judgment.

The profile scores (axiological scores) are numerical. The lower the number, the better the axiological score. The higher the number, the worse the axiological score.

Hartman developed a scoring system for measuring the axiological scores that result from the difference between an individual's ranking of the items and the axiological norm.

The first scale consists of four measures:

1. **The Differentiation Score**—for the capacity to differentiate values.
2. **The Dimension Score**—for the sense of proportion, which results from the equilibrium between value dimensions.
3. **The Integration Score**—for the capacity to solve problems and see the relevant in the complex.
4. **The Dissimilarity Score—**for the capacity to distinguish between good and bad.

The second scale consists of the measure of the three value dimensions:

1. **Intrinsic Value**—the capacity for discerning values concerning uniqueness and individuality.
2. **Extrinsic Value**—the capacity for discerning role, function and practicality.
3. **Systemic Value**—the capacity for discerning values concerning meaning, purpose, order and system.

The third set of scales concerns the measurement of the value dimensions. Each of the three value dimensions has a:

- **Dimensional Score**—indicating the capacity for discerning the value dimension in question.
- **Integration Score**—indicating the capacity for problem solving in that dimension.

Using Hartman's axiological profile and scoring systems, we measure, analyze and assess a person's value system and method for making value judgments and translate these measurements into a variety of descriptive and prognostic reports that both describe and make various diagnostic predictions about a person.

Construct Validity Study of the Hartman Value Profile

Value Resource Group has participated in and sponsored several studies concerned with the construct validity of an 18-item inventory designed to measure values placed by subjects within the dimensions of value measured by Dr. Hartman's mathematics. The focus of the studies is the measure of the congruency between the subjects' rank ordering of the 18 items and the Hartman Norm, which is based on his Value Mathematics. Two different studies were performed. One study was an internal study sponsored by Value Resource Group that included 1,777 subjects. The other was sponsored by Dollar General Corporation and was performed primarily by Dr. Chuck McDonald, a forensic psychologist in Nashville, TN, and William Panak, a statistician. This study included 6,354 individuals pulled at random from a database of thousands.

Dr. Hartman's model orders each of the possibilities of a value profile from 1 to 18. Based on this model, a person's value structure consists of three dimensions: intrinsic, extrinsic and systemic. Each of these dimensions is valued from a dimensional standpoint, i.e., the intrinsic valuation of extrinsic value, the extrinsic valuation of a systemic value and the systemic valuation of an intrinsic value, etc. Each value dimension can be valued in three ways: intrinsically, extrinsically and systemically, resulting in a total of nine valuational combinations. In addition, each value dimension can be enhanced valuationally, referred to as a "composition," or diminished valuationally, referred to as a "transposition". As a result, each value profile is composed of nine compositional and nine transpositional items.

The key issue for construct validity is to do large groups of people and order the items in the same way predicted by the model. Value Resource Group conducted studies on both Hartman Value Profile 1, a measure of one's capacities to make value judgments about the world, and Hartman Value Profile 2, a measure of one's capacities to make value judgments about one's self.

The focus of the studies was on three areas:

1. The construct validity of the profile as a whole.
2. The construct validity of the valuational (compositions) and disvaluational (transpositions) items.
3. The construct validity of each of the 18 individual items in the profile.

At the profile level, the studies examined the extent of isomorphism (correlation) between Hartman's model of value structures and the rank ordering of the value profile instruments. The question was whether the applicants would rank the 18 items in an order consistent with Hartman's

model, i.e., norm item one ranked lowest on the average and norm item 18 ranked highest, with all other items ordered from lowest to highest norm rank.

At the level of compositional vs. transpositional items, Hartman's model claims that individuals will rank the compositional items with a numerical ranking of 1 to 9, and the transpositional items with a numerical ranking of 10 to 18. In other words, individuals, on the whole, will see "good" items (compositional) as "good" and "bad" items (transpositional) as "bad".

At the level of each of the individual 18 items, the test is whether each item response matches the norm value predicted by the model.

The following summaries will focus on the results of the internal studies performed within Value Resource Group, and the external studies performed by Dr. McDonald both for Hartman Profile 1 (the "world" profile), and Hartman Profile 2 (the "self" profile).

A Study of the Profile as a Whole

The Hartman Model predicts that homogeneous groups of individuals will rank order the value profile instrument in a predictable way. According to Dr. Hartman's model, the 18 valuational items have a fixed hierarchical order of value. Hartman claimed that if one were to objectively assess the value system and value judgments of large samples of humanity, the average obtained rank of all items would match the theoretical order predicted by his system perfectly.

Internal Studies

The Hartman Model predicts that homogeneous groups of individuals will rank order items in a predictable order. To test for this order, Page's "Z" was calculated and compared to critical X values for a one-tailed test. To derive an index of concordance between subjects within each group, Kendall's coefficient of concordance "W" was calculated for the group.

HVP-1 (World Profile)

Results indicate that the isomorphism between the model and the observed sample ranking is quite high (Page's Z = 149.51) and the average correlation between pairs of respondents is excellent (Kendall's W = .81). The rank-order correlation of expected and obtained mean rankings for the 18 items is .96.

HVP-2 (Self Profile)

Results indicate that the isomorphism between the model and the observed sample ranking is also quite high (Page's Z = 143.64) and the average correlation between pairs of respondents is excellent (Kendall's W = .75). Also, the rank order correlation expected and obtained mean rankings for the 18 items is .95.

External Studies

The key in these studies is to identify deviant items, "bad" items ranked as "good" and "good" items ranked as "bad".

Items 1 through 9 - Range of Median Ranks 2 through 8
Items 10 through 18 - Range of Median Ranks 11 through 18

The compositional and transpositional items were split and Spearman's rank order correlation was

run on each half.

HVP-1 (World Profile)

The results for the compositional items 1 through 9 were Rs = 0.84

The results for the transpositional items 10 through 18 were Rs = 0.84

These results indicate that no items in Hartman's World Profile are grossly misconstrued to the point of being seen with a valence opposite of that which is expected under the Hartman model.

HVP-2 (Self Profile)

The results for the compositional items 1 through 9 were Rs = 0.83

The results for the transpositional items 10 through 18 were Rs = 0.98

Again, these results indicate that no items in Hartman's Self Profile are grossly misconstrued to the point of being seen with a valence opposite of that which is expected under the Hartman model

Summary Comment on Internal and External Compositional-Transpositional Studies

The studies indicate that, on the average, individuals do not see "bad" items as "good" and "good" items as "bad". Individuals do, in fact, make distortions and these distortions become important when distinguishing them as individuals and when measuring their capacity to make value judgments. The key is that, on the whole, the compositional- transpositional analysis supports Hartman's model that the differences are a measure of reality.

A Study of Individual Items

The two former classes of construct validity studies, evaluation of the profile as a whole, and analysis of compositional-transpositional items, support Hartman's model. This analysis examines how close the individual items are ranked against Hartman's mathematical norm. In short, the studies look for individual items that deviate significantly from their expected rankings. The studies represented in this validity synopsis are the external studies, those done by professionals primarily outside of Value Resource Group, conducted by Dr. Chuck McDonald.

