



Université d'Ottawa • University of Ottawa



**Relationships of Personality Types to the Outcome  
of a Values-Based Workplace Seminar Expressed  
as Commitment to the Principles Taught**

© Judy F. Wyspianski

Dissertation presented to the School of Graduate Studies and Research  
of the University of Ottawa  
in partial fulfilment of the requirements for the degree of  
Doctor of Philosophy (Education)

Ottawa, Canada, 1999



National Library  
of Canada

Acquisitions and  
Bibliographic Services

395 Wellington Street  
Ottawa ON K1A 0N4  
Canada

Bibliothèque nationale  
du Canada

Acquisitions et  
services bibliographiques

395, rue Wellington  
Ottawa ON K1A 0N4  
Canada

*Your file* *Votre référence*

*Our file* *Notre référence*

The author has granted a non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of this thesis in microform, paper or electronic formats.

The author retains ownership of the copyright in this thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without the author's permission.

L'auteur a accordé une licence non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de cette thèse sous la forme de microfiche/film, de reproduction sur papier ou sur format électronique.

L'auteur conserve la propriété du droit d'auteur qui protège cette thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

0-612-45200-X

Canada

## **ABSTRACT**

This is a study of personality types of adults undertaking workplace leadership training in relation to perceived training outcomes. Training programs to facilitate adult learning in the workplace are a logical and necessary extension of formal education. Leadership training programs are gaining importance in management education. From another perspective, personality characteristics of adult learners have been related to leadership effectiveness, but there is a lack of studies relating training outcomes to personality.

Based on these considerations, this study addresses the following question: After subjects attend a values-based leadership training seminar in the workplace, is their expressed commitment to implement its content a function of their personality types?

The sample consists of one thousand managers of a large North American corporation. The subjects participated in a leadership seminar focusing on personal needs and values. Subjects self-administered the Myers-Briggs Type Indicator (MBTI). Three weeks after the seminar, ratings of commitment to the implementation of the seminar were obtained, using a scale developed by the writer, the Perceived Implementation Rating Scale (PIRS). Statistical analyses included descriptive statistics, item analyses, reliability estimates, and multivariate analyses of variance.

The key results of this study may be summarized as follows: An overall comparison of the MBTI types yielded significant differences in perceived outcomes. More specifically, the combined group classified as TJ (Thinking-Judging) yielded lower scores than their non-TJ counterparts, and the Feeling group reported higher scores than the Thinking group. An exploratory comparison of men and women showed that women reported higher scores than did the males. These results imply that learning theories or models such as Andragogy and the Characteristics of the Adult Learner might do well to consider individual differences in personality as potentially relevant to learning outcomes and to the design of pedagogical strategies for adults.



## **ACKNOWLEDGEMENTS**

**This dissertation was carried out under the supervision of Professor Richard Rancourt, Faculty of Education. The writer expresses gratitude for his support and guidance. As well, the writer wishes to thank the members of the advisory committee, Professors Henry Edwards, Hanne Mawhinney and Maurice Taylor, for their valuable comments and suggestions.**

**My special gratitude to John for his wisdom and unfailing encouragement, to my parents who demonstrated the value of hard work, and to my siblings RBBMWC.**



## TABLE OF CONTENTS

	Page
Abstract .....	i
Acknowledgements.....	iv
List of Tables.....	x
List of Appendices.....	xiii
INTRODUCTION.....	1
 <b>CHAPTER 1: CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW</b>	
1.1. Alternative Theories of Adult Learning.....	4
1.1.1. Theories Based on Adult Characteristics.....	5
Andragogy.....	5
The CAL Model.....	8
1.1.2. Theories Based on An Adult’s Life Circumstances ....	9
The Theory of Margin.....	9
Proficiency Theory.....	10
1.1.3. Theories Based on Changes in Consciousness.....	10
1.1.4. Individual Differences & Theories of Adult Learning	11
1.2. Individual Differences in Adult Education.....	12
1.2.1. Individual Differences in Relation to	
Learning Outcomes.....	13
Demographic Variables.....	13
Gender.....	13
Age.....	16
Occupational Level.....	17
Education.....	18
Cognitive Variables.....	18
Personality Variables.....	19

## **TABLE OF CONTENTS (Cont'd)**

	<b>Page</b>
1.2.2. Implications for Research on Adult Education in the Workplace.....	22
1.2.3. Criteria for the Approach to be Used in This Study..	22
1.2.4. Alternative Conceptual Approaches to Personality...	23
Psychoanalytical.....	23
Neopsychanalytical.....	24
Trait.....	25
Humanistic.....	26
Cognitive.....	26
Behavioural.....	27
Social Learning.....	27
Jung's Theory of Psychological Type .....	28
1.2.5 Types of Learning Outcome.....	37
Direct Measures of Achievement or Performance.....	37
Indirect Training Outcome Measures.....	39
Supervisor Ratings.....	39
Performance Self-reports.....	40
Job Satisfaction.....	41
Attitudes Toward the Training Program.....	41
Self-Esteem.....	41
1.2.6. Outcome Measures for the Present Study.....	41
1.3. Continuing Education and Training in the Workplace.....	42
1.3.1. Importance and Scope of Adult Education.....	42
1.3.2. Training Programs in the Workplace.....	45
1.3.3. Training Programs in Managerial Leadership.....	45
1.3.4. Leadership Theory and Adult Learning.....	47
Trait Theories.....	47
Behavioural Theories.....	49

## TABLE OF CONTENTS (Cont'd)

	Page
1.3.5. Values-based Leadership Training: A Medium for the Present Study.....	51
1.4. Statement of the Problem.....	53
1.5. Research Hypotheses.....	54
Hypothesis 1.....	55
Hypothesis 2.....	56
Hypothesis 3.....	56
Hypothesis 4.....	57
Hypothesis 5.....	57
1.6. Complementary Research Question.....	58
<b>CHAPTER 2: METHOD</b>	
2.1. Subjects.....	59
2.1.1. Population.....	59
2.1.2. Samples.....	60
Preliminary Sample of 202 Subjects.....	60
Sample of 503 Subjects.....	61
Final Sample of 1015 Subjects.....	61
2.2. The Leaders for Tomorrow Training Seminar:	
2.2.1. Conduct of the seminar.....	62
2.2.2. Content of the Seminar.....	63
2.2.3. The Coaches.....	64
2.2.4. The Follow-Up Sessions.....	65

## TABLE OF CONTENTS (CONT'D)

	Page
2.3. Perceived Implementation and Personality Instruments.....	66
2.3.1. Perceived Implementation Rating Scale (PIRS).....	66
Development of the PIRS.....	66
Administration of the PIRS.....	70
Scoring of the PIRS.....	71
Reliability of the PIRS.....	72
Validity of the PIRS.....	73
2.3.2. The Myers-Briggs Type Indicator (MBTI).....	73
Selection of the MBTI.....	73
Administration and Scoring of the MBTI.....	75
Validity of the MBTI.....	76
Reliability of the MBTI.....	77
2.4. Procedural Issues.....	78
Ethics Committee Approval.....	79
2.5. Statistical Analyses of Data: Justification.....	80
2.5.1. Descriptive Statistics.....	80
2.5.2. Preliminary Correlational Analyses.....	81
2.5.3. Multivariate Analyses of Variance Used to Test the Hypotheses.....	81

## CHAPTER 3: RESULTS OF THE STUDY

3.1. Results: Descriptive Statistics.....	83
3.2. Results of Preliminary Correlations and Principal Components Analysis.....	89
3.3. Results of Preliminary Multivariate Analyses of Variance....	92
3.4. Results of the Multivariate Analyses of Variance on the Sample of 1015 Subjects.....	93

## **TABLE OF CONTENTS (Cont'd)**

	<b>Page</b>
3.4.1. Comparisons of PIRS Scores According to MBTI Personality Type.....	93
Comparison of the Sixteen MBTI Types.....	93
Conceptually Selected Comparisons of MBTI Types	97
Comparison of the TJ Versus Non-TJ Types.....	98
Comparison of Extravert Versus Introvert Types.....	103
Comparison of Sensing Versus Intuition Types.....	106
Comparison of Thinking Versus Feeling Types.....	112
Comparison of Perceiving Versus Judging Types.....	117
3.4.2. Comparisons of PIRS Scores According to Demographic Variables.....	122
Comparisons by Gender and Age.....	122
Comparisons by Gender and Occupational Level.....	125
Comparisons by Gender and Educational Level.....	129
3.5. Summary of the Key Results of the Study.....	132
<b>CHAPTER 4: DISCUSSION</b>	
4.1. The Objectives and Hypotheses of the Study.....	134
4.2. Discussion of the Major results of the Study.....	135
4.3. Scope and Limitations of the Study.....	144
4.4. Suggestions for Future Research.....	148
4.5. Conclusion.....	151
REFERENCES.....	153
APPENDICES.....	170

## LIST OF TABLES

Table		Page
1.	Characteristics of the sample used in the present study.....	84
2.	Characteristics of the sample used in the present study: distribution by age, education and occupation level.....	85
3.	Percentages of subjects of this study & MBTI Form G normative samples provided by Myers-Briggs and McCaulley (1993).....	88
4.	Summary of Factor Loadings for PIRS Applying and Trying questions.....	91
5.	Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, classified according to the 16 MBTI personality types.....	95
6.	One-way MANOVA testing for differences in the average Applying and Trying scores obtained for subjects classified according to the 16 MBTI types.....	96
7.	Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided into TJ* and non-TJ groups based on MBTI types.....	99
8.	One-way MANOVA testing for differences in the average Applying and Trying PIRS scores obtained for subjects classified according to TJ and non-TJ types.....	100
9.	Summary of two-way MANOVA testing for differences in the average Applying and Trying PIRS scores of subjects classified by gender and TJ versus non-TJ grouping.....	102
10.	Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided into Extraversion and Introversion MBTI groups.....	104

**LIST OF TABLES (Cont'd)**

Table	Page
11. One-way MANOVA testing for differences in the average Applying and Trying PIRS scores obtained for subjects classified according to Extraversion-Introversion types.....	105
12. Summary of two-way MANOVA testing for differences in the average Applying and Trying PIRS scores of subjects classified by gender and Extraversion versus Introversion types.....	107
13. Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided into Sensing and Intuition MBTI groups.....	109
14. One-way MANOVA testing for differences in average Applying and Trying scores obtained for subjects classified according to Sensing-Intuition types.....	110
15. Summary of two-way MANOVA testing for differences in the average Applying and Trying PIRS scores of subjects classified by gender and Sensing versus Intuition types.....	111
16. Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided into Thinking and Feeling MBTI groups.....	114
17. One-way MANOVA testing for differences in average Applying and Trying PIRS scores obtained for subjects classified according to Thinking-Feeling types.....	115
18. Summary of two-way MANOVA testing for differences in average Applying and Trying PIRS scores of subjects classified by gender and Thinking versus Feeling types.....	116
19. Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided into Perceiving and Judging MBTI groups.....	119

### LIST OF TABLES (Cont'd)

Table	Page
20. One-way MANOVA testing for differences in average Applying and Trying PIRS scores obtained for subjects classified according to Perceiving-Judging types.....	120
21. Summary of two-way MANOVA testing for differences in average PIRS scores of subjects classified by gender and Perceiving versus Judging types.....	121
22. Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided by age quartiles and gender.....	123
23. Summary of two-way MANOVA testing for differences in average Applying and Trying PIRS scores of subjects classified by gender and age.....	124
24. Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided by occupational level and gender.....	127
25. Summary of two-way MANOVA testing for differences in average Applying and Trying PIRS scores of subjects classified by gender and occupational level.....	128
26. Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided by education level and gender.....	130
27. Summary of two-way MANOVA testing for differences in average Applying and Trying PIRS scores of subjects classified by gender and educational level.....	131



**LIST OF APPENDICES**

<b>APPENDIX</b>	<b>Page</b>
A.1 Ethics Committee Approval, 1996.....	170
A.2 Ethics Committee Review, 1997.....	172
B Authorization to Use MBTI.....	174
C Outline of topics to be covered in the seminar on Day 1 titled “Inward Bound”.....	176
D Outline of topics to be covered in the seminar on Day 2 titled “Outward Bound”.....	179
E.1 Item Categorization Check by Judges.....	181
E.2 Perceived Implementation Rating Scale Questionnaire.....	185
F Letter from corporation to subjects regarding the seminar.....	194

## **INTRODUCTION**

**This dissertation is a study of personality types of adults undertaking workplace leadership training in relation to the outcomes of the seminar expressed as commitment to the principles taught. The importance of the topic stems from two areas of research reported in the literature. First, in today's rapidly changing world, adult learning in the workplace is a lifelong necessity and a logical and necessary extension of formal education (Cross, 1984; Merriam & Brockett, 1997). Therefore, it is important in the field of education to carry out studies of adults learning in the workplace.**

**Second, it is an established fact that there are individual differences in abilities, perception, personality, and many other human characteristics. According to a number of authors (cf. Corno & Snow, 1986; Tobias, 1987; and Myers-Briggs & McCaulley, 1993) such individual differences may influence learning. Previous studies of education and training outcomes have not considered potential relationships between individual differences and training outcomes in the workplace. Further research is needed in this area to establish whether relevant characteristics of adults undertaking workplace training influences the extent to which they benefit from such programs. This dissertation is an attempt to partially address this need.**

Specifically, this study addresses the following general research question in the context of a leadership training seminar for managers and supervisors in a large North American corporation:

After subjects attend a values-based leadership training seminar in the workplace, is their self-reported implementation of its content a function of certain aspects of their personality?

This manuscript consists of four chapters followed by references and appendices. Chapter 1 presents the background literature and conceptual framework for the study. It concludes with a statement of research hypotheses and complementary research questions. Chapter 2 presents the methodology, which includes a description of the subjects of the study, leadership seminar, instruments, procedure, and analyses of data. Chapter 3 presents the results of the study. Descriptive statistics are presented first, followed by correlations and principal components analyses. The remainder of the chapter presents the results of the multivariate analyses of variance that were used to test the hypotheses and complementary questions. The final chapter, Chapter 4, discusses the results of the study.

## **CHAPTER 1**

### **CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW**

This chapter reviews the conceptual and empirical literature that leads to the statement of the problem and hypotheses. The review is organized according to the following main headings: Alternative theories of adult learning, individual differences in adult education, and continuing education and training in the workplace. The chapter concludes with a statement of the problem, hypotheses, and exploratory research questions.

Under the first heading theories of adult learning are reviewed, in order to identify a coherent conceptual perspective that will serve as backdrop for this study of relationships between adult personality and specific training outcomes. The second section reviews studies of adult learners' individual differences as they relate to the outcomes of workplace training programs to establish a basis for studying relationships between adult personality types and training outcomes.

The third major heading documents the importance of continuing education and training in the workplace as a necessary extension of formal education. This section will review applied studies in order to determine what kind of training program would serve as an appropriate medium for studying the proposed relationships.

### **1.1. Alternative theories of adult learning**

This section provides a conceptual underpinning for the present study of learner characteristics in a workplace continuing education framework. Given the number and diversity of learning theories, the writer wishes from the start to set some criteria for this study. Specifically, a theory is considered particularly relevant for this study if it is well established, applicable to adults, and focuses on the characteristics of the learner including psychological characteristics as potential determinants of learning outcomes.

Reviews of learning theories as they apply to adults have been published by Cross (1981), Knowles (1984), and Merriam (1987, 1993). From these reviews it can be concluded that, while a number of theories have been advanced to explain the learning process in children, few are specifically intended for adults. In addition, these reviews suggest that theories of learning are not equally applicable to children and adults. Specifically, Knowles (1984) states that the adult learner has been neglected in research, perhaps because of the erroneous assumption that adults learn in the same way as children. Even in recent years most authors have dealt with the problem of adult learning by trying to adapt theories of children's learning by referring to the "differences in degree" between children and adult learners (see, for example, Brunner, 1959; Kidd, 1959; Kempfer, 1955; Verner & Booth, 1964). In contradistinction to the approaches that are essentially

adaptations of theories of children's learning, the following nine theories were articulated by their authors explicitly to explain adult learning.

Merriam (1987), while pointing to a paucity of theory in adult learning, reviews the major theories, and notes that there are nonetheless nine theories of adult learning, which may be classified under three different headings:

- theories based on adult characteristics,
- theories based on an adult's life situation, and
- theories based on changes in consciousness.

#### **1.1.1. Theories based on adult characteristics**

According to Merriam, there are two major theories of adult learning based on adult characteristics: **Andragogy**, and the **Characteristics of the Adult Learner (CAL)** model. In the writer's judgment, these are compatible with the requirements of the present study, not only because of their focus on adult learning, but more specifically due to their insistence that certain characteristics and experiences of adult learners have impacts on learning outcomes. Although they are not theories of individual differences as such, they implicitly allow for the relevance of individual differences, and this is the focus of the present study.

**Andragogy.** According to Draper (1998) "Andragogy and adult education (frequently used synonymously) reflect the involvement of adults in learning" (p.3). While there is much debate over the use of the term andragogy versus that of

pedagogy (Hartree, 1984; Joblin, 1988; Tennant, 1986), there is research in support of Draper's view that andragogy pertains explicitly to the direct involvement of adults in learning (Bruner, 1961; Erikson, 1964; Getzels & Jackson, 1962; Bower & Hollister, 1967; Iscoe & Stevenson, 1960). More specifically, the essence of andragogy is that, as individuals mature, they have an need and capacity to be self-directing, to use their experience in learning, to identify their own readiness to learn, and to organize their learning around life problems, structure their learning and, in effect, dictate the approaches to learning with which they are most comfortable (Knowles, 1984; MacKeracher, 1996; Merriam, 1993). In summary, andragogy can be viewed as a conceptual framework for approaches to facilitate and manage the intentional (formal and non-formal) learning of adults (Draper, 1998). The implications of andragogy for the educational process of adults are discussed next.

Knowles (1980, 1984, 1989) presents andragogy as a theory that focuses on the implications of adult learning for teaching practice. In North America, Knowles is responsible for popularizing the term andragogy which he defines as the art and science of helping adults learn. Furthermore, he developed the concept into a theory of adult learning. He bases his theory on six assumptions concerning adults as learners. The first posits that adults need to know why they need to learn something as well as the consequences of not learning it. The second states that, with development of the person, there is movement of the self-concept from

dependency toward self-direction. The third states that adults accumulate experience, which is a reservoir of, and a resource for, learning. The fourth speaks to the readiness of adults to learn as being closely related to the developmental tasks of their social roles. The fifth assumption is to the effect that time perspective changes as adults mature, producing change from subject-centered to problem-centered learning. The sixth and final assumption differentiates between intrinsic and extrinsic motivators, and argues that adults learn better through intrinsic factors, such as improved quality of life and enhanced self-esteem.

There is debate in adult learning literature regarding Knowles' initial formulation of the theory (when first formulated, it lacked the first and sixth of the above assumptions) as one of learning versus a theory of teaching because it focuses on commonalities of adult learners rather than on their relevant individual differences (Hartree, 1984). When discussing this theory, Cross (1981) remarks that the distinction between andragogy and pedagogy is difficult to maintain. Thus, while the theory is especially useful for the development of teaching strategies, and is not in contradiction to the focus of this study, it ignores individual difference variables as potential correlates of learning outcomes. This being said, if the present study were to demonstrate relationships between individual difference variables such as personality types and certain adult learning outcomes, such a finding would imply that the theory might benefit from including, rather than ignoring, individual differences in adults.



**Characteristics of the Adult Learner (CAL).** Cross (1981) offers this theory as “a tentative framework to accommodate current knowledge about what we know about adults as learners”, and to describe differences between children and adults as learners (p.234). This conceptual framework, in contrast to andragogy, focuses on both group and individual differences across the life-span. More specifically, it stresses the relevance of two classes of variables, personal and situational. The personal variables include physical, sociocultural, and psychological characteristics. These are regarded as developmental continua that must be taken into account by educators when teaching students at different points or stages along these continua. The situational variables are those most frequently experienced by adults as learners in the context of different experiences in educational and workplace settings. Thus, the learning situation of adults, who are typically volunteer part-time and self-directed learners, is vastly different from that of children, who are normally obligated to attend school full-time and are teacher-directed. To summarize, Cross reminds the reader that adult learning differs from children’s learning both in terms of the learning situation and where the learner is placed along physical, sociocultural and psychological continua. The author stops short of proposing that individual differences in personality and intelligence of adult learners should be related to learning outcomes. This would be a logical extrapolation from this framework, given its emphasis on developmental continua and situational variables impacting on the individual learner.

Merriam (1987), in a discussion of this framework, argues that “rather than suggesting implications for practice, as Knowles’ andragogy does, Cross’s model offers a framework for thinking about what and how adults learn” (p. 248). However, according to this author, while the CAL theory is good for stimulating research by encouraging thinking across and between categories, the personal and situational variables may be too broadly defined. Another limitation of the CAL Model is that it has yet to be empirically tested. Notwithstanding the above criticisms, this theory presents a conceptual framework that is compatible with the purpose of this study; it has practical value in that it identifies some characteristics of adult learners, and deserves further attention and research.

#### **1.1.2. Theories based on an adult’s life circumstances**

Whereas the above theories focus on characteristics of adult learners, the following focus on the external life circumstances of adult learners, such as age, physical condition, economic situation, and time constraints.

**The theory of margin.** This theory (McClusky, 1963) has not received much attention from researchers since its original conception (Hiemstra, 1993). It states that adults constantly attempt to achieve balance between available and required energy. The basic idea is that, at various ages, both the external demands imposed by the total environment and the limitations imposed by the body (general health and energy) are variable. For example, a healthy young adult without family responsibilities possesses far more energy that can be devoted to learning than

does an older, physically frail, adult with an extended family. McClusky conceptualizes the required energy for total living as the “load” of life, and available energy for such pursuits as education and learning as the “power” of life. Subtracting the energy required from the energy available yields what he calls the “margin of life”, through which concept he attempts to explain what is available for expending on adult learning, which is an energy consuming process. This theory, while intellectually stimulating, does not meet the criteria for inclusion in this study, in that it addresses neither the classification variables nor the dependent variables of this study.

**Proficiency theory.** Knox (1980) proposed a second theory of adult learning based on the adult’s life situation, whose central focus is the discrepancy between current and desired levels of proficiency. As such, the theory has generated research on motivation and achievement. However, from the perspective of this study, its focus on levels of proficiency is not directly relevant to the outcome variables under study, and the theory does not address individual differences.

### **1.1.3. Theories based on changes in consciousness**

This third group of theories focuses on cognitive structures, the mental construction of experience and inner meaning. They include Mezirow’s Perspective Transformation Theory, Freire’s Theory of Conscientization, several theories or conceptualizations based on Kelly’s Construct Theory, and

Brookfield's transactional encounter model of learning. These theories will not be reviewed in this section because the present study does not focus on cognitive variables but rather on personality preferences and related demographic variables.

#### **1.1.4. Individual differences and theories of adult learning**

The writer was unable to identify a coherent theory of adult learning which explicitly discusses individual differences. On the other hand, several authors in the field of education have commented on the importance of individual differences in relation to adult learning, although for theorists this has been a largely forgotten theme. More than twenty-five years ago, Tempkin (1982) pointed out that adults participate in learning to satisfy personal needs, and argued that personality types interact with such factors as educational setting in enhancing or diminishing their learning experiences. Lanese (1983) remarked that adult learners differ in learning styles, goals, and backgrounds, and argued that such individual differences should be taken into account in the planning and delivery of adult training programs. In 1989, Griffiths noted that personality continues to be largely ignored in the field of second language learning but should be considered in research for several reasons including the possibility that personality may be of importance to task-based student learning. More recently, Geisler-Brenstein (1996) explored empirically the relationships between personality and learning styles of students differing in self-esteem. This author concluded that personality is relevant in helping to define, among other things, individual differences in learning.

These viewpoints support the inclusion of personality variables in the present study of learning outcomes. Extrapolating to the specific objectives of this study, the writer expects that personality characteristics will be related to outcomes of a values-based leadership training seminar, on the grounds that a focus on human needs and values will be more in keeping with the expectations and styles of subjects with some, as opposed to other, personality types.

In the following section, albeit from an empirical rather than theoretical perspective, it will be shown that individual differences in such variables as demographics and personality have indeed been successfully related to a variety of learning outcomes. For these reasons, although there is no theory of adult learning which stands out as an anchoring theory for a study of relationships between adult personality and training outcomes, several of the above theories of adult learning and in particular andragogy as well as CAL permit the inference, supported by empirical evidence, of such relationships. The expected findings of the present study, to the extent that they reveal relationships between personality types and training outcomes, will be relevant for the extension of theories of adult learning to include consideration of individual differences in the learners' personalities.

## **1.2. Individual differences in adult education**

In order to provide a general context, this section reviews studies of individual differences in adult learners as these influence learning/training outcomes, emphasizing studies carried out in the workplace. This will be followed

by a discussion of the meaning and measurement of personality as the term is to be used in this study, and by a consideration of alternative approaches to the measurement of outcomes following workplace training.

### **1.2.1. Individual differences in relation to learning outcomes**

Learning outcomes subsume related concepts that encompass such variables as academic achievement, performance following a training program, success in any endeavour that requires specific learning or training, and commitment to knowledge and concepts acquired during the course of a training program or other learning experience. The following paragraphs briefly review research studies which have examined relationships between measures of individual differences and broadly defined learning outcomes.

**Demographic variables.** For purposes of this study, the key demographic variables are gender, age, occupational level, and educational level of the subjects. These are the demographic variables most commonly considered in the research studies which are the background of the present study. The following findings illustrate the relationships found between these variables and the outcomes of adult education and training programs.

**Gender.** Studies of outcomes of adult education and training have not typically compared men and women, and this notwithstanding the widespread interest of many researchers in gender issues, the fact that achievement tests typically report separate norms for men and women (e.g., Canadian Tests of Basic

Skills), and the existence of controversies in education concerning such issues as the performance of boys and girls in the sciences. A search of the research literature on gender in relation to adult learning or training outcomes revealed a limited number of studies that contrasted the performance of adult males and females on memory tests and cognitive tests, but these results are of minimal relevance to the present study. Studies of outcomes of adult education and training have not typically compared men and women. Studies of outcomes of adult education and training have not typically compared men and women.

