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A STUDY OF THE UNDERLYING VALUES THAT MOTIVATE  
ELEMENTARY AND ADVANCED ACCOUNTING STUDENTS

DISSERTATION

Presented to the Graduate Council of the  
North Texas State University in Partial  
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By

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In order to accomplish their objectives, accounting educators must deal with the underlying motivational characteristics (values) of student populations and individual students. Values may be studied utilizing the Graves' Value-Level Theory and associated measurement tools. Graves identifies seven primary value-levels--value-level one, Reactive; value-level two, Tribalistic; value-level three, Egocentric; value-level four, Conformist; value-level five, Manipulative; value-level six, Sociocentric, and value-level seven, Existential.

This study deals with three problems--the influence of the study of accounting on the value-level choices of individuals, a comparison of value-level choices among accounting populations, and a comparison of value-level choices between accounting and each of four other disciplines. Two models were developed to test sixteen hypotheses related to these problems. One model isolates any influence of the study of accounting on value-level choice and the other model develops value-level profiles without regard to cause.

Multiple Regression Correlation techniques were used to analyze the data.

The major conclusions of this research are

1. The study of accounting has little effect on the individual's value-level choices;
2. All populations have a value-level profile indicating each value-level's influence on the population and the dominant characteristics of the population;
3. Value-level four is a dominant influence on all of the populations tested and is strongest in the accounting samples;
4. The influence of the value-levels on the accounting populations change as the accounting sequence is completed
5. Different disciplines attract populations with different value-level concentrations;
6. The elementary accounting population does not resemble the general student population; and
7. Individuals with strong value-level two characteristics may leave the academic environment.

In addition this study developed a potentially powerful method for obtaining some of the knowledge and insights necessary to solve some of the important educational problems in accounting.

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## CHAPTER I

### INTRODUCTION

Accounting is one of the basic tools needed to understand today's economy. As such, it affects and is potentially useful to everyone (e.g., areas of personal finance, the national budget, employee evaluation, and investments). Given the significant role of accounting in our society, one needs an understanding of the relationships, principles, and objectives of accounting in order to be an informed citizen (5, p. 55). Similarly, one needs the basic ability to understand and utilize the information presented in various financial and managerial reports. Beginning accounting courses have the following two major functions in the process of providing the opportunity to gain this understanding and ability: (1) to motivate and prepare students for further study in accounting, and (2) to serve as the only formal accounting education for the majority of students involved (5, p. 54).

In recent years, the role, and the required level and complexity of knowledge, of the accountant in society, both in traditional and non-traditional functions, has expanded significantly in areas such as certified public accounting activities, management information services (especially in regard to computers), and social responsibility accounting.



Therefore, an education in accounting beyond the beginning courses must prepare individuals to face an extremely challenging environment, and, in order to serve the expanding needs of society, may need to prepare different types of individuals for a career in the accounting profession (10, pp. 38-40; 4, p. 1).

Furthermore, in order for advanced accounting courses to train the variety of individuals needed by the accounting profession, basic courses must be appropriately designed to attract enough of the "right" people. They must also foster sufficient interest to entice these people to continue their study of accounting (5, p. 54).

The structure of the class and the learning experience is determined by the methods employed by the instructor. However, while the instructor can establish a structure and framework for the student, each student will respond according to his own underlying characteristic values (2, pp. 136-137). Thus, if the instructor could determine the underlying values of the students, he would be able to establish the class structure and choose the instructional methods and techniques to which they would best respond.

One promising method for determining basic underlying values is the Graves' Value-Level Theory (7). This theory was developed by Clare Graves and can be applied to individuals and to groups (see Chapter III for a more complete discussion).

This theory recognizes that an individual functions in multiple life arenas, and that during his lifetime each individual may, in each life arena, progress through different value-levels, remain in one value-level, or regress to previous value-levels. Graves' system contains eighteen or more value-levels and is completely open-ended. Today, however, only the first seven value-levels appear to be present to any degree (see Table I). Each value-level has a psychological basis from which behavior can be explained or predicted if the intervening environmental variables are known. Therefore, if an individual's value-level(s) can be determined, the methods of communication and means of motivation can be selected that are most likely to be effective.

Levels one through six are called the "Subsistence Levels." Their overall goal is the establishment of individual survival and dignity. Level seven is the beginning of the "Experientialistic" cycle where man has "become reasonably secure, both physically and psychologically." At present, man, in each of his life arenas, exists in these seven levels (7, p. 73-75).

Finally, to determine the value-level(s) in which an individual is operating, one can use the "Values For (life arena)" Scales, which were developed by Vince Flowers, Charles Hughes, and their associates, for implementation of the theory. Although each scale measures the same type of underlying characteristics and is based on the same theory, a different scale is required for each life arena. Therefore each scale

TABLE I

VALUE-LEVELS AND THEIR PSYCHOLOGY\*

<u>Level</u>	<u>Psychology</u>
1. Automatic Existence	The major characteristic of this level is a physiological existence requiring immediate satisfaction of physiological needs with little or no self-awareness beyond the physiological.
2. Tribalistic	The major need of this level is for stability and control. The individual strongly defends a way of life without understanding it. Existence is based on myth and tradition with little concern for self since the individual lives for and in the tribe.
3. Egocentric	In this level, knowledge of self is characterized by "raw, rugged, self-assertive individualism." Assurance of one's survival at any cost and against anyone is paramount. A "might is right" mentality exists.
4. Saintly Existence	Suffering in present life for later reward, believing in salvation, and living by the rules prescribed for one's class including self-sacrifice and denial are all facets of this level.
5. Materialistic	Objectivistic, positivistic, operationalistic scientific method is used to obtain wealth and power by individuals in this level.
6. Personalistic	In this level, the central concern has become peace with self and the existence of harmonious relations within the group. Belonging and acceptance are most important with a trust in the good of all mankind.
7. Cognitive	The major belief of this level is "knowing and having to do so that all can be and can continue to be."

\*Clare W. Graves, "Human Nature Prepares for a Momentous Leap," The Futurist, VIII (April, 1974), 77.

is developed using words and meanings relative to the particular arena of interest (6, 9).

#### Purpose and Problems

Observations of members of the accounting profession indicate their tendency toward value-levels four and five on the Graves' value spectrum (Table I). Individuals at level four, Sainly Existence [later to be called Conformist (see Table III, Chapter III)], enjoy the "law of rules" presently governing the profession, are upset with the degree or uncertainty existing in many accounting areas today, and enjoy the mathematical relationships and processes involved in accounting. Individuals at level five, Materialistic [later to be called Manipulative (see Table III, Chapter III)], enjoy the opportunities for material gain, power, etc., that are available to a person who is well versed in accounting and its uses (7, p. 75).

If individuals with these tendencies are the principle ones attracted to the accounting profession, it is possible that the nature of the subject and the educational process are causal factors in the selection process (2, p. 140). Further, while elementary accounting populations are expected to resemble closely the general university population and include a variety of value-levels, intermediate and advanced student populations are expected to exhibit a narrower range of value-levels, mainly those value-levels found in the profession.

This study considers the following three problems as they are related to the foregoing discussion.

1. Does the study of accounting influence individuals with certain behavioral characteristics (as measured by the Graves' Value Level-Theory and the associated scales) to continue the study of accounting, and, at the same time, influence individuals with different characteristics to discontinue the study of accounting?

2. Is there a change in the primary value-level(s) concentration of students and the accounting student population as students progress from elementary through advanced accounting?

3. Do other disciplines attract individuals with the same mix of value-levels as those attracted to accounting, or do they attract individuals with a different mix of value-levels?

### Hypotheses

Given these three problems, there are a number of hypotheses that are explored by this study. The hypotheses are approached by developing a value-level profile of sample groups of the accounting student population and other selected student populations at North Texas State University. The null hypothesis, in each case, is stated as if there were no difference in group value-levels. Each of the General

Hypotheses is designed to look for the value-level concentration in each sample population. The Problem One, Two, and Three Hypotheses compare various sample value-level concentrations.

The student populations for this study are students of North Texas State University, Denton, Texas, who were enrolled in the following courses in the Fall Semester of 1978 or the Fall Semester of 1980:

Fall 1978

Elementary Accounting--ACIS 201  
Elementary History--HIST 261, 262

Fall 1980

Elementary Accounting--ACIS 201  
Elementary History--HIST 261  
Intermediate Accounting--ACIS 311, 312  
Senior Accounting--ACIS 435, 445, 448  
Senior History--HIST 440, 470  
Senior Economics--ECON 402  
Senior Finance--FINA 400, 434  
Senior Psychology--PSYC 363, 452

General Hypotheses

1. GHa. Elementary accounting student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).
- GHb. Elementary accounting student populations will exhibit one or more significant concentrations of value-levels.
2. GHa. Elementary history student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).
- GHb. Elementary history student populations will exhibit one or more significant concentrations of value-levels.

3. GHa. Intermediate accounting student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).  
GHb. Intermediate accounting student populations will exhibit one or more significant concentrations of value-levels.
4. GHa. Senior accounting student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).  
GHb. Senior accounting student populations will exhibit one or more significant concentrations of value-levels.
5. GHa. Senior finance student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).  
GHb. Senior finance student populations will exhibit one or more significant concentrations of value-levels.
6. GHa. Senior economics student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).  
GHb. Senior economics student populations will exhibit one or more significant concentrations of value-levels.
7. GHa. Senior history student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).  
GHb. Senior history student populations will exhibit one or more significant concentrations of value-levels.
8. GHa. Senior psychology student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).  
GHb. Senior psychology student populations will exhibit one or more significant concentrations of value-levels.

Problems 1 and 2 Hypotheses

9. P1-2Ha. Elementary accounting and intermediate accounting student populations will not exhibit significant value-level differences.
- P1-2Hb. There will be one or more significant value-level differences between elementary accounting and intermediate accounting student populations.
10. P1-2Ha. Elementary accounting and senior accounting student populations will not exhibit significant value-level differences.
- P1-2Hb. There will be one or more significant value-level differences between elementary accounting and senior accounting student populations.
11. P1-2Ha. Intermediate accounting and senior accounting student populations will not exhibit significant value-level differences.
- P1-2Hb. There will be one or more significant value-level differences between intermediate accounting and senior accounting student populations.

Problem 3 Hypotheses

12. P3Ha. Elementary accounting and elementary history student populations will not exhibit significant value-level differences.
- P3Hb. There will be one or more significant value-level differences between elementary accounting and elementary history student populations.
13. P3Ha. Senior accounting and senior history student populations will not exhibit significant value-level differences.
- P3Hb. There will be one or more significant value-level differences between senior accounting and senior history student populations.
14. P3Ha. Senior accounting and senior finance student populations will not exhibit significant value-level differences.
- P3Hb. There will be one or more significant value-level differences between senior accounting and senior finance student populations.



15. P3Ha. Senior accounting and senior economics student populations will not exhibit significant value-level differences.
- P3Hb. There will be one or more significant value-level differences between senior accounting and senior economics student populations.
16. P3Ha. Senior accounting and senior psychology student populations will not exhibit significant value-level differences.
- P3Hb. There will be one or more significant value-level differences between senior accounting and senior psychology student populations.