Differences between the obtained sum of ranks of all of the obtained ranks, and differences between the obtained sum of ranks and the model sum of ranks for each of the items were analyzed using critical differences defined by Hollander, Wolf and Daniels.

HVP-1 (World Profile)

Of all possible comparisons between items, at least 89.54% were statistically predicted by the model, 7.4% were not predicted by the model, and 2.61% were in a direction opposite to that predicted by the model.

HVP-2 (Self Profile)

Of all possible comparisons between items, at least 89.54% were statistically predicted by the model, 7.19% were not predicted by the model, and 3.27% were in a direction opposite to that predicted by the model.

In both HVP-1 and HVP-2, even in the differences between predicted ranking sums and actual ranking sums, the order and distribution of the items complies with The Hartman Model.

Summary Conclusions

Regardless of whether one studies the profile (both HVP-1 and HVP-2) as a whole—the compositional or transpositional sets of items, or each of the individual items—the obtained ranks strongly support the validity of Hartman's constructs regarding human value. The construct validity findings both in the internal and external studies lend great confidence that the profile instruments measure a person's basic value structure and the dynamics of their value judgments.

US Equal Employment Opportunities Commission Studies of the Hartman Value Profile

The fundamental principle underlying Federal Law and Regulation in the United States pre-employment and career assessment practices is as follows:

"Employer policies and practices which have an adverse impact on the employment opportunities of any race, sex or ethnic group are illegal." (EEOC, 1978)

The guidelines issued by the Federal Government cover not only tests, but also any selection procedure that is used as a basis for any employment decision.

"Employment decisions include, but are not limited to, hiring, promotion, demotion, membership, referral, retention, (EEOC, 1978) licensing and certification."

The focus of the EEOC studies for Value Resource Group is whether or not:

- The rank ordering of people, using the Hartman Value Profile, of different sexes, from different racial groups, and at different ages is statistically similar or different.
- The axiological scores resulting from the Hartman Scoring System of different sexes, from different racial groups, and at different ages is statistically similar or different.
- The clinical, interpreted scores of people of different sexes from different racial groups, and at different ages is statistically similar or different.

EEOC studies were performed internally by VRG focusing on the rank ordering of the profile items. EOOC studies were also performed externally for VRG by Dr. Chuck McDonald and sponsored by Dollar General Corporation. The external studies focused on:

- The rank ordering of the items.
- The axiological scores resulting from The Hartman Scoring System.
- The clinical, interpreted scores.

Internal EEOC Studies

These studies were conducted to determine whether The Hartman Value Profile discriminated between males and females, individuals of different age groups, and individuals of different races—specifically "white-black" differences. Two sample populations were chosen for the "male-female" study, the "age" study, and the "white-black" study. These populations consisted of 200 cases in

each population chosen at random from a database of approximately 6,000 cases.

The projects analyzed scores based on the Hartman Value Profile and considered the potential significance of differences in scores in the sample populations. The statistical test selected was two-sample, parametric, interval data t-test. Decision rules on interpreting the t-test gave a value of 1.282 and above for a significance of 0.20.

Fifty-four data items, including axiological and clinical measures, were analyzed to determine whether any significance could be established between sample populations.

The following results were determined:

- **Male-Female Discrimination**—no score item demonstrated any difference between the male and female population.
- **Age Discrimination**—no score item demonstrated any significance between age and ranges.
- **Black-White Discrimination**—no score item demonstrated any significance between the black and white population

External EEOC Studies

The Dollar General Company administered The Hartman Profile I (World Profile) and Hartman Profile II (Self Profile) as part of a battery of tests given to 1,075 persons who were either employed by or who were seeking employment with the company. The studies sought to establish whether or not the Hartman Value Profiles I and II met the requirements of the EEOC law regarding nondiscrimination in selection, assessment and promotion situations based on age and age group, sex, and race.

The studies were carried out at three different levels, from the perspectives of the individual rank items, the axiological scores based on Dr. Hartman's scoring system, and the clinical or interpreted scores.

The obtained scores and rankings were subject to a MEANS statistical analysis in order to establish whether or not there was any statistically significant difference between the scores for the respective groups.

The one-way analysis of variance of the difference between the "within groups" and "between groups" variances produced the following results:

- **F Ratio**—the ratio of the "within group" and "between group" variances.
- **Level of Significance**—the frequency we would expect to get the results that were achieved, assuming that both sample groups are drawn from a population in which the mean of each group is equal.
- **E ta^2**—a measure of the proportion of the total variability in the dependent variable that can be accounted for by knowing the values of the independent variable.

Age Discrimination Studies

THE INSTITUTE FOR THE STUDY OF HARTMAN VALUES AGE STUDY

The EEOC Age Discrimination Studies were based on a sample size of 1,075 employees who were either employed by, or were seeking employment with Dollar General during 1986-87. The studies were based on two groups of subjects. One grouping focused on the age of the individual subjects, beginning with "below 18," continuing at each age, "31," "41," etc., and ending with "over 70". The second grouping was based on the number of subjects in each age group:

Age Group	Participants
LO through 29	421
30 through 39	298
40 through 49	200
49 through HI	156
Total	1,075

There were three types of studies examining the rank items, the axiological scores and the clinical, interpreted scores, exploring the possibility of discrimination in two ways:

- Is the pattern for different age groups the same or different?
- If there is any significant difference in the pattern for different age groups, could such differences be construed to have a detrimental impact on the employability or career development of any particular group?

Based on the Individual Ranking of Items

An analysis of the rankings which 1,075 persons of different ages and different age groups assigned

to the 18 items on The Hartman Value Profile I discovered the following:

- ☉ For 16 of the items by specific age and 13 of the items by age group, there was no significant statistical difference between the MEAN ranks of the different ages and age groups.
- ☉ Of the two items by specific age, and five items by age group where there is a significant difference in the MEAN assigned to those items, the Eta clearly indicated that less than 1% to 8% of the difference was attributable to a person's age or age group.

These findings support the contention that The Hartman Value Profile I rank scores do not discriminate unfairly against persons of any specific age or general age group.

Based on the Axiological Scores

An analysis of 151 axiological scores based on Dr. Hartman's scoring system produced by the 1,075 persons of different ages and age groups produced the following results:

139 of the axiological variables by age and 134 of the 151 axiological variables by age group were the same.
Of the 12 by age variables that had different MEANS scores, nine of them did not have different MEANS scores when re-scored by age group. The remaining three, when analyzed by Eta, were found to have less than 2% of their variance due to age.
Of the 12 variables by age group that had different MEANS scores, less than 2% of the variance was due to age.

These findings lend strong support to the contention that the 151 axiological variables of
The Hartman Profile I do not unfairly discriminate against persons of different ages or age groups.

The findings also lend support to the contention that these axiological scores can be used in hiring and promotion assessments without any adverse effect on persons of different ages who belong to different age groups.

