

# TABLE OF CONTENTS

## **Chapter One: Introduction**

History of the DISC Model Theory and Questionnaire Development.....	3
DISC Model Theory.....	3
Development of Marston Based DISC Questionnaires.....	3
Objectives of the Profiles Team Analysis Technical Manual.....	4

## **Chapter Two: Development of the Profiles Team Analysis™**

Selection of Items for the Profiles Team Analysis™.....	5
Most–Least Response Technique.....	7

## **Chapter Three: Statistical Analysis of the Profiles Team Analysis™: Phase One**

Sample.....	8
Results.....	8
Descriptive Statistics.....	8
Reliability Analysis.....	8
Split-Half Reliability Analysis.....	9
Coefficient Alpha.....	9
Profiles Team Analysis Item Analysis.....	10
Frequency Distribution of Responses.....	10

## **Chapter Four: Statistical Analysis of the Profiles Team Analysis™: Phase Two**

Sample.....	12
Results.....	12
Descriptive Statistics.....	12
Reliability Analysis.....	13

## **Chapter Five: Construct Validity Analysis of the Five Scales**

Objective.....	14
Sample.....	14
Construct Validity Measures.....	15
GZTS-Guilford-Zimmerman Temperament Survey.....	15
GPP-I Gordon Personal Profile – Inventory.....	16
VPI-Vocational Preference Inventory.....	17

## ***Profiles Team Analysis™ Technical Manual***

Results of the Construct Validity Analysis.....	18
Correlation Coefficient Between the Profiles Team Analysis™ and the GZTS.....	18
Correlation Coefficient Between the Profiles Team Analysis™ and the GPP-I.....	19
Correlation Coefficient Between the Profiles Team Analysis™ and the VPI.....	20
Summary of the Construct Validity Analysis.....	21
Construct Validity Evidence: Scale I.....	21
Construct Validity Evidence: Scale II.....	22
Construct Validity Evidence: Scale III.....	22
Construct Validity Evidence: Scale IV.....	23

### **Chapter Six: Statistical Analysis of the Profiles Team Analysis™: Phase Three**

Sample.....	24
Results.....	24
Descriptive Statistics.....	24
Coefficient Alpha.....	24
Profiles Team Analysis™ Item Analysis.....	25
Frequency Distribution of Response.....	25

### **Chapter Seven: Statistical Analysis of the Profiles Team Analysis™: Phase Four**

Sample.....	26
Results.....	26
Descriptive Statistics.....	26
Coefficient Alpha.....	26
Profiles Team Analysis™ Item Analysis.....	27
Frequency Distribution of Response.....	27

### **Chapter Eight: Summary of Results and Conclusions**

Overview.....	28
Summary.....	28

### **Chapter Nine: The Profiles Team Analysis™ Scales**

The Profiles Team Analysis™ Scales Definitions.....	31
The Profiles Team Analysis™ Scales Correlations.....	33

<b>Appendix A:</b> Correlation Coefficients of the Profiles Team Analysis™ with The Guilford-Zimmerman Temperament Survey (GZTS), Gordon Personal Profile-Inventory (GPP-I) and Vocational Preference Inventory (VPI).....	35
--	----

# CHAPTER ONE

## Introduction

### History of the DISC Model Theory and Questionnaire Development

#### DISC Model Theory

The DISC Model Theory is not a recent development. As long ago as 1928, Dr. William Moulton Marston published the “Emotions of Normal People” in which he described it. The DISC language and the descriptive categories that make possible the practical application of his theory were derived from Dr. Marston’s work.

According to Dr. Marston’s DISC theory, behavior can be described by four primary dimensions, namely:

Dominance (D)

Inducement (I), also called “Influence”

Steadiness (S)

Compliance (C), also called “Cautiousness” and “Conscientiousness”

Every individual has one core or basic dimension and most behavior is a result of a combination of two or more of these dimensions<sup>1</sup>.

#### Development of Marston Based DISC Questionnaires

Dr. Marston never developed a DISC measuring instrument. It was not until the 1950’s that Walter Clark developed an instrument based on Marston’s theory. This instrument was entitled the “Activity Vector Analysis.”

Since the development of the “Activity Vector Analysis,” and particularly beginning in the 1970’s, an ever increasing number of DISC measuring instruments have become available. Most of these instruments share a common ancestry. For example, two of the more commonly used Marston based instruments are the “Style Analysis<sup>2</sup>” and the “Personal Profile System<sup>3</sup>.” Both of these instruments are forced choice, most-least adjective checklist questionnaires. Both contain 24 or 28 sets of four adjectives derived from the Marston DISC Model Theory. Both contain most of the same adjectives, arranged in the same order. Both questionnaires require an individual to select one “most like me” and one “least like me” adjective from each set of four.

---

<sup>1</sup> A more comprehensive, detailed description of the DISC Theory can be found in O’Connor, M. (1987). *The DISC Model, Trainer and Consultant Reference Encyclopedia*. Life Associates, Inc.

<sup>2</sup> Bonnstetter, B., Suiter, J. and Widrick, R. (1993). *The Universal Language DISC: A Reference Manual*. Target Training International, Ltd.

An individual's DISC scores are then plotted on three graphs. Graph I contains the individual's "most" responses. Graph II contains the "least" responses and Graph III contains the net difference between the "most" and "least" scores. Any one or more of these graphs have been used to identify and interpret an individual's DISC profile or behavioral style. DISC theory profiles have been used for:

- ☞☞ Team building
- ☞☞ Career guidance and career path planning
- ☞☞ Coaching and counseling
- ☞☞ Training and management development
- ☞☞ Interpersonal conflict resolution

Although there is no shortage of different Marston based DISC questionnaires, there is a critical shortage of technical and statistical data which support the development, validity and reliability of these questionnaires. In addition, what data, conclusions and recommendations that are available for review, are typically not clear or conclusive.