#### Usefulness of This Study

In addressing the problems indicated above, this study develops a general profile of the student value-level concentrations that are predominant at different stages of accounting education. (The value-level concentrations are measured by the Graves' Value-Level Theory and associated scales.) In addition, although value-level four is a predominant choice by students in all of the sample groups, this research indicates that students with certain value-level concentrations may be more attracted to disciplines other than accounting.

Given the expanding role of the accounting profession in both traditional and non-traditional areas, and the ever-increasing complexity of the body of knowledge that accountants need to be familiar with, educators must attempt to create optimal learning situations, and they may want to attract different types of individuals to accounting as a

profession. Moreover, educators must recognize that the needs of the participants in accounting education differ depending on the course. For instance, elementary accounting courses serve as an introduction to accounting study, not only for individuals who plan to become members of the accounting profession, but also for those who need only minimal accounting knowledge. On the other hand, advanced accounting courses primarily serve students seeking accounting careers (10, pp. 38-40; 5, p. 55).

An instructor may desire to structure his class to serve the needs of those individuals who plan to continue in the study of accounting. For instance, if accounting students are basically level four, Conformists, the instructor would emphasize rote memory, extensive and detailed instruction, and set rules for everyone. On the other hand, if the instructor wishes to appeal to students exhibiting various value-levels, he would adapt a flexible course structure wherein level four students, Conformists, would be handled as previously indicated while level seven students, Cognitive [later to be called Existential (Table III, Chapter III)], would be given basic instruction and assignments and allowed to proceed with minimal instructor contact and control.

The choice of course structure would depend on the perceived purpose of the course, which involves the knowledge level of the students, the value-levels of the students, and the value-levels of the instructor. One possible method of

insuring the correct mix of these factors would be to test the value-levels of the students and group them accordingly. This would allow each section of a course to have a predominant structure, at the same time appealing to and serving the needs of a wide range of individuals through the use of multiple sections (2, p. 138).

There is a wide range of educational techniques and aids (e.g., television, self-paced) that have been and will be used in accounting education. A knowledge of the value-level profile, and therefore the behavioral tendencies, of the students, would allow the instructor to match the appropriate technique to individual students and to groups of students. Studies of some of the presently used techniques have, at times, been inconclusive and even contradictory (3, 11, 12).

In most of the studies concerned with educational techniques, the underlying value-levels of the students involved were not determined and thus not taken into consideration. The resulting inconclusive or inconsistent results are not surprising, therefore, since it is likely that students with different value-levels were involved in the studies, and, as previously mentioned, the value-level of the individual affects how he responds to different educational techniques. With a knowledge of the value-levels predominant in the class, an instructor can choose the appropriate technique(s) and method(s) to accomplish his goals.

Further, a knowledge of value-levels, and the means required to appeal to and meet the needs of students at the different value-levels, would help the instructor allocate his scarce time. The instructor could identify both the students who need close supervision and those who can work on their own. For instance, in a class of sixty students, ten or twenty of them may be able to work with minimal assistance while ten or twenty other students may require closely corrected homework and close supervision. Thus, the individual instructor could serve the needs of individuals with different value-levels in the same class, or the students could be grouped in different course sections by value-level.

Additionally, this study indicates that individuals with certain predominant value-levels may be more attracted to disciplines other than accounting. Such value-level information could be used by accounting educators to develop programs to inform students of the varied aspects of an accounting career. Some students, who had not considered or been attracted to accounting, could thereby discover their aptitude for and interest in a challenging field of study.

Recently, the American Institute of Certified Public Accountants (AICPA) engaged the Educational Testing Service (ETS) to conduct an investigation to identify the skills and aptitudes needed to succeed in the study of accounting (1, p. 5). The ETS study is intended to provide a basis for the

development of an admissions test for students who are contemplating the study of accounting based on the acquired skills and aptitudes of the individual. However, it is not only the skills and aptitude of the individual but also his underlying value-levels that are important in the study of accounting. Thus, it is possible for an individual with the appropriate skills and aptitude to fail in accounting due to his underlying attitudes and beliefs. On the other hand, an individual with less skill and aptitude may be highly motivated due to his underlying attitudes and beliefs, and therefore be a success as an accountant.

Finally, by developing value-level profiles of accounting students, this research indicates what may be the initial value-levels of individuals as they enter the accounting profession. This information would be useful when considering such ideas as the ethical standards, the work standards, or the advancement potential of members of the accounting profession. Thus, accounting educators could consult more effectively with graduating students on job potential and with employers on potential employees.

The results of this study will (1) help accounting educators to serve the needs of the many different types of individuals who are involved in the study of accounting at various class levels, (2) indicate the need to attract more individuals of different value-level concentrations to the study of accounting, (3) aid the instructor in solving the

increasingly complex educational needs of those individuals who continue in accounting study (4) indicate the need to consider not only the potential accountant's skills and aptitudes, but also the way these skills and aptitudes relate to his value-levels, and (5) aid in the matching of individuals to available employment.

### Summary

Chapter I introduces the problems of this study along with their significance and importance, specifies the hypotheses to be examined, and states some possible, useful results of this study. The next three chapters discuss some of the underlying concepts of this study and the analytical methods employed. The last two chapters present the findings and conclusions of the study.

Chapter II reviews the concepts of attitudes and values and the related educational research in accounting. Chapter III deals with the Graves' Value-Level Theory and covers its development, present state, and relevant measurement tools.

Chapter IV describes the methodology employed in this study, discussing the sampling technique, the sample groups involved, and the data collection, coding, transformation, and correction. It also presents and discusses the analytical technique, hierarchical MMR/C and  $t$  tests, introduces and analyzes the models used, and discusses possible limitations of the study.

Chapter V presents analyses of the three problems addressed by this study. Chapter subsections review the hypotheses involved with the problems, and present the findings of the study in regard to these hypotheses. The final chapter presents the conclusions drawn from the analyses in Chapter V and suggests some possible future expansions of this study.

## CHAPTER BIBLIOGRAPHY

1. "Admissions Test Being Considered for Accounting," The CPA Letter, LX (February 25, 1980), 5
2. Amernic, Joel H. and Robin J. Enns, "Levels of Cognitive Complexity and the Design of Accounting Curriculum," The Accounting Review, LIV (January, 1979), 133-146.
3. Battista, Marianne S., "The Effect of Instructional Technology and Learner Characteristics on Cognitive Achievement in College Accounting," The Accounting Review, LIII (April, 1978), 477-485.
4. Cleveland, Gerald L., "The Future of the Accounting Curriculum in a College of Business Administration," Researching the Accounting Curriculum: Strategies for Change, edited by William L. Ferrara, Sarasota, American Accounting Association, 1975, pp. 1-5.
5. Fertakis, John P., "Toward a Revitalized Accounting I," Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 50-58.
6. Flowers, Vincent S. and Charles L. Hughes, Values for Marriage, Dallas, Center for Values Research, Inc., 1975.
7. Graves, Clare W., "Human Nature Prepares for a Momentous Leap," The Futurist, VIII (April, 1974), 72-87.
8. Grossman, Steven D. and Robert H. Strawser, "Accounting and Behavioral Concepts: A Classroom Approach," The Accounting Review, LIII (April, 1978), 495-500.
9. Hughes, Charles L. and Vincent S. Flowers, Value Systems Analysis Theory and Management Application, Dallas, Center for Values Research, Inc., 1978.
10. Langerderfer, Harold Q., "Society, Professions and Accounting Curricula," Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 38-49.



11. Laughlin, E. J., J. W. Gentry, and C. A. May,  
"Comparison of Alternative Forms of Teaching  
Fundamentals of Accounting," The Accounting  
Review, LI (April, 1976), 347-351.
12. Liao, Shu S., "Learner Directed Instruction: Additional  
Evidences," The Accounting Review, LIII (January,  
1978), 155-161.

## CHAPTER II

### ANALYSIS OF PREVIOUS RESEARCH IN ACCOUNTING

#### Introduction

As reviewed in this chapter, accounting educators recognize that accounting education must serve the needs of various types of individuals, must develop educational methods designed for the accounting discipline, and must consider the attitudes and desires of students in the development of the course structure. The effects of various educational methods depend on the quality of the methods and the attitudes and characteristics of the individuals involved. The value-level profile, based on the Graves' Value-Level Theory, can be used to categorize individuals and to indicate their characteristics and attitudes (13, pp. 78-79).

This chapter briefly explores the relationship between values and attitudes, followed by a review of the accounting research that is related to the structure of the accounting education process. This review is presented within the subsections of curriculum, specific methods and aids, and developmental levels.

#### Attitudes and Values

Bem (5) states that the three aspects that comprise attitudes are (1) emotional (feeling), (2) cognitive (thought),

and (3) social (interaction). Of these three aspects, Bem indicates that the social process is probably the most influential since attitudes are learned through experience and interaction with others.

Shaw and Wright (24, pp. 7-10) agree with Bem, stating that attitudes are learned. However, they emphasize the cognitive evaluative structure of attitudes, their interrelationships, and their social referents. Krech, Crutchfield, and Livson (17, pp. 756-772) expand this definition by adding that attitudes are an enduring organization of motivational, emotional, perceptual, and cognitive processes with respect to some aspect of a person's world. They also state that attitudes are the basis of an individual's response to a specific stimulus.

Based on these definitions, attitudes can be viewed as a set of emotional, cognitive, and social beliefs which endure in respect to some aspect of the world, and which form the basis of an individual's actions in a specific situation and at a specific time. In addition, attitudes are learned and can change given the appropriate social conditions.

Values have been defined in various ways which indicate that they encompass the needs of an individual from the physiological through the intrinsic. For instance, Adler (1) provides four possible alternatives: (1) values are absolutes existing external to man, (2) values are inherent in the material or non-material object based on that object's

potential to satisfy needs or desires, (3) values originate in the biological needs or the mind of man and are either learned or innate preferences, and (4) values are defined in terms of behavior.

Alternative (1) is concerned with internal truths that do not change with the situation or with time, and it is overly simplistic and highly restrictive. While alternative (2) allows values to change, it attributes them to the object and the way the object is viewed and not to the individual. Alternative (4) confuses values with attitudes which, as discussed above, are the basis of actions. Alternative (3) indicates that values are an aspect of man that may be learned or innate, and which can change with the situation and be applied in new situations.

Kluckholm (15) describes a value as a distinctive conception, explicit or implicit, of an individual or group, regarding what is desirable and which will influence the individual's actions. This definition is a combination of Adler's alternatives (3) and (4).

Rokeach (22, pp. 157-160) states that values are a standard or criterion for guiding action, for developing and maintaining attitudes, for justification of self or others, for judgements of self or others, and for comparison with others. The value concept, according to Rokeach, is dynamic, a determinant of attitudes, and more central than attitudes to the individual.

Thus, attitudes and values are interrelated aspects of the human psychic. Attitudes are a combination of emotional, cognitive, and social aspects that combine to dictate a response to various situations. Values underlie these attitudes and form a mental state of readiness, both physical and social, that interacts with situational variables to form a basis for attitudes. Finally, if values can be measured and the intervening situational variables understood, attitudes and the resultant behavior can be explained and predicted.