From another perspective, gender issues in the workplace have attracted considerable attention but little empirical research (Bolman & Deal, 1992). Although gender is not a central conceptual variable in the present study, studies of factors that influence the career patterns of men and women managers in the corporate workplace may be relevant in relation to the following three questions: Are workplace expectations of women employees, and workplace barriers to the progress of women employees, such that only women with exceptional commitment, coping strategies and competencies rise to management positions while a broader spectrum of men do so? In light of such expectations and barriers, are women likely to be under-represented in management positions? If women managers are an under-represented and select group, will they benefit differentially from a values-based leadership seminar in contrast with their male colleagues?

Workplace expectations and barriers to the advancement of women in the workforce have been addressed recently by a number of authors. For example, Wentling (1996), in a study of women middle managers in Fortune 500 companies, notes that barriers and bias in the organizational culture and work environment continue to limit the progress of fully qualified women. Berman (1996) makes a similar comment with respect to school administrators. Gupton & Slick (1996) add that women in management positions are expected to work harder for less pay and are scrutinized more rigorously than their male counterparts. The fact that the commitment and competence of women managers are over-tested is also discussed by Konrad & Cannings, 1997. In relation to this finding, Bolman & Deal (1992) remark that women in the workplace are judged more on their ability to be organized and rational while their male counterparts are judged more on their ability to be warm and participatory. This is in line with the finding that women in management positions are subjected to more work-related stressors than men (Long & Kahn, 1993). The overall consequence of these findings is that only a select sample of women rise to senior management positions.

The fact that women continue to be greatly under-represented in management positions is related to the above, and is explicitly highlighted by studies demonstrating that most women employees are concentrated in low-pay and low-status jobs despite the introduction of sex discrimination and equal pay legislation (Davidson & Cooper, 1992), and that systematic barriers block women



from access to top management positions (O'Leary & Ickovics, 1991).

Furthermore, according to Scott (1997), women self-select themselves out of the search for senior administrative positions in education due to the operation of barriers against them which include social biases against women leaders. Finally, Bolman & Deal (1992) conclude that women's under-representation is not a function of their ability to do the job.

Given the above, one may expect that women in management would be especially in need of workplace training and that they would express greater willingness to implement such training than men would. This general issue was studied by Burke (1996), who concluded that participating in formal courses and perceiving the courses as useful were related to work outcomes in women. Thus, while no specific hypotheses are advanced for this variable, gender will be included as a subject classification variable in the study.

Age. Although the importance of education for adults is highlighted in recent research, a systematic search of the relevant literature did not find any studies comparing the achievement or learning/training outcomes of adults in different age groups. Nevertheless, the possibility remains that young adults and those nearing retirement age may differ in training outcomes from their middle aged colleagues. Therefore, this study will examine possible age differences on an exploratory basis.

**Occupational level. A search of recent literature on the possible relationships between occupational level or work experience and the outcomes of adult education and training programs suggests that this question has not been addressed directly. However, there are some studies of relationships between work experience and work performance or career success. Burke & McKeen (1995), in a study of females in managerial and professional occupations, found that work experience had significant impact on career success when other demographic variables were controlled. Barrette & Durivage (1997) found significant differences in the “tacit knowledge” of groups of MBA students subdivided into four groups according to their previous levels of work experience. Tacit knowledge is relevant in that it has been found to predict potential management success (Kerr, 1995). In a meta-analysis of 22 studies, Quinones, Ford & Teachout (1995), found that work experience and job performance were positively correlated regardless of the specific measures employed. From another perspective, Tziner & Falbe (1993) found that seniority of male and female employees had an effect on their supervisors’ evaluation of their use of skills acquired in workplace training. Finally, two studies (Jacobs, Hofmann, & Kriska, 1990; and Rowe, 1988) support the notion of a relationship between work experience and performance on the job, without explaining the relationship.**

**The above findings lead to the conclusion that occupational level or experience should be included as a variable in the present study, either to be**

controlled when studying the relationships between personality and training outcomes, or in a search for potential interactions between it and personality in relation to training outcomes.

**Education.** Level of education has been associated with employability, level of employment and salary, and such relationships are reported regularly by Statistics Canada. More specifically, correlations have been established between level of education and scores on standardized achievement tests and university entrance examinations, such as the SAT, the GRE, and the Canadian Tests of Basic Skills. Therefore, in the present study, although there are no hypotheses in relation to this variable, subjects were asked to indicate total years of education for possible use as a control variable or covariate.

**Cognitive variables.** Although the relationship between intelligence or differential aptitudes and scholastic achievement has been well established for decades (Crano, Kennedy & Campbell, 1972; Tyler, 1965), studies of adult training in the workplace, particularly those dealing with management or other senior employees, do not typically measure the intelligence of the subjects, for two reasons: First, this is normally not permitted by the corporations. Second, the fact that the subjects have reached senior levels ipso facto implies relatively high intelligence, so that the intelligence range of the subjects is restricted and thus becomes an irrelevant variable.

In the field of leadership, which provides the workplace context for this study, 16 studies of intelligence and leadership are reviewed by Clark & Clark (1990). These authors conclude that "... leaders may be more intelligent than the group average, but not too much more intelligent" (p. 463). Furthermore, the average coefficient of correlation between IQ and measures of leadership was only 0.28 (p. 460). Therefore, the present study, which limits its subjects to supervisors and managers, will not include measures of intelligence and aptitudes.

**Personality characteristics.** Previous empirical studies of personality in relation to learning or related outcomes have been based on various (often implicit) definitions of personality. All provide relevant background information for the hypotheses and method of the present study. Generally, they conform with the most widely accepted definitions of personality. Although many definitions of personality have been proposed over the years by theorists and researchers, authors attempting to provide a general definition tend to agree upon the following: "Personality is that pattern of characteristic thoughts, feelings, and behaviors that distinguishes one person from another..." (Phares 1987, p. 4). This definition is widely agreed upon because it speaks to individual distinctiveness as the hallmark of personality (Jung, 1971; DiCaprio, 1974; Myers & Myers, 1980; Gregorc, 1982; Royce & Powell, 1983; Schultz, 1990). While more specific definitions of personality may differ in emphasis, they generally subsume the elements of the above definition.

Personality types have been widely studied in relation to academic achievement on high school, college, and university students, using the Myers-Briggs Type Indicator (MBTI). These studies are quoted and summarized in the MBTI Manual (Myers-Briggs & McCaulley, 1993). These studies show that, although correlations between personality characteristics, as expressed as continuous scores, and measures of academic achievement are generally low, type differences enter into academic achievement in many ways. For example: Judging (J) types tend to focus their energies and to concentrate better on learning tasks than Perceiving (P) types, and obtain higher grades than would be predicted from their aptitude. In other words, J types over-achieve while P types under-achieve. J types apply themselves more than P types to study and learning. According to Myers & Myers (1980), such application to learning is one of the three main components of scholastic success, with aptitude and interest as the others. From these studies, one can hypothesize that personality types, specifically the MBTI Judging (J) type, would help to predict the extent to which students or trainees focus upon or devote energy to a learning or training program.

It is axiomatic that professional or occupational success is a function, among other things, of education and training for the profession or occupation. Therefore, empirical studies of relationships between personality characteristics and success are relevant, at least indirectly, to the articulation of hypotheses about the possible relationships of personality and learning/training outcomes. According

to some recent studies: sensitivity has been related to artistic success (Stariha & Walberg, 1995); enthusiasm and imaginativeness as measured by Cattell's Sixteen Personality Factors Questionnaire (16PF) predicted success in medical studies (Peng, Khaw, & Edariah, 1995); high intelligence and trust as measured by the 16PF correlated with successful completion of a Big Brothers-Big Sisters program (Spitz & McKinnon, 1993); the personality structures of successful and unsuccessful problem solvers differ significantly (Kordacova, 1990); several MBTI characteristics including sensing, intuition and introversion helped to predict the success of football players (Schurr, Ruble, Nisbet, & Wallace, 1984); tough-mindedness coupled with trust as measured by the 16PF correlated with success in female basketball players (Evans & Quarterman, 1983); self-confidence and freedom from hostility predicted the success of lawyers (Schneidman, 1984); and originality and commitment to work was associated with the publications success of scientists (Busse & Mansfield, 1984). These studies, while they do not correlate personality characteristics directly with learning outcomes of specific programs, nonetheless demonstrate associations in normal adults between personality characteristics and success indicators in a variety of endeavours that require specific training as well as ability.

Such studies suggest that it is appropriate to study personality characteristics or types in relation to a variety of indicators of success or skill acquisition. By extrapolation it is reasonable, given the paucity of studies to date,

to further study personality types in relation to outcomes of an adult training program.

### **1.2.2. Implications for research on adult education in the workplace**

The above sections have pointed to the importance of studying adult education in the workplace as a legitimate research area in the field of Education, and to the relevance of focusing on individual differences in subjects as variables that may be related to adult learning outcomes. Literature on various individual differences was reviewed leading to the conclusion, in particular, that personality characteristics deserve further study.

### **1.2.3. Criteria for the approach to be used in this study**

Given that this is a study of empirical relationships between adult personality characteristics and selected workplace training outcomes, and that the justification for such a study stems in part from previous empirical research, the definition of personality for purposes of this study should conform to the following criteria:

1. Personality should be broadly defined, so that previous research findings have relevance for the hypotheses of this study.
2. Personality should be defined both conceptually and operationally, so that individual differences can be measured and interpreted.
3. Personality as defined must be applicable to normal adults of both genders.
4. The definition of personality should be one already used in relevant

workplace studies, so that its findings can be readily interpreted in relation to those of previous workplace studies.

With the above criteria in mind, alternative conceptual and operational approaches to the study of personality are considered below.

#### **1.2.4. Alternative conceptual approaches to personality**

A number of theories have been constructed to explain the nature of human personality (Schultz, 1990). Each of the major theories offers its own assumptions, methods and definitions of personality which contribute to the understanding of individual differences. Seven major approaches will be briefly considered in relation to the above criteria, in order to determine which must be rejected and which should be selected as anchoring theory for this study. The rationale for the specific approach selected will then be presented. The seven approaches are: psychoanalytic, neopsychanalytic, trait, humanistic, cognitive, behavioural and social learning.

**The psychoanalytic approach.** According to Loevinger (1987), the first systematic approach to the study of personality was psychoanalysis, the work of Sigmund Freud. Freud's view of the human personality has been enormously influential: "Nearly every theory of personality developed in the years since Freud's work owes a debt to his position" (Schultz, 1990, p.39). While the influence of psychoanalysis on many of today's personality theories is still



evident, the importance of this approach for empirical studies of personality and learning is primarily historical. In any case, Freud's approach has not yielded psychometrically valid measures of personality as such, and its differential views of men and women are no longer accepted. Therefore, the classical psychoanalytic approach will not be adopted as a theoretical framework in the present study.

**The neopsychanalytic approach.** The neopsychanalysts include such authors as Carl Jung, Alfred Adler, Karen Horney, Eric Fromm, Henry Murray and Erik Erikson. They were a group of theorists and clinicians whose work was highly influenced by the writings of Freud. While they generally followed Freud in their use of modified forms of clinical psychoanalysis, they diverged from his in their specific views both of the structure of personality and of determinism (see, for example, Loevinger, 1987; and Schultz, 1990). Among these authors, Adler furthered our understanding of personality in a social context, Horney contributed to the understanding of the foundations of neurosis and to feminine psychology, Fromm studied basic human needs and social determinants of behavior, while Murray spoke of the dependence of psychological processes upon physiological ones, and Erikson articulated a life-span developmental approach to the understanding of the person. Each of these authors made a significant contribution to our understanding of personality. None viewed human personality in empirically measurable terms, and their theories did not lead to any appreciable

amount of research on normal adults in the workplace. Therefore, their approaches do not meet the criteria for inclusion in the proposed study. Jung's theory, on the other hand, warrants serious consideration as an anchoring framework for the present study. It will be described and justified at the end of this section.

**The trait approach.** The trait approach to the study of personality subsumes a number of theories, the best known of which are those of Allport (1937), Cattell (1974), and Eysenck (1947). In essence, the trait theories define the personality in terms of measurable characteristics or "building blocks". Trait theories differ from type theories in that types subdivide people into discrete categories while traits, which are more numerous and may be subsumed under more basic types, describe how people vary along continua, that is, to what extent they possess more or less of a given trait. Conceptually, trait theories are compatible with the basic requirements of this study. In practice, neither Allport's nor Eysenck's theories yielded instruments for the measurement of personality that have been widely used in a work setting and would otherwise meet the criteria for this study. Cattell's theory, on the other hand, has been operationalized in an instrument titled the 16PF, which does measure personality as defined by Cattell in a valid and reliable manner, (Cattell, Eber, & Tatsuoka 1970) and is intended for a normal adult population. This instrument was not selected for the present study for two reasons. First, it has not been as widely used in workplace studies of personality as the MBTI, according to a search of the databases and consultation

of the test manuals. Second, in relation to the criteria for inclusion in this study, the 16PF did not represent any advantages when contrasted with the MBTI.

**The humanistic approach.** The humanistic approach is represented by such theorists as Rogers (1961) and Maslow (1962). It arose in reaction against psychoanalysis and behaviourism. It emphasizes the positive side of human nature and the fulfillment of potentialities, and focuses on such broad concepts as self-actualization and basic human needs. While the humanistic approaches have contributed substantially to clinical psychology, and Maslow's hierarchy of needs has been influential in workplace research, the humanistic approaches have not yielded widely used, comprehensive instruments for measuring individual differences in personality characteristics or types in a workplace context. Therefore, these approaches do not meet the criteria for inclusion in the present study.

**The cognitive approach.** The cognitive approach to the study of personality is typified by Kelly (1955). This approach attempts to describe all of personality in terms of cognitive processes. It is not a mainstream approach in psychology or education. As discussed by Schultz (1990), "Kelly's theory of personal constructs has not gained wide acceptance, either in academic psychology or in the clinic. The theory has generated little research ..." (p. 399). For these reasons, independently of the ultimate merit of this approach, it is rejected for purposes of the present study.

**The behavioural approach.** The behavioural approach in psychology is concerned with behaviour and its determinants, rather than with the study of internal characteristics that make up what is normally termed the personality. Even with the more recent inclusion of intervening variables in behaviourist psychology, the approach remains relatively alien to the study of individual differences in personality characteristics. Behaviourism applied to personality is represented by two leading theorists: John Watson (1914) the founder of behaviorism, and B.F. Skinner (1938) whose work built on that of Watson's. As influential as both authors have been in the field of psychology, neither author developed a distinct theory of personality. The focus of their research was not based on personality, but on overt behaviour, and the external variables that shape it. Criticism has been directed at Skinner's approach to studying human behaviour as too deterministic, for his lack of interest in individual differences, and for his "...failure to consider any distinctly human characteristics that may set us apart from rats and pigeons" (Schultz, 1990, p. 437). For these reasons, it is rejected for the purposes of the present study.

**The social-learning approach.** The social-learning approach to the study of personality is an extension of the behaviorist approach, which deals with the intervening variables between stimuli, responses and reinforcements. It is a legitimate experimental approach to the study of personality, and research based on the theories of such authors as Bandura (1977) and Rotter (1954) has furthered

our understanding of human behaviour in a social context. Nevertheless, this approach is rejected in the present study for two reasons. First, this approach has not yielded broad definitions of personality, and research based on this approach has tended to ignore individual differences in favour of understanding general principles of behaviour in a social context. Furthermore, this approach has not yielded measuring instruments comparable to the 16PF or the MBTI for applied research in the workplace context.

**Jung's Theory of Psychological Types.** Jung's theory warrants more detailed consideration, because it has provided the theoretical substrata for much recent research on personality in industrial-organizational psychology. This is paradoxical since, according to DiCaprio (1974), Schultz (1990) and others, Jung's overall approach to the understanding of the personality was unorthodox, highly complex, at times self-contradictory, and unscientific in that it was partly based on mythology, case studies of dreams and fantasies, extrasensory perception, and occult phenomena. This said, the paradox is largely resolved when one considers that modern researchers have not adopted Jung's complete theory, nor accepted all of his fundamental assumptions about human nature. Rather, they have retained specific aspects of his theory, transformed by concepts into empirical measures, and studied these. This is the approach followed in the present study. It recognizes the importance of and focuses directly on Jung's concept of the subconscious and on his theory of psychological types.

From this more specific perspective, Jung's theory of psychological types is more scientific and relevant to the present study. It is Jung's theory of psychological types that has given rise to researchable, measurable constructs. By the same token, it is his theory of psychological types which has provided the foundation or anchoring theory for a great deal of research in organizational and management literature. With reference to its relevance for adult education, Knowles (1984) both acknowledges that the discipline of psychotherapy, with its focus on re-education, has contributed significantly to learning theory and points to psychoanalysis as an important influence in this regard. Knowles explicitly states that Carl Jung's "plea for the development and utilization of all four functions in balance laid the groundwork for the concepts of the balanced personality and the balanced curriculum" (p. 38). Therefore, given both its conceptual relevance and the fact that it defines types in measurable terms, Jung's theory of psychological types provides the anchoring view of personality for this study. It is described in the following paragraphs.

The self is the core of personality in Jung's Type theory (Hjelle & Ziegler, 1992). All other elements are organized around this concept. The self is further understood in terms of orientations (introversion-extraversion) and psychological functions (rational-irrational). The combinations of these orientations and functions allow for the description of personality types, such that each type describes as a homogeneous group people who approach the world in keeping with

their own specific orientation and function. Thus, Jung's typology provides a relatively comprehensive approach to classification of the normal personality, by allowing for the subdivision of people into eight major groups or types.

According to Jung, there are two major orientations or attitudes to life, which he calls extraversion and introversion. They both exist in every person. One is dominant and conscious, while the other is non-dominant and unconscious. Extraverts focus their interests on objects external to themselves. They are seen open and eager to participate in their surroundings. Introverts attend more to their inner lives or inner selves. They are seen a shy, quiet and difficult to know. Although the relevance of the two orientations for the teaching-learning process has not been studied empirically, it is reasonable to expect that extraverts would prefer an emphasis on hands-on "real world" participatory experience while introverts prefer to deal with concepts and ideas (Lawrence, 1984, Myers-Briggs & McCaulley, 1993). With reference to the leadership training seminar used in this study, which deals largely with abstract values, one might expect it to appeal particularly to introverts.

Jung's psychological functions, which he labels rational and irrational, are ways of extracting information from experience and achieving internalized understanding (Jung, 1933). Each subdivide into two characteristic styles for relating to the world. The rational styles are Thinking and Feeling while the irrational styles are Sensing and Intuition. Of relevance to this study is the fact that

Types can be related to learning and achievement. Type theory can be used to predict the tasks that will enable students to use their preferred functions (Lawrence, 1984, Myers-Briggs & McCaulley, 1993).

If one considers the rational functions, the Thinking person relates to the world in an intellectual manner that seeks to extract meaning in all daily experiences. The Feeling person, in contrast, appraises his or her interactions with the world primarily in terms of positive or negative emotions. Extrapolating from these characteristics to the teaching-learning process (Lawrence, 1984, Barr & Barr, 1989), one might expect the Thinking type to prefer and benefit from education and training experiences that appeal principally to the intellect and logic. In contrast, one might expect the Feeling type to have a preference for education and training experiences that appeal to feelings and emotions (Pratt, Uhl & Little, 1980, Myers-Briggs & McCaulley, 1993). In other words, the Feeling person values “personal rapport” with the information, while the Thinking person values the rationality of the information. With specific reference to this study, given that the leadership seminar which serves as medium for the study stresses a consideration of “soft skills” (Stoneall, 1992) such as human needs, motives, values, and personal integrity, it follows that it may be especially appealing to persons of the Feeling type.

With reference to the irrational functions (Hjelle & Ziegler, 1992), the Sensing person relies on the senses to absorb and interpret external information,



while the Intuitive person relies on a “sixth sense” which may be defined in terms of less conscious perceptions, hunches, guesses or instincts. Extrapolating from these characteristics to the teaching-learning process (Barr & Barr, 1989), Sensors prefer information that can be concretely verified, and focus on specific tasks and step by step procedures. One might therefore expect persons of the Sensing type to favour education and training experiences that are rich in audio-visual aids and presentation styles that use concrete examples, field trips, and other components that appeal directly to the human senses. The Intuitive types interpret information in terms of meaning and future possibilities. Thus, they may prefer experiences that are less structured, that involve for example, discussion of cases or creative brainstorming, in short experiences that enable them to make use of their “sixth sense” in reaching their learning outcomes. With specific reference to the leadership seminar used in this study, it blends components that appeal to both of these Types. Therefore, no directional hypotheses are advanced when comparing the outcomes of Sensing and Intuitive types.

The above are the sum total of type distinctions advanced by Jung. When these were

given operational meaning by Myers (1980), a further overall distinction was added in terms of the person’s general attitude to the outer world, as follows:

Persons may be classified as J (Judgment) or P (Perception) types. Persons

characterized as J are said to prefer a judgment process (T or F) in dealing with the

outside world, while persons characterized as P prefer to use a perceptive process (S or N). Since this distinction is not found explicitly in Jung's theory, the writer will test it as an exploratory hypothesis only, without directional expectations.

Thus, as described above, there are sixteen possible MBTI types in total (Barr & Barr, 1989, Myers-Briggs & McCaulley, 1993):

ESTJ (extravert, sensor, thinker, judge)  
 ESFJ (extravert, sensor, feeler, judge)  
 ENTJ (extravert, intuiitor, \* thinker, judge)  
 ENFJ (extravert, intuiitor, feeler, judge)  
 ESTP (extravert, sensor, thinker, perceiver)  
 ESFP (extravert, sensor, feeler, perceiver)  
 ENTP (extravert, intuiitor, thinker, perceiver)  
 ENFP (extravert, intuiitor, feeler, perceiver)  
 ISTJ (introvert, sensor, thinker, judge)  
 ISFJ (introvert, sensor, feeler, judge)  
 INTJ (introvert, intuiitor, \* thinker, judge)  
 INFJ (introvert, intuiitor, feeler, judge)  
 ISTP (introvert, sensor, thinker, perceiver)  
 ISFP (introvert, sensor, feeler, judge)  
 INTP (introvert, intuiitor, thinker, perceiver)  
 INFP (introvert, intuiitor, feeler, perceiver)

\*Intuition is noted as (N) to distinguish it from Introversion (I).

As will be explained in Chapter 2, the above types have been measured in recent years using an inventory titled the Myers-Briggs Type Indicator or MBTI (Myers-Briggs & McCaulley, 1993). In their extensive review of research studies using this instrument with adults in various settings including the workplace, the authors have found that, not only the above sixteen types, but also certain type combinations, are relevant classification variables (pp. 30-51). More specifically,

for this study of persons who are managers or supervisors undertaking leadership training, it is the distinction between the combined TJ group versus all other groups combined that is of greatest interest.

The four TJ Types (ISTJ, INTJ, ESTJ and ENTJ) may be distinguished from the remaining types in that, when viewed as a combined TJ group, they represent persons who, due to their predominant use of the thinking judgment function, are considered good, logical decision makers when in positions of management and leadership. They may be expected to rise to leadership positions in their organizations, and to be prevalent in large numbers among the subjects of the present study, given that its population consists exclusively of persons in supervisory and management positions. In contradistinction, the remaining types when combined will include all persons who, instead of relying predominantly on judgment and logic for their decision-making, may be guided by such characteristics as feelings and overall perceptions.

In concluding this brief overview of Jung's Theory of Psychological Types, the writer wishes to draw attention to the following aspects which render it especially appropriate as a conceptual backdrop for this study:

1. Jung's typology is conceptually sophisticated and coherent for the purposes of this study. The operational definition and extension provided by the MBTI has been extensively validated and researched in settings that are relevant for this study of workplace training outcomes (see, for example,

Johnson, 1992; Myers-Briggs & McCaulley, 1993; Rytting, Ware & Prince, 1994; Saggino & Kline, 1996).

2. Jung's definition of personality has been empirically employed in various and diverse workplace studies as operationalized by Isabel Myers-Briggs (see, for example, Lake, Miles & Earle, 1973; Mitroff & Kilmann, 1975; Jaffe, J.M. 1980; Peters, C.E. 1981; Gaster, W.D. 1982; Lueder, D.C. 1986; Carskadon, T.G., McCarley, N.G. and McCaulley, M.H. 1987).
3. Studies of workplace behaviours of normal adults have favoured type theories over trait theories (Tischler, 1991). Of all theories of psychological type, Jung's is the most widely used. It is also the only one that has led to the development and widespread use of a valid and reliable measuring instrument, the MBTI.
4. Jung's concept of the unconscious is relevant to this study. Jung placed great emphasis on this concept in his theory of personality. The two levels of the unconscious in Jung's theory are the personal unconscious and the collective unconscious.

The personal unconscious is the reservoir of material that was once conscious but has been forgotten or suppressed (Schultz, 1990). The collective unconscious represents the deepest level of the psyche, containing accumulated and inherited experiences. In terms of the effects of the unconscious on thought and behaviour, Jung compared it to the lower

levels of a building, with the unconscious providing support for the upper level or consciousness.

The personal unconscious, with its reservoir of stored information and experiences, influences behaviour through the development of a pattern of perceptions, emotions or memories that become organized around a common theme or category. With reference to the present study, this concept implies that, in the workplace, a manager's behaviour is influenced not only by his or her conscious experiences and skills, but also by experiences, cognitions, emotions or skill patterns which have been stored in the personal unconscious. This being the case, it may be expected that much of the content of a leadership seminar focusing on inner process (needs, motives, values and attitudes) would be assimilated into the personal unconscious together with similar material already present there. Such unconscious material may then be expected to influence subsequent implementation of the seminar content.

The above review of approaches to the conceptualization of personality leads to the conclusion that Jung's theory of psychological types (Jung, 1933), a sub-theory within his overall neopsychoanalytic theory, meets the requirements of this study. It describes two personality orientations (introversion and extraversion), and four basic psychological functions (thinking, feeling, sensing and intuiting). The theory is widely accepted and researched. Finally, Jung's

Types have been subsequently measured with adequate validity and reliability, something which is essential if they are to be used in empirical research.