### **Objectives of the Profiles Team Analysis Technical Manual**

This technical manual summarizes the results of the development and statistical analysis of a new personality questionnaire entitled the "Profiles Team Analysis." This technical manual includes an analysis of the construct validity and scale reliabilities of the Profiles Team Analysis.

---

<sup>3</sup> Personal Profile System, Carlson Learning Company, 1994.

## CHAPTER TWO

### Development of the Profiles Team Analysis

#### Selection of Items for the Profiles Team Analysis

A panel of assessment practitioners, trainers, personnel consultants and psychologists served as the subject-matter experts. All of these panel members had extensive knowledge and experience with various personality measuring instruments and related materials. Personnel Research Associates, Inc. of Dallas, Texas, a psychological consulting firm, was retained to help develop the Profiles Team Analysis and to coordinate the necessary statistical analysis.

The panel members participated in an in-depth review of current personality measuring instruments, technical reports and training materials. This review resulted in a list of 50 potential items for each of the Profiles Team Analysis Scales. The total number of items was then reduced to 30 for each scale using the following process.

The final selection of questionnaire items was based on the following criteria:

**✂️ Deletion of vague and ambiguous items:** A review of DISC type questionnaires indicated that most of these questionnaires contain items that are highly vague and ambiguous. For example, two of these questionnaires contain the following items:

Obliging	Amicable
Cordial	Satisfied
Willing	Jovial
Eager	Animated
Lenient	

These items are vague and have too much surplus meaning — “willing” to do what?, “eager” to do what? “satisfied” with what? In addition, other vague items such as “magnetic,” “stimulating,” “refined” and “unconquerable” were not regarded as acceptable items for the Profiles Team Analysis™.

**✂️ Deletion of negative items:** The manner in which a set of four items is combined can cause problems with regard to producing a balanced and accurate representation of responses.

Example 1, which is common to most DISC theory questionnaires, contains a set of four items that clearly illustrate this problem. In this example, a respondent is required to select one “Most” and one “Least” item from this set of positive and negative items. These negative items will produce a biased response by most people’s preference for positive items. The end result is a skewed or distorted DISC profile.

<b>Example 1</b>		
<b>Most</b>	<b>Least</b>	
?	?	Fussy
?	?	Obedient
?	?	Firm
?	?	Playful

Therefore, negative items such as “obedient,” “easy mark,” “humble,” “argumentative,” “stubborn,” “gives in” were not considered as acceptable items for the Profiles Team Analysis.

**Avoidance of gender-related items:** In addition to ambiguous and negative items, gender-related or biased items such as “charming,” “delightful,” “captivating,” “appealing,” “sweet” were not included in the Profiles Team Analysis.

**Compatible with the Marston DISC Model Theory:** This criterion is compatible with all consultants and trainers who have developed and used handout, workbook and transparency materials based on the DISC Model Theory. This criterion will ensure that all Profiles Team Analysis practitioners can continue to use materials developed on Marston’s theory.

**Compatible with business people:** Although the Profiles Team Analysis can be used successfully with any individual or group of individuals, it was the intention of the panel to focus on items that were compatible with business people and business environments. The primary objective of this criterion was to insure that decisions with regard to team building, training, communication and career guidance would be based on a DISC theory measurement tool that was compatible with these types of decisions and with which business people felt comfortable.

The final result of this process was the identification and selection of 30 items for each of the Profiles Team Analysis scales, resulting in a total of 120 items.

## **Most - Least Response Technique**

Most DISC theory questionnaires utilize a forced-choice, one most-one least response technique. This technique creates several very serious problems.

First, it cuts in half the number of most-least comparisons that can be made, which impacts the reliability and validity of the questionnaire. The primary factors that affect the reliability of a test are the clarity of the test items and the length of the test. As a rule of thumb, the longer a test, the more reliable it tends to be. This problem helps to explain why the reliability coefficients related to Scale "I" and "C" for most DISC theory questionnaires are consistently well below professionally acceptable standards.<sup>4</sup>

Second, the most-least technique restricts the distances that separate the DISC profile scale scores from each other. As a result, it is frequently difficult to arrive at any decisive conclusion regarding the differences among DISC scale scores for one person and differences in DISC scale scores between two or more people. This restriction of range between scale scores can create profiles which are flat and ambiguous.

The Profiles Team Analysis requires a respondent to rank order the four items within each set. Each item represents one dimension. As a result, 30 sets of four items each produce scores on scales that range from 30 to 120. This wide range of scores not only enhances the reliability and validity of the scales, but also generates Profiles Team Analysis profiles which are precise and explicitly defined. This wide range of scale scores should eliminate most undershifts, overshifts and tight profiles. Finally, profile patterns can be based on raw scores as opposed to "segment numbers," "energy lines," and other vaguely defined "norms."

The Profiles Team Analysis reports the four primary dimensions as numbered scales. The scales relate directly to the DISC model theory. Scale I of the Profiles Team Analysis equates to the traditional Dominance scale; Scale II equates to the traditional Influence scale; Scale III equates to the traditional Steadiness scale; and Scale IV equates to the traditional Compliance scale.

---

<sup>4</sup> Most professional test developers agree that a reliability coefficient should be greater than .70.

## CHAPTER THREE

### Statistical Analysis of the Profiles Team Analysis: Phase One

#### Sample

The Profiles Team Analysis was administered individually and in small groups to 334 participants. The sample consisted of a cross section of ages, income levels, educational levels and an even distribution of gender. All participants were employed in a diverse range of positions, companies and industries.

#### Results

##### Descriptive Statistics

Table 1 contains the average scores, standard deviations, minimum and maximum scores and the range of scores for the four Profiles Team Analysis scales.