Based on the Clinical, Interpreted Scores

An analysis of 16 clinical, interpreted scores based on Dr. Hartman's scoring system which were produced by the 1,075 persons of different ages and age groups produced the following results:

For 11 of the clinical scores by age and 13 of the clinical scores by age group, there was no significant statistical difference between the MEAN scores for persons of different ages and age groups.
Five of the clinical scores by age and three of the clinical scores by age group were significantly different. However, the Eta ratios indicated that in no case was more than 9% of the variance attributable to age or age group.

The findings support the contention that the individual clinical scores analyzed in this study do not discriminate against persons of different ages or persons of different age groups.

VALUE INC. AGE STUDY

1n 1987 Wayne Carpenter and Edward Martin from Value, Inc. conducted a study to prove that the HVP did not show a bias toward people above or below the age of 40.

They were able to randomly select two separate sample groups from more than 6,000 people. The groups represented people below the age of 30 and another group over 40. To measure statistical significance, a two-sample parametric interval data T-test was used.

They generated 54 different HVP scores for each participant. A reliability factor of $p<.01$ was found for all 54 items. **This demonstrated that the HVP did not discriminate anything differently between the two different age groups selected.**

Sex Discrimination Studies

THE INSTITUTE FOR THE STUDY OF HUMAN VALUE SEX DISCRIMINATION STUDY

The EEOC Sex Discrimination Studies were based on a sample size of 1,075 subjects who were either employed by, or were seeking employment with, Dollar General during 1986-87.

There were three types of studies: examining the rank items, the axiological scores, and the clinical, interpreted scores, each exploring the possibility of discrimination in two ways:

1. Is the pattern for men and women the same or different?
2. If there is any significant difference in the pattern for men and women, could such difference be construed to have a detrimental impact on the employability or career development of any particular group?

Based on the Individual Ranking of the Items

An analysis of the rankings which 1,075 male and female subjects assigned to the 18 items of The

Hartman Value Profile I provided the following results:

- For 14 of the 18 items of the HVP-1 there was no significant statistical difference between the MEAN ranks of the male and female subjects.
- Of the four items where the MEAN ranks of the male and female subjects were significantly different, the Eta clearly indicated that less than 1% of the difference in both groups was due to gender.

These findings support the contention that The Hartman Value Profile I rank scores do not discriminate unfairly against either men or women.

Based on the Axiological Scores

An analysis of 151 axiological scores based on Dr. Hartman's scoring system produced by the same subjects showed the following results:

- 115 of the 151 axiological variables used in the study had MEAN scores that were equal.
- Of the 36 axiological scores that had MEAN scores that were statistically different, the Eta analysis revealed that only from 1% to 2% of the variance between the two groups was due to gender.

These findings provide strong support to the contention that the use of the axiological scores used in this study does not unfairly discriminate against either men or women. The findings also support the contention that the axiological scores can be used in hiring and promotion assessments without any adverse effect on either men or women.

Based on the Clinical, Interpreted Scores

An analysis of 16 clinical, interpreted scores based on Dr. Hartman's scoring system produced by the same subjects gave the following results:

For all 16 of the clinical scores used in this study, there was no significant statistical difference between the mean ranks of men and women.

These findings strongly support the contention that the clinical scores used in this study do not discriminate unfairly against either men or women, and that the use of the clinical scores will have no effect on the hiring or promotion of either men or women.

VALUE INC SEX DISCRIMINATION STUDY

In 1987 Wayne Carpenter and Edward Martin from Value Inc. conducted a study on two separate populations of 200 people to prove that the HVP did not discriminate based on sex.

Two groups of 200 people were randomly selected from a pool of 6,000 people that had completed the HVP. One group consisted of males and the other group consisted females. To measure statistical significance a two-sample parametric interval data T-test was used.

54 scores from each participant's HVP results were used and the two groups were compared. It was shown that all 54 scores using the T-test had a $p<.01$.

This demonstrated that the HVP did not discriminate between males and females and is in compliance with EEOC standards.

NEW MEXICO STATE UNIVERSITY STUDY

A study on 177 students at the University of New Mexico and other volunteers from the school, by Dr. Jim Kroger were given two different versions of the HVP for the purpose of testing the HVP and VVP for discrimination against sex (42 males, 137 females). Both the HVP and VVP were not found to have a statistically significant effect on sex at $p<.05$.

Race Discrimination Studies

The EEOC Race Discrimination Studies based on the same sample group included the following:

Group	Participants
Asian	6
Black	69
Hispanic	6
Indian	1
Caucasian & Other	992
Total	1,075

Based on the Individual Ranking of the Items

An analysis of the rankings that this sample of different racial or origins assigned to the 18 items provided the following results:

- For 14 of the 18 items of HVP-1 there was no significant difference between the MEAN ranks of persons of different racial origins.
- Of the four items where the MEAN ranks of persons of different origins were significantly different, the Eta clearly indicated that less than 3% of the difference for any variable was due to their racial origin.

These findings strongly support the contention that the HVP-1 rank scores do not discriminate unfairly against persons of different racial origins.

Based on the Axiological Scores

An analysis of 151 axiological scores based on Dr. Hartman's scoring system which were produced by this same sample provided the following results:

- 124 of the 151 axiological variables used in this study had MEAN scores that were equal.
- Of the 27 axiological scores that had MEAN scores that were statistically different, the Eta revealed that only 2% to 3% of the variance between the two groups was due to racial origin.

These findings strongly support the contention that use of the axiological scores used in this study does not discriminate unfairly against persons of different racial origins. The findings also support the contention that these axiological scores can be used in hiring and promotion assessments without any adverse effect on persons of different racial origins.

Based on the Clinical, Interpreted Scores

An analysis of 16 clinical, interpreted scores based on Dr. Hartman's scoring system for this same sample group produced the following results:

For all 16 of the clinical scores used, there were no significant statistical differences between the MEAN ranks for persons of different racial origins.

These findings strongly support the contention that the clinical scores used in this study do not discriminate unfairly against persons of different racial origins. The findings also support the contention that these clinical scores can be used in hiring and promotion assessments without any adverse effect on persons of different racial origins.

VALUE INC. RACE STUDY

In 1987 a grant funded study by Dollar General was conducted by Dr. Charles McDonald, Ph.D., Wayne Carpenter, Edward Martin, William Panak, and Gary McDonald. In this study, they set out to prove that the HVP did not discriminate between 5 different racial groups including: Asian, African American, American Indian, Hispanic, and whites.

They gathered a sample population of 1,075 people who were either employed or seeking employment from a corporation. 36 items/variables from the HVP were studied across the five different groups. The data was analyzed using the F-ratio for variance between groups and the Eta-squared measure to test the amount of the total variability in the dependent variable that can be accounted for by knowing the values of the independent variable.

The null hypothesis was: "that mean ranks for persons of different racial origins for the following normative items will not be significantly statistically different when using the Hartman Value Profile."

The results revealed that 31 of the 36 items had no statistical significance at all and the other 5 showed that the mean ranks of the subjects were significantly different. The Eta-squared showed

that less than 1% of the difference was due to racial differences (this was statistically significant with p values ranging from <.0144 to <.0001).