#### **1.2.5. Types of learning outcomes**

As noted previously, this is a study of relationships between individual differences in subjects undertaking training in the workplace and self-reported implementation outcomes. This section reviews research literature on education and training outcomes, in order to arrive at an operational definition of outcomes for purposes of the study. Both direct and indirect measures of education and training outcomes will be considered.

**Direct measures of achievement or performance.** While there is a vast literature on the relationship between scholastic programs and subject-matter achievement, it is outside the scope and objectives of the present study, for two basic reasons. First, the success of workplace seminars and related training programs is not normally measured in terms of the extent to which the trainees acquire detailed knowledge of the material taught (Stoneall, 1992). Second, while the relationships between intelligence/aptitudes and achievement are well documented, the research literature does not provide evidence of substantial relationships between personality and achievement. To cite but one example, Myers-Briggs & McCaulley (1993) review the correlations of MBTI preferences with achievement scores in samples of secondary and college students, and note

that the coefficients range from 0.01 to 0.35, with the vast majority of values below 0.20. In other words, the overlap between studied personality preferences and achievement scores is less than 5% on average. Therefore, the writer concludes that it would not be productive to correlate personality characteristics with direct paper and pencil measures of achievement.

As an alternative to achievement tests, measures of job performance following training programs deserve consideration as potential outcome measures. A number of studies provide indirect support for this position. For example, Hogan, Hogan, & Scott (1992) found that certain personality characteristics of new sales representatives were significant predictors of their on-the-job performance. Hogan, Hogan, & Todd (1992) found relationships between personality and managerial performance in employees of a large trucking company. Correlations between personality and job performance have also been found in such occupations as real estate agents (Crant, 1995), service workers (Stuart & Carson, 1995), nursing personnel (Day & Bedeian, 1995), astronauts (Rose, Fogg, Helmreich & McFadden, 1994), air force mechanics (Motowidlo & Van Scotter, 1994), and entrepreneurs (Jurcova, 1993). While these studies use job performance ratings as indicators of accomplishment on the job and therefore as outcomes, they do not use job performance measures as training outcomes.

A further search of the literature did not reveal studies linking workplace training programs to post-training job performance outcomes, with the exception

of training for concrete skills (e.g., truck driver training) which cannot be conceptually linked to the far more abstract leadership skills which are the object of this study. The preceding are, therefore, outside of the objectives of the present study. In fact, authors of texts on management and related workplace training in business and government (see, for example, Clark & Clark, 1990; Gardner, 1990; Kelly & Kelly, 1986; Lessem, 1994; and Mintzberg, 1989) either ignore the topic of training outcome measures altogether or argue that the relevant outcomes are not achievement or performance as such, but rather indirect outcomes. These outcomes are such “soft” variables as increased motivation, greater job satisfaction, higher self-esteem, more positive attitudes toward the job, and increased loyalty to the organization. The following section reviews relevant studies.

**Indirect training outcome measures.** In the workplace, it is relatively commonplace to rely on indirect measures of training outcomes, usually for pragmatic reasons. Five such measures are considered in this section.

Supervisor ratings. Job performance as rated by supervisors following a variety of adult training programs has been used as an outcome measure in recent literature. The groups studied have included nursing assistant trainees (Goodrich, Johnston, & Thomson, 1997), and managers (Engelbrecht & Fischer, 1995; Papa & Graham, 1991). Baumgartel, Reynolds, & Pathan (1984), employed ratings of the application of skills after training as a relevant outcome of management



training. Although this is not mentioned in the research literature, most modern organizations require regular reviews of employee performance at all levels. These reviews rely largely on supervisory ratings of employee performance coupled with self-ratings by the employees. This indirect approach to the measurement of employee performance is widely accepted, as it frequently relies on custom-built rating scales, and is adaptable to the outcome measure requirements of the present study.

Performance self-reports. Studies of rated performance have included both ratings by supervisors and self-reports. Although Yammarino & Atwater (1997) contend that insufficient attention has been paid to discrepancies between ratings by supervisors and self-ratings of performance, such authors as Mager (as cited in Stoneall, 1992), the father of criterion-referenced instruction, have argued that both observations and self-reports of performance are applicable in the workplace. Empirical studies of such groups as federal employees (Tharenou, 1995), volunteer community leaders (Cusack & Thompson, 1996), scientists undergoing management training (Brook et al., 1984), and management trainees in both the private and the public sector (Chaston, 1993) have employed performance self-reports as outcome measures. A study of personnel ratings by Waldman, Yammarino, & Avolio (1990) suggests that a mixed approach using supervisor and self-ratings of performance is best.

**Job satisfaction.** Job satisfaction is usually measured by employee self-reports. It is not typically considered a training program outcome measure, although it has been included in studies of organizational climate and culture (see, for example, Tziner & Latham, 1989).

**Attitudes toward the training program.** Some studies of training programs for adults have included measures of attitudes toward the programs as outcome measures, using such groups as business executives (Swanson, 1990) and academic administrators (Schmuck, 1992). Attitude change related to the job has also been used as an outcome measure following training programs focusing on human interactions (see, for example, Chidester, Helmreich, Gregorich, & Geis, 1991; and McGettigan, 1985), and on health promotion (McClaran, Breaky, & Sarris, 1981).

**Self-esteem.** Self-esteem and self-ratings of traits such as self-confidence have been employed as outcome measures of training programs for adolescents and adults, when the goals of the programs have included: the intent to bring about changes in how the subjects view themselves (see, for example, Rolle, 1990; and Vogel, 1989), or such themes as basic decision-making and values clarification (Pennsylvania State Dept. of Education, 1987).

#### **1.2.6. Outcome measures for the present study**

It is evident that no one outcome measure is ideal for all training programs. As proposed by Stoneall (1992), and more recently by Kraiger & Jung (1997), the

outcome measures used to evaluate the effectiveness of adult training programs in the workplace should be relevant to the specific objectives of the programs in question, and the objectives themselves should be defined in flexible ways that have optimum relevance for the work setting. Therefore, the present study will use outcome measures of perceived implementation of, and attitude toward, the values-based content of the seminar employed as the medium for testing the hypotheses of the study. Such measures are appropriate to the objectives and medium of the study, and more specifically they may enable subconsciously held commitment to the material acquired during the leadership seminar to be expressed, something which is in keeping with Jung's concept that the personal unconscious contains much of the material that influences a person's behaviour.

### **1.3. Continuing education and training in the workplace**

The above section considered individual differences both in terms of the characteristics of adult learners and in terms of the measurement of outcomes following workplace training programs. In this section, the importance of continuing education for adults within the broader field of education is considered, and the choice of a leadership training workshop as the medium within which to carry out the study is justified.

#### **1.3.1. Importance and scope of adult education**

According to Cross (1984), adult learning is essential for all, due to the rapid pace of change in private and work life. In 1976, UNESCO's supreme

legislative body (the General Conference) adopted the following definition of lifelong learning:

The term “lifelong education and learning” denotes an overall scheme aimed both at restructuring the existing education system and at developing the entire educational potential outside the education system. In such a scheme, men and women are agents of their own education. (p. xi)

The basis for UNESCO’s interest is that adult education, under such rubrics as training, human resource development, life-long education, or just plain learning, is near the top of all public and private collective agenda throughout the world. Given the importance of such considerations, Hofmann (1990) questions whether, in view of the increasingly rapid changes in society, the present education system will be able to meet the demands of the future. Fulmer (1997) provides an apt metaphor when he states “Columbus, like some corporate explorers, was using a map designed for a totally different environment. In a similar manner, our old maps are no longer adequate to describe today’s reality or to help chart a course for whatever lies beyond the horizon” (p.60). Hofmann and Fulmer’s statements support Cross’ (1984) view that society has come to change the way it thinks about traditional or formal education. Clearly, education and learning are no longer the exclusive domain of schools and other formal

educational institutions. If schools and universities find it increasingly difficult to address the continuing preparation and upgrading of employees at a time of constant social and technological changes, then other institutions will necessarily fill the void in what Cross calls the “learning society”.

Realizing that learning could be translated into competitive advantage, some corporations have erected college-sized institutions that would help them become learning organizations (Meister, 1996; Fulmer, 1997). In 1993, Meister identified 30 companies with corporate universities, most of which shared the common goal of seeing “training as a process of lifelong learning rather than a place to get trained.”(Meister, 1994). By 1996, she reported that almost 1,000 firms had begun or were actively exploring the possibility of a corporate university.

Lifelong learning, says Cross (1984) is “not a privilege or a right, it is simply a necessity for anyone who must live with the escalating pace of change - in the family ...on the job” (p. ix). From another perspective, one’s personality, interacting with one’s work environment, is an important determinant both of one’s learning needs and of one’s predisposition to benefit from continuing education and training experiences (Cusack & Thompson, 1996). The above considerations, coupled with the vast recent literature on various aspects of adult education and training in the workplace (e.g., Clark & Clark, 1990; Fulmer, 1997; Kouzes & Posner, 1990; Meister, 1994), suggest the need for a study focusing on

individual differences in adult learners as the primary beneficiaries of adult education.

### **1.3.2. Training programs in the workplace**

North American businesses are reported to be spending more than 45 billion dollars per year on training (Fulmer, 1997; Meister, 1994). This is viewed by business and industry as a necessity in order to fill the need for up to date employees, and particularly leaders, in an ever changing workplace. The training investment is an attempt by corporations to stay competitive. The investment in training for the purpose of increasing employee skills and performance is well justified. It renders employees more capable of meeting the challenges of rapid and continuing changes (Clark & Clark, 1990; Fulmer, 1997; Kouzes & Posner, 1990; Meister, 1994).

From the above it is evident that today's businesses are organizations which demand ongoing learning from their employees. The "learning organization" has as one of its principal purposes the expansion of knowledge, not for its own sake, but as Lessem (1994) refers to it, as knowledge that comes to reside at the core of what it means to be productive. Learning in this context is not viewed as unproductive activity, but rather as a new form of labour (Zuboff, 1988).

### **1.3.3. Training programs in managerial leadership**

Training programs and courses are being generated in all fields of study, and more particularly in the area of managerial leadership development. This

investment by business and industry addresses the call (Clark & Clark, 1990) for the type of leadership that is consistent with the dominant values of today's world societies. For example, the autocratic leader who does not always consider the needs and interest of employees will find that dissatisfied employees are creative in finding ways to express their displeasure (Kouzes & Posner, 1990; Manz, & Sims, 1989; McCormack, 1996; O'Toole, 1996), with detrimental effects for the corporation's bottom line. Indeed, it is increasingly evident that good managers are those who possess business know-how, human relations skills, and a coherent system of values. According to O'Toole (1996), to be more effective, "...leaders must begin by setting aside that culturally conditioned 'natural' instinct to lead by push, particularly when times are tough. Leaders must instead adopt the unnatural behavior of always leading by the pull of inspiring values" (p. 11). A review of recent management literature supports this view (e.g. McCormack, 1996; Pitcher, 1995). If this is correct, the requisite training of managers should include consideration of values and of human relationships in the workplace.

Businesses have found, however, that universities and colleges offering Master of Business Administration and related programs stress the technical aspects of management while ignoring managerial values and the interpersonal or "people" elements of management (see, for example, McCormack, 1996; and Mintzberg, 1989). Therefore, leadership and management seminars that

incorporate such concepts as human values and interpersonal relationships in the workplace are gaining in popularity, and are being offered either by the corporations themselves or by private training firms.

This study espouses the view that the Leaders for Tomorrow seminar (see Chapter 2) provides a relevant and appropriate vehicle for testing the hypotheses of the study. Immediately below, a brief outline of the rationale of leadership theory which best corresponds to the requirements of this study is presented.

#### **1.3.4. Leadership theory and adult learning**

**A brief overview.** While this is not a study on leadership, the medium utilized for the study is a leadership training seminar and in this context, an overview of the most relevant leadership theories will be presented. To be suitable for the present study, a theory should be well established, applicable to managers, compatible with the adult learning theories endorsed in this study, and focus on individual differences including psychological characteristics as potential determinants of learning outcomes.

There are numerous theories of leadership in work organizations, however, a comprehensive review is beyond the scope of this study. The following section will present a brief summary of two major orientations which are considered the most relevant: the trait approach and the behavioural approach.

**Trait Theories.** Trait theories of leadership assume that certain personality



traits or characteristics are associated with leadership behaviour (see for example, Bernard, 1926; Jenkins, 1947; Stogdill, 1974; Saal & Knight, 1988; Riggio, 1990). According to Riggio much of the research on trait theory involved attempting to isolate the specific traits or personality attributes associated with successful leadership. Hollander (1985) examined extraversion, dominance, psychological adjustment, and intelligence. Stogdill (1974) reviewed trait research from 1947 to 1970 and concluded that, while some traits were frequent among leaders, no single trait or group of traits was common to all effective leaders, and traits associated with successful leadership varied from situation to situation. As a result of Stogdill's and other reviews of leadership by the mid-1950's (for example, Gibb, 1954) it was concluded, at the time, that there was little reason to pursue this line of research.

A subsequent reconsideration of this view may be attributed to at least two factors (Campbell, Dunnette, Lawler, & Weick, 1970; Stogdill, 1974). The first of these was the linking of leadership effectiveness to the nature and requirements of specific types of management positions, such that traits associated with effectiveness could be identified and measured. The second was the tendency to evaluate trait theories more carefully. In this regard, for example, a study conducted by Ghiselli (1971) concluded that a set of relevant traits can be identified and measured which, while they do not show very strong associations with managerial effectiveness, do yield modest but significant and practically

useful relationships. More recently, McCormick and Ilgen (1985) reviewed major studies, re-interpreted Stodgill's pessimistic earlier conclusions, and argued that some generalizations can be made about traits which are useful for understanding and identifying leaders at least in certain contexts. In keeping with this more positive view, Hollander (1985) concluded that persons who are extraverted, dominant, better adjusted, or more intelligent are more likely to do well as leaders.

For the present study, this approach to leadership suggests, first, that personality characteristics and leadership may be related and, second, that leadership training programs which appeal to or help to develop aspects of one's personality may yield different outcomes in leaders of varying personality types or traits.

**Behavioural theories.** In contrast to the trait approach, which focuses on the personality and abilities of leaders, behavioural theories focus upon the behavior of people in leadership positions (Jewell, 1985). This is based on the premise that a leader's ability to influence others including peers and subordinates is a function of the leader's actions (McCormack & Ilgen, 1985). Badaracco and Ellsworth (1989) suggest that leadership behaviours are, in fact, a function of each manager's underlying leadership philosophy, whether it is explicit or implicit. These authors review three philosophies that underlie the behaviours of leaders: political, directive, and values-driven. Briefly, the political philosophy suggests that, in order to deal with such forces in an organization as splintering, resistance

to change, and varied self-interests, the actions of a successful leader must be based on pragmatics, politics and compromise. In the directive philosophy, given the overriding importance of facts and strategic substance to managerial decision-making, it is argued that the successful leader's actions must be forceful, direct, top-down, and hands-on.

According to Badaracco & Ellsworth (1989), the values-driven philosophy transcends the above two. It does not ignore political dimensions or minimize the necessity of strategic or administrative decisions. Its main focus, however, is based on the concept that the successful leaders's actions must reflect genuine and deeply held basic values with which the followers can identify.

There are a number of powerful reasons for this focus. For one, personal values lead to consistency in actions and decisions across time and situations. For another, when personal values are transmitted to and incorporated by others in the organization, the dedication and creativity of the organization as a whole facilitates excellent performance. The importance of values and integrity as essential components of successful leadership is highlighted by a number of authors (Badaracco & Ellsworth, 1989; Bennis, 1992; Bolman & Deal, 1991; Carr, 1996; Kennedy & Deal, 1982; Mintsberg, 1989; O'Toole, 1996; Pitcher, 1995; Sergiovanni, 1990).

Of the above, the values driven approach provides an appropriate theoretical framework for this study, for two key reasons. With regard to the

search for relationships between personality types and seminar learning outcomes, the values-driven approach guides the choice of a seminar training program which addresses the different needs and sources of motivation as well as leadership behaviours of subjects differing in personality characteristics. In addition, this approach suggests an interactive approach to training that takes into account the characteristics of adult learners posited as important by such adult learning theories as andragogy and the CAL approach. Thus, while both trait theory and the values-driven approach are compatible with the objectives of this study, the values-driven approach was selected because it forms the explicit basis of the training seminar in the context of which the hypotheses of this study are tested.

#### **1.3.5. Values-based leadership training: A medium for this study**

In a goal oriented organization human relationships play a pivotal role in goal achievement. The foundation of relationships rests on the principles of integrity, which consist of managerial behaviours rooted in the reciprocal principles of care, respect, responsibility and trust in the pursuit of organizational goals. The manager's behaviour anchored to these principles constitutes a model to be emulated. Ethical behaviour creates a work community environment within which employees grow in self-respect, respect for others and the ultimate pursuit of organizational goals. (Schmidt, 1982). In fact, as noted in the preceding section, the professional and research literature on management leadership repeatedly highlights the importance of such characteristics as values and integrity as

essential components of successful leadership.

According to Kouzes & Posner (1990), a leader needs a philosophy, a set of high standards by which the organization is measured, a set of values about how employees, colleagues and customers ought to be treated, a set of principles that make the organization unique and distinctive. Values are the pervasive, deep rooted standards by which almost every judgment and response to others are influenced. (Badaracco & Ellsworth, 1989, O'Toole, 1996; Schmidt, 1992).

Given these considerations, a two-day seminar for managers and supervisors titled Leaders for Tomorrow was selected as the vehicle for testing the hypotheses of the study. The seminar was designed in 1985 by a Canadian management consulting group with focus on human and organizational development, in order to provide values-based leadership training in the workplace. It addresses three fundamental dimensions of effective organizational leadership: 1) personal and interpersonal growth and effectiveness; 2) managerial leadership effectiveness; and 3) organizational performance. At the time of this study, the seminar had been implemented in various corporations in both the United States and Canada. Of interest to the present study was the fact that this seminar emphasizes exploration of personal values, and the application of strategies based on personal values and integrity to workplace problems and dilemmas. It was developed precisely to facilitate personal development through self-exploration and to address issues of values and integrity in leadership.

Therefore, the writer judged that exposure to this seminar would provide a logical medium in which to test hypotheses between personality and training outcomes, based on the concept that personality differences may be associated with values differences. More specifically, it was felt that this seminar, stressing as it did personal values and encouraging participants to make use of those values in the workplace, would be more or less readily accepted depending on the personalities of the participants. For example, the seminar extolled the human aspects of leadership by focusing on human needs and personal values. Therefore, it seemed a suitable vehicle through which to explore relationships between personality types and learning outcomes, particularly if such outcomes were defined in terms of the participants' own perceptions. The content and implementation of this seminar are presented in Chapter 2.

#### **1.4. Statement of the problem**

Workplace training is a necessary extension of formal education for adults. In this context, it is important to study those characteristics of the learners that may influence relevant learning outcomes. In the workplace, where it is not usually feasible to obtain direct performance measures, indirect measures such as perceptions of commitment to what is taught during workplace training constitute relevant alternative outcome measures. Leadership training, an important aspect of continuing education, provides a suitable vehicle for an exploration of relationships between learner characteristics and outcomes. Specifically, a

values-based training seminar is suitable for the exploration of relationships between individual differences in personality and training outcomes. Based on these considerations, this research study is intended to address the following question:

After subjects attend a values-based leadership training seminar in the workplace, is their self-reported implementation of its content a function of certain aspects of their personality?

This question is re-phrased below in terms of testable research hypotheses.

The hypotheses will be tested on a sample of subjects in a major Canadian corporation who participated in the Leaders for Tomorrow seminar and who cooperated with the writer by completing all aspects of the study. Personality was measured by a widely used instrument, the MBTI. The workplace outcomes of the seminar were assessed by means of ratings obtained during semi-structured follow-up interviews with coaches. Two sets of outcome ratings were obtained initially, denoting implementation of and attitudes toward the seminar content, as reported by the subjects to the coaches. Based on the results of a preliminary statistical analysis (see Chapter 3), the writer decided to eliminate attitude as a variable in this study, retaining two measures of reported implementation, Applying and Trying to Apply the seminar principles respectively.

### **1.5. Research hypotheses**

The general expectation of this study is that relationships will be found between certain personality types of adult subjects and the extent to which they

report having implemented principles acquired during a values-based leadership training seminar. This expectation was first tested globally, for all 16 MBTI Types, without any directional expectations. Then, it was tested as more specific hypotheses. Based on the literature reviewed, three directional hypotheses concerning personality types were articulated. In addition, the personality types considered by Jung to reflect the most basic orientations to the world, but which did not suggest differential results in the context of this study, were compared as non-directional hypotheses. Finally, exploratory comparisons suggested by the research literature were also phrased as a research question and tested.

### **Hypothesis 1:**

The rationale for the first hypothesis is provided by Myers-Briggs & McCaulley (1993), to the effect that the combined TJ types on the MBTI (that is, ISTJ, INTJ, ESTJ, and ENTJ) are predominantly rational thinkers and logical decision makers in the workplace, while the remaining MBTI types may be guided more by their feelings and overall perceptions. Given that the seminar employed in this study emphasizes human needs, values and emotions, it is expected to have a more profound impact and to be more readily implemented by the non-TJ types as opposed to the TJ types. This leads to the following hypothesis:

When the average reported seminar implementation scores of subject groups classified as TJ and non-TJ based on the MBTI are



compared, the non-TJ group will report significantly higher average scores than the TJ group.

**Hypothesis 2:**

Rationale: As reviewed in a previous section, Extraversion and Introversion are two basic orientations to the world, such that Extraverts focus their interests externally to themselves while Introverts attend more to their inner lives or inner selves. Given that the seminar dealt largely with abstract values and inner needs, it may be expected to appeal particularly to Introverts. This expectation leads to the following hypothesis:

When the average reported seminar implementation scores of subject groups classified as Introverts and Extraverts based on the MBTI are compared, the Introvert group will report significantly higher average scores than the Extravert group.

**Hypothesis 3:**

The rationale for this hypothesis stems from the fact that, according to Jung, there are two irrational ways in which people absorb and interpret external information. He called these Sensing and Intuition. From the perspective of this study, no concrete expectations could be advanced. However, given the importance attached by Jung to these functions, the following exploratory hypothesis was tested:

Subjects classified into Sensing and Intuition groups based on the MBTI will differ significantly in the extent to which they report, on the PIRS questionnaire, applying or trying principles acquired in a leadership training seminar.

**Hypothesis 4:**

Rationale: In addition to the above irrational functions, Jung proposes two rational ways in which people absorb and interpret external information. He called these Thinking and Feeling. While people who are Thinking types value rationality, the Feeling types value emotions and personal rapport with the information they extract from the external world. Given that the seminar stresses “soft skills” such as human needs, values, motives and integrity, it may be expected to appeal particularly to persons of the Feeling type. This leads to the following hypothesis:

When the average reported seminar implementation scores of subject groups classified as Thinking and Feeling based on the MBTI are compared, the Feeling group will report significantly higher average scores than the Thinking group.

**Hypothesis 5:**

Rationale: When Myers (1980) gave operational meaning to Jung’s types, an additional dichotomy was introduced, by dividing people into Judgment and Perception types, according to the processes by which they tend to deal with the

outside world. In this study, no specific expectation is formulated, by the comparison of the two types is made in the form of an exploratory hypothesis, as follows:

Subjects classified into Perceiving and Judging groups based on the MBTI will differ significantly in the extent to which they report, on the PIRS questionnaire, applying or trying to apply principles acquired in a leadership training seminar.

#### **1.6. Complementary research question**

The above are the conceptual hypotheses of the study. Additionally, variables often considered in the above literature as potential correlates of workplace performance or adult learning outcomes include demographic characteristics, and more specifically the gender, age, occupational level, and previous education of the subjects. Therefore, these variables are considered in this study as potential covariates, and potential interactions between the relevant personality types and these variables will be explored, whenever this is feasible. Finally, on an exploratory basis, these demographic variables will be used as classification variables to address the following complementary question:

Do subjects classified according to gender, age, occupational level, or education differ significantly in the extent to which they report, on the PIRS questionnaire, applying or trying to apply principles acquired in a leadership training seminar?

## **CHAPTER 2**

### **METHOD**

In this chapter the subjects, tools and procedures of the study are presented. A description of the subjects is presented first. The second section provides a description of the two-day training seminar which served as the adult workplace training medium for the study. Next is provided a description of the personality inventory and of the perceived implementation questionnaire. This section includes a discussion of the validity and reliability of these instruments. The procedures for implementing the two-day training seminar are presented in the next section, as are the procedures for administering the inventory and questionnaires. In the concluding section, the writer summarizes the key statistical analyses to be used in testing the hypotheses of the study.

#### **2.1. Subjects**

##### **2.1.1. The population**

This study was conducted within a large North American corporation with offices across the country. The corporation had undergone a period of labour strife, and for this reason requested a consulting firm to conduct a leadership training seminar for all levels of management. Those persons who undertook this training became, by definition, the population from which participant samples were selected for this study. This population consists of 6000 English-speaking managers (President to Supervisor level) from western, central and eastern Canada

(excluding Quebec). More specifically, the population consisted of 1760 females and 4240 males ranging in age from 21 to 65. Education levels ranged from Grade 12 or less to graduate degrees. Although the writer was not provided with information about the number of potential participants who chose not to attend the workshop, and although participation was voluntary, the tradition in this corporation is such that almost 100% attendance is expected. Therefore, it is appropriate to regard the total of 6,000 seminar participants as the population for this study.

Given the large size of this population, it is neither necessary nor practical to carry out the analyses on the total population. Adequate statistical power can be obtained by the use of a sample, and the use of a random sample permits generalization of findings to the population. In fact, as described below, three samples were selected.

### **2.1.2. The samples**

The conduct of this study required three samples to be selected: a preliminary sample of 202, a second sample of 503, and final sample of 1015 subjects. The three samples, and the reasons for their selection, are described below.

**Preliminary sample of 202 subjects.** In order for a first set of statistical analyses to be carried out to determine how many sub-tests to score on the custom-made PIRS instrument, a sample of 202 subjects (93 males and 109

females) was drawn randomly from the population using a computer generated table of random numbers.

This sample was drawn for the purpose of conducting preliminary correlation analyses on the PIRS data, and more specifically to determine whether the PIRS questionnaires allowed for the differentiation of implementation and attitude scales.