**Table 1: Descriptive Statistics for the Profiles Team Analysis**  
(n=334)

##### Profiles Team Analysis Scale

	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>
Average Score :	79	73	78	70
STD Dev. :	16	12	15	11
Min. Score:	39	38	42	46
Max. Score :	115	103	114	105
Range of Scores:	76	65	72	59

##### Reliability Analysis

No measure can be of much value unless it measures in a reliable or consistent manner. Reliability refers to the consistency of test scores obtained by the same person when

retested with the same test on different occasions. Since all types of reliability are concerned with the degree of consistency between two independently derived sets of test scores, they can all be expressed in terms of a correlation coefficient. A correlation coefficient expresses the degree of relationship between two variables. This relationship is expressed as a decimal number ranging from .00 to 1.00 where 1.00 indicates perfect reliability and .00 indicates the absence of reliability. Although no test is a perfectly reliable instrument, test reliability correlation coefficients should be in the .70's, .80's and .90's.

### **Split-Half Reliability Analysis**

Each of the 30-item Profiles Team Analysis scales was divided into two equivalent halves of 15 odd and 15 even numbered items. A split-half reliability correlation coefficient was calculated to provide a measure of consistency with regard to the content of the questionnaire items. That is, the split-half reliability coefficient would indicate how consistently the Profiles Team Analysis items measure the DISC dimensions for which it was developed to measure.

Table 2 contains the split-half reliability coefficients for the Profiles Team Analysis.

**Table 2: Split-Half Reliability Correlation Coefficients for the Profiles Team Analysis**  
(n=334)

	<b>Profiles Team Analysis Scale</b>				
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>Average</u>
Split-Half Reliability Coefficients	.85	.81	.88	.77	.83

According to Table 2, the four reliability correlation coefficients clearly indicate that the Profiles Team Analysis is a highly reliable measuring instrument. Reliability coefficients range from .77 (IV Scale) to .88 (III Scale). The average reliability coefficient for the Profiles Team Analysis was .83.

## **Coefficient Alpha Reliability Analysis**

Coefficient alpha is another statistical measure of reliability. It is a statistic that indicates the consistency of responses to individual test items. The higher a test's coefficient alpha, the more consistent the items are for that test. A test with a low coefficient alpha is a test that produces different or inconsistent scores each time the same person takes the test. A high coefficient alpha, however, indicates that the test produces similar or consistent scores each time the same person takes the test.

Table 3 contains the coefficient alpha correlations for the Profiles Team Analysis.

**Table 3: Coefficient Alpha Reliability Correlation  
Coefficients for the Profiles Team Analysis  
(n=334)**

	<b>Profiles Team Analysis Scale</b>				
	<b><u>I</u></b>	<b><u>II</u></b>	<b><u>III</u></b>	<b><u>IV</u></b>	<b><u>Average</u></b>
Coefficient Alpha	.89	.82	.89	.79	.85

According to Table 3, the coefficient alpha correlations range from .79 (IV Scale) to .89 (I and III Scales). The average coefficient alpha for the Profiles Team Analysis was .85. Therefore, the coefficient alpha reliability analysis not only supports the split-half reliability analysis but clearly indicates that the Profiles Team Analysis is a highly reliable measuring instrument.

## **Profiles Team Analysis Item Analysis**

### **Frequency Distribution of Responses**

The process of developing a personality test does not end with the initial administration of the test to a sample of people. Test developers should conduct a preliminary analysis to determine which test items are functioning as they should. Both the validity and reliability of any test depend on the characteristics of its items. High reliability and validity can be built into a test in advance through item analysis, and can be improved through the selection, substitution, or revision of items.

An item analysis of the Profiles Team Analysis was conducted to determine the frequency distribution of 4, 3, 2, and 1 responses for the 120 Profiles

## **Profiles Team Analysis™ Technical Manual**

Team Analysis items. If a large percent of the total sample assigned a rank of 4, 3, 2 or 1 to any one or more of the Survey items, these items would have to be regarded as excess baggage in the Questionnaire. That is, these items provide limited information about individual differences and contribute very little to the validity and reliability of the Profiles Team Analysis.

Table 4 summarizes the results of the item analysis.

**Table 4: Average Percent of Responses in the Total Sample (n=334) for the 120 Profiles Team Analysis Items**

		<b>Profiles Team Analysis Scale</b>			
<b>Response Choices</b>		<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Most Like Me	4	31%	22%	28%	20%
	3	23%	26%	26%	25%
	2	22%	26%	26%	24%
Least Like Me	1	24%	26%	20%	30%

Table 4 indicates that the Profiles Team Analysis produced a fairly well balanced representation of 4, 3, 2 and 1 responses for the 120 items. Scale I-related items received the largest percent of “most like me” responses (31%) whereas Scale IV-related items received the largest percent of “least like me” responses (30%). Inspection of the response distribution for the 120 items indicated that five of these items produced the largest percent of “least like me” responses. That is, 76% of the total sample selected “nit picker” and 71% selected “picky” as their “least like me” response. The additional three items were “poor loser” (64%), “thin skinned” (63%) and “fussy, hard to please” (61%). Apparently, these items were regarded as negative items by a majority of the participants. It was the opinion of the panel to delay any changes to the Profiles Team Analysis until additional data become available for analysis.

## CHAPTER FOUR

### Statistical Analysis of the Profiles Team Analysis: Phase Two

The primary objective of Phase Two was to replicate Phase One with a new sample of participants.

#### Sample

The Profiles Team Analysis was individually and group administered to 317 participants. This sample was similar to the sample in Phase One with regard to demographics.

#### Results

##### Descriptive Statistics

Table 5 contains the Profiles Team Analysis descriptive statistics for the 317 participants.