THE INSTITUTE FOR THE STUDY OF HUMAN VALUE RACE STUDY

A study of 177 students at the University of New Mexico and other volunteers from the school, by Dr. Jim Kroger were given two different versions of the HVP for the purpose of testing the HVP and VVP (an alternate version) for discrimination against race. Of those races that had enough representative samples, none of them had statistically significant effect on the factors measured at p<.05. (6 African Americans, 93 Latino / Hispanic, 61 Caucasian, 3 American Indians, and 12 others)

Summary Conclusions for The External EEOC Studies

An analysis of the 1,075 subjects broken down by age, sex and racial origin, and evaluated from the perspective of the individual profile rankings, axiological scores, and clinical, interpreted scores indicates that:

- When the MEAN scores by rank, axiological scores and clinical scores for persons of different ages, races or sex are statistically different, the differences in MEAN scores are due to factors other than sex, age or race.

These findings support the use of The Hartman Value Profile, The Hartman Scoring System, and The Clinical, Interpreted Scores based on the scoring system for use in making hiring or promotional decisions, without adverse effects due to age, sex or race.

Instrument Reliability Study of The Hartman Value Profile

The instrument reliability study of The Hartman Value Profile (HPV I and II) is an internal study performed by Value Resource Group. The reliability of an instrument measured the probability that the results of the assessments generated by the instrument are not a result of chance. This study analyzed basic Hartman axiological scores, as well as interpreted scores.

Two samples used in this analysis were selected from an applicant database generated for Dollar General Corporation over a three-year test project. Two hundred re-test situations were used for the reliability analysis. The 200 profiles used were selected in no particular order from a larger population of applicants re-tested at different times.

The first analysis examined each of the sample files and the score items generated by computer scoring of The Hartman Value Profile. The instruments were evaluated according to Hartman's scoring scheme and the interpreted factors, based on the axiological combinations. This analysis consisted of calculating the arithmetic mean and standard deviation for each of the data items in each of the data files analyzed.

The second analysis processed the data files concurrently and produced the Spearman Rank Order Correlation Analysis. This analysis is designed to compare the differences of each item of each subject. To achieve a significance level of .001 the analysis needed a rank order coefficient of 0.549. The group rank order coefficient for the test sampled as 0.974. The strength of the coefficient provides an extremely high level of significance and confidence in the reliability of The Hartman Value Profile.

Concurrent Validity Studies of The Hartman Value Profile

The most significant statistical evaluation for the purpose of concurrent validation of The Hartman Value Profile for the purposes of concurrent validation of the HVP centers on the correlation of the HVP scores with comparable elements from industry-accepted, psychological testing instruments. This correlation evaluates the probability that the measure of correlation or association obtained was due to chance. Any probability less than $p < .05$ points to a statistically significant association.

By far the most significant work correlating the HVP to industry-accepted models to date is centered in the work of Dr. Leon Pomeroy, the retired chief of a biofeedback and stress management unit at The Veterans Administration Medical Center Outpatient Clinic in Brooklyn, NY. He holds advanced degrees in the fields of both psychology and biology from the University of Texas at Austin and University of Massachusetts at Amherst. Dr. Pomeroy is a respected clinical researcher in the field that he discovered—Behavioral Axiology. He has published many papers on the subject of stress, lectured on the stress correlations between axiology and psychology, conducted years of research on the cross-cultural correlations of The Hartman Value Profile, and has served as editor or associate editor for psychological journals. Currently Dr. Pomeroy is in private practice, consulting, writing and serving as president of The Hartman Institute.

> PRESENTED AT 2ND INTERNATIONAL CONFERENCE FOR THE CATTEL 16PF

Dr. Pomeroy and Dr. John Davis published findings of their concurrent validity study of The Hartman Value Profile as it relates to the Minnesota Multiphasic Personality Inventory (MMPI), Cattell 16PF, Personal Belief Inventory (PBI), Cornell Medical Index (CMI), and Auto Lethality Index (ALI).

Two sets of data were used in this study. One group, collected n 1981, included a population of 68patients, 180 students, and 125 doctors. A second group, collected in 1982, had a population of 72. Both groups were largely male. The MPI instruments were scored by a VA computer facility, the IPAT data was scored by IPAT, the HVPs were scored at the University of Tennessee by Dr. Davis, and the PBI, SMI and ALI were scored by Dr. Pomeroy. All comparisons listed in the report had a probability of $p < .05$.

In the correlation of the HVP with the MMPI, 128 HVP/MMPI correlations of less than $p < .05$ were located. Of these 128, more than 75 had a correlation of better than $p < .001$.

The PBI/HVP correlation indicated 18 scores with a correlation of less than $p < .05$.

The CMI/HVP correlation indicated 6 scores with a correlation of less than $p < .05$.

The AL/HVP correlation indicated 4 scores with a correlation of less than $p < .05$.

These are highly significant correlations pointing to the high validity for the HVP in clinical applications. The correlations with the MMPI are highly significant and indicate that the measure of one's value system and capacity for making value judgments is a significant measure that has valid and useful applications.

The data from Dr. Pomeroy's studies establish a concurrent validity argument for The Hartman Value Profile in the measurement of self-defeating behavioral states commonly referred to as psychology and commonly measured by such instruments as the MMPI and CAQ. Moreover, the empirical results of the study provide credibility for The Hartman Value Profile, as well as the science of axiology itself.

Dr. Pomeroy has continued to collect and analyze data that he has presented as updates to his research at the annual meetings of The Hartman Institute. He is also currently writing a book on the results of the studies.

Dr. John Austin, a long-time member and current Chairman of The Hartman Institute, has conducted additional correlation studies. Dr. Austin has conducted many studies on the value of The Hartman Value Profile for education, investigating the use of the HVP to identify highly gifted students. He conducted a series of studies on the measure of moral value, correlating variables from the HVP with variables from the Rokeach Value Survey, Kohlberg's Theory of Moral Development, and Allport-Vernon-Lindzey Study of Values. The correlations from his study of the HVP and Kohlberg's moral variables and Rokeach variables show a higher significance (where Rho, or measure of statistical correlation was largely above .900) than the variables from the study of specific values from the Allport et al study. These results are to be expected, since the HVP measures one's capacity to make value judgments rather than the measure of one's specific values.

Dr. Pomeroy concluded: "These data clearly establish a concurrent validity for the Hartman Value Profile…and that the Hartman Value Profile is a valid measure of various stress states that produce problems in living."

Construct Validity

Construct validity measure whether an instrument in both its forms and results is consistent with the theory behind the instrument. In this case the measure will be to see if the ranks assigned the statements in the Hartman Value Profile (which for Hartman have fixed, universal order of value) provide support for the validity of Dr. Hartman's constructs.

THE INSTITUTE FOR THE STUDY OF HUMAN VALUE

This study was conducted by The Institute for the Study of Human Value (Dr. Charles McDonald, Ph.D., Wayne Carpenter, Edward Martin, William Panak, and Gary McDonald), and funded by a grant from the Dollar General Corporation, 1987.

The sample size was 6,354 persons. Analysis was of the profile as a whole, the compositional items (18), the transpositional items (18), and each individual item. The null hypothesis were, "that the ranking of all items would be random, that the compositional and transpositional items would be ranked randomly, and that the normative rank and median obtained rank for each item would be zero."