**Sample of 503 subjects.** It was decided to conduct a principal components analysis of the PIRS implementation items in order to determine whether one or more sub-tests were warranted. Since there were forty items, and thus forty variables for this analysis, this necessitated enlarging the preliminary sample to 500 in order to ensure more than 10 subjects per variable. 301 subjects were drawn randomly from the subject population and added to the above 202 subjects, resulting in a sample of 503 subjects.

**Final sample of 1015 subjects.** In order to test the major hypotheses of the study using MBTI Types as independent variables, and to ensure sufficient statistical power for the MANOVAs, a minimum of 30 subjects per cell was considered desirable. Given that preliminary analyses on the sample of 503 revealed unequal cell sizes, it was decided to double the size of the sample before testing the hypotheses using the MBTI. 512 additional subjects were drawn randomly from the subject population and added to the above 503 subjects, resulting in a final sample of 1015 subjects from the population of 6000.

## **2.2. The Leaders for Tomorrow training seminar: Content and conduct**

From the previous chapter, the reader will recall that the key purpose of this study is to establish relationships between personality types and perceived workplace training outcomes. The medium for testing these relationships was the two-day values based seminar. The rationale for it is found in the previous chapter. Its content is described below.

### **2.2.1. Conduct of the seminar**

The seminar was provided under contract for the managers and supervisors of a large North American corporation. The contract was awarded in October, 1991. The seminars were conducted across Canada between 1991 and 1995, starting in December, 1991. Prior to the starting date of the seminars, all members of the population received a letter from the corporation inviting them to attend the seminar. The letter (see Appendix F) further explained the rationale for the seminar as well as the process involved, and included an outline of the specific topics to be discussed. At the same time as the subjects received specific information about the seminar, they were asked if they would volunteer for this study. Specifically, they were asked to complete a personality questionnaire and to participate in at least one follow-up session with a coach. They were informed that their participation in the study would be voluntary, that their anonymity would be fully respected, and that they could withdraw from the study at any time without consequences.

Each seminar was attended by a group of not more than 20 subjects, in a hotel conference room, over a two-day period. Each group was mixed in that it included, to the extent possible, both genders and all management and supervisory levels under study. The principal trainer, a registered psychologist specializing in organizational issues, led the seminar with the assistance of the writer. The seminar consisted of lectures with audio-visual aids, and discussion groups. The trainer ensured that an informal, interactive and respectful approach was followed, and that this teaching method thus reflected the personal focus and values content of the seminar. For subsequent study, handouts and a study workbook were provided to all subjects. In this way, it was assured that the teaching method mirrored the intended focus and content of the seminar.

### **2.2.2. Content of the seminar**

The seminar was divided into two parts corresponding to the two days, plus subsequent follow-up sessions, as described below. Each seminar day began at 8:30 a.m. and ended at 4:30 p.m. There were three breaks, two health pauses and lunch respectively. The first part took place on day 1 and was titled Inward Bound (see Appendix C). It focused on the exploration of human nature and behaviour; effective self-development; principles of responsibility and accountability; the nature of human needs; principles of effective relationships; discovery and use of strengths and changing counterproductive behaviour habits. At the end of this section, the writer administered the Myers-Briggs Type



Indicator, Form G (MBTI). The completion of this questionnaire was voluntary, but only two persons out of the entire population chose not to take the inventory.

The second part took place on day 2 and was titled Outward Bound (see Appendix D). It focused on the interpretation of the MBTI results from day 1; discussion of personal and organizational applications of personality types; integrity-centered leadership as a model; creating performance focused environments; the importance of a sense of mission in leadership; and specific strategies intended to enhance leadership effectiveness.

### **2.2.3. The coaches**

Follow-up sessions were provided by trained coaches hired for this purpose. In all, up to twenty-two coaches worked simultaneously in a given geographical area. The coaches were hired on the basis of four criteria: having an undergraduate university degree, demonstrating during an interview that they possessed the interpersonal skills required (particularly the ability to establish a working rapport with subjects and good listening skills), being able to interpret and transcribe verbal information, and willingness to complete successfully the training program for the Myers-Briggs Type Inventory (so that they would understand the personality characteristics being studied).

Once hired under contract, the coaches received two distinct types of training. The first the MBTI Training Program provided by the Association for Psychological Type. The second was specific training provided by the principal

seminar leader on how to conduct the follow-up interviews and administer the PIRS. This was carried out as follows: First, each coach was given background readings, the seminar manual provided for all participants, and required to attend as observer two actual seminar presentations. This familiarized the coach with the values-based content of the seminar and with the in-seminar behaviours of typical participants (concerns, comments, questions, expressed attitudes). Then, the coaches were given a tour of the corporation's headquarters in order to familiarize them with key aspects of the work environment and their related terminology. After this, they were trained in groups by the principal seminar leader and the writer on how to conduct follow-up sessions. During these group meetings, all procedures related to the follow-up sessions were described. The PIRS instrument was provided and discussed in detail, with emphasis on various responses and their expected values on the 5-point scales. This was followed by role playing exercises, during which the coaches played alternately the roles of interviewer and subject, monitored by the principal seminar leader and the writer. The coaches were permitted to conduct follow-up sessions only after they were considered ready to do so by both the principal seminar leader and the writer. All coaches received a minimum of 32 hours of training in addition to the 5-day MBTI Training Program.

#### **2.2.4. The follow-up sessions**

Approximately three weeks after the completion of the two-day seminar, individual subjects were contacted by a coach and a first appointment was

arranged in their place of work. This first follow-up session had two purposes. First, the coach completed the PIRS questionnaire by means of a semi-structured interview with the participant. Then, the coach addressed any aspects of the seminar that the participant might wish to discuss (this aspect is not part of the present study). Additional follow-up sessions, not part of the present study, took place on an optional basis.

### **2.3. The perceived implementation and personality instruments**

Two instruments were used in the present study: The custom-designed Perceived Implementation Rating Scale (PIRS) and the Myers-Briggs Type Inventory, Form G, (MBTI). They are described in this section.

#### **2.3.1. The Perceived Implementation Rating Scale (PIRS)**

**Development of the PIRS.** This scale was developed for two purposes. First, it was intended to provide the dependent variables for this study. Second, independently of the present study, it was used as an outcome measure by the persons responsible under contract for the Leaders for Tomorrow seminar. Given the dual purposes, it was concluded that existing published scales did not exist which would: address the values-centred content of this custom-designed seminar; rate or measure relevant training outcome dimensions suggested by the literature reviewed in Chapter 1 of this study; and be acceptable in content and format to the corporation which provided the contract for the training seminar.

Therefore, the writer and a consultant from the firm that provided the seminar collaborated to create the PIRS specifically for use with this training seminar. To create the PIRS, the first step was to take account of the conceptual underpinning of the present study and of the seminar. While the seminar was eclectic in its conceptual basis, the present study adopted Jung's theory as its anchoring framework. Thus, it was decided to develop an instrument which would be conceptually compatible with this theoretical framework. Given that Jung, like other psychoanalysts, places more emphasis on unconscious drives than it does on the conscious as determinants of behaviour, it was decided to develop a questionnaire which might enable subjects to include in their responses material stored in their personal unconscious. This was accomplished by enabling the subjects to reply verbally in their own words to the coaches, who acted as interviewers and recorded the replies on the rating scales.

The second step was to review the content of the training seminar, and based on this to write a series of items tapping the most important themes. The seminar content was reviewed by the writer in discussion with the originator of the training seminar. Three major themes were identified in this manner by the writer: integrity leadership principles, managerial effectiveness, and vertical team building. Each theme led to the drafting by the writer of a series of items suitable for rating. These were discussed for relevance with the originator of the training seminar, based on whose comments refinements in wording were introduced.

As a third step, the items (the questions only, without the response rating scales) were reviewed by nine judges who were graduate students in Education. The judges were provided with the items in random order and with a separate list of the three major themes. Their task was to match each item with one major theme, and to indicate whether the fit between item and theme was high, medium, or low. The results were tallied by combining the high and medium categories, and summing the tallies for each item. These data, which are presented in Appendix E.1, revealed two findings. First, the judges agreed almost unanimously that each item reflected one of the major themes, and thereby provided preliminary evidence of construct validity for the PIRS. Therefore, the writer decided to retain the items (see Appendix E.2). On the other hand, the judges were far from unanimous in their judgement of which one of the three major themes was reflected by a specific item, so that a majority (that is, 5 out of 9 or more judges) agreed with the theme intended by the writer with respect to only 12 items out of 20. Therefore, the writer decided to retain the conceptual item groupings on a tentative basis only, and to re-group the items empirically into subtests prior to hypothesis testing, using a principal components analysis.

As shown in Appendix E.2, all items were followed by 5-point rating scales, where 1 is the minimum value and 5 the maximum value. More specifically, each item was followed by three separate 5-point rating scales constructed by the writer. The first of these was labelled the “applying” scale. It

asked for the extent to which the individual participant perceived himself or herself as having implemented the seminar principles contained in the item. The second scale, the “trying” scale, asked for the extent to which the individual participant perceived himself or herself as having attempted to implement the seminar principles contained in the item, regardless of the extent of application as such. (This distinction was considered important because the corporate environment was such that some subjects may feel unable to apply seminar principles even if they wished to do so). The third scale, the “attitude” scale, in fact consisted of two inter-related sub-scales: positive and negative. The positive (5-point) sub-scale asked for the extent to which the participant showed a positive attitude, that is, expressed a positive viewpoint, about the seminar principles contained in that item. The negative (5-point) sub-scale asked for the extent to which the participant showed a negative attitude, that is, expressed a negative viewpoint, about the seminar principles contained in that item. The intent was to generate a single attitude score on a 5-point scale by subtracting the negative value from the positive value.

The writer recognizes that this approach to the measurement of attitudes is unusual. Typically, a separate Likert scale would have been constructed and administered. However, given the time constraints imposed by the contractor organization, and the fact that those who awarded the contract did not wish to focus on politically sensitive issues that might jeopardize the further

implementation of the seminar principles, it was decided to ask the coaches to observe and rate the attitudes of the subjects while the latter were responding to the PIRS questions. Given that the questions were not phrased in attitudinal terms, it is perhaps not surprising that the attitude variable did not yield the intended results.

**Administration of the PIRS.** The next decision point in the development of the PIRS involved determining how to administer the scale. In order to remain faithful to Jung's stress on the personal unconscious, and mindful both of the probability that key principles of the leadership seminar would be stored in that unconscious and of the likelihood that the intention to implement those principles or not would be equally affected by the personal unconscious, it was felt that a standard paper and pencil rating scale would not suffice. Therefore, it was decided not to administer the scale directly to the subjects. Rather, the coaches were requested to complete the PIRS during the course of the first follow-up session, as follows.

The PIRS was administered as part of semi-structured follow-up interviews conducted in the subjects' offices, lasting approximately one to one-half hours in duration. At the start of the session, after establishing rapport with the participant, the coach (a trained person employed by the seminar provider) proceeded to interview the participant concerning the content of the PIRS, item by item. In other words, the coach explained the content of an item to the participant, and solicited

comment from the participant. Comments were solicited concerning application of the relevant principles, the subjects' attempts to implement such principles, and in general how the participant felt in a positive or negative sense about these principles. Based on the comments of the participant, when satisfied that the participant had said all he or she intended to say, the coach then entered the 5-point ratings for that participant on that item using the questionnaire form (see Appendix E.2). All items were completed in this manner. This means that the PIRS is a measure of the subjects' perceptions of their own application, attempts to apply, and attitudes related to seminar principles, as communicated to a coach who assigned 5-point scale values to the perceptions. While this approach results in an indirect assessment of the outcomes in question (applying, trying, attitude), it heightens the probability that each item was correctly understood by the participant, enables the coach to seek clarifications concerning the participant's responses, and ensures that both consciously held replies and those in the personal unconscious are elicited through patient questioning and ratings that take account of all that is said by the participant.

**Scoring of the PIRS.** The PIRS was scored in two ways. A first set of scores was obtained by the addition of all items on the "applying" and "trying" scales, to obtain a total score concerning the extent of perceived implementation of the principles acquired in the seminar. The "attitude items were converted from two sub-scales to one by subtracting the negative attitude values from the positive



attitude values. The resulting difference ratings were then summed to yield a total attitude score. These sets of scores, as will be noted in Chapter 3, were used to determine the relationship between perceptions of implementation and expressed attitudes. For inclusion as a variable in order to test the hypotheses of this study, it was decided to eliminate the attitude scale altogether, and to re-score the “applying” and “trying” items based on the results of a principal components analysis. The results of this way of scoring the PIRS are presented in Chapter 3. Essentially, each item was entered as two separate variables using 5-point scales: applying, and trying. The variables thus entered were subjected to a principal components analysis with varimax rotation. Two factors were identified (see Chapter 3), and the factors were labelled “applying” and “trying” respectively. Those items which had substantial loadings on one but not the other factor were considered to be a sub-test. The sub-test score was defined as the sum of the item scores (that is, 5-point ratings) divided by the number of items. Therefore, the PIRS yielded two dependent variables for testing the hypotheses of the study: an “applying” sub-test consisting of 10 items and a “trying” sub-test consisting of 5 items.

**PIRS reliability.** The reliability of the PIRS sub-tests was calculated by means of an alpha coefficient. According to the results to be presented in Chapter 3, the sub-tests were internally consistent and homogeneous.

**Validity of the PIRS.** This instrument was developed specifically for the present study. The writer attempted to provide for its construct validity in four ways. First, the approach whereby the subjects replied verbally to coaches who then filled in the rating scales was adopted in an effort to make the PIRS consistent with Jung's notion that unconsciously held perceptions, which may be better revealed in free speech than in direct quantitative ratings, are the most important. Second, by developing major themes and constituent items in discussion with the originator of the seminar, the writer hoped to maximize the likelihood that the PIRS item content would reflect the objectives and content of the seminar. Third, by asking nine judges to determine the extent to which the draft items coincided with three major themes, the writer verified the correspondence of item content to theme constructs. Finally, the empirical grouping of items to be carried out using principal components analysis will allow for the testing of hypotheses using more homogeneous subtests, and will contribute to the construct validity of these subtests.

### **2.3.2. The Myers-Briggs Type Indicator, (MBTI)**

**Selection of the MBTI.** The anchoring personality theory for this study is Jung's Theory of Psychological Types, as discussed in Chapter 1. Therefore, it is important to use an instrument for the measurement of personality which is based on Jung's theory. With this in mind, the writer selected the MBTI, which is a

Jungian theory-based measure of the normal personality. Furthermore, it is a measure of personality that has been widely used in a workplace context, is applicable to a wide range of normal adults, and has been employed specifically in relation to workplace training programs. Although no personality inventory known to the writer has been systematically associated with workplace training outcomes, this instrument provides a conceptually appropriate choice. It measures, in the form of 16 personality Types, behaviour preferences desirable for leadership as well as those that hinder the practice of effective leadership (Barr & Barr, 1989, Mani, 1995).

The 16 Types correspond to those described by Jung (Extraversion-Introversion, Thinking-Feeling, and Sensing-Intuition), plus two additional general orientations to the world derived from subsequent studies carried out from a Jungian perspective (Judging-Perceiving). The combinations of these orientations and functions yield the sixteen MBTI Types.

In selecting this instrument, the writer agrees with Tischler (1991) who, in a doctoral dissertation, states that “The reason for the choice of Jung and Myers is that Jung’s is the most widely used and quoted theory of psychological type, and Myers’ instrument, the MBTI, is the most widely used type instrument” (p. 61). With specific reference to the present study, the MBTI is especially appropriate because the study is based on Jung’s types which are the direct conceptual underpinning for the hypotheses, and because it is a study of adults in the

workplace and the MBTI is the most widely researched measure of normal adult personality in the workplace (Myers-Briggs & McCaulley, 1993).

**Administration and scoring of the MBTI.** The MBTI is described in the test manual as a self-administering and self-scoring instrument. It has no time limit but can usually be completed in approximately 30 minutes. The test manual includes detailed instructions for its administration, and these are also found on the covers of the question booklets and response sheets (see Myers-Briggs & McCaulley, 1993). Specifically, it was administered toward the end of Day 1 in the seminar room. Forty-five minutes were allocated for its administration. Subjects were reminded that the administration of this instrument was on a voluntary basis. Any not wishing to continue were free to leave for the day at this point. The questionnaires and answer sheets were distributed by the writer. The writer read the instructions aloud (for administration and scoring) while the subjects followed on their booklets. Any questions were answered at this point. The subjects then completed the inventory, using the self-scoring Form G answer sheets provided, and scored it. All forms were collected by the writer, who assured the subjects of the confidentiality of individual results and indicated that they would be provided with feedback the next day. That evening, the writer entered the results into coding sheets, using a sequential numerical coding system instead of participant names. On Day 2, the writer discussed the results with the subjects and returned the original answer sheets to them.

**Validity of the MBTI.** The MBTI is a well established measure of personality types. Its validity is discussed, with supporting evidence, in Myers-Briggs & McCaulley, 1993. Several types of validity evidence are presented. First, this instrument is based on Jung's Theory of Psychological Types. It has construct validity in that the Types it measures are operational definitions of Jung's typology, as discussed in Chapter 1.

In their discussion of validity of this instrument, Myers-Briggs & McCaulley, 1993 (Chapter 11), provide evidence in answer to the following questions: (a) Do MBTI continuous scores correlate in the expected directions with other instruments that appear to be tapping the same constructs? (b) Is there evidence that the behaviour of the MBTI Types is consistent with behaviour predicted by theory? (c) What can knowledge of Type differences contribute to understanding of other issues of importance to psychology? In answering these questions, the authors cite hundreds of studies and provide thousands of statistical analyses. In summary, this chapter of the test manual provides strong support for the construct and concurrent validity of the MBTI in answer to the preceding three questions. Most of these studies were carried out with normal adult subjects.

Myers-Briggs & McCaulley, 1993 (Chapter 8), also provide evidence of the usefulness of the MBTI in educational settings, with secondary school and college students. Specifically, the authors point to established relationships between Types and measures of aptitude, learning style, teaching style, scholastic achievement in

various subject areas, and grade rankings. Based on such findings, the writer concluded that the MBTI is a valid instrument for use in testing the hypotheses of the present study.

**Reliability of the MBTI.** The MBTI manual (Myers-Briggs & McCaulley, 1993) provides information about the internal consistency and stability of the MBTI. Based on continuous scores, split-half reliability coefficients are consistent with those of other comparable personality inventories. Hundreds of coefficients are presented, and almost all are higher than 0.80 for the total test. Alpha coefficients presented by the authors range from 0.64 to 0.85. In addition, as evidence of stability over time, test-retest estimates of percent of agreement in specified MBTI categories (EI, SN, TJ, and JP) are presented for varying time intervals (five weeks to six years) and found to vary from 66% agreement (after 4.5 years) to 92% (after 5 weeks). Based on such data, the writer concludes that the reliability of the MBTI is acceptable for the present study. Given that the study involves only one administration of the MBTI per participant, the fact that the instrument is internally consistent is especially relevant.

To conclude, the validity and reliability of the MBTI are well documented in the literature. For these reasons, it was not considered necessary to obtain additional evidence of validity and reliability as part of the present study.

#### **2.4. Procedural issues**

The initial thrust for the present study stems from two sources: First, the writer was generally interested in the study of personality types and wished to investigate these in the context of adult education and training in the workplace. This interest led to a preliminary statement of research questions. At the same time, the writer was informed by a Canadian management consulting firm about a leadership seminar which it was about to offer under contract to the managers and supervisors of a large corporation. The writer was invited to participate as an assistant to the seminar leader. This provided the writer with an opportunity to carry out this study on a large population in a workplace training context. The writer therefore sought and obtained approval in principle from the thesis supervisor, with respect to the basic research questions, the type of instruments to be used especially in the measurement of personality, and the overall context in which the study would be conducted.

After this, the writer collaborated with the seminar leader in order to inform the corporation about the writer's involvement in the seminar, to request its approval for the gathering of relevant data and to obtain its consent for the use of the data in the present study. The corporation's agreement was conditional upon the writer not divulging the name of the corporation, not identifying individual subjects in any way, not seeking or obtaining direct measures of work performance nor contacting any one at work other than the subjects themselves concerning

outcomes of the seminar, and not seeking to obtain any direct achievement or other work performance measures. Permission was granted to ask for participation in the study, to obtain normal personality measures, to conduct follow-up interviews, and to rate the subjects' own perceptions about the benefits of the seminar.

Based on the above approval, which was given directly to the consulting firm and communicated by them to the writer, the writer selected the MBTI in collaboration with the thesis supervisor, and developed the PIRS as a perceived seminar outcome measure in collaboration with the seminar leader and consulting staff, and subject to the ongoing supervision of the thesis supervisor.

The procedure for: seeking participation in the study; administering the instruments; collecting and coding data during the seminar while maintaining confidentiality; and gathering perceived outcomes information during the follow-up sessions was developed at this time. These procedures are presented in the sections of this chapter dealing with the seminar and the instruments of the study.

**Ethics Committee approval.** Once the above procedures had been established and the instruments chosen, the writer applied for and received formal approval from the Ethics Committee (Appendix A.1), in 1996. The data for the study had been collected between 1991 and 1995, in keeping with the contractually mandated time-frame for the implementation of the seminar within the corporation. The Ethics Committee, in formally approving the thesis in 1996,



verified that all applicable ethics guidelines had indeed been respected. Then, in the 1997 annual submission to the Ethics Committee, the writer introduced a change in the title of the study to better reflect the final articulation of hypotheses. The Ethics Committee agreed that no additional approval was needed (Appendix A.2).

## **2.5. Statistical analyses of data: Justification**

This study, although it entails an intervention (the leadership training seminar) as a medium for interrelating the variables under study, does not involve an experimental design as such. This was not feasible in the corporate setting of the study. Rather, the design is correlational. This is reflected in the descriptive and inferential statistical analyses of the study.

### **2.5.1. Descriptive statistics**

A number of descriptive statistics were performed. The samples of subjects were described through ranges, means and standard deviations, or as percentages of subjects in discrete categories (for example, the percentages with or without post-secondary education). In addition, several comparisons of subject subsamples were considered appropriate. First, the mean age and education of men and women, expressed in years, were compared using parametric t-tests for comparisons of uncorrelated samples. Then, the frequencies of subjects in the discrete categories were compared using non-parametric Chi-square tests of association, which are appropriate for comparisons of nominal data.

### **2.5.2. Preliminary correlational analyses**

The PIRS was a custom-built scale, consisting of items grouped into conceptually defined subtests. It had not been used prior to this study. Therefore, it was considered appropriate to verify empirically whether the intercorrelations among items justified their grouping into the predetermined subtests. Given a sample of 500 subjects, it was feasible to do a factor analysis while respecting the widely accepted criterion of at least 10 subjects per variable. According to Diekhoff (1992), data simplification is a goal of factor analysis. In other words, it is a tool for reducing a large number of variables (for example items) into a small number of empirically determined groups (for example subtests). Principal components analysis is a simple form of factor analysis often employed due to its conceptual and mathematical simplicity. According to this author, “principal components analysis is usually used when our intent is to develop a reduced set of factor variates or principal components for use in other analyses” (Diekhoff, 1992, p. 358). A principal components analysis with varimax rotations was, therefore, carried out on the PIRS using item scores as variables. After the PIRS sub-tests were determined from the obtained factors, their reliability as internal consistency was calculated using alpha coefficients.

### **2.5.3. Multivariate analyses of variance used to test the hypotheses**

The research design of the present study is correlational. Conceptually, personality types are used as classification or independent variables, demographic

characteristics are used as descriptors, covariates, or classification variables, and the sub-scores of the PIRS are used as the criterion or dependent variables of the study. Given the hypotheses of the study and their underlying rationale (especially Jung's typology and its operational definition in the MBTI in terms of discrete types as opposed to continuous variables), it was decided to treat subject groups as homogeneous on the basis of the classification variables, and to look for significant differences in the dependent variables when contrasting the groups thus classified. Based on the above reasoning, it was decided to test the hypotheses of the study using multivariate analyses of variance or covariance, with two dependent variables. One-way or two-way (that is, two-factor) analyses were carried out depending on the number of classification variables used as independent variables. In all cases, the dependent variables were the two sub-tests (Applying and Trying) of the PIRS. The specifics of these analyses, and the results obtained, are presented in the following chapter.

## **CHAPTER 3**

### **RESULTS OF THE STUDY**

In this chapter the results of the study are presented. Descriptive statistics are presented first. The central section of the chapter presents, by means of text and tables, the results of the multivariate analyses of variance that were carried out to test the hypotheses and complementary research questions. Selected correlations are also presented in this section. The concluding section provides a brief summary of the most important results.

#### **3.1. Descriptive statistics**

The following demographic and descriptive variables were considered in the present study: gender, age, years of education, occupation level, and personality type.

The ages of male subjects ranged from 21 to 65 years, the average being 44 years, while those of female subjects ranged from 24 to 61 years, with an average of 40 years. The male subjects were significantly older than the female subjects ( $t = 6.67, p < .001$ ). A summary of these results is presented in Table 1.

The subjects were then divided into four age groups by quartiles, separately for men and women (see Table 2). The percentages of men and women in each age quartile were compared using a non-parametric Chi-square test of association. The result,  $\chi^2 = 42.98, p < .001$ , is indicative of significant differences. More

Table 1

Characteristics of the sample used in the present study

		Male	Female	
		n = 727	n = 288	t
<b>Demographic</b>				
Age	$\bar{x}$	43.61	40.22	6.67**
	SD	7.46	6.85	
Education	$\bar{x}$	14.75	14.5	1.38
	SD	2.62	2.52	

\*  $p < .01$  \*\*  $p < .001$

Table 2

Characteristics of the sample used in the present study: distribution by age, education, and occupation level

	Male		Female		$\chi^2$
	n = 727		n = 288		
	Column %	Row %	Column %	Row %	
<b>Age Quartiles</b>					
Q-1 (21-37)	21.0%	58.6%	37.5%	41.4%	
Q-2 (38-44)	23.7%	68.0%	28.1%	32.0%	
Q-3 (44-47)	26.7%	77.9%	19.1%	22.1%	
Q-4 (48-65)	28.6%	82.5%	15.3%	17.5%	42.98**
<b>Education Level</b>					
Grade 12 or less	24.9%	69.3%	27.8%	30.7%	
Post-secondary	75.1%	72.4%	72.2%	27.6%	0.89
<b>Occupation Level</b>					
Executive	7.0%	89.5%	2.1%	10.5%	
Manager	32.7%	74.1%	28.8%	25.9%	
Supervisor	49.1%	73.2%	45.5%	26.8%	
Officer	11.1%	54.4%	23.6%	45.6%	32.45**

\*  $p < .01$  \*\*  $p < .001$

specifically, based on comparisons of the standardized residuals, male subjects are under-represented in the first two (younger) age quartiles and over-represented in the second two (older) age quartiles. Thus, the results presented in Tables 1 and 2 indicate that the male subjects are significantly older, as a group, than the female subjects.