**Table 5: Descriptive Statistics for the Profiles Team Analysis - Phase Two**  
(n=317)

##### Profiles Team Analysis Scale

	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>
Average Score:	79	73	79	70
STD Dev.:	15	13	14	12
Min. Score:	44	39	44	43
Max. Score:	109	103	117	105
Range of Scores:	65	64	73	62

The average I, II, III, and IV scale scores in Table 5 are nearly identical to the average scale score reported in Phase One (See Table 1). Only one point separated the average scale scores from being identical. These highly consistent descriptive statistics are a direct result of the high reliability correlation coefficients that were obtained in Phase One.

**Reliability Analysis**

Table 6 contains coefficient alpha for the Profiles Team Analysis.

**Table 6: Coefficient Alpha for the Profiles Team Analysis - Phase Two**  
(n=317)

	<b>Profiles Team Analysis Scale</b>				
	<u><b>I</b></u>	<u><b>II</b></u>	<u><b>III</b></u>	<u><b>IV</b></u>	<u><b>Average</b></u>
Coefficient Alpha	.88	.84	.88	.81	.85

Table 6 clearly indicates that coefficient alpha for the four scales are nearly identical to those reported in Phase One (See Table 3). The coefficient alphas range from .81 (Scale IV) to .88 (Scales I and III). The average coefficient alpha was .85.

## **CHAPTER FIVE**

### **Construct Validity Analysis of the Five Scales**

Construct validity refers to the extent to which a psychological measure is an accurate measure of a particular construct. Construct validity addresses the question, “What does this measure really measure, and how well does it measure what it was designed for and purported to measure?”

Although there are different methods for determining the construct validity of a psychological measure, such as experts’ judgment and analysis of internal consistency (i.e. coefficient alpha), one of the most informative methods is to examine the correlation coefficients between the new psychological measure and other psychological measures that have been shown to measure the same or similar construct. That is, correlation coefficients between a DISC theory measuring instrument and other personality measures should show specific predictable relationships.

For example, Scale II of the Profiles Team Analysis was designed for and is purported to be a valid measure of the construct “Influence.” According to Marston’s DISC model theory, “Influence” is directly related to “Sociability.” Therefore, evidence of construct validity for Scale II should include high correlation coefficients between Scale II and other “proven” psychological measures of “Sociability.”

#### **Objective**

The objective of this analysis is to provide evidence of construct validity for the Profiles Team Analysis by examining the pattern of correlation coefficients for these scales with two highly regarded personality measures and a measure of vocational interest.

#### **Sample**

The sample for Phase Two consisted of 317 participants.

## **Construct Validity Measures**

In addition to the Profiles Team Analysis, the 317 participants were administered the following three psychological measures:

?? **Guilford-Zimmerman Temperament Survey (GZTS)<sup>5</sup>**

The GZTS is a measure of normal, adult personality. It is based on more than 30 years of research and has been documented in over 2,000 books and journal articles. Occupational profile data and norms include more than 15,000 individuals. The GZTS contains ten personality scales. These scales include:

<b><u>GZTS Scale</u></b>	<b><u>Description</u></b>
General Activity	Fast vs. Slow
Restraint	Self control vs. Impulsivity
Ascendance	Dominance vs. Submissive
Sociability	Outgoing vs. Shy
Emotional Stability	High vs. Low
Objectivity	Objective vs. Subjective
Friendliness	Friendly vs. Aggressive
Thoughtfulness	Think It Through vs. Act It Out
Personal Relations	Positive vs. Negative
Masculinity	Interest in Masculine vs. Feminine Activities

---

<sup>5</sup> Guilford, J.P., and Zimmerman, W.S. (1978). *The Guilford-Zimmerman Temperament Survey: Manual of Instructions and Interpretations*. Beverly Hills, CA: Sheridan Psychological Services, Inc.

**? Gordon Personal Profile - Inventory (GPP-I)<sup>6</sup>**

The GPP-I provides a comprehensive description of normal personality functioning through the measurement of eight personality traits. The GPP-I is a self-report questionnaire, with items presented in a forced-choice format. The GPP-I has 40 years of research, documentation and use with a wide variety of business organizations and climates. The GPP-I measures the following eight personality traits:

<b><u>GPP-I Scale</u></b>	<b><u>Description</u></b>
Ascendancy	Active vs. Passive role in group situations
Responsibility	High vs. Low
Emotional Stability	High vs. Low
Sociability	Socially outgoing vs. Shy
Cautiousness	Careful vs. Impulsive
Original Thinking	Innovative vs. Conventional
Personal Relations	Positive vs. Negative
Vigor	High vs. Low Activity

---

<sup>6</sup> Gordon, L.V. (1978). *Gordon Personal Profile - Inventory Manual*. New York: Harcourt Brace Jovanovich.

**?? Vocational Preference Inventory (VPI)<sup>7</sup>**

The VPI is widely regarded as the standard of career interest inventories. The VPI has been successfully used by millions of people for more than 20 years. Reliability and validity of the VPI are supported by a large body of research.

The VPI measures the following six general occupational themes:

<b>Theme</b>	<b>Description</b>
Realistic	Mechanical, Outdoors
Investigative	Technical, Science
Social	Social welfare, Helping people
Conventional	Office
Enterprising	Sales, Business management
Artistic	Creative expression

The VPI is an indirect measure of personality. According to its developers, each of the six occupational themes is related to a specific personality type. People who share an interest in a specific occupational theme will also share a specific personality type. Table 7 summarizes the relationships between the six occupational themes and personality types.

**Table 7: Relationships Between the VPI Occupational Themes and Personality Types**

<b>Occupational Theme</b>	<b>Personality Type</b>
Realistic	Practical, low key, unemotional
Investigative	Intellectual, unconventional
Social	People oriented
Conventional	Dependable, steady, consistent
Enterprising	Assertive, competitive
Artistic	Emotional, sensitive

---

<sup>7</sup> Holland, J.L. (1970). *Vocational Preference Inventory Manual*. Palo Alto, CA: Consulting Psychologist's Press.