#### Curriculum

According to Clark (7, p. 1), "Education is like putting together a jigsaw puzzle." Clark suggests that there is little structure or framework for the student to use as a base to underlie the curriculum being studied. Thus, the student finds it difficult to organize his "learnings" into an integrated whole. The solution, according to Clark, involves a systemic approach to education that begins with the whole, thus providing a context in which to place the parts as they are learned. Further, in order to accomplish this objective, individuals need to employ the intuitive (or right) side of the brain as well as the rational (or left) side of the brain. Also, educators and others need to recognize that the educational processes must be considered in conjunction with the attitudes of the individual and that it must be understood in this context.

In order to consider the attitudes of individuals, it is necessary to measure them. This study provides one possible method of learning something about individual attitudes by looking at the underlying value-levels which are the basis for those attitudes (11, p. 42; 13, p. 72). Moreover, the educator must be careful in applying a "systemic approach." While all individuals may require a "basis from which to work," how they best obtain that framework is affected by their underlying value-levels.

In 1974, the American Accounting Association (AAA) published a book (9) that provides a forum for thought concerning accounting education. It contains a variety of papers that indicate what were, at that time, many of the concerns about, and possible methods and aids available to, accounting education. Some of the concerns discussed include (1) the structure of the class, (2) learning theories and their relation to accounting, and (3) evaluation of the student and of the instructor. Some of the methods discussed include (1) self-paced education, (2) programmed learning, and (3) modularized learning. Several educational aids discussed include (1) television, (2) case-method, (3) team teaching, (4) game theory, and (5) computers.

In the same year, a symposium discussed accounting curriculum and strategies for change. The symposium report (10) contains papers that cover different areas of accounting education. In general, the report recognizes the need for

change and updating of the accounting curriculum. Suggestions include the use of modularized segments, the introduction of social accounting principles into the curriculum, and the obtaining of information from employer groups as to what they require from employees with an accounting education.

The book (9) and the symposium report (10) indicate the breadth of concern about accounting education and suggest some possible innovations. The innovations include methods, aids, and suggest the need to understand the student and his relation to the learning process.

Additional questions raised by many authors indicate considerable dissatisfaction with the present accounting education structure. For instance, in reviewing accounting education up to 1974, Mautz (20, pp. 30-37) states that accounting education had changed in the previous three decades, and was now less relevant for both students and employers. According to Mautz, this change was caused by a shift in emphasis from teaching to research, from practice to theory, and from experience to publication. He suggests that there is a need to determine the student's future work-related requirements by first-hand experience and to make these requirements the center of accounting education.

Wilson (29) reviews the pedagogical mode of financial accounting. He notes that the present approach to course work and examinations assumes that each question has one correct answer which can be discovered by the well-prepared

individual. He recommends a change in the present modes of instruction to an accounting education that starts with a course introducing the student to the principles, rationale, assumptions, and limitations of accounting, continuing with the study of various authorities influencing accounting policy. A second course should present the accounting mechanism, and a third course should review the issues involved in corporate financial reporting. Wilson indicates that accounting education changed little in the 1960s while the needs it served changed significantly.

Smith (26, pp. 23-44) states that accounting education beyond the elementary level is based on influences of forty years ago (the 1920s and 1930s). While segments of this pattern are still useful, he states that other segments need to change. He also observes little or no innovation in those areas requiring change.

These authors indicate the extent of dissatisfaction with the accounting educational process, charging that it is no longer relevant to the needs of students and employers. Suggestions to bring about the required changes in the structure include (1) efforts to obtain employer input, (2) efforts to actively involve students in the educational process, and (3) efforts to develop more relevant educational methods and aids.

In Horizons for a Profession: The Common Body of Knowledge for Certified Public Accountants (23), Roy and MacNeil



develop a common curriculum for the education of the prospective Certified Public Accountant. They recommend that conceptual understanding rather than procedural skills be emphasized in classrooms. In addition, they indicate that the four-year accounting program cannot be expected to contain all of the general and technical knowledge required of the accountant.

On the other hand, Wu, Foran, and Dierks (30) surveyed manufacturing and financial firms in Texas. They report that perhaps procedural skills are as important as conceptual skills. The firms they interviewed desire students with backgrounds in logic, ethics, English, and general business. In fact, the firms indicate that these subjects and procedural skills may be more important than behavioral science, quantitative methods, and other recommendations made by Roy and MacNeil (23).

Willingham, McNeill, and Collins (28, pp. 173-180) briefly review learning theories as they relate to accounting. They discuss the need for the educator to recognize his roles as the creator of classroom environment and as a partner in the learning process. They state that the educator should be aware of the various forces influencing the learning process (such as peer pressure and the relationship between the instructor and the student) and of how to deal with them.

Kinard and Stanley (14, pp. 94-105) mention the rigidity found in most accounting courses. They suggest that there is

a need for flexibility and for individualization. The authors of the last two articles cited above suggest that students should be dealt with on an individual basis, and that their attitudes and behavioral characteristics should be integrated with the structure of the class. Therefore, if the student's underlying value-levels are the basis of his attitudes and behavioral characteristics, the value-levels can be measured and considered in establishing the class structure (13, pp. 84-85).

#### Specific Methods and Aids

Various aids and methods have been, and are being, developed to involve the student in the educational process. For instance, Newton, Cullen, and others (21, pp. 547-562) review the results of the implementation of an "innovative educational program." The program was designed to facilitate the involvement of the individual's intellectual and personal development in the learning process, and to develop the individual's ability to integrate and utilize new information with present information. Participating students were divided into eight general personality categories, and their interest in education was measured. Pretest results indicated that less than half of the students found education interesting. After one year, the attitude of those students involved in the new program had significantly improved. The authors contend that the new program, which

keyed on a recognition of the importance of the students' attitudes and the removal of "force" in program choice, successfully improved subject attitudes toward education.

Buehlmann (6, pp. 564-571) reports on the effects of "active student participation in elementary accounting." Data were obtained through the use of proficiency examinations and attitudinal surveys. The experimental group displayed a greater change in accounting proficiency, from pretest to posttest, than did the control group; however, it was not a significant difference. Attitude comparisons between the two groups, over the same time period as the proficiency examinations, resulted in no significant difference in a category of "satisfaction with accounting as an interesting career." However, under two other categories, "satisfaction with accounting as an exciting career" and "satisfaction with accounting as a stimulating career," the experimental group had a significantly higher change in attitude toward accounting. The study indicates a need for a variety of teaching techniques since all student groups are made up of individuals who require different stimuli.

Bailes (4) reports on the use of a "personalized System of Instruction" (PSI), which involves modularized course structure, written study materials, self-paced study, and student peer-proctors. Learning effectiveness, as measured by examination results, and student attitudes, as measured by the number and strength of recommendations to friends to

take the course, were significantly higher in the PSI group than in the control group. The dropout rate was significantly higher in the PSI group, however, especially at the start of the term.

Goosen (12) studied the use of a programmable calculator to solve accounting problems, and he reports that the calculator can be used easily for this purpose. From this and similar experiences, he draws the implications that (1) significant changes in accounting educational procedures will be necessary due to the use of the calculator, (2) it will become difficult to justify the requirement of manual problem solution, and (3) there will probably be a change in the subject matter emphasis in the classroom.

Thus, when the individual student's involvement, needs, and attitudes are considered in the structure of an accounting program, student attitudes toward education appear to improve significantly. In addition, the individual's outlook toward an accounting career or as a recommendation to friends appears to improve. Therefore, an understanding of the student's attitudes and behavior would be useful in developing and understanding the impact and effects of the course structure, the aids to be used, and the methods to be employed in the course. This study provides one method of understanding student attitudes and behavior by measurement of the student's underlying value-levels.

Studies related to specific methods of education have often provided inconclusive or inconsistent results. For instance, Koehler (16, pp. 313-328) reviews the use of television in the classroom at Pennsylvania State University, and he reports on the results of several other studies involving the method. Student reactions, obtained through a questionnaire, indicated that students prefer traditional methods in small sections; as class sizes increased, however, the favorable reaction to television also increased. The use of "Talk Back" systems with television were viewed as better than nothing but as inferior to live, small (thirty-five or less) class discussions. The results of television instruction were dependent on factors other than the quality of the program.

Koehler's review of the studies that relate to student achievement in television and non-television sections indicates no significant differences in proficiency or attitudes. The results of the method may be related to other factors besides class size or program quality, such as the attitudes and characteristics of the students involved.

Self-paced methods are designed to allow the individual to proceed at his own pace. However, such methods do not take into account the individual's structural needs and attitudes. For instance, some individuals may learn well on their own and at their own speed while other individuals may require constant contact and pressure to learn.

Battista (3) reports on a comparison of the achievement of elementary accounting students in conventional and self-paced classes. Her study includes a measure of personality characteristics based on "locus of control" requirements. ["Locus of control" refers to the individual's belief as to who controls him. Internal "locus of control" indicates that the individual believes he controls what happens to him; external "locus of control" indicates that the individual believes that outside forces (e.g., God, government) control what happens to him.] Battista states that students in the conventional sections scored significantly higher on achievement tests. In addition, the "locus of control" variable did not exhibit a significant effect either by itself or in interaction with the method of instruction. This would seem to indicate that the traditional methods of instruction are superior, and that personality has no effect.

Conversely, Liao (19) reports from his study that the students who were taught by self-paced methods outperformed the traditional control group on examinations. In addition, by grouping the students by entering grade-point average, he found that while there was no significant difference in performance for the higher group (3.5 and above), students in the middle group seemed to perform better under self-paced methods, and students in the lower group (2.5 and below) performed worse under self-paced methods. Once again, there

seems to be a need to differentiate among students before using specific methods and aids to instruction.

Laughlin and others (18) compared self-paced and audio-visual methods. They report no significant differences in performance under the two methods.

These inconsistencies in study results are not restricted to self-paced instruction. For instance, the use of business games was studied by DeCoster and Prater (8). They introduced a commercial business game into an accounting class and measured achievement and attitude change. They report that no significant differences were found in achievement or in attitude change between the experimental and control groups.

However, Solomon (27), using a competitive case-game, found a significant positive difference in attitude change toward accounting between the experimental and control groups. Student attitude toward accounting and other professions was measured both before and after the test period.

The conflicting results of such studies may be due, at least in part, to a lack of attention (or inconsistent attention) to individual and group differences. As previously indicated, individuals may operate at significantly different value-levels and this will affect the way they react to the various methods and aids used in the educational process.

#### Developmental Levels

The final issue to be considered in this chapter concerns the developmental level of the individual and its impact

on the educational process. Shute (25, p. ix) conducted an extensive study on the developmental stages of individuals in accounting education, based on Piaget developmental theories. He assumed that accounting students operate at the "concrete-operational stage," wherein the individual can think about things that are observable and can be manipulated (real world). However, in order to use abstract reasoning, the next higher stage of development must be reached. His testing confirms that, even at the graduate level, accounting students operate in the "concrete-operational" stage or just above it, and, therefore, they are able to use accounting algorithms but lack abstract reasoning ability.

Shute's analysis of examination problems indicates that most of the questions did not test abstract reasoning but instead tested the use of algorithms. According to Shute, accounting educators do not require students to exercise abstract reasoning abilities, but rote-memory. This fact, coupled with the ever-increasing demand for content placed on the instructor in the classroom, results in a continuing emphasis on rote learning with little use of the abstract thought process.