The subjects' education expressed as a total number of years ranged from 10 to 23 years for the males, the average being 14.75 years, and from 9 to 23 for the females, with an average of 14.5 years. The two groups did not differ significantly in years of education. These results are also presented in Table 1.

The male and female subjects were then divided into two levels of education, those who had attended only high school (12 years or less of education) and those who had completed at least some post secondary education (more than 12 years). In the present study, approximately 75 percent of males and 72 percent of females reported that they had completed more than 12 years of education. The percentages of subjects in these groups were then compared using a chi-square test of association, which was not statistically significant. A summary of these results is presented in Table 2. There are no significant gender differences in the education level of male and female subjects in the present study.

Subjects were then classified into four occupation levels, that is, "Executives" (President, Vice-President, Directors, and Legal Counsel),

“Managers” (Superintendents, Professional Engineers, and Retail Representatives), “Supervisors” (Supervisors, Technicians, and Operators), and “Officers” (Clerks, Trainers, Accountants, and Dispatchers). A summary of the percentages of men and women classified by occupation level is presented in Table 2. A Chi-square test was used to compare the percentages of men and women across the four levels. It was significant,  $\chi^2 (3) = 32.35, p < .001$ . When comparing the adjusted residuals, it shows that females are over-represented at the officer level (that is, the lowest level) and under-represented at the executive level.

Given that the MBTI was administered to all subjects, they were grouped into sixteen personality Types and subdivided by gender as presented in Table 3. The Chi-square test of association comparing the percentages of men and women by personality type was significant,  $\chi^2 (15) = 56.82, p < .001$ . An analysis of the standardized residuals indicates that males are under-represented, and females over-represented, in the ISFJ, ENFP, and ESFJ personality types. By contrast, females are under-represented, and males over-represented, in the ISTP and ESTJ personality types.

Table 3 also provides as percentages the distributions of personality types of the male and female subjects in relation to relevant norms presented in the MBTI manual (Briggs & McCaulley, 1993, p. 50-51). These norms are based on data collected by the Center for Applications of Psychological Type (CAPT) for



Table 3

Percentages of subjects of this study and the MBTI Form G normative samples provided by Myers-Briggs and McCaulley (1993).

	Male %		Female %		$\chi^2$
	Subjects	Norm	Subjects	Norm	
1. ISTJ	19.4	15.5	14.6	9.8	
2. ISFJ	5.5	4.4	9.7	10.3	
3. INFJ	2.5	2.6	2.8	4.8	
4. INTJ	8.7	7.3	5.6	4	
5. ISTP	6.5	6.1	2.8	2.7	
6. ISFP	1.4	3	2.4	4.2	
7. INFP	2.6	4.8	3.1	6.3	
8. INTP	8	7.1	6.6	3.2	
9. ESTP	4.3	5.9	3.8	2.8	
10. ESFP	2.1	3.1	3.1	5.7	
11. ENFP	3.6	5.4	7.3	10	
12. ENTP	6.6	6.9	7.3	4.1	
13. ESTJ	18.3	14	10.4	10.1	
14. ESFJ	2.6	4.4	9.4	10.7	
15. ENFJ	1.5	2.7	2.8	6.3	
16. ENTJ	6.6	6.9	8.3	5.2	56.82**

\*\*  $p < .001$

Form G, on a sample is of 15791 males and 16880 females in the United States.

The distribution of male subjects in the study differs significantly from the MBTI norm,  $\chi^2(15) = 52.93$ ,  $p < .001$ . An analysis of the standardized residuals indicates that participant males are under-represented in the ISFP, INFP, ENFP and ENFJ personality types, and over-represented in the ISTJ and ESTJ personality types.

The distribution of female subjects also differs significantly from the norm,  $\chi^2(15) = 52.64$ ,  $p < .001$ . An analysis of the standardized residuals indicates that participant females are under-represented in the INFP, ESFP and ENFJ personality types, and over-represented in the ISTJ, INTP, ENTP and ENTJ personality types.

### **3.2. Results of preliminary correlations and principal components analysis**

As indicated in Chapter 2, a first sample of 202 subjects was drawn from the subject population for the purpose of conducting preliminary correlation analyses on the PRIS data, and to determine whether the applying/trying and attitude scales could be differentiated. For this purpose, as a first step, all of the PIRS items intended to rate the extent to which the subjects applied or tried to implement the workshop principles were combined by addition into a total “applying/trying” score. Similarly, the difference scores for all items intended to measure attitudes concerning the workshop model were combined by addition into a total “attitude” score. The “applying/trying” and “attitude” scores were then correlated using a Pearson coefficient. The obtained correlation was  $r=0.90$ .

The magnitude of the above correlation is such as to preclude, for purposes of this study, any further consideration of an “attitude” variable. Therefore, all further analyses included only the items intended as ratings of “applying/trying”, that is, of perceived implementation of the workshop.

At this time, it was decided to carry out a principal components analysis of the PIRS “applying/trying” items, in order to determine whether one or more subtests were warranted. Since there were forty items, and thus forty variables for this analysis, it was decided to enlarge the preliminary sample to 500 in order to ensure more than 10 subjects per variable. In fact, 301 subjects were added, resulting in a sample of 503 subjects.

The results of the principal components analysis of the PIRS items are presented in Table 4, which provides the loadings on the rotated factor matrix following varimax rotation. Using varimax rotation and the eigenvalue set at 1.0, two factors were extracted, the first with eigenvalue of 27.9 accounting for 69.9% of the variance and the second with eigenvalue of 1.2 accounting for 3.0% of the variance. Most items loading on factor 1 were originally written as intended to rate “applying” workshop principles, while most items loading on factor 2 were originally written as intended to rate “trying” to apply workshop principles.

Ten items were determined to constitute factor 1 (“applying), and five items factor 2 (“trying”), based on the following criteria: original intent of the item, and

Table 4

Summary of Factor Loadings for PIRS Applying and Trying Questions.

Survey questions	PIRS Factor Loadings	
	Applying	Trying
<b>PIRS Applying factor items</b>		
Constant leadership	0.84	0.36
Mutually accountable support system	0.78	0.42
Creates positive work experience	0.78	0.45
Communicates with positive feedback	0.77	0.43
Uses personal strengths to lead people	0.76	0.41
Practices and leads by principles	0.75	0.47
Recognizes the group's individual skills	0.75	0.44
Fosters dynamic system of communication	0.75	0.45
Discusses management by responsibility	0.72	0.45
Applies learning to suit culture's values / goals	0.72	0.49
<b>PIRS Trying factor items</b>		
Reviews those involved in circle	0.36	0.82
Discusses people's attitudes	0.31	0.8
Understands basic human needs	0.46	0.75
Discusses personal work related behaviour	0.48	0.71
Encourages high level performance	0.38	0.68

a factor loading of at least 0.70 on the rotated matrix. It was decided, therefore, to use these two PIRS subtests in subsequent analyses. The subtest scores were the sum of the raw scores on the subtest items, divided by the number of items.

For the total sample, the reliability of these subtests was calculated by means of alpha coefficients of internal consistency. The applying scale yielded an alpha of 0.97 while the alpha for the trying scale was 0.92. This result indicates that the two scales are highly homogeneous and internally consistent.

### **3.3. Results of preliminary multivariate analyses of variance**

The above sample of 503 subjects was used to carry out a series of preliminary multivariate analyses of variance and of covariance, using as dependent variables the Applying and Trying PIRS scores. The classification variables were personality types and selected demographic variables. In the analyses of covariance, age and education level were entered as covariates. The effect of the covariates was not statistically significant in any of these analyses. Therefore, it was decided not to use covariates and to rely instead on multivariate analyses of variance. Where appropriate, it was judged best to use age and education as classification variables. Most of these preliminary analyses were subsequently repeated using the final sample, and are therefore not presented in this section.

### **3.4. Results of the multivariate analyses of variance on 1015 subjects**

Based on the results presented above, on the fact that a 2-factor multivariate analysis of variance to compare 16 personality types (the MBTI types) by 2 genders entails 32 cells, and the desire to include 30 subjects per cell on the assumption of equal distribution of subjects across cells, two decisions were reached and implemented in all further analyses. First, the sample was increased to 1015 subjects by adding randomly to the previous sample from the total subject population of approximately 5,000 persons. Second, since the attempt to measure attitudes using the PIRS did not yield interpretable results, attitude as a variable was discarded from further consideration.

The sample of 1015 subjects was used as the final sample, that is, the sample on which were tested the hypotheses of the study. This section presents the results of all analyses used to test the hypotheses and complementary research questions. The specifics are provided in each sub-section. Throughout, the two variables used as dependent variables are the PIRS Applying (ten-item subtest) and Trying (five-item subtest) derived from the two factors obtained in a principal components analyses. The classification variables are MBTI Types, gender, age, occupation level, and education level of subjects.

#### **3.4.1. Comparisons of PIRS scores according to MBTI types**

**Comparison of the sixteen MBTI Types.** The writer initially intended to

carry out a two-factor MANOVA, using MBTI Type and gender as classification variables. However, the distribution of subjects across cells was more uneven than expected, and a number of cell sizes were smaller than 10, which was considered the lowest acceptable size. Therefore, gender was not used in this analysis, and the two-factor analysis is not presented in this study.

A one-factor MANOVA was then carried out to test for differences between the 16 MBTI personality types, using the PIRS Applying and Trying scores as dependent variables. The means and standard Deviations for the PIRS Applying and Trying scores of the subjects on each of the 16 MBTI personality types are presented in Table 5. A summary of the obtained univariate and multivariate effects is presented in Table 6.

The multivariate effect was significant, Pillais' criterion  $\underline{F}$  (df, 1994) = 1.97,  $p < .001$ . The univariate effects of group classification were significant for the PIRS Applying scores,  $\underline{F}$  (df, 997) = 2.82,  $p < .001$ , and for the PIRS Trying scores,  $\underline{F}$  (df, 997) = 3.20,  $p < .001$ . In other words, the average Applying and Trying scores obtained by the subjects classified according to the 16 MBTI personality Types differed significantly.

This result confirms the non-specific general hypothesis of the study, to the effect that there is a significant relationship between personality Type and the perceived training outcomes. However, due to the large number (16) of

Table 5

**Means and standard deviations obtained on the PIRS Applying and Trying scales by the sample used in the present study, classified according to the 16 MBTI personality types**

MBTI type	n	PIRS Scores			
		Applying		Trying	
		$\bar{x}$	SD	$\bar{x}$	SD
ISTJ	183	3.22	0.99	3.62	0.82
ISFJ	68	3.44	0.98	3.83	0.83
INFJ	26	3.4	0.77	3.84	0.75
INTJ	79	3.05	0.92	3.47	0.95
ISTP	55	3.22	1.1	3.67	0.98
ISFP	17	2.82	1.21	3.37	0.77
INFP	28	3.46	0.67	3.96	0.66
INTP	77	3.32	0.86	3.77	0.72
ESTP	42	3.12	1.06	3.71	0.82
ESFP	24	3.38	1.23	3.87	1.08
ENFP	47	3.64	0.84	4.09	0.77
ENTP	69	3.31	0.87	3.68	0.78
ESTJ	163	3.06	1.09	3.51	0.98
ESFJ	46	3.67	0.76	4.1	0.67
ENFJ	19	3.68	0.78	3.99	0.59
ENTJ	72	3.43	0.87	3.77	0.79
Total	1015	3.28	0.97	3.7	0.86



Table 6

One-way MANOVA testing for differences in average Applying and Trying PIRS scores obtained for subjects classified according to the 16 MBTI types

Effect	SS		df (Error)	F
	Hypothesis	Error		
<b>The 16 MBTI Types</b>				
Multivariate Pillais'	-	-	1994	1.97**
Applying univariate	39.01	819.25	997	2.82**
Trying univariate	34.42	714.43	997	3.20**

\*  $p < .01$  \*\*  $p < .001$

classification levels, it is impractical on the basis of this analysis to determine more precisely where the meaningful differences lie. A prohibitive number of post-hoc tests would be required. For this reason, further MANOVAs were performed using subsets of MBTI Types as classification variables. These are presented below.

**Conceptually selected comparisons of MBTI Types.** More specific analyses were carried out to compare the average PIRS Applying and Trying scores of participant groups classified according to conceptually selected sub-sets of MBTI types. The following sub-sets were used: TJ vs. Non-TJ; Extraversion vs. Introversion; Sensing vs. Intuition; Thinking vs. Feeling; and Perceiving vs. Judging. As noted in earlier chapters, both personality type and gender may be related to workplace training outcomes. From the perspective of this study, personality differences are hypothesized based on a conceptual rationale. They are of primary importance. Differences by gender, though expected, are based on pragmatic rather than conceptual considerations. In this sense, they are of secondary importance for this study. Therefore, all of the following MANOVAs are carried out, first, as one-way analyses using personality as the single classification variable and, secondly, as two-factor analyses using personality type and gender as classification variables. In all cases, the PIRS scores are the dependent variables.

**Comparison of the TJ versus non-TJ Types.** This comparison was carried out in order to test the first specific hypothesis of the study. Subjects were classified into “TJ types” and “Non-TJ types” by combining the relevant sub-groups. The TJ category included the following four personality types: ISTJ, INTJ, ESTJ, and ENTJ. The non-TJ category consisted of the remaining 12 personality types. 53 percent of males and 39 percent of females were classified as TJ, while 47 percent of males and 61 percent of females were classified as non-TJ.

The results of the one-way MANOVA comparing the TJ and non-TJ groups are presented in Tables 7 and 8. Table 7 presents the means and standard deviations of the PIRS Applying and Trying scores obtained by the TJ and non-TJ groups. Of relevance to this analysis are the rows labelled Total. Table 8 presents the results of the MANOVA. The multivariate effect for personality was significant, Pillais’ criterion  $\underline{F}$  (df, 1010) = 10.06,  $p < .001$ . The univariate effects were significant for the PIRS Applying scores,  $\underline{F}$  (df, 1011) = 11.53,  $p < .001$  as well as for the PIRS Trying scores,  $\underline{F}$  (df, 1011) = 19.58,  $p < .001$ . In other words, the TJ group obtained significantly lower average scores than the non-TJ group on both dependent variables. This result confirms the main hypothesis of the study, and will be interpreted in Chapter 4.

A two-factor MANOVA was performed using as independent variables gender and TJ versus Non-TJ type classification. The two main purposes were to

Table 7

Means and standard deviations obtained on the PIRS Applying and Trying scales by the sample used in the present study, divided into TJ\* and non-TJ groups based on MBTI types

MBTI type*	Gender	n	PIRS Scores			
			Applying		Trying	
			$\bar{x}$	SD	$\bar{x}$	SD
TJ types	Male	385	3.11	1	3.51	0.89
	Female	112	3.36	1	3.83	0.87
	Total	497	3.17	1	3.58	0.9
Non-TJ types	Male	342	3.32	0.96	3.78	0.84
	Female	176	3.5	0.89	3.91	0.75
	Total	518	3.38	0.94	3.82	0.81

\* The TJ group combines ISTJ, INTJ, ESTJ and ENTJ. Non-TJ combines all other types.

Table 8

One-way MANOVA testing for differences in average Applying and Trying PIRS scores obtained for subjects classified according to TJ vs non-TJ types

Effect	SS		df (Error)	F
	Hypothesis	Error		
TJ versus non-TJ				
Multivariate Pillais'	–	–	1010	10.06**
Applying univariate	10.79	946.47	1011	11.53**
Trying univariate	14.23	734.62	1011	19.58**

\*  $p < .01$  \*\*  $p < .001$

determine if the average PIRS scores of male and female subjects differed, and to look for a possible interaction between these personality types and gender. The means and standard deviations are presented in Table 7, while the MANOVA results are presented in Table 9.

The interaction effects were not statistically significant. The multivariate effect for gender was significant, Pillais' criterion  $F$  (df, 1008) = 6.92,  $p < .001$ , as were the univariate effects for Applying scores,  $F$  (df, 1009) = 7.84,  $p < .01$ , and for Trying scores,  $F$  (df, 1009) = 13.45,  $p < .001$ . More specifically, the male subjects obtained significantly lower PIRS Applying and Trying average scores than female subjects. This result will be interpreted in Chapter 4.

With respect to personality type, the two-factor MANOVA failed to replicate the significant difference presented above for the one-way MANOVA. Using two factors, neither the multivariate effect for TJ versus Non-TJ classification (Pillais' criterion  $F$  (df, 1008) = 4.32, ns) nor the univariate effect using as dependent variable the PIRS Applying score ( $F$  (df, 1009) = 6.40, ns) were statistically significant. Only the univariate effect for the PIRS Trying score as dependent variable reached statistical significance,  $F$  (df, 1009) = 8.65,  $p < .01$ . While the direction of the observed differences is similar for the one-way and two-factor MANOVAs, the pattern of statistical results suggests that the effect for gender accounts for the major part of the statistical significance attributed to

Table 9

Summary of two-way MANOVA testing for differences in the average Applying and Trying PIRS scores of subjects classified by gender and TJ versus non-TJ grouping

Effect	SS		df (Error)	F
	Hypothesis	Error		
TJ versus non-TJ groups				
Multivariate Pillais'	-	-	1008	4.32
Applying univariate	5.96	939.16	1009	6.40
Trying univariate	6.21	724.22	1009	8.65*
Gender				
Multivariate Pillais'	-	-	1008	6.92**
Applying univariate	7.29	939.16	1009	7.84*
Trying univariate	9.65	724.22	1009	13.45**
Interaction				
Multivariate Pillais'	-	-	1008	2.33
Applying univariate	0.27	939.16	1009	0.29
Trying univariate	1.72	724.22	1009	2.40

\*  $p < .01$  \*\*  $p < .001$

personality type in the one-way MANOVA. In other words, the writer will interpret the gender differences with greater confidence than the personality differences observed in this section.

**Comparison of Extravert versus Introvert Types.** This comparison was carried out in order to test Hypothesis #2. Subjects were classified into Extravert and Introvert personality types by combining the relevant sub-groups. The Extraverts included ESTP, ESFP, ENFP, ENTP, ESTJ, ESFJ, ENFJ and ENTJ. The Introverts included the other eight types, that is, ISTP, ISFP, INFP, INTP, ISTJ, ISFJ, INFJ and INTJ. 46 percent of males and 52 percent of females were classified as being Extraverts, while 56 percent of males and 48 percent of females were classified as Introverts.

To assess differences between Extraverts and Introverts on their average PIRS Applying and Trying scores, a one-way MANOVA was performed. The means and standard deviations are presented in Table 10 (rows labelled total), while the MANOVA results are summarized in Table 11. Neither the multivariate nor the two univariate effects were statistically significant. In other words, no significant differences were found in the average Applying or Trying scores of the Extraverted versus Introverted participant groups.

A two-factor MANOVA was performed using as independent variables gender and Extraversion-Introversion. Since the gender difference has been



Table 10

Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided into Extraversion and Introversion MBTI groups

MBTI type	Gender	n	PIRS Scores			
			Applying		Trying	
			$\bar{x}$	SD	$\bar{x}$	SD
Extravert	Male	331	3.25	0.99	3.66	0.89
	Female	151	3.45	1	3.91	0.83
	Total	482	3.31	0.99	3.74	0.88
Introvert	Male	396	3.18	0.98	3.61	0.86
	Female	137	3.43	0.87	3.85	0.75
	Total	533	3.25	0.96	3.67	0.84

Table 11

One-way MANOVA testing for differences in the average Applying and Trying PIRS scores obtained for subjects classified according to Extraversion-Introversion types

Effect	SS		df (Error)	F
	Hypothesis	Error		
Extraversion - Introversion				
Multivariate Pillais'	--	--	1010	0.75
Applying univariate	1.03	956.23	1011	1.09
Trying univariate	1.11	747.74	1011	1.50

\*  $p < .01$  \*\*  $p < .001$

documented above, the key purpose was to look for a possible interaction between gender and Extraversion-Introversion. The means and standard deviations are presented in Table 10 while the results of the MANOVA are presented in Table 12.

For the interaction between gender and Extraversion-Introversion, neither the multivariate effect nor the two univariate effects reached statistical significance. According to these results, there is no significant interaction between gender and Extraversion-Introversion.

According to the data presented in Table 12, the multivariate effect for gender (Pillais' criterion  $F$  (df, 1008) = 7.40,  $p < .001$ ) and the univariate effects using as dependent variables the PIRS Applying scores ( $F$  (df, 1009) = 9.15,  $p < .01$ ) and Trying scores ( $F$  (df, 1009) = 14.61,  $p < .001$ ) were statistically significant. More specifically, as shown in Table 10, male subjects obtained significantly lower average scores than female subjects on both subtests of the PIRS.

As expected based on the results of the preceding one-way MANOVA, the two-factor MANOVA did not yield any statistical differences for the main effect comparisons of Extraverts and Introverts (see Tables 10 and 12).

**Comparison of Sensing versus Intuition Types.** This comparison was carried out in order to test an exploratory hypothesis, Hypothesis #3. Subjects

Table 12

Summary of two-way MANOVA testing for differences in the average Applying and Trying PIRS scores for subjects classified by gender and Extraversion versus Introversion types

Effect	SS		df (Error)	F
	Hypothesis	Error		
Extraversion - Introversion				
Multivariate Pillais'	--	--	1008	0.46
Applying univariate	0.35	947.52	1009	0.37
Trying univariate	0.6	737.06	1009	0.82
Gender				
Multivariate Pillais'	--	--	1008	7.40**
Applying univariate	8.59	847.52	1009	9.15*
Trying univariate	10.67	737.06	1009	14.61**
Interaction				
Multivariate Pillais'	--	--	1008	0.29
Applying univariate	0.14	947.52	1009	0.15
Trying univariate	0	737.06	1009	0

\*  $p < .01$  \*\*  $p < .001$

were classified into Sensing and Intuition types by combining the relevant sub-groups. The Sensing category included ISTJ, ISFJ, ISTP, ISFP, ESTJ, ESFJ, ESTP and ESFP. The Intuition category consisted of the remaining eight Types, that is, INFJ, INTJ, INFP, INTP, ENFJ, ENTJ, ENFP and ENTP. 60 percent of males and 56 percent of females were classified as Sensing types. The remaining 40 percent of males and 44 percent of females were classified as Intuitive types.

The results of the one-way MANOVA carried out to assess differences between Sensing and Intuitive types on PIRS Applying and Trying scores are presented in Tables 13 and 14. Table 13 presents the relevant means and standard deviations. Table 14 presents the MANOVA results per se. Neither the multivariate effect nor the two univariate effects reached statistical significance. In other words, no significant differences were found in the average PIRS scores of subject groups classified as Sensing or Intuitive.

Following the pattern of comparisons presented above, a two-factor MANOVA was performed with gender and Sensing-Intuition as classification variables and PIRS scores as dependent variables. The key purpose was to look for a possible interaction between gender and Sensing-Intuition. The means and standard deviations are presented in Table 13, while the results of the MANOVA are presented in Table 15. For the interaction between gender and Sensing-Intuition, neither the multivariate effect nor the two univariate effects reached

Table 13

Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided into Sensing and Intuition MBTI groups

MBTI type	Gender	n	PIRS Scores			
			Applying		Trying	
			$\bar{x}$	SD	$\bar{x}$	SD
Sensing	Male	436	3.15	1.04	3.6	0.9
	Female	162	3.43	1.03	3.86	0.85
	Total	598	3.22	1.04	3.66	0.9
Intuition	Male	291	3.31	0.89	3.7	0.84
	Female	126	3.47	0.8	3.9	0.71
	Total	417	3.35	0.87	3.76	0.81

Table 14

One-way MANOVA testing for differences in average Applying and Trying PIRS scores obtained for subjects classified according to Sensing-Intuition types

Effect	SS		df (Error)	F
	Hypothesis	Error		
Sensing - Intuition				
Multivariate Pillais'	--	--	1010	1.4
Applying univariate	2.58	954.68	1011	2.74
Trying univariate	1.77	747.08	1011	2.4

\* p < .01 \*\* p < .001

Table 15

**Summary of two-way MANOVA testing for differences in the average Applying and Trying PIRS scores of subjects classified by gender and Sensing versus Intuition types**

Effect	SS		df (Error)	F
	Hypothesis	Error		
<b>Sensing - Intuition</b>				
Multivariate Pillais'	–	–	1008	0.56
Applying univariate	0.98	945.17	1009	1.05
Trying univariate	0.82	736.01	1009	1.12
<b>Gender</b>				
Multivariate Pillais'	–	–	1008	7.07**
Applying univariate	7.6	945.17	1009	8.12*
Trying univariate	10.04	736.01	1009	13.76**
<b>Interaction</b>				
Multivariate Pillais'	–	–	1008	0.57
Applying univariate	0.89	945.17	1009	0.95
Trying univariate	0.27	736.01	1009	0.37

\*  $p < .01$  \*\*  $p < .001$



statistical significance. There was no significant interaction between gender and Sensing-Intuition.

The multivariate effect for gender was significant, Pillais' criterion  $F$  (df, 1008) = 7.07,  $p < .001$ . Likewise, the univariate effects for gender were significant using as dependent variables the PIRS Applying scores ( $F$  (df, 1009) = 8.12,  $p < .01$ ) and Trying scores ( $F$  (df, 1009) = 13.76,  $p < .001$ ). Male subjects obtained lower average scores, as already noted in other analyses using gender as classification variable.