**Results of the Construct Validity Analysis**

**Correlation Coefficients between the Profiles Team Analysis and the Guilford- Zimmerman Temperament Survey**

Table 8 contains the correlation coefficients of the Profiles Team Analysis™ with the ten personality scales from the GZTS.

**Table 8: Correlation Coefficients of the Profiles Team Analysis with the Guilford Zimmerman Temperament Survey (n=317)**

<b>GZTS Scale</b>	<b>PTA Questionnaire</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
General Activity	.48		-.51	
Restraint		-.38		.32
Ascendance	.46		-.45	
Sociability		.35		-.38
Emotional Stability				
Objectivity				
Friendliness	-.41		.44	
Thoughtfulness				
Personal Relations				
Masculinity				

---

*All Correlations are significant, p<.001.*

A sample of 317 participants requires a correlation coefficient of .20 to demonstrate statistical significance at the .001 level. In order to amplify the most meaningful results in Table 9, correlation coefficients less than .30 were not included. Appendix A contains the correlation coefficients that are statistically significant at the .001 level.

Table 9 indicates the following results:

- ?? Scale I is significantly related to General Activity (.48), Ascendance (.46) and Low Friendliness (-.41)
- ?? Scale II is significantly related to Sociability (.35) and Low Restraint (-.38)
- ?? Scale III is significantly related to Low General Activity (-.51), Low Ascendance (-.45) and High Friendliness (.44)
- ?? Scale IV is significantly related to Restraint (.32) and Low Sociability (-.38)

These results are clearly in line with Marston’s DISC model theory and strongly support the construct validity of the Profiles Team Analysis.

**Correlation Coefficients between the Profiles Team Analysis and the Gordon Personal Profile – Inventory**

Table 9 contains the correlation coefficients of the Profiles Team Analysis with the GPP-I.

**Table 9: Correlation Coefficients of the Profiles Team Analysis with the Gordon Personal Profile - Inventory**  
(n=317)

<b>GPP-I Scale</b>	<b>PTA Questionnaire</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Ascendancy	.36		-.39	
Responsibility				
Emotional Stability				
Sociability		.41		-.35
Cautiousness	-.35	-.43	.48	.31
Original Thinking				
Personal Relations			.37	
Vigor				

---

All Correlations are significant,  $p < .001$ .

Table 9 indicates the following results:

- ?? Scale I is significantly related to Ascendancy (.36) and Low Cautiousness (-.35)
- ?? Scale II is significantly related to Sociability (.41) and Low Cautiousness (-.43)
- ?? Scale III is significantly related to Cautiousness (.48), Personal Relations (.37) and Low Ascendancy (-.39)
- ?? Scale IV is significantly related to Cautiousness (.31) and Low Sociability (-.35)
- ?? These results are also compatible with Marston’s DISC model theory and support the construct validity of the Profiles Team Analysis.

**Correlation Coefficients Between the Profiles Team Analysis and the Vocational Preference Inventory**

Table 10 contains the correlation coefficients of the Profiles Team Analysis with the VPI.

**Table 10: Correlation Coefficients of the Profiles Team Analysis with the Vocational Preference Inventory**  
(n=317)

VPI Scale	PTA Questionnaire			
	I	II	III	IV
Realistic				
Investigative				
Social				
Conventional	-.30		.34	.30
Enterprising		.31		
Artistic				

---

All Correlations are significant,  $p < .001$ .

Table 10 indicates that although the overall relationship between the Profiles Team Analysis and the VPI was limited, Scale II was significantly related to the Enterprising theme (.31), Scale III (.34) and Scale IV (.30) were significantly related to the Conventional theme, and Scale I (-.30) was significantly related to the Conventional theme. These statistically significant correlation coefficients between the Profiles Team Analysis and VPI are compatible with Marston's DISC model theory.

**Summary of the Construct Validity Analysis**

Table 11 contains a summary of correlation coefficients of the Profiles Team Analysis with the GZTS and GPP-I.

**Table 11: Summary of the Correlation Coefficients of the Profiles Team Analysis with the GZTS and GPP-I**

<b>Profiles Per. Ind. Questionnaire</b>	<b>Correlation Coefficient</b>	<b>Personality Trait</b>	<b>GZTS GPP-I</b>
<b>Scale I</b>	.48	General Activity	(G-Z)
	.46	Ascendance	(G-Z)
	.36	Ascendancy	(GPP-I)
	-.41	Friendliness	(G-Z)
	-.35	Cautiousness	(GPP-I)
<b>Scale II</b>	-.38	Restraint	(G-Z)
	.35	Sociability	(G-Z)
	.41	Sociability	(GPP-I)
	-.43	Cautiousness	(GPP-I)
<b>Scale III</b>	-.51	General Activity	(G-Z)
	-.45	Ascendance	(G-Z)
	-.39	Ascendancy	(GPP-I)
	.44	Friendliness	(G-Z)
	.48	Cautiousness	(GPP-I)
<b>Scale IV</b>	.32	Restraint	(G-Z)
	-.38	Sociability	(G-Z)
	-.35	Sociability	(GPP-I)
	.31	Cautiousness	(GPP-I)

All correlations are significant,  $p < .001$ .

Table 11 clearly indicates that the Profiles Team Analysis is a valid measure of Marston’s four dimensional model theory. The validity evidence for each of the Profiles Team Analysis scales can be summarized as follows:

**Construct Validity Evidence: Dominance (Scale I)**

Marston’s DISC model theory states that people with a high “D” (Dominance) behavioral tendency seek to meet their needs by controlling their environment through direct, forceful action.