The results of the test as a whole, using Friedman's Two-way ANOVA by rank, Page's Test for Ordered Alternative, and Kendall's Coefficient of Concordance provided a 99% confidence level that the rankings did match the theoretical order of value. The Spearman Rank Order Correlation also provided a statistically significant indication that a correlation exists between the rank order of the model and the rank order of the obtained rankings.

"The results obtained support the contention that the Hartman Value Profile provide a valid description and explanation of the structure and dynamics of human value and human value judgements."

Construct and Concurrent Validation

This joint construct and concurrent validation study determines both the individual and comparative validity of the instrument. Because the Hartman Value Profile is axiological in nature and therefore has more robust and useful applications than psychological instruments, it is necessary to insure its axiological validity by validating it against benchmark axiological instruments.

PRESENTED AT THE ASSOCIATION OF SCHOOL PSYCOLOGISTS CONVENTION MARCH 1977

This study was conducted by Drs. John Austin and Barbara Garwood, 1976.

This study incorporated three different values instruments as measuring rods to establish concurrent validation. The instruments were the Rokeach Value Survey (RVS), the Allport-Lindzey Study of Values (AVL), and Kohlberg's Theory of Moral Development (KMD). The population was comprised of 65 university students with an average age of 23.5 years.

The results were obtained by using the nonparametric Median test of the significance of differences between the number of persons in two more subgroups that scored above and below the median. The study indicated that the expected and obtained mean rankings was significant with a correlation of .95. For the compositional vs. transpositional items the confidence is highly significant with a $p<.001$. The individual items test indicated that no significant difference existed among the individual items ($p=.911$).

The findings of this study prove that the Hartman Value Profile measures what it claims to measure and that it is a valid axiological instrument.

Drs. Austin and Garwood presented this study and these findings at the National Association of School Psychologist Convention, March, 1977.

Content Validity

To meet content validity the assessment needs to meet the guidelines of the scientific theory that it based on, in this case The Science of Valuation, (Axiology). It has to be validated by subject matter experts to ensure that it is actually measuring what it says. Validation in this case is done by the independent experts rating the items independently and checking to make sure the different ratings are consistent for each item. In the case of the HVP, the items in the test need to be compared to the science of Valuation as defined by the late Dr. Robert S. Hartman in his work on formal Axiology in the Structure of Valuation (1967) and in his Manual on the Hartman Value Profile (1973).

In this study, the HVP was checked to make sure that each statement that was made accurately articulated the value defined in the Theory of Valuation. This study was conducted by a full panel of practicing Value Scientists (Axiologist) back in 1987 that were part of The Institute for the Study of Human Value. The study was funded by a grant from the Dollar General Corporation and the researchers included Dr. Charles McDonald, Ph.D., Wayne Carpenter, Edward Martin, William Panak, and Gary McDonald. In this study both sets of 18 statements were checked to ensure that they were sound. Each researcher performed an independent analysis of each statement to ensure that they were truly representative of:

1. The Concept they depicted
2. The Value Dimension they represented
3. The Valuation that was intended
4. That the Concept was correct
5. That the Value Dimension was correct
6. That the Valuation was Correct

The results of this analysis matched the conclusions that Dr. Hartman provided and gave high confidence to both the structure and the order of the content contained in every statement. Both sets of 18 items statements were found to be Axiologically Valid.

Reliability

To prove an assessment is reliable it is important to demonstrate that the results will come out the same although the instrument may be given at different times in different contexts, often called test/retest reliability. In many instances, test/retest results are checked with a 10-day period or more. If the results match even after a longer period of time, then the more reliable the instrument is thought to be.

UNIVERSITY OF TENNESSEE STUDY

One of the first studies was conducted back in 1982 at the University of Tennessee by John Davis, Ph.D., Glenn Graber, Ph.D., and Leon Pomeroy, Ph.D. In this study 86 students were assessed with the HVP and then tested again 10 days later. The group of students involved in this study were completing a medical ethics course at the time. This ensured that the subjects were under a high stress situation in between takes to further prove the stability of the HVP.

The results showed that all 40 dimensions measured by the HVP were statistically the same between the first and second administration of the assessment. "The reliability of the Hartman Value Profile

was especially noteworthy in the most complex dimensions: value quotients, balance quotients, self-quotients, integration scores, and differentiation scores." Even these more mathematically complex dimensions were shown to be the same with a confidence above 99% with p<.01.

VALUES INC. STUDY

Values Inc., a private company, conducted a second study between 1984 and 1987 that was much more rigorous. It was run by Wayne Carpenter and Edward Martin and consisted of 200 adults that worked for or were applying for work at the Dollar General Corporation. The test subjects were given the HVP over a three-year period and both the raw scores from the different takes and the scores ranked according to the Science of Valuation were compared.

Both sets of data were evaluated with the Spearman Rank Order Correlation Analysis and the results provided correlation at a confidence level of p<.001. In the raw scores analysis the correlation coefficients were greater than .549. The final rank order coefficient was .974, indicating "an extremely high level of significance and confidence in the reliability of the instrument, which is far greater in significance than provided by a p<.001."

NEW MEXICO STATE UNIVERSITY STUDY

A study on 177 students and other volunteers at the University of New Mexico, by Dr. Jim Kroger were given two different versions of the HVP for the purpose of validating a new statement set. Although this test was not given over an extend period of time, the fact that two different versions were given and the items in the world containing similar statements were found to correlate at the p< .001 level is significant not only for the statements themselves, but also for the test retest ability in a shorter amount of time.

Business Necessity

The E.E.O.C. requires that any instrument used in candidate selection must be able to prove "business necessity":

That it measures those traits and/or abilities that directly relate to what is needed to do the particular job.

When an instrument has either predictive validity or criterion validity it fulfills the business necessity requirement.

Predictive Validity

Predictive validity is a measure of an instrument's precision and usefulness in being able to predict whether given individuals will be successful, prior to the person's working in that position or acting in that specific role. It follows the process of predicting a person's future success in a particular job or position based on his/her test scores. This validation provides a foundation for using an instrument as both a candidate screen and a guide for training and managing employees in specific roles.

Criterion Validity

Criterion validity is a measure of the ability of an instrument to correspond to specific criteria or behaviors. This type of validation compares groups and analyzes the differences measured between the groups. When the analysis is statistically significant, then that instrument is a valid tool for distinguishing the characteristics that separate the members of those two groups.

Predictive Validity

A study was conducted by Dr. Robert K. Smith, and Virginia G. Harvey, Ph.D., 1996.

The study sample was 78 individuals seeking employment to manage independently operated retail outlets. Of the 78 candidates, 50 were hired and placed into management positions. While none of the 78 was excluded based on the results, all of the candidates' were categorized according to risk as a manager: low, medium and high.

At the end of the three-year study, the managers were defined to have been successful if they had successfully started and operated their own stores. Failure was defined as having not run their own stores profitably, having been fired for just causes, or having quit for any reason.