Amernic and Enns (2) report on the interaction of the students' conceptual level, based on behavioral characteristics, and the learning environment. Using three conceptual levels, they found that students in each of the three levels react differently to the same programs. The authors state



that it is the instructor's task to assess student learning styles and to adjust the structure of the learning environment to fit the student. They suggest that students should be grouped according to conceptual level, and that the design of the course should be based on the behavioral characteristics of the level involved.

While the individual's stage of development provides a general description of his ability to think and reason, it seems that the individual must also be socially ready to operate in a certain stage. It is the educator's responsibility to work with the individual at his stage of development and to help him progress. As indicated by Amernic and Enns (2), behavioral characteristics must be considered in this process. The educator must measure both the physical and social readiness of the individual in the classroom. While the individual's physical stage of development can be measured by various objective tests, the measurement of related attitudes and behavioral characteristics is much more difficult. This study provides a possible method for developing a profile of the individual based on the underlying value-levels of that individual.

#### Summary

In reviewing the related accounting research, it becomes obvious that there has been and is a great deal of concern about structure and methods of accounting education and the

aids used in the educational process. The conflicting and inconsistent results of studies concerned with the educational process indicate that there is a need to understand the individual and to know how he will react to different methods, aids, and structure. Chapter III discusses one method of obtaining this understanding.

## CHAPTER BIBLIOGRAPHY

1. Adler, F., "The Value Concept in Sociology," American Journal of Sociology, XXL (1956), 272-279.
2. Amernic, Joel H. and Robin J. Enns, "Levels of Cognitive Complexity and the Design of Accounting Curriculum," The Accounting Review, LIV (January, 1979), 133-146.
3. Battista, Marianne S., "The Effect of Instructional Technology and Learner Characteristics on Cognitive Achievement in College Accounting," The Accounting Review, LIII (April, 1978), 477-485.
4. Bailes, Jack C., "Lectures Versus Personalized Instruction: An Experimental Study in Elementary Managerial Accounting," The Accounting Review, LIV (January, 1979), 147-154.
5. Bem, Daryl J., Beliefs, Attitudes, and Human Affairs, Belmont, Brooks/Cole Publishing Company, 1970.
6. Buehlmann, David M., "Student Attitudes Toward Management Accounting and the Influence of the Management Accounting Course," Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 564-571.
7. Clark, Edward T., Jr., "Systemic Thinking: A New Mode of Educational Thought," Education Tomorrow, IV (October, 1979), 1-2.
8. DeCoster, Don and George Prater, "An Experimental Study of the Use of a Business Game in Elementary Accounting," The Accounting Review, XLVIII (January, 1973), 137-142.
9. Edwards, James Don, editor, Accounting Education Problems and Prospects, Sarasota, American Accounting Association, 1974.
10. Ferrara, William L., editor, Researching the Accounting Curriculum: Strategies for Change, Sarasota, American Accounting Association, 1975.

11. Flowers, Vincent S., "Conceptual Foundation for Human Resource Accounting," unpublished doctoral dissertation, Department of Accounting, North Texas State University, Denton, Texas, May, 1974.
12. Goosen, Kenneth R., "The Potential of Programmable Calculators for Solving Educational Accounting Problems," 1978 Southwest Regional AAA Proceedings, Baylor University, 1978, pp. 71-82.
13. Graves, Clare W., "Human Nature Prepares for a Momentous Leap," The Futurist, VIII (April, 1974), 72-87.
14. Kinard, J. C. and C. H. Stanley, "Rigidity or Systematic Flexibility?" Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 94-105.
15. Kluckholm, C., "Values and Value-Orientations in the Theory of Actions," Toward a Central Theory of Action, edited by T. Parsons and B. Shils, Cambridge, Harvard University Press, 1951, pp. 388-433.
16. Koehler, Robert W., "Television Related Instruction," Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 313-328.
17. Krech, David, Richard S. Crutchfield, and Norman Livson, Elements of Psychology, 3rd ed., New York, Alfred A. Knopf, 1974.
18. Laughlin, E. J., J. W. Gentry, and C. A. May, "Comparison of Alternative Forms of Teaching Fundamentals of Accounting," The Accounting Review, LI (April, 1976), 347-351.
19. Liao, Shu S., "Learner Directed Instruction: Additional Evidence," The Accounting Review, LIII (January, 1978), 155-161.
20. Mautz, Robert K., "The Over-Intellectualization of Accounting Education," Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 30-37.
21. Newton, James D. and others, "A Case Study of Comprehensive Educational Innovation," Accounting Education: Problems and Prospects, edited by James Don Edward, Sarasota, American Accounting Association, 1974, pp. 547-561.

22. Rokeach, Milton, Beliefs, Attitudes, and Values, San Francisco, Jossey-Bass, Inc., 1968.
23. Roy, Robert H. and James H. MacNeil, Horizons for a Profession: The Common Body of Knowledge for Certified Public Accountants, New York, American Institute of Certified Public Accountants, 1967.
24. Shaw, Marvin E. and Jack M. Wright, Scales for the Measurement of Attitudes, New York, McGraw-Hill, Inc., 1967.
25. Shute, George E., Accounting Students and Abstract Reasoning: An Exploratory Study, Sarasota, American Accounting Association, 1979.
26. Smith, Jay M., "The Advanced Financial Accounting Curriculum-Recent Developments and the Need to Reconsider Content, Sequence and the Blending of Theory and Practice in Courses Beyond the Introductory Level," Researching the Accounting Curriculum: Strategies for Change, edited by William L. Ferrara, Sarasota, American Accounting Association, 1975, pp. 23-43.
27. Solomon, Lanny, "Improving Student Attitudes in the Beginning Accounting Course," The Accounting Review, L (July, 1975), 601-605.
28. Willingham, J. J., I. E. McNeill, and E. F. Collins, "Learning Theories and Accounting," Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 173-180.
29. Wilson, David A., "On the Pedagogy of Financial Accounting," The Accounting Review, LIV (April, 1979), 396-401.
30. Wu, Yew-Jen Marion, Michael F. Foran, and Paul A. Dierks, "An Examination of Curriculum Requirements for Managerial Accountants," 1978 Southwest Regional AAA Proceedings, Baylor University, 1978, pp. 61-70.

## CHAPTER III

### VALUE-LEVEL THEORY

#### Introduction

As reviewed in Chapter II, accounting educators are concerned about the status of the accounting curriculum (6, 7). Moreover, reported results of studies concerning some of the suggestions to improve that curriculum are inconsistent and conflicting (2, 6, 17, 18). Shute (19) suggests that of major importance is the individual's stage of development. He indicates that an individual must have reached the "concrete-operational" stage in order to study accounting. In addition, he states that present-day accounting education neither requires nor develops abstract reasoning ability, which indicates that accounting education may neither attract nor develop individuals beyond the "concrete-operational" stage of development.

It is true that an individual must achieve a certain stage of physical development in order to use abstract reasoning. Also, as a result of the increasingly complex demands on the accounting profession, there is a need for accounting education to emphasize the development in students of abstract reasoning abilities. However, it must be remembered that each individual is a maze of different

attitudes and underlying values which are not a part of physical development (1, pp. 139-141; 16, p. 577). Such attitudes and values affect the individual's needs and desires, his behavior, and his responses to different situations. Therefore, such attitudes and values affect one's ability to operate in any particular stage of development regardless of one's physical state.

Knowing the developmental stage of the individual would not insure his responsiveness to an instructional program. In order to create a situation closer to optimal, there must be knowledge of the individual's underlying value-levels and how these value-levels affect the individual's responses to the various methods of communication and motivation. As previously mentioned, one promising method of determining these value-levels is the Graves' Value-Level Theory. Since 1966, this theory has been discussed in various journals including The Harvard Business Review, The Futurist, The Journal of Humanistic Psychology, and Personnel (10; 11; 12; 14; 15, pp. 168-170).

This chapter introduces Graves' theory in three sections. Section one reviews the background of the theory and its development. The second section briefly outlines the theory. Section three discusses the measurement tools developed for the implementation of the theory.

### Background of the Theory

While serving as a professor of psychology at Union College, Schenactady, New York, beginning in the early 1950s, Clare W. Graves became interested in what constituted the "healthy personality." To investigate the subject, he developed a research strategy that involved his students, his colleagues, and time (15, pp. 1-2).

In the first phase, Graves asked each of his students to write a description of the "healthy personality." He then asked his colleagues, acting as judges, to categorize (not correct) the descriptions in any manner they considered appropriate.

The second phase began with the students studying the views of various authorities in the field of personality. After this period of study, the students wrote a second description of the "healthy personality." As in phase one, Graves' colleagues categorized the descriptions as they saw fit.

In the final phase, the students defended their descriptions before the class. After all defenses were completed, the students wrote a final description of the "healthy personality." Once again, all of the descriptions were categorized by Graves' colleagues.

This process was continued over a period of years and resulted in an extensive data base. This data base consisted of personality descriptions from a large number of subjects,



the changes in the personality descriptions over the time period of the course, and the categorizations of those descriptions that had been accomplished by numerous judges.

From an analysis of the categorizations of the descriptions, two major categories became obvious, "deny self" and "express self." These categories were further subdivided into two subcategories each. (1a) deny self for later reward (level four), (1b) deny self for acceptance by others (level six), (2a) express self at the expense of others (level 5), and (2b) express self not at the expense of others (level 7) (15, p. 3; see also Table I, Chapter I).

Having developed the basic theory, Graves desired to find if there were any correlations to the standard tools of psychology (such as intelligence, personality, and problem solving measurements). He administered measurement tools to his students and correlated the results with the value-levels exhibited. Table I, Chapter I, lists the value-levels and some of their characteristics as found by Graves. (Table III provides a more current description of the value-levels.) At about the same time, Graves expanded his subject base to individuals other than university students in his psychology classes. Three more value-levels emerged from this analysis and completed the basic theory of seven levels. (While Graves later introduced eighteen or more levels, these seven form the basic levels that can presently be understood and measured.)

## Theory

Graves' Value-Level Theory can be related to other theories of human behavior and needs (Appendix F) and may form a general framework for such theories. It is open-ended, in that it permits the addition of more levels, and it can be applied both to individuals and to groups (Appendix E). Further, it combines and considers not only the attitudes and behavioral characteristics of individuals but also their physical development and potential (Appendix F; 11, p. 72).

Graves states that individuals move through the various value-levels in consecutive fashion (9, p. 12; 11, p. 73). Movement through the value-levels (Table II) depends on the opportunities available (removal of barriers such as family disapproval), the pressure placed on the individual (such as the loss of all financial capacity), and the ability of the individual. For instance, as people mature they tend to change value-levels as conditions dictate. However, if the individual is genetically or socially unable to change, then a level change will not occur (11, p. 72). Thus, while maturation may include value-level change, such a change is dependent on other factors, not automatic. In addition, the speed of value-level change and, indeed, if the change will occur, depends on the individual and the situation (11, p. 87).