High “D” (Scale I) behavioral tendencies include:

- ?? getting immediate results
- ?? causing action
- ?? accepting risk
- ?? taking charge of people and situations

These behavioral tendencies are highly compatible with high General Activity, high Ascendance, low Friendliness, and low Cautiousness.

### **Construct Validity Evidence: Influence (Scale II)**

People with a high “I” (Influencing) behavioral tendency seek to meet their needs by persuading others to work with them to accomplish results. High “I” (Scale II) behavioral tendencies include:

- ?? contacting people
- ?? emotionality
- ?? spontaneity
- ?? enthusiasm

These behavioral tendencies are highly compatible with high Sociability, low Restraint and low Cautiousness.

### **Construct Validity Evidence: Steadiness (Scale III)**

People with a high “S” (Steadiness) behavioral tendency seek to meet their needs by cooperating with others in a steady, consistent manner. High “S” (Scale III) behavioral tendencies include:

- ?? maintaining the status quo
- ?? steady, deliberate performance
- ?? patient, easy going
- ?? team player, accommodating, agreeable

These behavioral tendencies are highly compatible with high Personal Relations, high Cautiousness, high Friendliness, low Ascendance and low General Activity.

**Construct Validity Evidence: Compliance (Scale IV)**

Finally, Table 11 summarizes the evidence of construct validity for the “C” scale. People with a High “C” (Compliance) behavioral tendency seek to meet their needs by working with existing circumstances to provide quality and accuracy. High “C” (Scale IV) behavioral tendencies include:

- ?? high standards regarding quality and correctness
- ?? attention to details
- ?? more data than people oriented
- ?? guarded, highly controlled, disciplined

These behavioral tendencies are highly compatible with high Restraint, high Cautiousness and low Sociability. In conclusion, Table 11 clearly indicates that the Profiles Performance Indicator is a valid measure of Marston’s DISC dimensions and is highly compatible with his DISC model theory.

## CHAPTER SIX

### Statistical Analysis of the Profiles Team Analysis: Phase Three

#### Sample

Phase Three combined the samples from Phase One (334) and Phase Two (317) into a total sample of 651 participants.

#### Results

##### Descriptive Statistics

Table 12 contains the descriptive statistics for the Profiles Team Analysis.

**Table 12: Descriptive Statistics for the Profiles Team Analysis**  
(n=651)

	Profiles Team Analysis Scale			
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>
Average Score	79	73	78	70
Std. Dev.	15	12	15	12
Min. Score	39	39	42	43
Max. Score	115	103	117	105
Range of Scores	76	64	75	62

##### Coefficient Alpha Reliability Analysis

Table 13 contains the coefficient alpha correlations for the Profiles Performance Indicator.

**Table 13: Coefficient Alpha Reliability Correlation Coefficients for the Profiles Team Analysis**  
(n=651)

	Profiles Team Analysis Scale				
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>Average</u>
Coefficient Alpha	.89	.83	.89	.80	.85

Table 13 indicates that coefficient alpha ranged from .80 (Scale IV) to .89 (Scales I & III). The average coefficient alpha for the Profiles Team Analysis was .85.

**Profiles Team Analysis Item Analysis**

**Frequency Distribution of Responses**

Phase One included an item analysis of the Profiles Team Analysis. This analysis focused on the frequency distribution of 4, 3, 2, and 1 responses for the 120 Profiles Team Analysis items. The item analysis indicated that five of these items produced a skewed percent of “least like me” responses. It was the opinion of the panel to delay any changes to the Profiles Team Analysis until additional data became available. Phase Three provided the opportunity to replicate the item analysis on a larger sample.

Table 14 compares the percent of “Least like me” responses for Phase One with the percent of “Least like me” responses for Phase Three for these five questionnaire items.

**Table 14: Comparison of the Percent of “Least Like Me” Responses of Phase One with Phase Three and the Revision of Least Acceptable Items**

PTA Item	% Least Like Me Response		
	Phase One	Phase Three	Revised Item
Nitpicker	76%	77%	Very selective
Picky	71%	71%	Picky, Discriminating
Poor Loser	64%	63%	Likes to win
Thin Skinned	63%	65%	Feelings easily hurt
Fussy, hard to please	61%	60%	Hard to please

Table 14 indicates that the skewed percent of “Least like me” responses did not change in spite of a significant increase in sample size. These five items do not provide much information about individual differences and contributed very little to the validity and reliability of the Profiles Team Analysis. As a result, these five items were revised.

The primary objective of this revision was to create items that would result in a more balanced representation of 4, 3, 2, and 1 responses. As a result, revisions were made that maintained the basic meaning of the item, but reduced or eliminated its negative connotations. These revised items appear in Table 16.

## CHAPTER SEVEN

### Statistical Analysis of the Profiles Team Analysis Questionnaire: Phase Four

#### Sample

Phase Four represents an update and confirmation of the earlier phases using a large sample of 8,628 participants. These participants are actual users of the instrument and represent several hundred client companies. A well-balanced variety of gender, age and ethnicity are represented. The job titles represented range from skilled labor, through sales and administration, to senior management.

#### Results

#### Descriptive Statistics

Table 15 contains the descriptive statistics for the Profiles Team Analysis. These results do not differ significantly from the earlier studies. This suggests stability across the several studies, regardless of the sample size.

**Table 15: Descriptive Statistics for the  
Profiles Team Analysis**  
(n = 8,628)

	<b>Profiles Team Analysis Scale</b>				
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>
Average Score	78	71	79	71	62
Std. Dev.	14	12	13	11	16
Min. Score	40	39	43	44	16
Max. Score	116	116	114	106	101
Range of Scores	76	77	71	62	85

#### Coefficient Alpha Reliability Analysis

Table 16 contains the coefficient alpha correlations for the Profiles Team Analysis. The table indicates that coefficient alpha ranged from .80 (Scale IV) to .91 (Scales V). The average coefficient alpha for the Profiles Team Analysis was .85.