Risk Score	Number Hired	% Successful
LOW	20	90
MODERATE	25	65
HIGH	5	0

The results prove that "the overall risk scores determined by the Hartman Value Profile were found to be *highly predictive* of successful employment, at the $p < .0035$ level."

Two proprietary studies conducted by Cornerstone Consulting International, one in the restaurant industry and another in the retail convenience store industry, demonstrated the predictive validity of the HVP relating to performance and longevity.

In the restaurant industry application, 26 General Managers and 54 Restaurant Managers were given the HVP and then rated 6 months later for performance and longevity in the company. It was found that a combination of HVP scores could successfully predict the top performers 75% of the time in the General Managers and 83% of the time in the Restaurant managers. A different combination of scores from the HVP could be used to predict failure 75% of the time in the general managers and 100% of the time in the Restaurant managers.

A retail convenience store chain wanted to test the predictive validity of the HVP before using it to hire new managers. A blind test was done, where 38 existing retail managers from the convenience stores, some top performers and some bottom performers, were tested using the HVP. Predictions were made as to who would be a top performer and who would be a bottom performer and why. The HVP accurately predicted 80% of the top performers and was able to predict the 85% bottom performers. The company then used the assessment to hire the next wave of managers and the HVP was accurate at predicting success of at least 80% of the managers at the 6th month mark and 76% at the year mark.

The Hartman Value Profile is a valid and very useful instrument for establishing predictive indicators of success in business applications. This predictive validation proves that the Hartman Value Profile fulfills the EEOC requirement of business necessity.

Criterion Validity

The construct validity studies establishes that the HVP measures what it is designed to measure—the capacity to make value judgments. The test-retest reliability study demonstrates that the profile results can be counted on to be a reliable indicator over time of an individual's capacity to make value judgments. The EEOC studies give confidence that the HVP analyses can be used without discriminating by age, race or gender. The concurrent validity studies lend weight and credibility to the validity and reliability of the HVP-based analyses as accurate measurements of the ability to make value judgments. The accumulated weight of these studies gives confidence that the HVP-based analyses are accurate, valid and reliable diagnostic predictors.

The internal and external studies, as well as the concurrent studies, confirm that HVP-based analyses are an accurate measure of a person's specific capacity to make value judgments, such as the ability to pay attention to practical values and concrete detail. The information generated can be validly and accurately utilized to identify value patterns in individuals, groups and to identify resources for enabling an individual to learn how to develop an understanding of their value capacities and chart a development course.

Criterion validity measures the capacity of the HVP-based analyses to be used as valid predictors. In other words, how well do the HVP and the report instruments function as an indicator of performance in specific areas such as sales, management and customer relations? Can the HVP analyses be used to decide ahead of time which individuals have a better chance of succeeding in a specific environment?

Value Resource Group has collected data from a variety of organizations—data with indifferent geographical areas of organizations, within specific performance areas, and between performers who were demonstrating either ability or lack of ability. One consistent factor which VRG has continuously found and pointed out to clients is that value patterns that indicate success and, thus, can be validated as predictors, vary between companies, within companies and within performance areas. Unless the diagnostic patterns measured by the HVP are empirically correlated to those factors that measure success for a specific performance function in an individual company, and in an individual geographical location for the company, the information cannot be reliably used to predict who will and who will not succeed.

Sales

For the sales study, the sample was divided into three groups, non-sales persons, moderately successful sales persons, and very successful sales persons. The objective criterion to separate the sales groups was commissions earned for the three previous years.

Customer Service

For the following customer service study all of the members of samples groups were employed as customer service personnel. They were distinguished as those who were successful from those who were not successful in customer service. The objective criterion for distinguishing these people were letters of commendation from satisfied customers and management's recognition of the person's success in this role.

Management

The first management study compared managers who had succeeded with managers who had failed in the Sara Lee Corporation outlet stores. The second and third management studies compared those who had advanced into management positions with those who had not advanced into management positions.

Criminal vs. Non-Criminal Study

This criminal vs. non-criminal validation compares convicted criminals with the normal population and analyzes the differences between these two groups. When the analysis is statistically significant, then that instrument is a valid tool for distinguishing the characteristics that separate criminals from non-criminals.

Sales Criterion Validity

One particular statistical criterion study conducted for Value Resource Group analyzed the Sales Performance Model. Tim Garton Associates, Lemont, IL, conducted the study, 1987.

> SALES STUDY BY VALUE, INC.

The Sales Performance Model was initially based on the findings of a Yale University study published in *The Journal of Personal Psychology* that identified and evaluated 5,000 successful sales people over a five-year period. The findings of the study identified the major factors of sales success as "empathy" and "ego drive." VRG expanded this study to develop a measure of a person's capacity to relate, handle rejection, be a self-starter, have versatility of motivation, be able to think and see what needs to be done, manage stress, and be able to organize and plan. The model included 49 basic factors that are based on an integrated analysis of scores the Hartman Scoring System.

The criterion study was conducted as an empirical validation of the sales-interpreted functions of the Sales Performance Model.

The study sample was 237 persons with 137 being sales persons from the insurance and estate planning industry. The criteria for distinguishing these persons into three groups was:
- 100 non-sales persons randomly selected from a database of more than 5,000 general employment candidates.
- 87 sales persons earning commissions between $50-100K/yr. For a 3-year period: labeled moderately successful.
- 50 sales persons earning commissions between $100-500K/yr. For a 3-year period: labeled successful salespersons.

Methodology of the Sales Criterion Study

In the initial scoring process, The Hartman Value Profile takes the ordinal rankings and converts them into interval scales or scores. The scoring process weights the Hartman rank data according to The Hartman Scoring System. VRG further weights the interval data and generates new interval data. This new interval data is used to determine 49 sales factors that are used to measure sales strengths and development areas.

This statistical analysis analyzes the final interval data and variables and considers the significance of the differences in the values of distributions between a sample of non- sales persons, mid-level sales persons and top sales persons.

With interval scales data in three sample populations, an analysis of variance tests resulting in an F ratio was chosen. Decision rules on interpreting the F ratio were values of 2.00 and above for 0.05 level significance, and 4.00 and above for 0.01 levels of significance.

For variables not deemed significant in the ANOVA test, a new test of the two extreme populations, on-sales and top sales, was constructed. Given the smaller size of the top sales population and the dominance in size of the non-sales population, the Kruskal-Wallis test was applied.

Summary of Results

This study focused on three sample populations:

1. **Non-sales**—100 cases
2. **Mid-sales**—87 cases
3. **Top-sales**—50 cases

The results of comparative tests of all three populations indicate that of the 49 variables analyzed:

- 26 were significant at the .01 level
- 14 were significant at the .05 level
- 2 were significant at the 0.10 level
- 7 were not significant

Subsequent studies of the two extreme populations—non-sales and top-sales—indicated significance for two of the seven not deemed significant.

As an additional measure they picked 8 measures from the HVP and predicted that that the sales people earning a higher commission would have higher scores than the other two groups. The results were significant for all 8 variables.