As presented in Table 15, neither the multivariate nor univariate effects for Sensing-Intuition reached statistical significance. These results replicate the non-significant findings of the one-way MANOVA presented in Table 14.

**Comparison of Thinking versus Feeling Types.** The purpose of this comparison was to test Hypothesis #4. Subjects were classified into Thinking versus Feeling categories by combining the relevant Types. The Thinking category included ISTJ, INTJ, ISTP, INTP, ESTJ, ENTJ, ESTP and ENTP. The Feeling category consisted of ISFJ, INFJ, ISFP, INFP, ESFJ, ENFJ, ESFP and ENFP. 78 percent of males and 59 percent of females were classified as Thinking. The remaining 22 percent of males and 41 percent of females were classified as Feeling.

To assess differences between Thinking and Feeling groups on their average PIRS Applying and Trying scores, a one-way MANOVA was performed. The means and standard deviations are presented in Table 16 (rows labelled total). The MANOVA results are presented in Table 17. The multivariate effect for Thinking-Feeling classification was significant, Pillais' criterion  $F$  ( $df, 1010$ ) = 12.65,  $p < .001$ . The univariate effects using as dependent variables the PIRS Applying scores ( $F$  ( $df, 1011$ ) = 19.30,  $p < .001$ ) and Trying score ( $F$  ( $df, 1011$ ) = 25.28,  $p < .001$ ) were also statistically significant. More specifically, subjects who were classified as Feeling types reported significantly higher average PIRS Applying and Trying scores than did the Thinking group. This will be interpreted in Chapter 4.

A two-factor MANOVA was performed using as independent variables gender and Thinking-Feeling classification. The key purpose was to look for a possible interaction between the two classification variables. The means and standard deviations are presented in Table 16 while the results of the MANOVA are summarized in Table 18.

The multivariate effect for personality (Thinking versus Feeling groups) was significant, Pillais' criterion  $F$  ( $df, 1008$ ) = 6.50,  $p < .001$ . Similarly, the univariate effects using as dependent variables the PIRS Applying scores ( $F$  ( $df, 1009$ ) = 10.12,  $p < .01$ ) and Trying scores ( $F$  ( $df, 1009$ ) = 12.97,  $p < .001$ ) were

Table 16

Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided into Thinking and Feeling MBTI groups

MBTI type	Gender	n	PIRS Scores			
			Applying		Trying	
			$\bar{x}$	SD	$\bar{x}$	SD
Thinking	Male	569	3.13	0.99	3.56	0.88
	Female	171	3.42	0.94	3.85	0.8
	Total	740	3.2	0.99	3.63	0.87
Feeling	Male	158	3.49	0.91	3.91	0.8
	Female	117	3.48	0.933	3.93	0.79
	Total	275	3.49	0.92	3.92	0.79

Table 17

One-way MANOVA testing for differences in average Applying and Trying PIRS scores obtained for subjects classified according to Thinking-Feeling types

Effect	SS		df (Error)	F
	Hypothesis	Error		
Thinking - Feeling				
Multivariate Pillais'	-	-	1010	12.65**
Applying univariate	17.96	939.3	1011	19.30**
Trying univariate	18.27	730.58	1011	25.28**

\*  $p < .01$  \*\*  $p < .001$

Table 18

Summary of two-way MANOVA testing for differences in the average Applying and Trying PIRS scores of subjects classified by gender and Thinking versus Feeling types

Effect	SS		df (Error)	F
	Hypothesis	Error		
<b>Thinking - Feeling</b>				
Multivariate Pillais'	–	–	1008	6.50*
Applying univariate	9.34	930.77	1009	10.12*
Trying univariate	9.26	720.65	1009	12.97**
<b>Gender</b>				
Multivariate Pillais'	–	–	1008	2.55
Applying univariate	2.27	930.77	1009	2.46
Trying univariate	3.42	720.65	1009	4.79
<b>Interaction</b>				
Multivariate Pillais'	–	–	1008	2.41
Applying univariate	3.63	930.77	1009	3.93
Trying univariate	3.4	720.65	1009	4.76

\*  $p < .01$  \*\*  $p < .001$

significant. Specifically, subjects classified as Thinking scored significantly higher than those classified as Feeling on their PIRS applying scores.

The multivariate effect for gender was not significant, Pillais' criterion  $F$  ( $df, 1008$ ) = 2.55, ns. Similarly, the univariate effects for gender using as dependent variables the PIRS Applying scores ( $F$  ( $df, 1009$ ) = 2.46, ns) and Trying scores ( $F$  ( $df, 1009$ ) = 4.79, ns) did not reach statistical significance. This finding is contrary to the comparisons by gender presented above for other personality by gender groupings. This may be due to an artifact of the specific groups compared in this contrast, or it may be that the difference by gender is obscured by the stronger difference based on this personality classification.

The writer will interpret the personality difference found here, and will present an analysis by gender free of any possible personality "contaminant" in a subsequent section of this chapter.

For the interaction between gender and Thinking-Feeling, neither the multivariate effect nor the two univariate effects reached statistical significance. These results indicate that there was no significant interaction between gender and Thinking-Feeling classification.

**Comparison of Perceiving versus Judging Types.** This comparison was carried out in order to test an exploratory hypothesis, Hypothesis #5. Subjects were classified into Perceiving categories by combining the relevant sub-groups.

The Perceiving category consisted of the following Types: ISTP, ISFP, INFP, INTP, ESTP, ESFP, ENFP and ENTP. The Judging category included ISTJ, ISFJ, INFJ, INTJ, ESTJ, ESFJ, ENFJ and ENTJ. 35 percent of males and 37 percent of females were classified as Perceiving types. The remaining 65 percent of males and 63 percent of females were classified as Judging types.

The results of a one-way MANOVA carried out to assess differences between Perceiving and Judging types on the PIRS Applying and Trying scores are presented in Tables 19 and 20. Table 19 provides the relevant means and standard deviations, while Table 20 presents the MANOVA results. Neither the multivariate effect nor the univariate effects reached statistical significance.

No significant differences were found when comparing the average PIRS scores of the Perceiving and Judging groups.

Following the pattern of comparisons presented above, a two-factor MANOVA was performed with gender and Perceiving-Judging as classification variables and PIRS scores as dependent variables. The key purpose was to look for a possible interaction between gender by Perceiving-Judging. The means and standard deviations are presented in Table 19 while the MANOVA results are presented in Table 21. For the interaction effect, neither the multivariate nor the univariate F values were statistically significant. No significant interaction was found between gender and classification as Perceiving-Judging.

Table 19

Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided into Perceiving and Judging MBTI groups

MBTI type	Gender	n	PIRS Scores			
			Applying		Trying	
			$\bar{x}$	SD	$\bar{x}$	SD
Perceiving	Male	254	3.24	0.98	3.72	0.86
	Female	105	3.5	0.89	3.92	0.72
	Total	359	3.31	0.97	3.78	0.83
Judging	Male	473	3.2	0.98	3.59	0.88
	Female	183	3.41	0.96	3.86	0.83
	Total	656	3.26	0.98	3.67	0.88



Table 20

One-way MANOVA testing for differences in average Applying and Trying PIRS scores obtained for subjects classified according to Perceiving-Judging types

Effect	SS		df (Error)	F
	Hypothesis	Error		
<b>Perceiving - Judging</b>				
Multivariate Pillais'	--	--	1010	2.99
Applying univariate	0.37	956.9	1011	0.39
Trying univariate	2.27	746.58	1011	3.07

\*  $p < .01$  \*\*  $p < .001$

Table 21

Summary of two-way MANOVA testing for differences in the average Applying and Trying PIRS scores of subjects classified by gender and Perceiving versus Judging types

Effect	SS		df (Error)	F
	Hypothesis	Error		
Perceiving - Judging				
Multivariate Pillais'	--	--	1008	1.48
Applying univariate	0.45	947.91	1009	0.48
Trying univariate	1.45	735.24	1009	1.98
Gender				
Multivariate Pillais'	--	--	1008	6.57**
Applying univariate	8.65	947.91	1009	9.20*
Trying univariate	9.57	735.24	1009	13.13**
Interaction				
Multivariate Pillais'	--	--	1008	1.01
Applying univariate	0.06	947.91	1009	0.06
Trying univariate	0.2	735.24	1009	0.27

\*  $p < .01$  \*\*  $p < .001$

The multivariate effect for gender was significant, Pillais' criterion  $\underline{F}$  (df, 1008) = 6.57,  $p < .001$ . Likewise, the univariate effect for gender was significant when using as dependent variables the PIRS Applying scores ( $\underline{F}$  (df, 1009) = 9.20,  $p < .01$ ) and Trying scores ( $\underline{F}$  (df, 1009) = 13.13,  $p < .001$ ). In all instances, the male subjects yielded significantly lower average scores than their female counterparts.

As presented in Table 21, neither the multivariate effect nor the univariate effects for Perceiving versus Judging reached statistical significance. These results are in keeping with the non-significant results of the one-way MANOVA.

### **3.4.2. Comparisons of PIRS scores according to demographic variables**

**Comparisons by gender and age.** In Chapter 1 it was noted that, although there was no rationale for anticipating differences in PIRS scores in relation to age, differences according to gender could indeed be anticipated. Due to the fact that work experiences of men and women may vary over time, it was decided to do a two-factor MANOVA comparing the PIRS scores of subjects classified by gender (men, women) and age (four quartile groups). The results of this analysis are presented below, in Tables 22 and 23. Table 22 presents the relevant means and standard deviations while Table 23 presents the MANOVA results.

The multivariate effect for gender was significant, Pillais' criterion  $\underline{F}$  (df, 1005) = 7.84,  $p < .001$ . Similarly, the univariate effects using as dependent

Table 22

Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided by age quartiles and gender

Age quartile	Gender	n	PIRS Scores			
			Applying		Trying	
			$\bar{x}$	SD	$\bar{x}$	SD
Q 1 (age 21-37)	Male	153	3.35	0.99	3.71	0.84
	Female	108	3.54	0.83	3.94	0.71
	Total	261	3.43	0.93	3.81	0.79
Q 2 (age 38-44)	Male	172	3.16	0.95	3.59	0.82
	Female	81	3.23	1.05	3.75	0.94
	Total	253	3.18	0.98	3.64	0.86
Q 3 (age 44-47)	Male	194	3.24	1	3.67	0.92
	Female	55	3.5	1.03	3.93	0.8
	Total	249	3.3	1.01	3.72	0.9
Q 4 (age 48-65)	Male	208	3.12	0.99	3.59	0.91
	Female	44	3.54	0.77	3.91	0.66
	Total	252	3.19	0.97	3.64	0.88

Table 23

Summary of two-way MANOVA testing for differences in the average Applying and Trying PIRS scores of subjects classified by gender and age

Effect	SS		df (Error)	F
	Hypothesis	Error		
<b>Age Quartiles</b>				
Multivariate	--	--	2012	1.44
Univariate Applying	7.24	941.09	1006	2.58
Univariate Trying	2.93	734.82	1006	1.34
<b>Gender</b>				
Multivariate	--	--	1005	7.84**
Univariate Applying	10.83	941.09	1006	11.58**
Univariate Trying	11.47	734.82	1006	15.70**
<b>Interaction</b>				
Multivariate	--	--	2012	0.78
Univariate Applying	2.89	941.09	1006	1.02
Univariate Trying	0.59	734.82	1006	0.27

\*  $p < .01$  \*\*  $p < .001$

variables the PIRS Applying scores ( $F(df, 1006) = 11.58, p < .001$ ) and Trying scores ( $F(df, 1006) = 15.70, p < .001$ ). In all instances, the male group obtained significantly lower average PIRS scores than the female group.

Using age as independent variable, neither the multivariate effect nor the univariate effects reached statistical significance. In other words, subjects classified by age quartile were not significantly different in their average PIRS scores.

For the interaction between gender and age, neither the multivariate effect nor the univariate effects were statistically significant. These results indicate that there was no significant interaction between gender and age in the present study.

**Comparisons by gender and occupational level.** From previous chapters, the reader may recall that the subjects were heterogeneous in seniority as reflected in their occupational levels. In the literature review, it was proposed as an exploratory question that occupational level (seniority) may be related to the dependent variables of this study. Therefore, a two-factor MANOVA, using as independent variables gender and occupational level, was carried out. In order to achieve cell sizes greater than 20, Executives and Managers were combined into the Manager category. The reason for this is that there were few women Executives. The key purposes of this analysis were to look for differences according to occupational level and for a possible interaction between gender and

occupational level. Table 24 presents the means and standard deviations, while Table 25 presents the results of the MANOVA.

The comparisons by gender replicate the results presented throughout this chapter. Specifically, the multivariate effect was significant, Pillais' criterion  $F$  ( $df, 949$ ) = 7.41,  $p < .001$ . Likewise, the univariate effects were significant using as dependent variables the PIRS Applying scores ( $F$  ( $df, 950$ ) = 8.82,  $p < .01$ ) and Trying scores ( $F$  ( $df, 950$ ) = 14.58,  $p < .001$ ). The average scores of the male group were significantly lower than those of the female group.

For occupational level, neither the multivariate effect nor the univariate effects were statistically significant. Classified by occupation level, the participant groups did not yield significant differences in their average PIRS scores.

For the interaction between gender and occupation level, the multivariate effect was not significant, Pillais' criterion  $F$  ( $df, 1900$ ) = 3.18,  $ns$ . However, the univariate effects using as dependent variables the PIRS Applying scores ( $F$  ( $df, 950$ ) = 5.14,  $p < .01$ ) and Trying scores ( $F$  ( $df, 950$ ) = 6.04,  $p < .01$ ) were significant. More specifically, the tendency for females to report higher Applying as well as Trying scores than their male counterparts is stronger when one compares managers and supervisors rather than officers. Given that the multivariate effect was not significant, this result is interpreted with caution.

Table 24

Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided by occupational level and gender

Occupation level	Gender	n	PIRS Scores			
			Applying		Trying	
			$\bar{x}$	SD	$\bar{x}$	SD
Manager	Male	238	3.11	1.04	3.53	0.93
	Female	83	3.65	0.82	4.08	0.69
	Total	321	3.25	1.02	3.67	0.91
Supervisor	Male	357	3.22	0.97	3.63	0.86
	Female	131	3.29	1.01	3.71	0.84
	Total	488	3.24	0.98	3.65	0.86
Officer	Male	81	3.31	0.86	3.73	0.72
	Female	68	3.43	0.86	3.92	0.76
	Total	149	3.36	0.98	3.82	0.75



Table 25

Summary of two-way MANOVA testing for differences in the average Applying and Trying PIRS scores of subjects classified by gender and occupational level

Effect	SS		df (Error)	F
	Hypothesis	Error		
Occupational level				
Multivariate	--	--	1900	1.72
Univariate Applying	2.31	882.12	950	1.24
Univariate Trying	3.85	682.19	950	2.68
Gender				
Multivariate	--	--	949	7.41**
Univariate Applying	8.19	882.12	950	8.82*
Univariate Trying	10.47	682.19	950	14.58**
Interaction				
Multivariate	--	--	1900	3.18
Univariate Applying	9.56	882.12	950	5.14*
Univariate Trying	8.68	682.19	950	6.04*

\*  $p < .01$  \*\*  $p < .001$

**Comparisons by gender and educational level.** As noted in the review of literature, level of education is not a central variable in this study. However, due to the fact that differences in education have been related to a variety of learning outcomes, it was decided to compare the PIRS scores of subjects classified into two groups, those with grade 12 or less versus those with post-secondary education. In order to look for a possible interaction between gender and education level, a two-factor MANOVA was carried out. The means and standard deviations are presented in Table 26 while the MANOVA results are presented in Table 27.

When the comparisons by gender were carried out, the results did not replicate those presented above. The multivariate effect was not significant, Pillais' criterion  $F(df, 1009) = 4.46$ , ns, nor was the univariate effect for the PIRS Applying score,  $F(df, 1010) = 6.36$ , ns. However, the univariate effect of gender was statistically significant for the PIRS Trying score,  $F(df, 1010) = 8.92$ ,  $p < .01$ . This result is regarded as an artifact of the specific sub-grouping of men and women in this analysis.

For comparisons by educational level, neither the multivariate nor the univariate effects were significant. In this study, there were no significant differences in the average PIRS scores of subjects classified into two groups by level of education. This result will be interpreted in the Chapter 4.

Table 26

Means and standard deviations obtained on the PIRS Applying and Trying scores by the sample used in the present study, divided by education level and gender

Education level	Gender	n	PIRS Scores			
			Applying		Trying	
			$\bar{x}$	SD	$\bar{x}$	SD
Grade 12 or less	Male	181	3.24	1.02	3.69	0.88
	Female	80	3.43	1.05	3.84	0.86
	Total	261	3.29	1.03	3.73	0.87
Post-secondary	Male	546	3.2	0.97	3.62	0.88
	Female	208	3.45	0.89	3.9	0.77
	Total	754	3.27	0.96	3.69	0.86

Table 27

Summary of two-way MANOVA testing for differences in the average Applying and Trying PIRS scores of subjects classified by gender and education level

Effect	SS		df (Error)	F
	Hypothesis	Error		
<b>Education level</b>				
Multivariate	--	--	1009	0.06
Univariate Applying	0.11	950.23	1010	0.11
Univariate Trying	0.06	737.33	1010	0.08
<b>Gender</b>				
Multivariate	--	--	1009	4.46
Univariate Applying	5.99	950.23	1010	6.36
Univariate Trying	6.52	737.33	1010	8.92*
<b>Interaction</b>				
Multivariate	--	--	1009	0.91
Univariate Applying	0.06	950.23	1010	0.07
Univariate Trying	0.61	737.33	1010	0.83

\*  $p < .01$  \*\*  $p < .001$

For the interaction between gender and occupation level, neither the multivariate effect nor the univariate effects reached statistical significance. There was no significant interaction between gender and education level in the present study.

### **3.5. Summary of the key results of the study**

The employee subjects in this study were 727 males, average age of 43.6 years, and 288 females, average age of 40.2 years. As a total group, they had an average of 14.7 years of education. They were classified as Executives, Managers, Supervisors, and Officers.

Based on the preliminary analyses of data, the items of the PIRS were grouped, based on a principal components analysis with varimax rotations, into two subtests labelled Applying and Trying. The hypotheses of the study were tested on a sample of 1015 subjects by means of multivariate analyses of variance using the MBTI and selected demographic variables as independent variables, and the Applying and Trying PIRS scores as dependent variables. The key results of these analyses are presented below.

Contrasts of groups according to personality type revealed differences in PIRS scores among the 16 MBTI Types, between TJ versus non-TJ groups, and between Thinking-Feeling groups. More specifically, the TJ and Thinking groups yielded lower average Applying and Trying scores than did the non-TJ and Feeling

groups. The comparison of all 16 Types revealed an overall relationship between personality and PIRS scores. The following contrasts did not yield significant differences: Extraversion-Introversion, Sensing-Intuition, and Perceiving-Judging.

Eight two-factor MANOVAs included gender as a classification variable. Of these, six yielded significant differences in the PIRS scores of men and women respectively. Specifically, the males as a group obtained significantly lower Applying and Trying scores than did their female counterparts.

The MANOVAs which contrasted age, education and occupation groups did not yield statistically significant results. With one exception, the two-factor MANOVAs did not yield significant interaction effects. There was a significant interaction (univariate effects only) between gender and occupational level, such that female subjects reported higher Applying and Trying scores than those of the males especially within the Manager and Supervisor categories.

## **CHAPTER 4**

### **DISCUSSION**

Previous chapters have presented the rationale, hypotheses, method, and results of this study. In this last chapter, the writer will recapitulate the key objectives and hypotheses, summarize and discuss the results in relation to the rationale and hypotheses, review strengths and limitations of the study which may have influenced the results, and conclude by reiterating the relevance of the study for the field of adult education.

#### **4.1. The Objectives and Hypotheses of the Study**

The study explored relationships between personality types and perceived training outcomes in the context of a workplace leadership seminar. The general expectation was that there is a relationship between personality types of adult participants and the extent to which they report having implemented principles acquired in a values-based leadership training seminar. This expectation was tested globally, and also as a series of specific hypotheses. In all, there were five hypotheses and one complementary research question. The first hypothesis predicted that the average implementation scores of TJ and non-TJ groups would differ significantly, favoring the non-TJ group. The second predicted that Introverts would report higher average implementation scores than Extraverts. The

third hypothesis was an exploratory contrast of Sensing and Intuition groups. The fourth predicted that the Feeling group would report higher average implementation scores than the Sensing group. The fifth was an exploratory contrast of Perceiving and Judging groups. Finally, the complementary research question investigated the mediating effects of gender on the training results as measured by the PIRS.

#### **4.2. Discussion of the major results of the study**

This section discusses the results of the study in relation to the hypotheses and their underlying rationale. The results obtained using the MBTI as classification variable will be discussed first. This will be followed by a brief discussion of the results that address the exploratory questions. Throughout, the Applying and Trying scores on the PIRS are used as dependent variables.

The key results derived from comparisons of MBTI groups, with respect to their average Applying and Trying PIRS scores, may be summarized by stating that there were statistically significant differences between: (a) the sixteen MBTI Types; (b) the TJ versus non-TJ groups; and (c) the Thinking versus Feeling groups. On the other hand, the remaining comparisons of Extraverts versus Introverts, Sensing versus Intuitive, and Perceiving versus Judging groups did not yield statistically significant differences.

The first of the above results confirms the general hypothesis of the study,



to the effect that personality types are related to reported implementation of principles acquired during a leadership training seminar. This finding lends support to the general notion that individual differences in personality are related to certain learning outcomes. It has implications for theories of adult learning. These theories, while implicitly acknowledging the relevance of learner characteristics for learning outcomes, have nonetheless largely ignored individual differences in personality. One may infer that they should be expanded to take more explicit account of such variables. More specifically, the writer wishes to consider the implications for andragogy and the CAL model, which were reviewed in Chapter 1 as the two theories that provide the most compatible adult learning backdrop for this study.

With reference to andragogy, this theory is explicit in suggesting that the differential experience and intent or expectations of adult learners should be taken into account when developing pedagogical approaches for them. It is, however, silent on the possible relevance of individual differences in the personality types of the adult learners for such pedagogical approaches. The results of the present study should lead to further studies including a greater range of pedagogical content and measured outcomes than could be considered here. Furthermore, if the findings from such studies replicate and extend the present findings, they would imply that andragogy or similar theories should be expanded to include personality types

among the variables that have relevance for the articulation of pedagogical approaches. These ideas will be expanded upon in the section of the present chapter devoted to suggestions for further research.

The CAL model is more explicit than andragogy in its acknowledgment of individual differences in adult learners as factors that affect the teaching-learning process. It gives explicit attention to differences between children and adults as learners in terms of both their learning needs and the situational contexts in which their learning typically takes place. For example, children learn in school, on a compulsory basis, as full-time students, whereas adults learn in multiple settings including the workplace, typically as voluntary part-time students. However, this model does not explicitly consider the potential relevance of either cognitive or affective individual differences in the internal characteristics of the learner. The results of the present study, by pointing to relationships between personality types and learning outcomes as expressed by adult learners, suggest that at least in certain contexts, such as the workplace setting, the CAL model should be expanded to take more explicit account of normal personality types. This suggestion would be strengthened if the present results are replicated and extended in future studies.

The reader will recall that five hypotheses, in addition to the global expectation that there is a relationship between personality type and learning, were

articulated with reference to MBTI types. The above paragraphs, while articulated with respect to the most general of these, apply equally to the significant results that were obtained when testing the specific hypotheses of the study. The following paragraphs consider the latter hypotheses in terms of the personality concepts involved.

The first hypothesis states that the TJ and non-TJ types will differ in the extent to which they report implementation of the principles acquired during the leadership seminar, and that the non-TJ group will report the higher average scores. The results support this hypothesis. The non-TJ group subjects on average reported that they perceived themselves as implementing or attempting to implement the principles acquired during the leadership seminar more than did the TJ group. This finding may be explained by the fact that the leadership seminar used in this study is one that emphasizes the importance of human needs and human values in the workplace more than rational decision-making processes. The seminar is based on the premise that the most successful leaders are those who possess personal integrity. Such concepts may be more easily incorporated by persons whose predominant functioning is guided more by feelings than by logical/rational thinking and more by perceptions than judgement as defined by Jung and operationally measured via the MBTI. To the extent that the differences obtained in the study can be attributed to differences in personality type, those

subjects classified as TJ and non-TJ, the results support the first hypothesis.

The second hypothesis states that Extraverts and Introverts will differ in the extent to which they report implementation of the principles acquired during the leadership seminar. The writer's expectation was that the internal, self-reflective, attitude of the introverts would favour their subsequent implementation of principles acquired during the leadership seminar. However, the results of this study did not yield statistically significant differences between subjects classified as Extraverts and Introverts by the MBTI.

According to the third hypothesis, participants divided into sensing and intuition groups will differ in the extent to which they report implementation of the principles acquired during the leadership seminar. This hypothesis was phrased non-directionally since comparable arguments could be advanced in support of either group reporting a higher or lower score. Although there was no clear basis for predicting which group would score higher or lower on the PIRS scores, there was a theoretical basis for predicting that the two groups would score differently. In fact this hypothesis was tested on an exploratory basis. The results were not statistically significant.

The fourth hypothesis states that participants divided into thinking and feeling groups will differ in the extent to which they report implementation of the principles acquired during the leadership seminar. It was predicted that the feeling

group would yield higher average scores on the dependent variables. This expectation was based on the rationale that, while thinking types might prefer educational experiences that appeal to logic and reasoning, feeling types may prefer education and training experiences that appeal to their feelings and emotions. Given the emphasis of the leadership seminar used in this study upon such concepts as human needs, motives, values, and personal integrity, it follows that its content would be more readily integrated by the feeling group. Indeed, the results support this hypothesis. The average PIRS scores of the feeling group were significantly higher than those of the thinking group, as hypothesized.

The final hypothesis, which was exploratory, states that participants divided into judgment and perception groups will differ in the extent to which they report implementation of the principles acquired during the leadership seminar. This hypothesis was phrased non-directionally since it cannot be traced directly back to Jung's theory as such, and tested on an exploratory basis. The results were not statistically significant.