The existence of a "crisis" phase is indicated in Graves' research (11, p. 87) and subsequently by Flowers and associates (15, pp. 19-22). A crisis is caused by dissonance

TABLE II  
 STEPS OF VALUE-LEVEL CHANGES\*

<u>Step</u>	<u>Characteristics</u>
1. Potential in the brain	The brain must be both physically and socially developed.
2. Resolution of the existential problems with which an individual is faced	Having solved the problems of existence at his present level, the individual is ready to move on.
3. Dissonance: A breakdown in the solution of current existential problems must occur.	The simple fact that problems of existence are resolved is not enough; there must be a crisis. The crisis triggers a <u>regressive search</u> that may lead to a solution at a previous level.
4. Insight	Insight enables the individual to solve problems in a new way. This stops the regressive search for old methods of problem solving.
5. Overcoming barriers	Few people around the individual will share the insight. Thus, those individuals will form barriers to be overcome or ignored. If these barriers are too strong, the individual will reenter the regressive search phase.
6. Consolidation	Consolidation occurs when the individual begins to practice his new way of behaving.

\*According to Graves, "Human Nature Prepares for a Momentous Leap," The Futurist, VIII (April, 1974), 87.

due to one's inability to handle some occurrence at one's present value-level. This dissonance results in a "regressive" search that takes the individual through previous levels in an attempt to find a satisfactory means of solving the problem. When satisfied, the individual remains at the previous level of existence. If the individual experiences "insight," he is ready to move to the next level of existence with a new method of handling his problems (11, p. 87). The steps involved in value-level change are presented in Table II.

For example, assume an individual at level five, Manipulative, experiences financial disaster. Since one who is on this level is achievement oriented, with a respect for material possessions and power, such an occurrence would be devastating to his psychic well being. During a "regressive" search, the individual might enter level 4, Conformist, and be satisfied with its "deny self for later reward" orientation. On the other hand, he may experience "insight" and decide that the loss of his wealth was a way to become accepted by many other individuals and to live harmoniously with them. This would represent a change to level six, Sociocentric.

While each of the two general categories contain specific high level characteristics (such as repression of self and expression of self), it is clear that each of the individual levels has its own specific behavioral characteristics (see Tables I and III). If an individual operates primarily on

TABLE III

VALUE-LEVELS\* AND BEHAVIORAL CHARACTERISTICS

Level (**)	<u>Behavioral Characteristics</u>
1. Reactive (Automatic Existence)	An awareness which excludes "self" and is limited to the presence of physiological needs and their solution. The individual reacts to stimuli in order to obtain immediate solution of basic needs such as hunger and pain.
2. Tribalistic (Tribalistic)	Belief in myths, tradition, spirits, magic, and superstition. The individual exists in the tribe which lasts forever. He requires a leader or chieftain to tell him what to do, and he believes that whatever the chieftain says is correct.
3. Egocentric (Egocentric)	Existence as an individual with full awareness of being a separate and distinct person. Survival of "self" becomes of paramount importance along with a desire for self-satisfaction in all things no matter what the cost to others. The individual is highly self-assertive, aggressive, and rebels against authority figures, norms, rules, and standards.
4. Conformist (Saintly Existence)	Conviction that there is a reason for life beyond self-satisfaction. The individual believes in future reward, especially in after-life with such characteristics as piety, self-sacrifice, harsh self-discipline, and a lack of self-indulgence. He prefers order, structure, and promotes clearly defined social roles.
5. Manipulative (Materialistic)	A materialistic outlook with a respect and desire for power, wealth, and position. The individual is rational and scientific in approach with a high achievement orientation. Within the constraints of society, he will use the rules of society and other people to obtain what he wants.

TABLE III--Continued

<u>Level (**)</u>	<u>Behavioral Characteristics</u>
6. Sociocentric (Personalistic)	Concern with relations of "self" to other individuals. Characteristics include a desire to belong and to be accepted with a concern with group harmony. The individual believes in the uniqueness and inherent worth of each person and finds basic value in humanity.
7. Existential (Cognitive)	The resolution of basic human fears, whereby the individual has a recognition of all existence, a value of spontaneity, simplicity, and sense-making ethics but not of conventionality. He seeks to live within society's constraints while enjoying maximum individual freedom and is inner-directed and self-motivated.

\*Based on Charles L. Hughes and Vincent S. Flowers, Value Systems Analysis Theory and Management Application, Dallas, Center for Values Research, Inc., 1978, pp. vi, 13-18.

\*\*Note: Some of Graves' original level names were altered to make them more descriptive. See Table I, Chapter I.

specific value-levels he will exhibit characteristics and behavioral postures associated with those levels, and he should be approached and motivated using techniques designed specifically for these levels (see Appendix G). In addition, people tend to view the world based on the characteristics of their value-levels; for this reason, they expect other individuals to act the same way they do. For instance a level six individual expects all people to be good and to be interested in the group (8, 13).

#### Measurement Tools

Vince Flowers and Charles Hughes and several associates, of the Center for Values Research, Inc., Dallas, Texas, have developed various measurement tools based on the value-level theory. Vince Flowers became interested in the Graves' Value-Level Theory while he was an accounting doctoral candidate at North Texas State University. After graduation, he, with M. Scott Myers, Charles Hughes, and several other individuals, continued to work with the theory to develop effective measurement tools. Their work led to the establishment of the Center for Values Research, Inc., a consulting firm that specializes in manager-employee problems. The firm is employed by organizations to help management understand and motivate employees. Using the appropriate values measurement scale, center personnel measure the basic value-levels of managers and employees, and based on the results, help

management to develop appropriate methods of communication and motivation.

Charles Hughes, in a conversation with this researcher, described a typical problem.

Management, desiring to acquaint employees with the aspects of a benefit program, develops a brochure and has it distributed to each employee. Later, the employees complain about the lack of a benefits program and threaten to strike. The problem: Management, on level five or Manipulative, developed an intricate brochure with all of the facts and figures concerning the plan. The employees, level two or tribalistic, found the brochure ridiculous because they were unable to read or understand it. Solution: Involve employee representatives and develop a brochure aimed at the value-level of the employees and not the value-level of the managers (13).

This subsection will review the format of the scales, the reasons for multiple scales, their reliability, and validity considerations.

#### Format

Each measurement scale consists of eight questions. Each question has six possible answers, representing value-levels two through seven. Level one, Reactive, individuals do not function above the physiological level, and probably they are not employed by the organizations consulted. Levels above seven rarely occur at present; such individuals would be difficult to measure and understand given today's knowledge (8).



### Scale Completion

There are twelve points per question and ninety-six points for the entire scale. When the scale is administered, the subject, for each question, divides the twelve points among the six possible answers, in any manner he desires (e.g., 0, 6, 0, 2, 2, 2). Point totals are summed over the eight questions by value-level. Normally, one level will be predominant, while a second level will also be evident. Usually, the two levels will be from the same general category (deny self, express self). For instance, level 2 = 4, level 3 = 2, level 4 = 25, level 5 = 10, level 6 = 55, and level 7 = 0. This result indicates an individual who is functioning at level six and level four, both of which are in the general category of "deny self." While every subject, when completing the scale, will assign points to more than two value-levels, only the two highest scores indicate the value-levels in which the individual is functioning (8).

### Multiple Scales

Even though each scale is constructed in the same manner, measuring the same basic characteristics, and based on the same theory, multiple scales are required, because each scale is related to a different aspect of the individual's life. Some of these life arenas are work, home, religion, and learning. The individual may have different value-level concentrations in each life arena (9, p. 24).

For instance, at work the individual may be a level two, tribalistic, requiring a leader, tradition, etc. However, at home the same individual may rule completely, demanding his own way no matter what the cost to others--a level three or egocentric.

The contents of each measurement scale are tailored to the life arena being tested. For instance, following is an example of a question constructed for the work-arena (5).

The kind of boss I like is one who

- tells me exactly what to do and how to do it and encourages me by doing it with me.
- is tough but allows me to be tough too.
- calls the shots and is not always changing his mind, and sees to it that everyone follows the rules.
- does not ask questions as long as I get the job done.
- gets us working together in close harmony by being more a friendly person than a boss.
- gives me access to the information I need and lets me do my job in my own way.

The following question is an example that is constructed for the learning-arena (3).

The kind of teacher I like is one who

- tells me exactly what the assignments are and how to do them and is there when I need help.
- keeps off my back because I do not like anybody telling me what to do or how to act.
- outlines the course in detail, is not always changing his or her mind, and makes sure that students follow the course outline.
- understand the game of getting through school and knows how and when to bargain with students.
- gets students working together in close harmony by being more a friend than a teacher.
- gives me access to the information I need and leaves me alone to learn in my own way.

### Reliability and Validity

The original value measurements scales, "Values For Working" (5) and "Values For Living" (4) were developed as a result of administering large numbers of experimentally written items and refining them through correlation analysis with the descriptions of levels two through seven (9, p. 14). In addition, the scales are developed by a committee that normally includes individuals from the Center for Values Research plus individuals with experience in the area to be tested. For instance, the "Values for Learning" (3) scale, which is used in this study, was developed by a committee of four individuals including Vince Flowers (Center) and Nancy Dickson (at that time associated with the Dallas Community Colleges; 13).

After development, the measurement scale is used and the resulting data are compared to the observed behavior of a sample of the subjects. The generated data, especially the business data, have often been used to develop solutions to problems (8, 13). The success of these programs, which were based on the data, strongly suggest that the scales do measure the underlying value-levels of the participants.

The method of development, the comparison of data to observed subject behavior, and the successful use of the scales in developing problem solving programs indicate that the scales are reliable. The number of questions (eight), and the tendency for subjects to remember questions and

answers over a short period of time, make it difficult to employ such tests of reliability as "split-half" and "test-retest." In addition, the phenomena being measured (behavioral characteristics based on value-level categorization) are expected to change, a change not limited to a particular time or direction.

Because of these confounding factors, reliability measures must be used carefully. For this study, "test-retest" reliability measurement was employed (see Chapter V). This test, coupled with the facts previously presented, provide an indication of the reliability of the scale.

The validity of the scales is supported by the foregoing factors. The use of a committee to develop the scales mitigates against the problem of preparer bias. The successful use of the scales, and the comparison of data obtained to observations of subject behavior, argue that the scales measure value-levels as described by Graves. In addition, the scales have "face validity;" they appear to measure what they claim to measure.

While the scales appear to be reliable and valid at the present time, their construction locks the individual into levels two through seven. Presently, as previously discussed, this is not considered a problem. However, there may be life arenas that require the measurement of level one, Reactive, individuals. Also, if mankind continues to progress, as

indicated by Graves, the measurement of levels above seven could become important.

A final problem that affects the use of these tools concerns the use of language and the meaning and relationships of words. Any researcher must be familiar with the population he is dealing with in order to insure the correct interpretation of the measurement statements. For instance, a scale prepared for an English-speaking sample, even if translated, probably would not be appropriate for a French-speaking sample. The researcher should take into account the background of the subject group and construct the scale accordingly.

#### Summary

Chapter III reviews the development and refinement of the Graves' Value-Level Theory. Briefly discussed are the present state of the theory, the value-levels, and movement through the levels. Measurement tools used in the implementation of the theory are introduced; and a discussion of the development of the tools, their format and use, and their reliability and validity is included.

The next chapter discusses the methodology of the study. The discussion covers data collection and processing, the analytical technique (Hierarchical MMR/C) employed, the models used and their analyses, and some possible limitations of the study.