HVP Variables	Statistical Significance
"Ego-drive" (I2/E2/S2 Val & Dims)	$p < .01$
"Empathy" (I1Dim & Valence)	$p < .01$
Common Sense (DimE1)	$p < .01$
Intuitive Insight (DimI1)	$p < .01$
Realistic Goal Setting (DimS1)	$p < .01$
Self-Confidence (DimE2)	$p < .01$
Self-Control (DimS2)	$p < .01$
Self-Esteem (DimI2)	$p < .01$

This study provided significant proof that the HVP has the ability to predict potential performance for sales excellence.

Overall, the results of these studies indicate the Hartman Value Profile a very powerful statistical

model with a high level of statistical significance relating to samples drawn on the key characteristic that the model is intended to predict—sales ability.

Customer Service Criterion Validity

This study was conducted by Dr. Robert K. Smith and Virginia Harvey, Ph.D. and commissioned by James River Corporation, 1990.

A study sample of 41 customer service personnel working for James River Corporation. The criterion used to distinguish one group from the other was success in the customer service role. The sample was divided into two groups: those who had been both commended for their service by customers and had been recognized by their colleagues within the company for their exemplary customer service, and those who had neither been commended by their customers nor their colleagues.

The marketplace distinguishes consistently good performers from mediocre and bad performers. This study measured the differences between those two groups as they functioned in customer service roles. General observations would lead one to conclude that those who are exemplary are better able to find practical solutions, communicate with others, instill confidence in their ability to perform, and be able to be persistent without being stubbornly insistent. To confirm the validity of the Hartman Value Profile, these abilities would have to be distinguished by statistically significant differences in the dimensional scores of measuring common sense, personal competence, and personal duty (E1, E2, and S2).

The results confirmed that those who were exemplary in customer service had greater abilities in all dimensions measured by the Hartman Value Profile and statistically higher abilities to reason in the three-dimensional areas noted above.

	% Higher of Excellent	p value
Empathy	17	.19
Common sense	21	.02
Logical solutions	15	.18
Self esteem	13	.26
Personal competence	30	.05
Personal duty	17	.07

This study proves that the Hartman Value Profile scores correlate directly to behaviors, abilities, and attitudes that are required for excellence in customer service.

Management Criterion Validity

This study was conducted by Dr. Robert K. Smith in conjunction with the Sara Lee Corporation, 1990-92.

A sample of 150 managers of Sara Lee outlet stores was given the Hartman Value Profile in the Fall of 1990. All participants had been identified as qualified for management and had been managers of their respective stores for fewer than two years. They were given the Hartman Value Profile as part of their ongoing management training and education.

Two years later, in the Fall of 1992, the head of this division of Sara Lee divided the list of names from the three groups (excellent, good, and failures). The criteria he used to distinguish the excellent managers from the good managers were" operations, sales, turnover, and ability to function within budget. At that time, Sara Lee had an annual management assessment program (completed by peers, subordinates and corporate management) which scored all managers on a numeric scale. These scores provided further distinctions by which the excellent manager (28) were distinguished from the good managers (79). Managers who were identified to be failures (43) had been removed or had quit from their positions prior to the Fall of 1992. They had failed for various reasons ranging from an inability to effectively lead and manage people, an inability to effectively and efficiently oversee operations, and an inability to plan and effectively execute those plans.

The results of this study are bases on the differences between the excellent managers and failures. In this particular case, the unusual feature is that all participants (the excellent, good and failures) had been selected by management in 1990 as capable store managers. The profile scores that were compared are those from the testing completed prior to fall, 1990.

The final conclusions were reached by comparing the dimensional scores of the two groups. Previous management studies had shown that different personality types are able to function effectively in management roles. This was confirmed by this study, as well, in that the differences between the two groups were not those that manifest personality characteristics as much as they were those that manifest differences in functionality:

A better ability to work with and be patient with people
(Excellent were 18% more empathic with a valence of I1 of 54% positive vs. 54% negative),

a greater tendency to work with others than do it herself
 (Excellent were 53% more inclined to delegate with a E1 valence of 28% vs. 43% positive),

a greater tendency to be proactive rather than reactive
(Excellent were 17% more planning oriented with S2 Dim of 11 vs. 13),

greater personal courage (resulting in less defensiveness)
(Excellent had 42% healthier self-esteems with and I2 Valence of 25% vs. 16% positive),

and greater resiliency when under stress
(Excellent were 50% better able to function in stressful situations with BQRs of 1.1 vs. 1.65).

All of the differences noted above are statistically significant with a $p < .05$.

This study confirms that the Hartman Value Profile scores correlate directly to behaviors, abilities, and attitudes that are confirmed by the marketplace as crucial distinctions between those who succeed in managing a retail store from those who do not.

Management Criterion Validity (Study B)

This study was conducted by Kinsel Enterprises, Inc. (Dr. Robert K. Smith and Ken Bandy), 1996.

120 women in business were given the Hartman Value Profile from 1987 to 1991 as part of their ongoing training and development. They came from more than 20 different companies in 6 different states. Their ages ranged from mid-twenties to mid-fifties.

The sample was divided into two groups, those who were executive, currently serving in management roles in their companies (20), and those who were not in management roles (100).
The results of this study are based on the differences between the managers and non-managers. The final conclusions were reached by comparing the dimensional scores of the two groups. This study confirmed that the differences between the two groups were dramatic and significant in five areas. The non-manager group did not score higher than the managers in any category.

A greater ability to make decisions and use common sense
(Managers were 23% clearer in their decision making and common sense judgment with a Dim E1 of 7.25 vs. 8.9)

Greater personal courage (resulting in less defensiveness)
(Managers had 20% healthier self-esteems with an I2 Valence of 22% vs. 19% and Dim of 10.1 vs. 12.5),

A greater ability to make accurate self-assessments of their own strengths, limitations, and competencies
(Managers were 12.5% clearer and more accurate in assessing their own abilities and roles with a Dim E2 of 12.75 vs. 14.25),

And a greater degree of personal freedom to make mistakes, risk loss, and shift one's own priorities.
(Managers were 13% more reasonable and less dogmatic than the non-managers were with a Dim S2 of 11.5 vs. 13.8)

Management Criterion Validity (Study C)

This study was conducted by Dr. Robert K. Smith, 1993.

A sample of 257 managers from eight different companies was given the Hartman Value Profile between 1988 and 1993. All participants were in management positions when they took the profile. They were given the Hartman Value Profile as part of their ongoing management development.

The sample was divided into three groups: excellent managers, good managers, and poor managers. The criteria used to distinguish the excellent managers from the good managers were: superlative operations in their respective fields, effectiveness with their people, lack of turnover, and ability to function within a budget. All were also assessed by their peers, subordinates and superiors who identified them as excellent (70), good (100), or poor (87). In order for a manger to be identified as poor, s/he had to have ongoing unresolved problems, glaring ineffectiveness with her direct reports, or failures within business contexts in which others were succeeding.