**Profiles Team Analysis Item Analysis**

**Frequency Distribution of Responses**

Phase One included an item analysis of the Profiles Team Analysis. This analysis focused on the frequency distribution of 4, 3, 2, and 1 responses for the 120 Profiles Team Analysis items. The item analysis indicated that five of these items produced a somewhat skewed percent of “least like me” responses. These five items were modified (see Table 16) with the result that the earlier skewness was eliminated. It was the opinion of the panel to delay any changes to the Profiles Team Analysis until additional data became available. Phase Three provided the opportunity to replicate the item analysis on a larger sample.

**Table 16: Coefficient Alpha Reliability Correlation Coefficients  
for the Profiles Team Analysis**

(n = 8,628)

	<b>Profiles Team Analysis Scale</b>					<b>Average</b>
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>	
Coefficient Alpha	.87	.83	.84	.80	.91	.85

## **CHAPTER EIGHT**

### **Summary of Results and Conclusions**

#### **Overview**

This technical manual summarized the results of the development and statistical analysis of a questionnaire entitled Profiles Team Analysis. The Profiles Team Analysis was designed to be a valid and reliable measure of the four primary dimensions from William Marston's DISC Model Theory, published in 1928. Although there are a number of Marston based DISC questionnaires currently available, there is a critical shortage of technical and statistical data which support the development, validity and reliability of these questionnaires.

The Profiles Team Analysis has gone through several phases of development. Phase One included 334 participants and focused on the development and analysis of the Profiles Team Analysis. This analysis included a detailed item analysis of the 120 questionnaire items, descriptive statistics and reliability statistics. Phase Two included 317 participants and was concerned with the construct validity of the Profiles Team Analysis. Evidence of construct validity was determined by examining patterns of correlation coefficients of the Profiles Team Analysis with two measures of personality and a measure of vocational interest.

Phase Three contained a replication of the item analysis summarized in Phase One, and the descriptive and reliability statistics for the 651 individuals who participated in Phase One and Phase Two.

Phase Four represented an update and confirmation of the descriptive statistics utilizing a large group of more than eight thousand subjects from several hundred organizations who are users of the assessment. These results suggest that the norm tables maintain their veracity with this large sample representing a broad mixture of gender, age, ethnicity and job titles.

### **Summary**

#### **1. Reliability of the Profiles Team Analysis**

Table 17 contains the Average Profiles Team Analysis Scale Scores for Sample One (n=334), Sample Two (n=317), the Combined Sample (n=651) and Sample Four (n=8,628).

Table 18 contains coefficient alpha reliability correlations for Sample One (n=334), Sample Two (n=317), the Combined Sample (n=651) and Sample Four (n=8,628).

**Table 17: Average Profiles Team Analysis Scale Scores for All Samples**

	<b>Profiles Team Analysis Scale</b>			
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>
Sample One (n=334)	79	73	78	70
Sample Two (n=317)	79	73	79	70
Combined Sample (n=651)	79	73	78	70
Sample Four (n=8,628)	78	71	79	71

**Table 18: Coefficient Alpha Reliability Correlations for All Samples**

	<b>Profiles Team Analysis Scale</b>				
	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>Average</b>
Sample One (n=334)	.89	.82	.89	.79	.85
Sample Two (n=317)	.88	.84	.88	.81	.87
Combined Sample (n=651)	.89	.83	.89	.80	.85
Sample Four (n=8,628)	.87	.83	.84	.80	.85

Table 17 and Table 18 clearly indicate that the Profiles Team Analysis produces highly reliable and consistent results. This high consistency of results can be attributed to several features that were built into the design of the Profiles Team Analysis.

First, the reliability of any measuring instrument is influenced by the clarity or lack of clarity of its items. The 120 items of the Profiles Team Analysis were included only if each item satisfied a stringent set of criteria. Negative items, vague and ambiguous items and gender-related items were not included in the Profiles Team Analysis.

Second, the reliability of a measuring instrument can be influenced by the length of the instrument. DISC theory questionnaires that contain 24 sets of four items each appear to have 24 items for each scale. Closer inspection of these scales, however, indicates that many of these items are regarded as “neutral” items and do not contribute to the final scale score.

For example, the “C” scale of a frequently used DISC theory questionnaire contains 12 “most like me” neutral items. In addition, if it is safe to infer that negative items produce a biased response by most individual’s preference for positive items, the “True” length of this scale is not 24, but rather 10 items. It is extremely difficult for any type of ten-item measuring instrument to produce reliable results. Without reliability, there is very little validity. This finding helps to explain why the most reliable and consistent feature of many questionnaires based on Marston’s DISC theory is their lack of reliability and their inconsistency of results.

The Profiles Team Analysis contains 30 sets of four items per set. Each item represents one Profiles Team Analysis scale and every item is included in the scoring. Therefore, 30 sets of four items each produce Profiles Team Analysis scale scores that range from 30 to 120. This wide range of scale scores not only contributes to the reliability of results, but also produces Profiles Team Analysis profiles which are clearly defined and distinct.

## **2. Construct Validity Analysis**

Evidence of construct validity clearly and consistently indicated that the Profiles Team Analysis is a valid measure of the DISC model theory dimensions. Patterns of statistically significant correlation coefficients of the Profiles Team Analysis with highly regarded and valid measures of personality strongly supported this conclusion.

The “Dominance” scale (Scale I) of the Profiles Team Analysis was significantly related to General Activity, Ascendance, Aggressiveness and Risk Taking. The “Influence” scale (Scale II) was significantly related to Sociability, Impulsivity and Risk Taking. The “Steadiness” scale (Scale III) was significantly related to Submissiveness, Friendliness, Cautiousness and Personal Relations.