## CHAPTER BIBLIOGRAPHY

1. Amernic, Joel H. and Robin J. Enns, "Levels of Cognitive Complexity and the Design of Accounting Curriculum," The Accounting Review, LIV (January, 1979), 133-146.
2. Battista, Marianne S., "The Effect of Instructional Technology and Learner Characteristics on Cognitive Achievement in College Accounting," The Accounting Review, LIII (April, 1978), 477-485.
3. Center for Values Research, Inc., Dallas, Texas, "Measurement Scale: Values for Learning," 1977.
4. Center for Values Research, Inc., Dallas, Texas, "Measurement Scale: Values for Living," 1976.
5. Center for Values Research, Inc., Dallas, Texas, "Measurement Scale: Values for Working," 1975.
6. Edwards, James Don, editor, Accounting Education Problems and Prospects, Sarasota, American Accounting Association, 1974.
7. Ferrara, William L., editor, Researching the Accounting Curriculum: Strategies for Change, Sarasota, American Accounting Association, 1975.
8. Flowers, Vincent S., personal interview with author, Dallas, 1978.
9. Flowers, Vincent S. and others, Managerial Values for Working, New York, American Management Association, January, 1975.
10. Graves, Clare W., "Deterioration of Work Standards," Harvard Business Review, XLIV (September-October, 1966), 117-128.
11. Graves, Clare W., "Human Nature Prepares for a Momentous Leap," The Futurist, VIII (April, 1974), 72-87.
12. Graves, Clare W., "Levels of Existence: An Open System of Values," Journal of Humanistic Psychology, X (Fall, 1970), 131-155.

13. Hughes, Charles L., personal interview with author, Dallas, July, 1979.
14. Hughes, Charles L. and Vincent S. Flowers, "Shaping Personnel Strategies to Disparate Value Systems," Personnel (March-April, 1973), 8-23.
15. Hughes, Charles L. and Vincent S. Flowers, Value Systems Analysis Theory and Management Application, Dallas, Center for Values Research, Inc., 1978.
16. Janis, Irving L. and others, Personality: Dynamics, Development, and Assessment, New York, Harcourt, Brace and World, Inc., 1969.
17. Laughlin, E. J., J. W. Gentry, and C. A. May, "Comparison of Alternative Forms of Teaching Fundamentals of Accounting," The Accounting Review, LI (April, 1976), 347-351.
18. Liao, Shu S., "Learner Directed Instruction: Additional Evidences," The Accounting Review, LIII (January, 1978), 155-161.
19. Shute, George E., Accounting Students and Abstract Reasoning: An Exploratory Study, Sarasota, American Accounting Association, 1979.

## CHAPTER IV

### METHODOLOGY

Since the problems addressed by this study are concerned with a "real world" situation--a situation which does not readily lend itself to laboratory conditions--a "quasi-experiment," a field study, was designed to test the hypotheses. The study took place over a period of two years and is concerned with the comparison of the underlying values, as measured by a tool based on the Graves Value-Level Theory, of several sample populations.

The study compares the value-levels, as defined by Graves, of undergraduate accounting students, in elementary, intermediate and senior courses. In addition, it includes sample populations from four other disciplines. Finally a series of demographic variables were collected on each subject in order to isolate and highlight any effect of the educational process.

This chapter reviews the sampling techniques and the sample populations involved in the study. It examines the measurements taken, the administration of the data package, and the experimental intrusion. Next, it introduces and discusses the analytical technique and the models used. Finally, it discusses possible limitations of the study.



### Sampling

Given the large number of students in undergraduate accounting, sampling was employed because "total counts" were not feasible. Convenience samples, consisting of individual courses, and selected sections of courses, were obtained during the Fall, 1978, and the Fall, 1980, semesters at North Texas State University.

For several reasons, convenience sampling was employed rather than random sampling. These reasons include (1) the relative ease and control of the administration of the test package, (2) all groups could be taken from the same time period for ease of comparison, (3) the relative ease of obtaining the sample population, and (4) the university registration process helps to increase the validity of the samples due to its randomizing function.

### Populations

The various sample groups (see Table IV) were composed of multiple sections of the same course or multiple courses composed of students at the same class level (e.g., seniors). This process was used to mitigate possible single-section problems such as instructor influence, time-of-day influence, and room influence. Further, it provided thirty or more subjects in each of the sample groups.

During the Fall of 1978, all of the class sections used in both the accounting and the history groups met at

TABLE IV  
 SAMPLE GROUPS AND THEIR ABBREVIATIONS

Fall 1978

- |  |  |
|--|--|
| 1. Elementary Accounting<br>(EA1) (ACIS 201) | 2. Elementary History<br>(OC1) (HIST 261, 262) |
|--|--|

Fall 1980

- |  |   |
|--|---|
| 1. Elementary Accounting<br>(EA2) (ACIS 201)       | 5. Senior History<br>(SLH) (HIST 440, 470)    |
| 2. Elementary History<br>(OC2) (HIST 261)          | 6. Senior Economics<br>(SLE) (ECON 402)       |
| 3. Intermediate Accounting<br>(JLA) (ACIS 312)     | 7. Senior Finance<br>(SLF) (FINA 400, 434)    |
| 4. Senior Accounting<br>(SLA) (ACIS 435, 445, 448) | 8. Senior Psychology<br>(SLP) (PSYC 363, 452) |

Note: 1, 3, 4. The accounting courses were chosen as representative of the accounting sequence. 2. The elementary history courses are required by the university for all students and can be considered as representative of the university population at the sophomore class level. 5. Advanced history was chosen as representative of a discipline unlike accounting and because of the previous use of elementary history. 6. Economics was chosen as a discipline unlike the accounting discipline but still related. 7. Finance was chosen as a discipline somewhat closely related to the accounting discipline. 8. Psychology was chosen as a discipline unlike accounting.

approximately the same time of day. Both groups contained between 100 and 300 subjects.

During the Fall of 1980, the sample groups were again selected on the basis of numbers of students and time of meeting. For each sample, at least two sections or two courses were selected.

### Measurement

The measurement tools used in this study consist of the demographic scale (Appendix A) and the Values For Learning scale (Appendix B). The format of the Values scale was introduced and discussed in Chapter III.

The same individual administered the data package to most of the courses and sections involved. When this was impossible, a second individual was utilized who was carefully instructed in order to insure as close as possible a similarity in administration.

Administration of the package occurred during normal class time, took approximately forty minutes, and took place during the same ten-day period during each of the years (1978 and 1980) involved. The time requirement included explanations of the study, of any possible effects on the subject, and of the nature of the tools. Such explanations are required by North Texas State University and by the United States Government for research involving human subjects. The data are identified by subject social security number, class level and type (e.g., FINA 400), and section number. Since the subjects are uniquely identified, confidentiality must be maintained; the data are being controlled by the researcher.

The tools (Appendices A and B) were used to collect raw data which were transformed to computer readable format.

Coding consisted of numerical representation of the demographic data and the Values For Learning data (Appendix C).

Prior to analyses, the data were reviewed using a computer program in an effort to uncover any missing or incorrect entries. Where possible, the data were corrected as indicated in Appendix D. Following the correction phase, all data were transformed as required by the analytical models developed for this study and the analytical tools used (Appendix C).

#### Experimental Intrusion

Normal accounting classes and class structure constituted the Experimental Intrusion. Since the study attempts to identify the present underlying value-levels exhibited in accounting classes, to compare those levels between classes, and to compare those levels with those found in other disciplines, no special controls or arrangements were required.

#### Analytical Technique

##### Hierarchical MMRC

Hierarchical Multiple Multiple Regression/Correlation was used to analyze the data obtained in this study. This method is an expansion of Multiple Regression/Correlation (MRC) analysis.

"MRC is a highly general and therefore very flexible data-analytic system that may be used whenever a quantitative

variable (the dependent variable) is to be studied as a function of, or in relationship to, any factors of interest (expressed as independent variables)" (2, p. 3). This broad statement is followed by a statement that analysis of variance and covariance methods are, technically, "special cases of the 'general linear model' in mathematical statistics" (2, p. 4). Given that MRC is this "general linear model," it follows that MRC can be used whenever the other techniques would also be appropriate (2, p. 5; 6, pp. 498, 599).

MRC, by use of the appropriate variables, can analyze the effect of different independent variables on the dependent variable. Thus, it removes, or "partials out," the effect of possible confounding variables from the analysis and then looks at the effect of the variable of interest (2, pp. 7-9). For instance, in analyzing the relationship between sex and income, it would be appropriate to remove the effect of education on income prior to looking at the effect of sex. In such research, education would be a confounding variable in regard to the target relationship.

Hierarchical MRC, as distinguished from stepwise MRC, allows the researcher to enter the variables in the order dictated by theory--his understanding of the relationships involved (2, p. 98; 4, p. 344). In this manner, the researcher tests his theory. Often, especially in human research, two or more variables will not be completely independent. If general regression techniques are employed,

this lack of independence will result in a loss of information or analytical accuracy. If step-wise regression is used, the computer decides the order of variable entry. However, the computer has no understanding of the theory involved and does not change the order of entry accordingly (2, pp. 102-103; 4, pp. 345-346).

For these reasons, hierarchical MRC allows the researcher to statistically remove the effects of confounding variables when analyzing the relationship between the dependent variable and specified independent variables (4, p. 321). Therefore, hierarchical MRC allows the researcher to address the complex behavioral arena.

#### Ordinal and Nominal Data

Much of the data collected in this study, as is the case in most behavioral studies, are not interval (continuous) in nature but are ordinal (ranking) or nominal (qualitative) in nature (2, p. 10; 5, p. 22). MRC is a parametric tool, and this means that its assumptions include the use of interval data (1, p. 55). Ordinal and nominal data may be analyzed by the use of non-parametric methods (5, pp. 20-25). However, in looking at the ordinal data collected in behavioral studies (and in this study), it appears that most of the ordinal scales approximate some type of continuum and are therefore related to interval scales (1, p. 64; 2, p. 10).

Nominal (qualitative) variables do not make the quantitative distinctions that both interval and ordinal variables make (2, p. 10; 5, pp. 22-23). (For instance, a numerical rating of religions would be difficult.) Thus, nominal data do not even approximate a type of continuum. However, data transformations have been developed to allow the use of MRC analysis with such data. One such method is known as Dummy Variable Coding (2, p. 173).

For instance, given the existence of four separate groups--such as single, married, separated, and divorced--the researcher could represent them in a model by the use of three nominal variables.

$$Y = A + B_1X_1 + B_2X_2 + B_3X_3 + e$$

where		$X_1$	$X_2$	$X_3$
$G_1$	single	1	0	0
$G_2$	married	0	1	0
$G_3$	separated	0	0	1
$G_4$	divorced	0	0	0 (reference group).

By such a transformation, the researcher can analyze the relationships between the dependent variables and the various categories depicted by the nominal variables.

In "Scales and Statistics: Parametric and Nonparametric" (1), Anderson reviews various studies comparing parametric and non-parametric statistical methods when used with non-interval data. He compares the methods using two major

categories, practical statistical considerations and measurement scale considerations.

In the first category, Anderson reports that the differences between the methods are not great when considering significance tests ( $F$  and  $t$ ) or power. However, the versatility of the parametric technique makes it much more useful in everyday psychological research.