The results of this study are based on the differences between the excellent and poor managers. The final conclusions were reached by comparing the dimensional scores of these two groups. Previous management studies had shown that different personality types are able to function effectively in management roles. This was confirmed by this study, as well, in that the differences between the two groups were not those that manifest personality characteristics as much as they were those that manifest functional capability. The poor managers did not score higher than the excellent managers in any dimension. The excellent managers were statistically superior to the poor managers in the following dimensions:

A better ability to work with and be patient with people
(Excellent were 26% more empathic with a I1 valence of 59% vs. 43% positive),

A greater tendency to work with others than do it herself
(Excellent were 25% more inclined to delegate with an E1 valence of 32% vs. 44% positive),

greater personal courage (resulting in less defensiveness)
(Excellent had 13% healthier self-esteems with I2 Dim of 11 vs. 13),

and a greater degree of reasonability when confronted
(Excellent were 18% more reasonable and less stubborn than the poor managers were with an S2 dim and 12 vs. 14).

All of the differences noted above are statistically significant with a $p < .05$.

This study confirms that the Hartman Value Profile scores correlate directly to behaviors, abilities, and attitudes that are confirmed by businesses as critical distinctions between those who succeed in management from those who do not.

Criminal vs. Non-Criminal Study

This criminal vs. non-criminal validation compares convicted criminals with the normal population and analyzes the differences between these two groups. When the analysis is statistically significant, then that instrument is a valid tool for distinguishing the characteristics that separate criminals from non-criminals.

For this study we assume that the judicial system of the State of Tennessee is a sound criteria selector in distinguishing violent criminals from the rest of the population. Criminals in general are people whose behavior stems from their inability to call upon strengths to overcome their weaknesses. Non-criminals are people who can and do rely on their strengths to overcome or to "hold in check" their weaknesses. To establish the validity of the Hartman Value Profile, an analysis of the profiles of the criminals and non-criminals should present a significant difference in their capacities to reason and function effectively in stressful situations.

This study was conducted by Drs. Mark Moore and Phil King, 1994.

The study included 44 convicted criminals serving their sentences at Brushy Mountain State Prison, the maximum-security state prison for the State of Tennessee. These criminals took the Hartman Value Profile while serving time for murder or violent rape. The normal population profiles were gathered from Dr. Moore's database of more than 500 functioning people, from all walks of life, throughout the United States. The null hypothesis was that no significant difference would exist between convicted criminals and the general population.

A summary of the results for the six key measures of the Hartman Value Profile (using Dr. Hartman's transfinite scoring methods [the lower the number the greater the capacity and ability to reason and function effectively in stressful situations]):

Capacities to	Criminal	Non-Criminal
Empathize (I1)	11.85	8.42
Reason Practically (E1)	14.76	9.08
Reason Logically (S1)	17.43	13.63
Value One's Self (I2)	18.26	11.45
Compare One's Self (E2)	19.02	14.30
Define One's Self (S2)	17.80	13.49

A summary of the results for the same six key measures of the Hartman Value Profile using Dr. Moore's vector analysis scoring method are (the higher the number the greater the capacity and ability to reason and function effectively in stressful situations):

Capacities to	Criminal	Non-Criminal
Empathize (I1)	4.86	7.44
Reason Practically (E1)	2.68	6.94
Reason Logically (S1)	0.67	3.53
Value One's Self (I2)	0.05	5.16
Compare One's Self (E2)	--0.52	3.03
Define One's Self (S2)	0.40	3.63

For both scoring methods, the differences are statistically significant with a $p < .05$.

This study is significant in that it establishes a high statistical difference between people who are able to be effective in society from those who are unable to do so. It provides an objective, resultant-behavioral criterion against which the scores are compared. In as much as few people will ever have cause to encounter or profile murderers or violent rapists, this study does confirm that the Hartman Value Profile accurately measures a person's capacity to value by assessing people at the severely dysfunctional end of the behavioral spectrum.

CONCLUSION

The theory behind the Hartman Value Profile is subject to scrutiny and testing as are all other scientific theories. Based on observations about the nature of our world, the scientist posits principles that define and categorize those observed behaviors or characteristics. Then a mathematical system with the same properties is associated to that system. That mathematical system is then able to model that world, without the scientist actually entering that world. This is why engineers on earth can design a ladder that will work on the moon. This establishing a theory and finding a mathematical system that has an isomorphic relationship to that theory is what Dr. Robert S. Hartman did from 1945 through 1973 in his discovery of formal axiology. One practical result of that work was the Hartman Value Profile. Dr. Hartman was nominated for the Nobel Peace Prize in 1973 because of the conclusions he reached using formal axiology.

Once a scientific theory is defined, the proofs of the theory are based on its consistency and ability to be applied to all relevant aspects and its consistency with previously proven tenants. This is why a physicist does not have to fly a plane or observe planes to be able to design one that flies. He mathematically models the flights of a large airplane by using previously proven formula of flight to model the new plane. He then proves his design (and thus the theories, as well) by having the actual plane fly.

The cornerstone axiological instrument is the Hartman Value Profile. The formulation of the Profile came from its consistency with previously established tenants. This was demonstrated by the middle three studies in this compendium. The proof comes in the validity and reliability of axiological instruments to real life, which was demonstrated by the final eight studies. **These studies, spanning 15 years, being completed by 19 individuals, validate the tenants of formal axiology and prove that the Hartman Value Profile is reliable, is valid, complies with the EEOC requirements, and is useful in multiple applications for industry and social sciences.**

Appendix - Axiometrics™ Validity Timeline

1980s	Construct validity—random samples, 40,000 Dollar General EEOC validity items, Hartman math, clinical variables, retest every 5 years
1985	Reviewed and approved, legal department, CUNY mutual, used for all employees until 1996 when company was bought
1988	Criterion validity
1988	Validity study, Chuck McDonald and Bill Murphy with Vanderbilt psychometrician
1988	Reviewed and approved, GTE legal and psychometric—used until Training Center closed in Norwich, CT (10 years later)
1990	Reviewed and approved by legal department, AIB
1990	Reviewed and approved, psychometrics, at AT&T
1991	Reviewed and approved, Drake Beam Morin
1991	Reviewed and approved, legal and psychometric, USPS, Lamon Mosely, Asst. Postmaster General
1996	Reviewed and approved, KPMG, for leadership
1996	Reviewed and approved, psychometrics, Arthur Andersen Consulting, Ann Mueller, psychometrician and adjunct faculty, University of Chicago
1996	Reviewed and approved through peer review of academic psychometricians from Harvard, Princeton and Yale
1996	Reviewed and approved, legal commission, Ernst and Young
2000	Reviewed and approved, Graduate school of Education, Georgetown University, Marshal Saskin
2003	Reviewed and approved, Chief HR Officer, Chief Nursing Officer, CEO, HCA
2016	6 yr longitudinal study of predictability of a bad hire, major international corporation
2018	Reviewed and approved, Learning and Development Team, NHS Trust. Detailed product review of Psychometrics vs Axiometrics, benefits and applications.

*The above represent the key validations and reviews conducted by and for the psychometric and legal specialists within client companies. The results, while theoretically rigorous, are also targeted toward actual organizational usage. Since they involve internal data, privacy concerns require that the studies remain proprietary. There have been numerous tests done on original Hartman material as well. These are available on request. Email **value@axiometricspartners.com** or employ the contact button at **http://www.axiometricspartners.com/contact-us** to request a copy.*