The above findings are based on one-way multivariate analyses of covariance, given that no interactions between personality type and demographic variables had been hypothesized. However, the North American corporation in which the present study was carried out was one characterized by a history of management-labour problems, and by an overall male-dominated, tense and

confrontational work environment that may not have been equally facilitative to the work of male and female supervisors or managers. It seemed possible, therefore, that female participants would feel less able than male participants to implement the principles acquired during the seminar. If this were the case, one might anticipate that, using two-factor MANCOVAs with personality type and gender as classification variables, significant interactions between personality type and gender would be revealed.

For this reason, a series of two-factor analyses were carried out. None of the interaction effects reached statistical significance. Further research would be required in order to explain the lack of significant results. A plausible explanation may be that, in such a hostile work environment, only those females who are best able to cope with gender-related conflicts and who are above average in assertiveness reach and retain supervisory and management positions. Thus, they would represent a biased sample with respect to the possible interaction tested in the two factor design.

In addition to the above hypotheses, a complementary research question was articulated concerning classifications of participants according to the demographic variables obtained. For purposes of statistical testing, the general question was divided into seven specific questions pertaining to individual classification variables. Questions 1 to 4 asked if there were statistically significant

differences in the average PIRS scores (Applying and Trying respectively) of participants classified by gender, age grouping, occupational level, or educational level. The main effects of age grouping, occupational level, and educational level were not significant. On the other hand, comparisons by gender consistently yielded significant differences.

More specifically, the female participants on average reported significantly higher implementation of the principles acquired during the values-based seminar than did their male counterparts. This exploratory finding has, at least, two implications. First, although no interactions between gender and personality type were found in this study, gender on its own right is a relevant variable for inclusion in studies of adult education and its outcomes in the workplace. As the writer noted in Chapter 1, the literature on gender issues in the workplace, while giving considerable attention to the reported obstacles experienced by women in management and leadership position, provides little by way of supporting empirical studies (see, for example: Bolman & Deal, 1992). The paucity of research in this area is explained in part by the implicit assumption that leadership is a male activity (Bolman & Deal, 1992) and by the fact that women in higher management positions have been and continue to be under-represented (Davidson & Cooper, 1992; Scott, 1997). The significant results of the present study based on the comparisons of male and female managers, by showing that their seminar

outcomes are significantly different, illustrate the need to document empirically the differential behaviours of men and women in the workplace.

Second, in an effort to explain this finding, it may be that the female participants who must survive in a male-dominated and stressful environment work harder and in general try harder than their male colleagues. More specifically, in contrast to their male counterparts, women in management and leadership positions have to cope with more artificial barriers or obstacles to advancement (collectively known as the glass ceiling), and with more stressors ranging from the need for juggling family obligations and work responsibilities to putting up with inappropriate sex role stereotypes and negative or degrading attitudes toward women. Furthermore, women are a visible minority in the workplace who, in the majority of instances, still lack role models and mentors. This being the case as documented in Chapter 1, women managers and leaders who advance to senior positions are necessarily competent, committed, self-confident, ambitious, and hard-working. As a group, the women need to possess these characteristics to a greater extent than do their male counterparts. This suggests that, in relation to workplace training seminars such as the one studied here, that the women would tend to make more explicit use of their training opportunities than the men in the same setting. The experiences and demands placed upon women in the workplace are important factors which could mediate learning experiences. These important



issues warrant further research.

Given the above findings concerning gender as a main effect, questions five to seven inclusive explored possible interactions between gender and other demographic variables (age grouping, occupation level, and education level), using the PIRS scores as dependent variables. There were no significant interactions between gender and age or gender and education. The gender by occupational level interaction, however, was statistically significant for both the Applying and Trying PIRS scores, according to the univariate contrasts. The multivariate contrast was not significant, and for this reason the univariate results are interpreted with caution. The interaction suggests that the tendency of female participants to report higher Trying and Applying scores than their male counterparts applies to females in the higher occupational levels (manager and supervisor) only. Female participants at the officer level did not show this trend. If the interpretation for the main effect by gender is accurate, then by extension of this reasoning one may infer that the stress perceived by females in management positions increases as their occupational level increases, and this causes them to “try harder” to benefit from development opportunities at the higher occupational levels especially.

#### **4.3. Scope and limitations of the study**

This section addresses the intended scope of the study as well as key

limitations within which the results must be interpreted. The following should be noted:

1. The study was carried out in Canada on the English-speaking population of male and female managers and supervisors of a large North American corporation characterized by labour strife. Due to contractual requirements as well as the need to maintain full confidentiality, the writer is precluded from identifying the corporation by name. In fact, due to its history of labour strife and management-labour tensions, the corporation granted its approval only on condition that its name would not be revealed, that the participants be volunteers, and that there be no direct work performance measures.
2. The corporation in which the study was carried out was selected because it offered access to a large population of managers and supervisors, provided a real-life setting for the study, and afforded the opportunity to use as training medium an approach to leadership training which is particularly relevant to the study of personality types in relation to outcomes of the seminar.
3. The training medium for this study of personality and training outcomes in the workplace was a specific custom-designed leadership seminar, Leaders for Tomorrow. The objectives and content of this seminar emphasized the

nature and importance of human needs, motives, values, and integrity. One may expect the findings of this study to generalize to other values-based training seminars. However, many leadership seminars pay little attention to personal factors and deal primarily with more impersonal skills in relation to employee performance, or with management techniques. In the absence of replication of the study using such a seminar as training medium, it is not possible to say whether or not the findings of the present study would replicate. This remains for further research.

4. Conceptually, the study was carried out against a backdrop which acknowledged the relevance of such adult education theories as andragogy and the Characteristics of Adult Learners. It employed as its anchoring theory Jung's Theory of Psychological Types. This theory dictated the choice of measures of personality type and also influenced the design of outcome measures. In fact, the study is robust in its use of the MBTI as the measure of personality, because this well-known test has been widely used in workplace studies across a range of conceptual orientations, including but not limited to Jung's. In other respects the findings of the study, to the extent that they can be generalized, must be interpreted within these boundaries.
5. A pre-post research design was considered and rejected. Pre-versus post

seminar measures could not be obtained for practical reasons. This is not unusual in studies of workplace training and outcomes. Those responsible for approving such training do not normally feel the need for gathering research data, and worry that the use of pre-measures may diminish attendance at the training programs or result in breaches of anonymity or confidentiality. Second, when a training program is delivered in multiple sites, the use of pre-measures adds substantial cost. Third, in many companies, employee turnover in the management ranks often results in incomplete pre-versus post-data. However, if it had been possible to use pre-and post-measures, it would have been possible to look for attitude change as a function of the seminar.

6. More direct measures of attitude and of attitude change would have permitted a test of the last two hypotheses articulated in the first chapter. However, due to time constraints and corporate sensitivities that prevented the writer from including a separate Likert scale consisting of direct attitude questions, attitudes could only be estimated indirectly by the coaches based on the overall replies of the subjects to the PIRS. This attempt to estimate attitudes indirectly was not successful.
7. Concerning the PIRS, in retrospect, it would have been preferable to use a combination of (1) paper and pencil outcome rating scales filled out directly

by the participants, (2) structured interviews conducted by the coaches, and (3) a separate Likert scale to measure attitudes. It may then have been possible to measure outcomes at more than one point in time, and thereby estimate longer versus shorter term effects of the seminar. This approach would also have permitted the writer to employ standard psychometric approaches to the construction of the rating scales.

As a closing comment, while the scope and limitations of the study do not in any way invalidate the findings of the study, they are advanced here as a context within which the results must be interpreted, and as considerations for future studies.

#### **4.4. Suggestions for future research**

Throughout the manuscript, the writer has presented a number of suggestions for future research. Several are especially noteworthy, and may be summarized as follows:

1. The corporate context in which this study was carried out, while not infrequent in North America, cannot be automatically regarded as representative of North American corporations in general. It would be appropriate to replicate the study in corporations that differ in both size and corporate culture. If different personality types thrive in different corporate cultures, and different corporate cultures value and reward different

leadership styles and skills, then the values-based Leaders for Tomorrow seminar may have greater impact in some corporations and less in others, and this may affect the outcomes of the seminar as perceived by persons of different personality types.

2. There are a number of alternative approaches to leadership training ranging from the values-based approach employed here to approaches that focus exclusively on the technical aspects of management. It would seem relevant in a future study to use a different training approach or to compare alternative training approaches, on the expectation that each approach may be especially compatible with certain personality types or within specific corporate cultures.
3. Although the outcome variables used in this study are congruent with its conceptual basis, the use of direct outcome measures including, where feasible, work performance measures would broaden the value of the study. A comparison of self-report, likert based, questionnaire measures of employee attitudes and behaviours to a performance based measure of productivity would increase our understanding of the relationship between perceived attitudes and behaviours and actual performance. Furthermore, these two measures could be used together, both before and after, a training intervention to assess changes in attitudes and behaviours as a function of

the intervention.

4. Subsequent studies may benefit from inclusion of standardized measures of attitude. If combined with a pre-test versus post-test design, these would further our understanding of the possible interaction between personality and attitudes as variables that influence workplace training outcomes, and more specifically enable us to observe the evolution of workplace attitudes as a function of workplace training.
5. Concerning gender, the findings of the present study suggest that gender should be included as an independent variable in future studies. It has too often been assumed that results obtained on men can be generalized to women. Results obtained in this study clearly indicate that this assumption is incorrect. Furthermore, the rapidly increasing numbers of women in management positions, the continuing challenges they must face, and the relative lack of empirical research in this area, lead to the conclusion that empirical research is much needed on the differences between men and women managers in relation to their workplace performance and training outcomes.
6. The present study examined a necessarily biased sample of women managers and supervisors due to the fact that most managers and supervisors in the population sampled were men. The writer believes that

the sample was biased in that only those women with special competencies and coping skills were represented in sufficient numbers. Further studies should investigate the value of leadership training seminars for a wider spectrum of women in the workforce, in the hope that women with a greater range of characteristics will develop the necessary motivation and coping skills to rise to the senior management ranks.

7. With respect to theories of adult learning, the findings of the present study that there are relationships between personality type and certain adult learning outcomes lead to the suggestion that individual characteristics of the adult learner, and more specifically personality type, should be included as variables that may influence learning in studies of such theories as *Andragogy and the Characteristics of the Adult Learner*.

#### **4.5. Conclusion**

The key conclusion from this study is that certain personality types are related to the extent to which participants in a workplace training seminar report implementing or attempting to implement principles acquired during the seminar. The salient personality types as measured by the MBTI were the combined TJ (Thinking-Judging) versus non-TJ (all other types), and Thinking versus Feeling. These findings were interpreted to mean that subjects whose personality type was characterized by an emotion-based approach to decisions reported higher



implementation than those characterized by a cognitive-rational approach. A second conclusion worthy of note is that females generally reported higher implementation of the seminar principles than did their male counterparts.

The above findings have clear implications for the field of adult education. Concretely, they suggest that theories of adult education, which to date have almost entirely ignored the personalities of the learner, should be modified to take such variables into account. For example, while andragogy focuses on the intentionality of adult learning as well as the surrounding life circumstances, it otherwise ignores individual differences. This framework could be readily expanded to include, in addition to the above variables, the idea that adults whose preference in interacting with the world is affective would benefit from a different pedagogical approach than adults with a primarily rational-intellectual preference. This suggests an extension of Ferro's (1993) conclusion that, since the emotions are involved in all learning transactions, attention must be paid to the affective domain. The results of this study suggest that such attention to the affective domain should differ when personality types are considered. Similar arguments could be made in relation to other contemporary theories of adult education.

Fundamentally, important mediating effects of personality type on adult learning are demonstrated in this study. Further investigation is warranted in this rapidly expanding field.

## REFERENCES

- Abouserie, R. (1995). Self-esteem and achievement motivation as determinants of student's approaches to studying. Studies in Higher Education, 20, 19-26.
- Adams, J. A., & Montague, W. (1967). Retroactive inhibition and natural language mediation. Journal of Verbal Learning and Verbal Behavior, 6, 528-525.
- Agor, W. (Ed.). (1989). Leading and managing productively. Newbury Park, CA: Sage.
- Allport, G. (1937). Personality: A psychological interpretation. New York, NY: Holt.
- Anderson, J., & Bower, G. (1973). Cognitive skills and their acquisition. Hillsdale, NJ: Erlbaum.
- Argyris, C. (1984). Double loop learning in organizations. In D. A. Kolb, I. M. Rubin, & J. M. McIntyre (Eds.), Organizational psychology (pp. 45-58). Englewood Cliffs, NJ: Prentice-Hall.
- Badaracco, J., & Ellsworth, R. (1989). Leadership and the quest for integrity. Boston, MA: Harvard Business School Press.
- Baker, D. (1983). Research in college science teaching: Can the difference between male and female science majors account for the low number of women at the doctoral level in science? Journal of College Science Teaching, 13, 102-107.
- Bandura, A. (1977). Social learning theory. Englewood Cliffs, NJ: Prentice-Hall.
- Baumgartel, H., Reynolds, J., & Pathan, R. (1984). How personality and organizational variables moderate the effectiveness of management development programs: A review of some recent research findings. Management and Labour Studies, 9, 1-16.
- Barr, L., & Barr, N. (1989). The leadership equation: Leadership, management and the Myers-Briggs. Austin, TX: Eakin Press.

**REFERENCES (Cont'd)**

- Berman, B. (1996). A pilot study for the validating a questionnaire on perceptions of barriers to upward mobility by women administrators in international schools in Mexico and the United States. Paper presented at the annual meeting of the Mid-South Educational Research Association, Tuscaloosa, AL.
- Bernard, L. L. (1926). An introduction to social psychology. New York, NY: Holt.
- Bolman, L., & Deal, T. (1991). Reframing organizations: Artistry, choice, and leadership. San Francisco, CA: Jossey-Bass.
- Bolman, L., & Deal, T. (1992). Leading and managing: Effects of context, culture, and gender. Educational Administration Quarterly, 28, 314-329.
- Borg, M., & Shapiro, S. (1996). Personality type and student performance in principles of economic education. Journal of Pharmaceutical Education, 27, 3-21.
- Bower, E. M., & Hollister, W. G. (Eds.). (1967). Behavioral science frontiers in education. New York: Wiley.
- Bruner, J. S. (1961). The process of education. Cambridge, MA: Harvard University Press.
- Brunner, E. (1959). An overview of adult education research. Washington, DC: Adult Education Association.
- Burke, R., & McKeen, C. (1995). Work experiences, career development, and career success of managerial and professional women. Special Issue: Gender in the workplace. Journal of Social Behavior & Personality, 10, 81-96.
- Burke, R. (1996). Benefits of formal training courses: Gender effects? Psychological Reports, 78, 785-786.
- Busse, T., & Mansfield, R. (1984). Selected personality traits and achievement in male scientists. Journal of Psychology, 116, 117-131.

**REFERENCES (Cont'd)**

Brook, J. A. (1984). An Evaluation of European Industrial Training. Journal of European Industrial Training, 8(3), 11-16.

Brown, S., & Seidner, C. (Eds.). (1998). Evaluating corporate training: Models and issues. Boston, MA: Kluwer Academic Publishers.

Cabral, G., & Joyce, M. (1991). Managers and Psychological Type in an Industrial Setting: Sex Differences and Similarities, Managerial Level, and Age. Journal of Psychological Type, 21, 40-53.

Campbell, J. P., Dunnette, M. D., Lawler, E. E., III, & Weick, K. E., Jr. (1970). Managerial behavior, performance, and effectiveness. New York, NY: McGraw-Hill.

Carskadon, T. G., McCarley, N. G., & McCaulley, M. H. (1987). Compendium of research relating to the Myers-Briggs Type Indicator. Gainesville, FL: Center for Application of Psychological Type.

Carlson, J. (1989). Testing the test, affirmative: In support of researching the Myers-Briggs Type Indicator. Journal of Counseling and Development, 67, 484-486.

Cassidy, T., & Lynn, R. (1991). Achievement motivation, educational attainment, cycles of disadvantage and social competence: Some longitudinal data. British Journal of Educational Psychology, 61, 1-12.

Cattell, R. B. (1970). The scientific analysis of personality. Baltimore, MD: Penguin.

Cattell, R. B., Eber, H. W., & Tatsuoka, M. M. (1970). Handbook for the Sixteen Personality Factor Questionnaire. Windsor, Berks: National Foundation for Education Research.

Chidester, T., Helmreich, R., Gregorich, S., & Geis, C. (1991). Pilot personality and crew coordination: Implications for training and selection. International Journal of Aviation Psychology, 1, 25-44.

## REFERENCES (Cont'd)

Clark, K., & Clark, M. (Eds.). (1990). Measures of leadership. West Orange, NJ: Leadership Library of America.

Corno, L., & Snow, R. R. (1986). Adapting teaching to individual differences among learners. In M. C. Wittrock (Ed.), Handbook of research on teaching, 3<sup>rd</sup> ed. New York, NY: Macmillan.

Covey, S. (1991). Principle-centered leadership. New York, NY: Summit Books.

Crano, W. D., Kenny, D. A., & Campbell, D. T. (1972). Does intelligence cause achievement?: A cross-lagged panel analysis. Journal of Educational Psychology, 63, 258-275.

Crant, J. M. (1995). The Proactive Personality Scale and objective job performance among real estate agents. Journal of Applied Psychology, 80, 532-537.

Cross, P. (1981). Adults as learners: Increasing participation and facilitating learning. San Francisco, CA: Jossey-Bass.

Cusack, S., & Thompson, W. (1996). Building a community of leaders: Research and development of a program to train seniors as empowering leaders. Canadian Journal for the Study of Adult Education, 53, 19-36.

Davidson, M., & Cooper, C. (1992). Shattering the glass ceiling: The woman manager. London, England: Paul Chapman Publishing.

Day, D., & Bedeian, A. (1995). Personality similarity and work-related outcomes among African-American nursing personnel: A test of the supplementary model of person-environment congruence. Journal of Vocational Behavior, 46, 55-70.

DiCaprio, N. (1974). Personality theories: Guides to living. Toronto, ON: W.D. Saunders.

Diekhoff, G. (1992). Statistics for the social and behavioral sciences: univariate, bivariate, multivariate. Dubuque, IA: William C. Brown.

## **REFERENCES (Cont'd)**

Draper, J. (1998). The metamorphoses of Andragogy. Canadian Journal for the Study of Adult Education, 12, 3-26.

Earnest, G., & McCaslin, N. L. (1994). Extension administrators' approach to conflict management: Study of relationships between conflict management styles and personality type. Journal of Agricultural Education, 35, 18-22.

Ehrman, M., & Oxford, R. (1990). Adult language learning styles and strategies in an intensive training setting. Modern Language Journal, 74, 311-327.

Engelbrecht, A., & Fischer, A. H. (1995). The managerial performance implications of a developmental assessment center process. Human Relations, 48, 387-404.

Erikson, E. H. (1964). Insight and responsibility. New York: Norton.

Evans, V., & Quarterman, J. (1983). Personality characteristics of successful and unsuccessful black female basketball players. International Journal of Sport Psychology, 14, 105-115.

Eysenck, H. J. (1947). Dimensions of personality. London: Routledge & Kegan Paul.

Ferro, T. (1993). The influence of affective processing in education and training. In D. Flannery (Ed.), Applying Cognitive Learning Theory to Adult Learning. New Directions for Adult and Continuing Education, 59, Fall, 25-33.

Fulmer, R. (1997). The evolving paradigm of leadership development. Journal of Organizational Dynamics, Spring, 59-72.

Furnham, A., & Stringfield, P. (1993). Personality and work performance in two cultures. Personality and Individual Differences, 14, 145-153.

Gagne, R. M., & Rohwer, W. D. (1967). Instructional psychology. Annual Review of Psychology. Palo Alto, CA: Annual Review.

**REFERENCES (Cont'd)**

- Gardner, J. (1990). On leadership. New York, NY: The Free Press.
- Gaster, W. D. (1982). A study of personality type as a predictor of success in retail store management. (Doctoral dissertation, Louisiana Technical University, 1982). Dissertation Abstracts International, 43, 4020A.
- Geisler-Brenstein, E. (1996). An Individual Difference Perspective on Study Diversity. Higher Education, 31, 73-96.
- Getzels, J. W., & Jackson, P. W. (1962). Creativity and intelligence. New York: Wiley.
- Ghiselli, E. (1959). Traits differentiating management personnel. Personnel Psychology, 12, 535-544.
- Ghiselli, E. (1971). Explorations in management talent. Pacific Palisades, CA: Goodyear Publishing.
- Gibb, C. A. (1954). Leadership. In G. Lindzey (Ed.), Handbook of social psychology, 2. Reading, MA: Addison-Wesley.
- Goodrich, D., Johnston, P., & Thomson, M. (1997). Impact of a nursing assistant training program on job performance, attitudes, and relationships with residents. Educational Gerontology, 23, 37-51.
- Gregorc, A. F. (1982). An adult's guide to style. Maynard, MA: Gabriel Systems, Inc.
- Griffiths, R. (1989). Personality and second-language learning: Theory, research and practice. In E. Sadtono (Ed.), Language acquisition and the second/foreign language classroom. Anthology Series 28, Sept.
- Gupton, S., & Slick, G., (1996). Highly successful women administrators: The inside stories of how they got there. Thousand Oaks, CA: Corwin Press.

## REFERENCES (Cont'd)

Gurney, P. (1992). On the association between modes of mental representation and mathematics experience in pre-service education students. Unpublished doctoral dissertation, University of Ottawa, Canada.

Hartree, A. (1984). Malcolm Knowles' theory of andragogy: A critique. International Journal of Lifelong Education, 3, 203-210.

Hetrick, W. (1993). Leadership for a time of change. Paper presented at the Annual Conference on Creating the Quality School, Oklahoma City, OK.

Hjelle, L., & Ziegler, D. (1992). Personality theories: Basic assumptions, research and applications (3<sup>rd</sup>ed.). New York, NY: McGraw-Hill.

Hofmann, R. (1990). Proceedings of the San Antonio Conference on psychological measures and leadership (pp. 569-606). In K. Clark & M. Clark (Eds.), Measures of leadership. West Orange, NJ: Leadership Library of America.

Hogan, R., Hogan, J., & Murtha, T. (1992). Validation of a personality measure of managerial performance. Special Issue: Test Validity Yearbook I. Journal of Business and Psychology, 7, 225-237.

Hogan, J., Hogan, R., & Gregory, S. (1992). Validation of a sales representative selection inventory. Special Issue: Test validity yearbook: I. Journal of Business & Psychology, 7, 161-171.

Hogan, R., Hogan, J., & Roberts, R. (1996). Personality measurement and employment decisions. American Psychologist, 51, 470.

Hollander, E. P. (1985). Leadership and power (pp. 485-538). In G. Lindzey & E. Aronson (Eds.), The handbook of social psychology (3<sup>rd</sup> ed.). New York: Random House.

Iscoe, I., & Stevenson, W. W. (Eds.). (1960). Personality development in children. Austin, TX: University of Texas Press.

Jacobs, R., Hofmann, D., & Kriska, S. D. (1990). Performance and seniority. Human Performance, 3, 107-121.



**REFERENCES (Cont'd)**

Jaffe, J. M. (1980). The relationship of Jung's psychological predispositions to the implementation of management by objectives: A sociotechnical perspective. (Doctoral dissertation, University of Southern California, 1980). Dissertation Abstracts International, 41, 4833A.

Jenkins, W. O. (1947). A review of leadership studies with particular reference to military problems. Psychological Bulletin, 44, 54-79.

Jewell, L. N. (1985). Contemporary industrial/organizational psychology. New York: West Publishing Company.

Johnson, D. (1992). Test-retest reliabilities of the Myers-Briggs Type Indicator and the Type Differentiation Indicator over a 30-month period. Journal of Psychological Type, 24, 54-58.

Jung, C. G. (1933). Psychological Types. New York, NY: Harcourt, Brace & World.

Jung, C. G. (1971). Psychological Types. Bollingen Series XX. The Collected Works of C.G. Jung, Vol 6. Princeton, NJ: Princeton University Press.

Kelly, F., & Kelly, H. (1986). What they really teach you at the Harvard Business School. New York, NY: Warner Books.

Kelly, G. A. (1955). The psychology of personal constructs. New York, NY: Norton.

Kempfer, H. (1955). Adult education. New York, NY: McGraw-Hill.

Kennedy, A., & Deal, T. (1982). Corporate cultures: The rites and rituals of corporate life. Reading, MA: Addison-Wesley.

Kerr, M. (1995). Tacit knowledge as a predictor of managerial success: A field study. Canadian Journal of Behavioural Science, 27, 36-51.

Kidd, J. R. (1959). How adults Learn. New York: Association Press.

## REFERENCES (Cont'd)

Kirkcaldy, B., Furnham, A., & Lynn, R. (1992). Individual differences in work attitudes. Personality and Individual Differences, 13, 49-55.

Knowles, M. (1980). The modern practice of adult education: Andragogy versus pedagogy. New York: Association Press.

Knowles, M. (1984). The adult learner: A neglected species (3<sup>rd</sup> ed). Houston, TX: Gulf Publishing.

Knowles, M. (1989). The making of an adult educator. San Francisco, CA: Jossey Bass.

Knox, A. B. (1980). Proficiency theory of adult learning. Contemporary Educational Psychology, 5, 378-404.

Kodman, F. (1984). Some personality traits of superior university students. Social Behavior and Personality, 12, 135-138.

Konrad, A., & Cannings, K. (1997). The effects of gender role congruence and statistical discrimination on managerial advancement. Human Relations 50. 1305-1328.

Kouzes, J., & Posner, B. (1990). The leadership challenge: How to get extraordinary things done in organizations. San Francisco, CA: Jossey-Bass.

Kordacova, J. (1990). Personality correlates of successfulness in problem solving. Studia Psychologica, 32, 107-114.

Kraiger, K., & Jung, K. (1997). Linking training objectives to evaluation criteria (pp. 151-175). In M. A. Quinones & A. Ehrenstein (Eds.), Training for a rapidly changing workplace: Applications of psychological research.

Lake, D. G., Milles, M. B., & Earle, R. B. (1973). Measuring human behavior. New York, NY: Teachers College Press.

Lanese, L. (1983). Applying principles of learning to adult training programs. Educational Technology, March, 15-17.