Concerning the second category, Anderson points out that an interval scale is not a prerequisite to the use of tests of significance. Further, he argues that parametric tools are of more use, especially at the start of an investigation when the relevant variables and their relationships may not be well known. Given these findings, Anderson concludes that the type of measuring scale (data) should have little to do with the choice of analytical technique.

Thus, by use of the appropriate variables and transformations of nominal data, the MRC system can be used to analyze almost all of the multiple and varied types of influences involved. The MRC analysis results in a representation of the relationships between the independent and dependent variables. This representation is indicated by the Bs in the models.

#### Multivariate Analysis

The measurement tool, the Values For Learning scale, provides six possible dependent variables. However, MRC is



designed to handle one dependent variable, which indicates the need to use a multivariate technique such as Canonical Analysis (CA). Cohen and Cohen (2, pp. 440-444), however, suggest the use of a Multiple MRC system (MMRC). This technique consists of a series of regression equations (one for each dependent variable) and the use of t tests for comparisons among and between the equations. Cohen and Cohen argue that the use of CA involves the derivation of Canonical Variates that must be correlated to the independent variables. Usually it is difficult to interpret the relationships of the original variables (2, pp. 440-442).

Under MMRC, each independent variable is related to each dependent variable making the analysis and interpretation of the relationships much easier. The use of t tests (2, p. 331) allows the researcher to check for significant factors within the dependent variables while maintaining the individual relationships. CA variates may more easily indicate these significant factors, but at the same time they tend to mask individual relationships. Of course, MMRC assumes independent dependent variables (2, pp. 443-444). In this study, the value-levels are independent categories, each of which has its own behavioral characteristics (3, pp. 73-74).

A variation of Dummy Variable Coding (2, p. 173) can be utilized to represent the dependent variable when employing the MMRC analytical technique (2, p. 441). The method is

composed of the same steps as discussed in the previous subsection (Ordinal and Nominal Data) except that there is no reference group. For instance, the value-level choices analyzed in this research could be coded as follows:

Value-Level/Variable	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>3</sub>	Y <sub>4</sub>	Y <sub>5</sub>	Y <sub>6</sub>
2	1	0	0	0	0	0
3	0	1	0	0	0	0
4	0	0	1	0	0	0
5	0	0	0	1	0	0
6	0	0	0	0	1	0
7	0	0	0	0	0	1

Therefore, Hierarchical Multiple Multiple Regression/Correlation was selected as the analytical technique to be used in the analysis of the data obtained for this study.

#### Models

Underlying value-levels are affected by many different circumstances that impact the individual. The models used in this study include several important considerations as represented by the demographic data collected on each subject. The models are appropriate for comparison over time or at a point in time and can be used in the comparison of various sample groups.

#### Model Problem One

There are six separate regression equations, one for each value-level measured, levels two through seven (see

Chapter III, measurement tool). The general form of model 1 is

$$Y_i = A_j + B_1X_1 + \dots + B_nX_n + e$$

where

$$i = 1 - 6, j = 1 - 6, n = 35.$$

$\bar{Y}_{ik}$  = adjusted means where  $i = 1-6$   $k = 29-35$ ,  $A_c$   
(see Table V for a discussion of the variables).

Problem One is concerned with the relationship between value-level concentration and the study of accounting. Thus, variables one through twenty-eight may be considered confounding variables. Given this fact, all of the tests in the following discussion are designed to consider the association of value-level concentration or the difference in value-level concentration and the study of accounting.

Significance.--In this research, both the F and  $t$  tests are considered at the .05 significance level in order to provide reasonable assurance that any significant difference was not neglected. In addition both of the significance tests are robust to the various assumptions of parametric tests (2, p. 56; 6, pp. 37-38, 206-207).

Analysis.--The first step in the analysis is concerned with the value-level concentration within a class (e.g., elementary accounting). The above regression model, all six equations, was run, adjusted means calculated, and  $t$  tests taken over the appropriate means.

TABLE V  
MODEL VARIABLES

<u>Variables:</u>	<u>Meaning</u>
Y's	represent choice totals of the six value-levels (2-7) measured by the Values for Learning scale.
A's	represent the autonomous change in level.
X <sub>1</sub>	represents administrator and is used to "partial out" bias introduced due to the use of more than one data package administrator.
X <sub>2</sub>	represents time and is used to "partial out" general population effects due to the time difference 1978 to 1980.
X <sub>3</sub>	represents age and is used to "partial out" effects of the general maturation process of an individual. While Graves indicates this is secondary to the "crisis" process for change, this model is concerned with the effect of accounting education on the individual.
X <sub>4</sub>	represents sex and is used to "partial out" any effects due to a difference in sex.
X <sub>5</sub> -X <sub>8</sub>	represent ethnic background and are used to "partial out" effects due to different pressures on, and roles of, various ethnic groups.
X <sub>9</sub> -X <sub>11</sub>	represent marital status and are used to "partial out" the effects of the various involved responsibilities.
X <sub>12</sub>	represents military service and is used to "partial out" the effect of such service.
X <sub>13</sub> -X <sub>15</sub>	represent education of Father, Mother, and Self and are used to "partial out" the effects that various educational levels may have on the value-levels of the individual.

TABLE V--Continued

<u>Variables:</u> *	<u>Meaning</u>
X <sub>16</sub> -X <sub>27</sub>	represent the work background of Father, Mother, and Self and are used to "partial out" the effects of various work backgrounds.
X <sub>28</sub>	represents the number of accounting courses taken and is used to "partial out" the effect of a variable number of background courses in accounting.
X <sub>29</sub>	identifies elementary accounting (EA1, EA2).
X <sub>30</sub>	identifies elementary history (OC1, OC2).
X <sub>31</sub>	identifies intermediate accounting (JLA).
X <sub>32</sub>	identifies senior accounting (SLA).
X <sub>33</sub>	identifies senior finance (SLF).
X <sub>34</sub>	identifies senior economics (SLE).
X <sub>35</sub>	identifies senior history (SLH).
e	error
$\bar{Y}$ 's	adjusted mean of value-level choices per sample group after the removal of the effects of the confounding variables. Calculation of $\bar{Y}$ (2, p. 332) reference group equals $A_{ci}$ sample group <sub>ik</sub> equals $A_{ci} + B_{ij}X_{ik}$ where: $A_{ci} = A_i + B_{i1}\bar{X}_{i1} + \dots + B_{ij}\bar{X}_{ij}$ $\bar{X}_{ij}$ = mean of $X_{ij}$ j = the confounding variables in the equation. i = the equations in the analysis. k = the Dummy Variable group. $X_{ik} = 1$ (all other members of the Dummy Variable Group set to zero).

\*Variables 29-35 form a group, when all of these variables are 0, the group identified is senior psychology (SLP).  
(Dummy Variable Coding)

Note: See Appendix G for Variable coding.

$$\begin{array}{ll}
 H_0: \bar{Y}_{ik} - \bar{Y}_{lk} = 0 & k = 29, 31, 32 \\
 & i = 1 - 6 \\
 H_1: \bar{Y}_{ik} - \bar{Y}_{lk} \neq 0 & l = 1 - 6 \neq i \\
 & \bar{Y} = \text{adjusted means.}
 \end{array}$$

The above tests are designed to indicate the existence of significant value-level concentrations within a class. For instance, if no significant differences are found within the class, then all value-levels are equally present in the class. If, however, significant differences are found, then one or more value-levels is predominant.

The second step in this analysis is concerned with significant value-level differences between accounting classes.

$$\begin{array}{ll}
 H_0: \bar{Y}_{ik} - \bar{Y}_{il} = 0 & k = 29, 31, 32 \\
 & l = 29, 31, 32 \neq k \\
 H_1: \bar{Y}_{ik} - \bar{Y}_{il} \neq 0 & i = 1 - 6 \\
 & \bar{Y} = \text{adjusted means.}
 \end{array}$$

This analysis is designed to indicate any significant differences in value-level concentration between accounting classes. For instance, if elementary accounting has no significant concentration, and senior accounting has concentrations at levels four and five, a significant difference would be indicated by the  $t$  tests on the adjusted means obtained from regression equations  $Y_3$  and  $Y_4$ . Such a result indicates a narrowing of value-level due to the study of accounting.

The above series of analyses examined the value-level concentrations of accounting classes and the significant differences in those concentrations. The model includes

several variables which are designed to "partial out" all effects except for the study of accounting.

Model Problems Two and Three

While problems two and three are also concerned with value-level concentrations and differences in concentrations, they are not concerned with the cause(s) of the concentration or difference in concentration. Therefore, this model does not contain the number of confounding variables found in the first model.

As with the first model, F and t tests of significance were used at the .05 level. The general model is

$$Y_i = A_j + B_1X_1 + B_2X_2 + B_{29}X_{29} + B_{30}X_{30} + B_{31}X_{31} + \\ B_{32}X_{32} + B_{33}X_{33} + B_{34}X_{34} + B_{35}X_{35} + e.$$

$\bar{Y}$  = adjusted means. (See Table V for a discussion of the variables.)

Variables one and two were included as confounding variables in this model since they represent effects concerned with the test administration (administrator) or a general population change (time). All other variables previously included (such as sex and age) were not included since this model is concerned with value-level concentrations and differences in value-level concentrations regardless of cause. In addition, this model is concerned with all of the disciplines and not just the accounting discipline.

As in relation to Problem One, the first step in this analysis is to look for significant value-level concentrations within the various classes.

$$\begin{array}{ll}
 H_0: \bar{Y}_{ik} - \bar{Y}_{1k} = 0 & k = 29 - 35 \text{ and } Ac^* \\
 & i = 1 - 6 \\
 H_1: \bar{Y}_{ik} - \bar{Y}_{1k} \neq 0 & \underline{1} = 1 - 6 \neq i \\
 & \bar{Y} = \text{adjusted mean.}
 \end{array}$$

\*When using Dummy Variable Coding,  $Ac$ , the corrected  $A$ , is the  $B$  for the reference group (the group for which the variables in the set are all 0). In this case, the reference group is senior level psychology.  $Ac$  is obtained by adding all  $B$ 's, not in the set, to  $A$ . In this case,  $Ac = A_j + B_{i1}\bar{X} + B_{i2}\bar{X}$ .

These tests are designed to indicate the existence of significant value-level concentrations within a class.

Problem Two requires an analysis of value-level concentrations between accounting classes. The analysis consists of a general accounting class comparison (elementary, intermediate, and senior level).

The analysis is the same as the second step analysis in the previous model.

$$\begin{array}{ll}
 H_0: \bar{Y}_{ik} - \bar{Y}_{i1} = 0 & k = 29, 31, 32 \\
 & l = 29, 31, 32 \neq k \\
 H_1: \bar{Y}_{ik} - \bar{Y}_{i1} \neq 0 & \underline{i} = 1 - 6 \\
 & \bar{Y} = \text{adjusted means.}
 \end{array}$$

The analysis is designed to indicate any significant differences in value-level concentration between accounting classes.

Problem Three requires an analysis of value-level concentrations between the senior accounting group and senior other discipline groups, and between the elementary accounting group and the elementary history group.



$$H_0: \bar{Y}_{ik} - \bar{Y}_{il} = 0$$

$$H_1: \bar{Y}_{ik} - \bar{Y}_{il} \neq 0$$

$\bar{Y}$  = adjusted mean

<u>Senior</u>	<u>Elementary</u>
k = 32	k = 29
l = 33, 34, 35, Ac	l = 30
i = 1 - 6	i = 1 - 6.