Finally, the “Compliance” scale (Scale IV) of the Profiles Team Analysis was significantly related to Introversion, Cautiousness and Restraint. These personality traits are not only significantly related to the Profiles Team Analysis scales, but also represent the most critical behavioral tendencies of the DISC model theory.

## **CHAPTER NINE**

### **The Profiles Team Analysis Scales**

#### **Introduction**

The Profiles Team Analysis consists of twelve scales as shown in Table 19. The definition for each scale is also show. A panel of professionals determined that these twelve factors are important to the success of a team. A team leader should be made aware of the presence of these factors/skills in the team members.

**Table 19: The Profiles Team Analysis Scales with Definitions**

<b>Profiles Team Analysis Scale Name</b>	<b>Scale Definitions</b>
<b>Control</b>	The tendency to take charge, be assertive and/or take control of a situation.
<b>Social</b>	The tendency to be outgoing, people-oriented and extroverted.
<b>Patience</b>	The tendency to be patient, tolerant and understanding to others.
<b>Precision</b>	The concern for accuracy, details and exactness.
<b>Ambition</b>	The tendency to be competitive, to have a desire to win, and to be aggressive.
<b>Positive Expectancy</b>	The tendency to have a positive attitude and to be extroverted.
<b>Composure</b>	The tendency to be easygoing and casual, to take things as they come.
<b>Analytical</b>	Liking to identify and analyze problems.
<b>Results Orientation</b>	The concern for timely results and the tendency to be quick.

<b>Emotion</b>	The tendency to show emotions, to share feelings.
<b>Team Player</b>	A preference to be a part of the team to work with others.
<b>Quality Oriented</b>	A concern for standards and high quality of work.

---

These twelve scales may be grouped together into four subsets of three scales each (see Table 20). Each of these subsets relates to one of the four primary scales of the Profiles Performance Indicator™ as also shown in Table 20.

While knowing that a team member scored moderately high on Scale I is important, it is also important to recognize the make-up of that moderately high Scale I score. By understanding the relative strengths of the sub-set items, Control, Ambition and Results Orientation, the team leader may better understand how to effectively utilize the skills of that team member.

**Table 20: The Profiles Team Analysis Subscales and their relationship with the Scales of the Profiles Performance Indicator**

<b>Profiles Performance Indicator Scales</b>	<b>Profiles Team Analysis Scales</b>
<b>I</b>	1- Control 5- Ambition 9- Results Orientation
<b>II</b>	2- Social 6- Positive Expectancy 10- Emotion
<b>III</b>	3- Patience 7- Composure 11-Team Player
<b>IV</b>	4- Precision 8- Analytical 12- Quality Oriented

---

**Sample**

A large group of subjects (n=906) completed the Profiles Team Analysis questionnaire. The information from this study is presented in the following tables. The inter-correlation of the three scales in each subset confirms their interrelationship. For clarity, only the significant correlation coefficients are shown.

**Table 21: Inter-scale Correlations -  
The Profiles Team Analysis  
(n=906)**

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
<b>1</b>	x	-.629			.629				.637		-.545	
<b>2</b>		x				.451		-.350		.479		-.500
<b>3</b>	-.629		x		-.610	.302	.559		-.610		.612	-.401
<b>4</b>				x				.447		-.414		.348
<b>5</b>	.629		-.610		x		.563		.573		-.495	
<b>6</b>		.451	.302			x		-.335		.333	.329	-.503
<b>7</b>	-.654		.559		-.563		x		-.494		.450	
<b>8</b>		-.350		.447		-.335		x		-.414		.412
<b>9</b>	.637		-.610		.573		-.494		x		-.522	
<b>10</b>		.479		-.414		.333		-.414		x		-.318
<b>11</b>	-.545		.621		-.495	.329	.450		-.522		x	-.535
<b>12</b>				.348		-.503		.412		-.318	-.535	x

Table 22 shows only the correlation coefficients for the member scales of each sub-set. The interrelationship of these member scales is clearly indicated by the high coefficients.

**Table 22: Inter-scale Correlations –  
The Profiles Team Analysis  
Only the Sub-Scale Member Scales are Shown  
(n=906)**

	1	2	3	4	5	6	7	8	9	10	11	12
1	x				.629				.637			
2		x				.451				.479		
3			x				.559				.612	
4				x				.447				.348
5	.629				x				.573			
6		.451				x				.333		
7			.559				x				.450	
8				.447				x				.412
9	.637				.573				x			
10		.479				.333				x		
11			.621				.450				x	
12				.348				.412				x

When the scores for the twelve Profiles Team Analysis factors are known for the team leader and each team member, then the team leader can better understand how to supervise the team and manage the team members for the ultimate success of the team's efforts.

## Appendix A

### Correlation Coefficients of the Profiles Team Analysis with the Guilford-Zimmerman Temperament Survey (GZTS), Gordon Personal Profile - Inventory (GPP-I) and Vocational Preference Inventory (VPI)

(n=317)

#### Profiles Team Analysis

	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>
<b>GZTS</b>				
General Activity	.48	.26	-.51	-.27
Restraint		-.38	.16	.32
Ascendance	.46		-.45	
Sociability		.35		-.38
Emotional Stability				
Objectivity				
Friendliness	-.41		.44	
Thoughtfulness				
Personal Relations				
Masculinity				
<b>GPP-I</b>				
Ascendancy	.36	.30	-.39	-.30
Responsibility			.24	
Emotional Stability			.37	
Sociability		.41	-.22	-.35
Cautiousness	-.35	-.43	.48	.31
Original Thinking				
Personal Relations	-.29		.37	
Vigor				
<b>VPI</b>				
Realistic				
Investigative				.19
Social	-.21	.20		
Conventional	-.30	-.29	.34	.30
Enterprising		.31		-.23
Artistic	-.29	.21		

---

All correlations are significant,  $p < .001$ ;  $n = 317$