## **REFERENCES (Cont'd)**

Lawrence, G. (1984). A synthesis of learning style research involving the MBTI. Journal of Psychological Type, 8, 2-15.

Lessem, R. (1994). Total Quality Learning: Building a learning organization. Cambridge, MA: Blackwell Publishers.

Long, B., & Khan, E. (Eds.). (1993). Women, work, and coping: A multidisciplinary approach to workplace stress. Montreal, PQ: McGill-Queen's University Press.

Lueder, D. C. (1986). Psychological types and leadership styles of the 100 top executive educators in North America. Journal of Psychological Type, 12, 8-12.

Loevinger, J. (1987). Paradigms of personality. New York, NY : W. H. Freeman.

Lowenthal, W., & Meth, H. (1989). Myers-Briggs Type Indicator personality preferences and academic performance. American Journal of Pharmaceutical Education, 53, 226-228.

MacKeracher, D. (1997). Making sense of adult learning. Canadian Journal of the Study of Adult Education, 11, 82-83.

Mani, B. (1995). Progress on the journey to total quality management: Using the Myers-Briggs Type Indicator and the Adjective Check List in management development. Public Personnel Management, 24, 365-398.

Mann, H., Siegler, M., & Osmond, H. (1972), Four types of personalities and four ways of perceiving time. Psychology Today, 6, 76-84.

Manz, C., & Sims, Jr, H. (1990). Super leadership: Leading others to lead themselves. New York, NY: Berkeley Books.

Marso, R., & Pigge, F. (1990). Relationships between prospective teachers' personality attributes and changes in concerns about teaching during training. Paper presented at the Annual Meeting of the Mid-Western Educational Research Association, Chicago, IL.

**REFERENCES (Cont'd)**

Maslow, A. (1970). Motivation and personality (2<sup>nd</sup> ed). New York, NY: Reinhold.

McClusky, H. Y. (1963). The course of the adult life span. In W. C. Hallenbeck (Ed.), Psychology of adults. Washington, DC: Adult Education Association of the USA.

McCormack, M. (1989). What they still don't teach you at Harvard Business School. New York, NY: Bantam Books.

McCormack, M. (1996). On managing. West Hollywood, CA: Dove Books.

McCormick, E., & Ilgen, D. (1985). Industrial and organizational psychology (8<sup>th</sup> ed). Englewood Cliffs, NJ: Prentice-Hall.

McPherson, B. (1995). Re-engineering your office environment: Matching careers and personality via the Myers-Briggs Type Indicator. Office Systems Research Journal, 13, 29-34.

Meister, J. (1994). Corporate quality universities. New York, NY: Richard D. Irwin.

Merriam, S. (1987). Adult Learning and theory building: A review. Adult Education Quarterly, 37, 187-198.

Merriam, S. (Ed.). (1993). An update on adult learning theory. San Francisco, CA: Jossey-Bass.

Merriam, S., & Caffarella, R. (1991). Learning in adulthood: A comprehensive guide. San Francisco, CA: Jossey-Bass.

Merriam, S., & Brockett, R. (1997). The profession and practice of adult education: An introduction. San Francisco, CA: Jossey-Bass.

Mills, D. (1990). Testing for leadership with the California Psychological Inventory (pp. 355-391). In K. Clark & M. Clark (Eds.), Measures of leadership. West Orange, NJ: Leadership Library of America.

## REFERENCES (Cont'd)

Mintzberg, H. (1989). Inside our strange world of organizations. New York, NY: The Free Press.

Mitroff, I. I., & Kilmann, R. H. (1975). Stories managers tell: A new tool for organizational problem solving. Management Review, 64, 18-28.

Moody, H. (1984). Introduction to late-life learning. Generations, 12, 5-9.

Motowidlo, S., & Van Scotter, J. (1994). Evidence that task performance should be distinguished from contextual performance. Journal of Applied Psychology, 79, 475-480.

Myers, I. B., & Myers, P. (1980). Gifts differing. Palo Alto, CA: Consulting Psychologists Press.

Myers, I. B., & McCaulley, M. (1993). Manual: A guide to the development and use of the Myers-Briggs Type Indicator. Palo Alto, CA: Consulting Psychologists Press.

Neves, D. M., & Anderson, J. R. (1981). Knowledge compilation: Mechanisms for the automation of cognitive skills. In J. R. Anderson (Ed.), Cognitive skills and their acquisition. Hillsdale, NJ: Erlbaum.

Niday, P. (1987). Analysis of learning styles of head nurses and staff nurses. Unpublished doctoral dissertation, Century University, California.

Norman, D. A., & Rumelhart, D. E. (Eds.). (1975). Explorations in cognition. New York, NY: W.H. Freeman.

O'Leary, V., & Ickovics, J. (1992). Cracking the glass ceiling: Overcoming isolation and alienation. In Sekaran, U., & Leong, F. (Eds.), Womanpower: Managing in times of demographic turbulence (pp286-314). Newbury Park, CA: Sage

O'Toole, J. (1996). Leading change: The argument for values-based leadership. New York, NY: Ballantine.

## REFERENCES (Cont'd)

Papa, M., & Graham, E. (1991). The impact of diagnosing skill deficiencies and assessment-based communication training on managerial performance. Communication Education, 40, 368-384.

Peng, R., Khaw, H., & Edariah, A. B. (1995). Personality and performance of preclinical medical students. Medical Education, 29, 283-288.

Pennsylvania State Department of Education, Division of Adult Basic Education. (1987). Building self-esteem and confidence of substance abusers through adult basic education. (A 310 Special Demonstration Report). Erie City School District, PA.

Peters, C. E. (1981). An investigation of the relationship between Jung's psychological type and preferred styles of inquiry. (Doctoral dissertation, Ohio State University, 1981). Dissertation Abstracts International, 44, 1974B.

Phares, E. J. (1987). Introduction to Personality (2<sup>nd</sup> ed). Glenview, IL: Scott, Foresman & Company.

Pitcher, P. (1995). Artists, craftsmen and technocrats: The dreams, realities and illusions of leadership. Toronto, ON: Stoddart Publishing Company.

Pratt, L. K., Uhl, N. P., & Little, E. R. (1980). Evaluation of games as a function of personality type. Simulation & Games, 11, 336-346.

Quinones, M., Ford, J. K., & Teachout, M. (1995). The relationship between work experience and job performance: A conceptual and meta-analytic review. Special Issue: Theory and literature. Personnel Psychology, 48, 887-910.

Rideout, C., & Richardson, S. (1989). A team building model: Appreciating differences using the Myers-Briggs Type Indicator with developmental theory. Journal of Counseling and Development, 67, 529-523.

Riggio, R. (1990). Introduction to industrial/organizational psychology. Glenview, IL: Scott, Foresman & Company.

**REFERENCES (Cont'd)**

- Rogers, C. R. (1980). A way of being. Boston, MA: Houghton Mifflin.
- Rome, L. (1990). Myers-Briggs: A tool for building effective work teams. Wilson Library Bulletin, 64, 42-47.
- Rose, R., Fogg, L., Helmreich, R., & McFadden, T. (1994). Psychological predictors of astronaut effectiveness. Aviation Space & Environmental Medicine, 65, 910-915.
- Rotter, J. (1954). Social learning and clinical psychology. Englewood Cliffs, NJ: Prentice-Hall.
- Rowe, J., Vivian, V., & D'Costa, A. (1987). Work experience as a predictor of performance: A validation study. Evaluation & the Health Professions, 10, 42-57.
- Royce, J. R., & Powell, A. (1983). Theory of personality and individual differences: Factors, systems and processes. Englewood Cliffs, NJ: Prentice-Hall.
- Rytting, M., Ware, R., & Prince, R. (1994). Bimodal distributions in a sample of CEOs: Validating evidence for the MBTI. Journal of Psychological Type, 31, 16-23.
- Saal, F., & Knight, P. (1988). Industrial/organizational psychology: Science and practice. Balmont, CA: Cole Publishing.
- Saggino, A., & Kline, P. (1996). The location of the Myers-Briggs Type Indicator in personality factor space. Journal of Personality and Individual Differences, 21, 591-597.
- Schmidt, W. H. (1992). Managerial values and expectations: The silent power in personal and organizational life. New York, NY: American Management Association.
- Schott, R. (1992). Abraham Maslow, humanistic psychology and organization leadership: A Jungian perspective. Journal of Humanistic Psychology, 32, 106-120.
- Schultz, D. (1990). Theories of personality. Belmont, CA: Wadsworth.

**REFERENCES (Cont'd)**

Schurr, T., Ruble, V., Nisbet, J., & Wallace, D. (1984). Myers-Briggs Type Inventory characteristics of more and less successful players on an American football team. Journal of Sport Behavior, 7, 47-57.

Scott, J. (1997). Women and leadership: A study of issues in independent schools. Microfiche Paper. New York, NY: Columbia University.

Sergiovanni, T. (1990). Value-added leadership: How to get extraordinary performance in schools. San Diego, CA: Harcourt Brace Jovanovich.

Shneidman, E. (1984). Personality and "success" among a selected group of lawyers. Journal of Personality Assessment, 48, 609-616.

Skinner, B. F. (1938) The behavior of organisms. New York: Appleton, Century Crofts.

Spitz, R., & MacKinnon, J. (1993). Predicting success in volunteer community service. Psychological Reports, 73, 815-818.

Stariha, W., & Walberg, H. (1995). Childhood precursors of women's artistic eminence. Journal of Creative Behavior, 29, 269-282.

Sternberg, J. (1985). Human abilities: An information-processing approach. New York, NY: W.H. Freeman.

Stewart, G., & Carson, K. (1995). Personality dimensions and domains of service performance: A field investigation. Journal of Business & Psychology, 9, 365-378.

Stogdill, R. M. (1948). Personal factors associated with leadership: A survey of the literature. Journal of Psychology, 25, 35-71.

Stogdill, R. M. (1974). Handbook of Leadership. New York: Free Press.

Stoneall, L. (1992). The case for more flexible objectives. Training and Development Journal, August, 67-69.



## REFERENCES (Cont'd)

Tedfalk, R. (1988). A discriminant analysis of majors in the College of Business and Public Administration at the University of North Dakota. North Dakota Economics Studies, 52, 6.

Tempkin, T. (1982). Mapping the terrain of continuing allied health education. 167 Paper presented at the National Adult Education Conference, San Antonio, TX.

Tharenou, P. (1995). The impact of a developmental performance appraisal program on employee perceptions in an Australian federal agency. Group and Organizational Management, 20, 245-272.

Tischler, L. (1991). Person-job personality fit and work success. (Doctoral dissertation, University of Maryland College Park, 1991). UMI Dissertation Services, UMI Microfilms Order No. 9133175.

Tobias, S. (1987). Learner characteristics. In R. M. Gagne (Ed.), Instructional technology: Foundations. Hillsdale, NJ: Erlbaum.

Tyler, L. E. (1965). The psychology of human differences (3<sup>rd</sup> ed.). New York, NY: Appleton-Century Crofts.

Tziner, A., & Falbe, C. (1993). Training-related variables, gender and training outcomes: A field investigation. International Journal of Psychology, 28, 203-221.

Tziner, A., & Latham, G. (1989). The effects of appraisal instrument, feedback and goal-setting on worker satisfaction and commitment. Journal of Organizational Behavior, 10, 145-153.

Verner, C. A., & Booth, A. (1964). Adult Education. New York, NY: Center for Applied Research in Education.

Vogel, R. (1989). Adventure training: Its effect on self-actualization and self-perception of personal change. Journal of Outdoor Education, 23, 20-29.

Waldman, D., Yammarino, F., & Avolio, B. (1990). A multiple level investigation of personnel ratings. Personnel Psychology, 43, 811-835.

**REFERENCES (Cont'd)**

Watson, J. (1914). Behavior: An introduction to comparative psychology. New York, NY: Holt, Rinehart & Winston.

Wentling, R. (1996). A study of career development and aspirations of women in middle management. Human Resource Development Quarterly, 7, 257-270.

Yammarino, F., & Atwater, L. (1997). Do managers see themselves as others see them? Implications of self-other rating agreement for human resources management. Organizational Dynamics, 25, 35-44.

Zemke, R. (1992). Second thoughts about the MBTI. Training, 29, 43-47.

Zuboff, S. (1988). In the age of the smart machine. London: Heinemann.

**APPENDIX A.1**

**ETHICS COMMITTEE APPROVAL, 1996**



# Université d'Ottawa • University of Ottawa

Faculté d'éducation  
Cabinet du vice-doyen

Faculty of Education  
Office of the Vice-Dean

February 19, 1996

Ms. Judy Wyspianski  
183 Wilbrod Street  
Ottawa ON  
K1N 6L4

Dear Ms. Wyspianski,

Your research project entitled "*A Description of Cognitive Factors of non-University Educated*" has been approved by the Ethics Committee - **Category IA for one year.**

On behalf of the Committee I wish you all the best with this research project.

Sincerely,

Penelope J. Gurney  
President  
Ethics Committee

/mc

**APPENDIX A.2**

**ETHICS COMMITTEE REVIEW, 1997**



# Université d'Ottawa • University of Ottawa

Faculté d'éducation  
Cabinet du doyen

Faculty of Education  
Office of the Dean

August 27, 1997

Ms. Judy Wyspianski  
Faculty of Education  
P.O.Box 30  
INTRA

Dear Ms. Wyspianski:

The Ethics Committee has examined your research project entitled "Personality Characteristics as Predictors of Participants' Commitment ..." at its meeting of August 26.

The Committee judges that a re-approval is not needed because data-collection is complete and if ever other data need to be collected the applicant must submit a new application.

With regards and best wishes of success in your research.

For the Ethics Committee,

Raymond LeBlanc,  
Presiding for Aline Giroux,  
Chair

H:\IDEONT\LTR-APP.3

**APPENDIX B**

**AUTHORIZATION TO USE  
THE MYERS-BRIGGS TYPE INDICATOR (MBTI)**

The writer, Judy Wyspianski, attended a course on the use and interpretation of the MBTI in organizational settings, in 1992. In addition, as a graduate with a Masters degree in Education, the writer has C-level credentials, which entitle her to purchase and use this instrument as indicated in the following statement:

“The MBTI, Form G, is available to those who have the requisite C-level professional credentials”.\*

- \* Krebs Hirsh, Sandra (1992). MBTI Team Building Program: Leader’s Resource Guide. Palo Alto, CA: Consulting Psychologists Press.



**APPENDIX C**

**INTEGRITY LEADERSHIP SEMINAR**

**Day One: "Inward Bound"  
Outline of Topics**

## **INTEGRITY LEADERSHIP SEMINAR**

### **Day One: “Inward Bound” Outline of Topics**

- **Biological foundations of behaviour**
  - Heredity and physiology**
  - Environmental influences**
  - Promoting well-being, growth, and development**
  - Avoiding harmful situations**
- **The human difference**
  - Life and choices**
  - Self awareness**
  - Self esteem and self management**
  - Taking control**
  - Responsibility and accountability**
- **Attitudes and performance**
  - Positive and negative thinking habits**
  - The incredible power of attitudes**
  - Frames of mind that affect thoughts and behaviour**
  - More positive attitudes and thinking habits for better performance**
- **Motivation and achievement**
  - Motives: the driving forces for behaviour**
  - Building strength and commitment**
  - Relationship of motivation to achievement and work performance**
- **Basic psychological needs**
  - The most basic human needs, need hierarchies**
  - How need satisfaction creates positive behaviour**
  - Need for order and self-determination**
  - Need to belong and to stand out**
  - Need for meaning**
  - Need for power**

## **APPENDIX C (Cont'd)**

- **Relationship values**
  - Relationship principles as the key to success**
  - Care and respect**
  - Responsibility and trust**
  - Commitment and honesty**
  - Understanding and self-discipline**
  - From understanding human nature to day-to-day leadership behaviour**
  
- **Personality preferences and behaviour preferences**
  - The Myers-Briggs Type Indicator (MBTI)**
  - Understanding ourselves**
  - Appreciating others**
  - Solving problems**
  - Communicating effectively**
  - Improving teamwork**
  - Resolving conflicts**

**APPENDIX D**

**INTEGRITY LEADERSHIP SEMINAR**

**Day Two “Outward Bound”  
Outline of Topics**

## **INTEGRITY LEADERSHIP SEMINAR**

### **Day Two “Outward Bound” Outline of Topics**

- **Key dimensions of performance**  
Person/work interplay  
Impediments to performance  
Workplace stressors, distress, illness and burnout  
Effects of stressors on performance and the bottom line  
Toward self-renewal and consistently optimal performance
- **Integrity centered leadership**  
The concept of integrity as it applies to leadership  
Foundations of integrity in the modern organization  
Implications of integrity for performance and productivity  
From creative vision to profitable results
- **Maintaining effectiveness, productivity and profitability**  
An organizational perspective on attitudes  
Communication patterns and their impacts  
Congruent communication patterns vertically and horizontally  
Attitudes and clear communication: keys to high morale
- **Successful change**  
Life is change  
The key to survival is the ability to manage or cope  
with the demands and challenges of everyday life  
Principles of successful change
- **Toward the next century**  
Healthy minds in healthy bodies  
Accomplishing more and better with less stress and effort
- **Group assignment**  
Identify the obstacles to implementing integrity centered leadership  
Identify the solutions (challenges) for overcoming the obstacles  
Develop an action plan for implementing the solutions

**APPENDIX E.1**

**ITEM CATEGORIZATION CHECK BY JUDGES**

### Item Categorization Check by Judges

Nine judges were provided with the list of PIRS items in random order, and separately with the list of PIRS major themes. Each judge was asked to indicate which major theme the item reflected, and the extent to which there was fit or congruence (high, medium or low) between the item and the theme. The results are summarized below, for the combination of high and medium fit judgements summed across nine judges.

Item	Major theme		
	Leadership Integrity	Managerial Effectiveness	Vertical Teams
To what extent does the interviewee provide positive feedback and constructive criticism to members of his or her team?	5		4
To what extent does the interviewee promote open and positive internal as well as external communication?		9	
To what extent does the interviewee encourage fellow employees to meet the demands for achieving the goals of the organization?	2	4	3
In doing his/her job, does the interviewee make use of integrity centred leadership principles?	8	1	
To what extent does the interviewee explicitly recognize the individual skills of members of his/her work team?	3		6
To what extent is the interviewee conscious of using the leadership principles in day to day practice?	9		
To what extent does the interviewee work actively to create positive attitudes and enhanced performance among fellow workers?	3	4	
To what extent does the interviewee express the desire to build a new organizational culture based on integrity principles?	3	6	

### Appendix E.1 (Cont'd)

Item	Major theme		
	Leadership Integrity	Managerial Effectiveness	Vertical Teams
To what extent does the interviewee establish mutually accountable support systems?		4	5
To what extent does the interviewee adapt the knowledge acquired during the seminar to the organization's values and goals?	5	4	
To what extent does the interviewee show understanding of basic human needs and relationship values?	9		
To what extent does the interviewee strive to enhance the talents of the organization's employees?	1	6	2
To what extent do the comments of the interviewee concerning work environment suggest that he or she creates an environment for the team that is conducive to a positive work experience?	2	6	1
To what extent does the interviewee show consistent values-based leadership in supporting and reinforcing fellow workers?	3	6	
To what extent does the interviewee treat the people in his/her circle of influence in a caring and respectful fashion?	4	5	
To what extent does the interviewee make use of the values acquired in the seminar, in order to promote a healthy work climate?	4	3	2
To what extent does the interviewee use his or her strengths in order to lead people?	2	7	



### Appendix E.1 (Cont'd)

Item	Major theme		
	Leadership Integrity	Managerial Effectiveness	Vertical Teams
To what extent does the interviewee display flexibility in coping with the organization's demands or need for change?		5	4
To what extent does the interviewee express that he or she manages by responsibility?	3	4	2
To what extent does the interviewee express commitment and accountability to the organization?	8	1	

**APPENDIX E.2**

**THE PERCEIVED IMPLEMENTATION  
RATING SCALE (PIRS)**

## **The Perceived Implementation Rating Scale (PIRS)**

### **Instructions to coaches:**

The following rating scale was constructed by the writer (Judy Wyspianski), as a means of assessing the implementation of principles acquired, and attitudes toward, a leadership training workshop titled Leaders for Tomorrow. More specifically, we are interested in the perceptions of the workshop participants as expressed to you, the coach, during the follow-up interview.

In order to obtain and record these perceptions accurately, you are asked to conduct a semi-structured interview of approximately one hour's duration with each participant. After establishing rapport and assuring the participant of the anonymity of all replies, you are to ask each of the following questions, obtain a response, seek clarification if appropriate, and based on the answers enter four ratings on the columns at the right, on scales from 1 to 5.

The four columns to the right ask for the ratings of the following in relation to the content of each question:

- Degree to which the participant has been implementing, that is, applying, what is asked in the question, since the seminar.
- Degree to which the participant, even if unable to implement what is asked in the question, has been trying to do so.
- Degree to which the participant, in answering the question, makes positive or complementary statements about what is asked in the question.
- Degree to which the participant, in answering the question, makes negative or uncomplimentary statements about what is asked in the question.

In each case, the 5-point ratings are ordered from 1 (least, negative) to 5 (most, positive), with 3 being the intermediate or "neutral" point.

Proceed in this manner until all questions have been addressed, and ratings provided.

## APPENDIX E.2 (Cont'd)

### Part 1: Integrity Centred Leadership Principles

1. In doing his/her job, does the interviewee make use of integrity centred leadership principles?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

2. To what extent does the interviewee show understanding of basic human needs and relationship values?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

3. To what extent does the interviewee treat the people in his/her circle of influence in a caring and respectful fashion?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

### APPENDIX E.2 (Cont'd)

4. To what extent does the interviewee work actively to create positive attitudes and enhanced performance among fellow workers?

Applying: 1 2 3 4 5  
Least                      Moderate                      Most

Trying: 1 2 3 4 5  
Least                      Moderate                      Most

Positive: 1 2 3 4 5  
Least                      Moderate                      Most

Negative: 1 2 3 4 5  
Least                      Moderate                      Most

5. To what extent does the interviewee express commitment and accountability to the organization?

Applying: 1 2 3 4 5  
Least                      Moderate                      Most

Trying: 1 2 3 4 5  
Least                      Moderate                      Most

Positive: 1 2 3 4 5  
Least                      Moderate                      Most

Negative: 1 2 3 4 5  
Least                      Moderate                      Most

6. To what extent does the interviewee encourage fellow employees to meet the demands for achieving the goals of the organization?

Applying: 1 2 3 4 5  
Least                      Moderate                      Most

Trying: 1 2 3 4 5  
Least                      Moderate                      Most

Positive: 1 2 3 4 5  
Least                      Moderate                      Most

Negative: 1 2 3 4 5  
Least                      Moderate                      Most

## APPENDIX E.2 (Cont'd)

7. To what extent does the interviewee make use of the values acquired in the seminar, in order to promote a healthy work climate?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

### Part 2: Managerial Effectiveness

1. To what extent does the interviewee use his or her strengths in order to lead people?

Applying: 1 2 3 4 5

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

2. To what extent is the interviewee conscious of using the leadership principles in day to day practice?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

### APPENDIX E.2 (Cont'd)

3. To what extent does the interviewee express that he or she manages by responsibility?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

4. To what extent does the interviewee express the desire to build a new organizational culture based on integrity principles?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

5. To what extent does the interviewee adapt the knowledge acquired during the seminar to the organization's values and goals?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

## APPENDIX E.2 (Cont'd)

### Part 3: Vertical Team Building

1. To what extent does the interviewee explicitly recognize the individual skills of members of his or her work team?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

2. To what extent does the interviewee establish mutually accountable support systems?

Negative: 1 2 3 4 5  
Least Moderate Most

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

3. To what extent do the comments of the interviewee concerning work environment suggest that he or she creates an environment for the team that is conducive to a positive work experience?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most



**APPENDIX E.2 (Cont'd)**

4. To what extent does the interviewee provide positive feedback and constructive criticism to the members of his or her team?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

5. To what extent does the interviewee display flexibility in coping with the organization's demands or need for change?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

**APPENDIX E.2 (Cont'd)**

6. To what extent does the interviewee strive to enhance the talents of the organization's employees?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

7. To what extent does the interviewee promote open and positive internal as well as external communication?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

8. To what extent does the interviewee show consistent values-based leadership in supporting and reinforcing fellow workers?

Applying: 1 2 3 4 5  
Least Moderate Most

Trying: 1 2 3 4 5  
Least Moderate Most

Positive: 1 2 3 4 5  
Least Moderate Most

Negative: 1 2 3 4 5  
Least Moderate Most

**APPENDIX F**

**LETTER FROM THE ORGANIZATION  
TO POTENTIAL SEMINAR PARTICIPANTS**

## **Letter from the Organization to Potential Seminar Participants**

### **Note to the reader:**

The text of the letter provided below was sent to all potential participants, as an invitation to attend the Leaders for Tomorrow seminar. It was sent initially by Human Resources, from the Head Office of the organization. Then, within each area, it was sent by the area director together with his/ her own covering letter containing more specific information.

Each area director, among the information provided, made specific reference to two points:

- Participation in the part that included the administration and interpretation of a personality questionnaire (the MBTI) was strictly voluntary, even for participants agreeing to attend all other aspects of the workshop. And
- Participants who took the MBTI were thereby volunteering the data from the instrument and from the first Coaches' follow-up session, anonymously, for use in the writer's PhD thesis.

The workshop outline referred to in this letter is found in Appendices C and D.

## **THE LEADERS FOR TOMORROW SEMINAR**

### **What is it?**

The seminar is designed to address three fundamental dimensions of effective organizational leadership:

- Personal and interpersonal growth and effectiveness,
- Managerial leadership effectiveness, and
- Organizational performance.

## **APPENDIX F (Cont'd)**

### **What's the process?**

The principal from the consulting firm and his team conduct the seminars/workshops over a two-day period. These are supported by follow-up, on-site coaching to all seminar participants to help solve problems encountered in the practice of the new skills learned. Further, instruction is given in the use of vertical team building methods, to facilitate problem-solving and communication through the hierarchy. The seminars are a necessary first step in the culture change and support the introduction of quality process improvement to all employees.

### **What's the workshop outline?**

The workshop outline is attached.