This analysis is designed to indicate possible differences such as senior accounting value-levels of four and five and psychology value-level six.

The above series of analyses attempts to look at the value-levels of all sample groups and possible significant differences. Unlike the previous series (Problem One), it does not consider the association of the study of accounting to the value-levels.

#### Examples

In order to test for a significant value-level concentration in the elementary accounting group, the  $\bar{Y}$ s for elementary accounting ( $X_{29}$ ) are compared over all six equations. If elementary accounting contains levels four, five, six, and seven, but not levels two or three, a significant difference is found between these two groups of value-levels.

In order to test for a significant difference between senior accounting and senior history, the Bs for senior accounting and senior history ( $X_{32}$ ,  $X_{35}$ ) are tested within each equation. If senior history has a significant level six, and senior accounting does not, then the  $t$  test on the

appropriate  $\bar{Y}$ s for the equation  $Y_5$  indicates a significant difference.

#### Possible Limitations

This section reviews possible limitations in the three main categories of (1) external validity, generalization of the results, (2) internal validity, the accuracy of the study, and (3) miscellaneous.

#### External Validity

Since the sample groups are taken from the North Texas State University undergraduate student body and contain no graduate sample groups or professional sample groups, generalization of the results of this study are limited to the North Texas State University undergraduate student body. In addition, the use of convenience samples, rather than random samples, could limit the generalization to the sample groups involved. However, this is mitigated by the number of subjects and the general registration policies of the university. Such policies tend to randomize the students in the various sections. Further, this study was designed to develop a value-level profile of students in the selected populations. As such, it does not purport to solve problems in accounting education; instead, it develops a means for studying possible solutions based on the underlying characteristics of the individual.

"Faking" of answers may occur when testing human subjects. The number of subjects used in all sample groups is considered to be large enough to mitigate any distortions caused by possible faking. In addition, while faking could occur on the demographic questions, it is hoped that the simplicity of the form and the explanation of the study and its purpose insured that a minimum of faking occurred. Finally, the nature of the measurement tool, Values For Learning, would require a knowledge of the Value-Level Theory to effectively fake answers.

#### Internal Validity

The general passage of time allows outside events to affect the value-level concentrations of individuals. Within this study, such an effect would cause differences between the Fall, 1978, and the Fall, 1980, elementary accounting groups, thereby affecting the homogeneity of this sample group. A time variable was included in the models to partial out any effect of this type.

Organism maturation is expected to occur and is an integral part of the value theory where maturation may involve value-level change. Such a change in value-levels may be reflected by the subject's choice of remaining in accounting; it is therefore an appropriate part of this study. However, in addressing Problem One, the effect of maturation would be a confounding variable since this problem attempts

to isolate the effect of the study of accounting on the individual's value-levels. The age variable,  $X_3$ , was included to partial out this effect.

Some test learning may have occurred over time within the group tested. However, given the nature of the tool, the theory behind its development, and the intervening time period, it was not considered a major problem.

The use of specific sections and courses can lead to instructor effects, time-of-day effects, and other problems related to the use of single sections. The use of multiple sections or courses and the number of subjects involved mitigated any effects of this problem.

#### Miscellaneous

The use of any analytical tool requires adherence to the assumptions of that tool. Often the nature of behavioral data does not allow it to completely meet such requirements. The use of MMRC and  $t$  tests allow significance to be judged by the use of  $F$  and  $t$  tests. Both of these methods have been shown to be robust in regard to violations of their assumptions, such as independence and normalacy.

Multicollinearity, or interrelations between the independent variables, is common in behavioral studies. While the use of hierarchical MMRC allows the researcher to enter the variables according to existing theory, the order of that entry will still affect the analytical relationships between the independent and dependent variables (as indicated by the

Bs). Thus, the researcher must be careful when drawing conclusions based on the indicated relationships.

The use of the Values For Learning scale assumes the existence of separate life arenas, such as work and learning. Since the individual's value-levels may be different in different life arenas, the profile developed in this study must be limited to the learning arena.

The measurement scale is designed around a format which forces the individual into one of the six levels tested. If the population is composed of a significant number of individuals with value-level concentrations below two or above seven, the results of the use of the scale would not be valid. As discussed earlier, this should not be a problem at this time. However, if, as Graves indicates, man is progressing through the levels, it may become a problem and should be considered when reviewing any population under study.

Finally, the composition of the scale is dependent on language and the meanings and relationships of words. The researcher should keep his population in mind and update the scale as necessary (e.g., an English-speaking group vs. a French-speaking group) to accommodate the subjects as well as the life arena involved.

#### Summary

The data collected in this field study were obtained through the use of convenience samples from student

populations in accounting and other selected disciplines. The method selected for use in analyzing these data, given the models developed for this study, was Hierarchical Multiple Multiple Regression/Correlation. Due to the nature of this type of research, the use of samples, the assumptions involved in the use of analytical methods, and the construction and use of the measurement tools (demographic scale and the Values For Learning scale), various limitations affect the generalization and other use of the results of this study.

Chapter V reviews the results of the data analyses. The results are discussed in relation to the three problems addressed by this study and to the hypotheses that were developed based on those problems.

## CHAPTER BIBLIOGRAPHY

1. Anderson, Norman H., "Scales and Statistics: Parametric and Nonparametric," Psychological Bulletin, LVIII (1961), 305-316.
2. Cohen, Jacob and Patricia Cohen, Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences, Hillsdale, Lawrence Erlbaum Associates, Publishers, 1975.
3. Graves, Clare W., "Human Nature Prepares for a Momentous Leap," The Futurist, VIII (April, 1974), 72-87.
4. Nie, Norman H. and others, Statistical Package for the Social Sciences, 2nd ed., New York, McGraw-Hill, Inc., 1975.
5. Siegel, Sidney, Nonparametric Statistics for the Behavioral Sciences, New York, McGraw-Hill, Inc., 1956.
6. Winer, B. J., Statistical Principles in Experimental Design, 2nd ed., New York, McGraw-Hill, Inc., 1971.

## CHAPTER V

### RESULTS OF DATA ANALYSIS

This chapter is based on material presented in Chapters I through IV. The problems of this study and their related hypotheses are introduced in Chapter I. The value-level theory, including the value-levels and their characteristics, is discussed in Chapter III. The models developed for this research and the methods of analysis used, including the calculation of value-level adjusted means, are presented in Chapter IV. This chapter presents the results of the data analysis in four sections, (1) reliability of the measurement scale, (2) overview, (3) general results--value-levels, and (4) general results--value-level comparisons.

For ease of presentation in the tables and discussion in the text, the value-levels are usually referred to by number in this chapter. For instance, results for value-level two, Tribalistic, are listed under the number 2 on the tables and referred to in the text as value-level two. Other value-levels discussed in this chapter are value-level three--Egocentric, value-level four--Conformist, value-level five--Manipulative, value-level six--Sociocentric, and value-level seven--Existential.



### Reliability of the Measurement Scale

A subsection of Chapter III presents support for the reliability of the Values For Learning measurement scale. This section presents the results of a statistical test of the Values For Learning data that were obtained from 239 subjects over a four and one-half month semester (Fall, 1978) at North Texas State University. These results provide further support of the reliability of the instrument.

#### Test-Retest

The first section of Table VI contains the correlation factors that were obtained from a comparison of the individual's value-level raw scores at the start of the semester with his value-level raw scores at the end of the semester. While the factors range from .62 to .85, only the correlation factor for value-level three is below .72. Although all of the factors are lower than .9, they are fairly high for this type of data and measuring device (2, pp. 220-221).

Section two of Table VI contains the correlation factors that were obtained from a comparison of the individual's two highest value-level choices at the start of the semester with his two highest value-level choices at the end of the semester. This comparison does not utilize value-level raw score; it redefines the dependent variables to indicate the two highest, by raw score, value-levels. For instance, if the individual's value-level raw scores at the start of the semester are 24, 06,

37, 08, 12, and 09, they were recoded for this comparison to 2, 0, 2, 0, 0, and 0 (see Table VII).

TABLE VI  
RELIABILITY CORRELATION\*

Section One--Raw Score (Variable Range from 0 to 96)

<u>Value-Level</u>	<u>Raw Score</u>
2 . . . . .	.75
3** . . . . .	.62
4 . . . . .	.85
5 . . . . .	.72
6 . . . . .	.80
7 . . . . .	.84

Section Two--Highest Choices (Variable Range from 0 to 2)\*\*\*

2 . . . . .	.63
3** . . . . .	---
4 . . . . .	.60
5 . . . . .	.55
6 . . . . .	.68
7 . . . . .	.68

Section Three--Consistency of Choice

Percent of the 239 subjects choosing the same value-levels . . . .	61
Percent choosing only one level the same . . . . .	39
Percent choosing neither the same . . . .	0

\*Correlation factors obtained by use of simple linear regression.

\*\*Value-level three was chosen only four times out of a possible 478 choices (two choices per subject).

\*\*\*Based on value-level raw score, see Table VII for an example.

TABLE VII  
EXAMPLE OF VALUE-LEVEL CHOICE

A. Individual Scores								
Individual	Value-Level						Value Choice	
	2	3	4	5	6	7		
1	<u>24</u>	06	<u>37</u>	08	12	09	4	2
2	14	06	<u>25</u>	07	<u>28</u>	16	6	4
3	<u>30</u>	01	<u>25</u>	14	10	16	2	4
4	<u>27</u>	03	18	16	<u>23</u>	09	2	6
5	<u>26</u>	03	<u>24</u>	12	14	17	2	4
B. Value-Level Choice--Coded								
1	2	0	2	0	0	0		
2	0	0	2	0	2	0		
3	2	0	2	0	0	0		
4	2	0	0	0	2	0		
5	2	0	2	0	0	0		
Total*	8	0	8	0	4	0		
Mean	1.6	0.0	1.6	0.0	0.8	0.0		

\*If a value-level was chosen by each individual the total for that value-level would be 10 and its mean would be 2.0.

These correlation factors range from .55 to .68. No correlation factor is available for value-level three because it was chosen by only four of the 239 subjects as one of the two highest value-levels. While the section two correlation

factors are, in all cases, lower than those in section one, not all of the difference is attributable to lower correlation between the measurements used in section two. A part of each difference occurs because the dependent variables have different ranges (2, pp. 90-91). Raw-score variables (section one) range from zero through ninety-six, and value-level choice variables (section two) range from zero to two. Therefore, both sections one and two indicate relatively the same degree of correlation between the value-levels of the individual at both the start and the end of the semester.

Given the individual's two highest value-level choices at both the start and the end of the semester, section three of Table VI shows that (1) 61 per cent of the subjects chose the same two value-levels both times, and (2) 39 per cent of the subjects chose one of two value-levels both times. For instance, if the individual's value-level choices were 0, 0, 2, 0, 2, 0 and 0, 0, 2, 0, 0, 2, he would be part of the 39 per cent of the subjects.

The test-retest results support a belief in the reliability of the Values For Learning measurement scale. When these results are considered in conjunction with the reliability factors discussed in Chapter III, they support a contention that the Values For Learning scale is reliable.

#### Overview

The data obtained in this research were analyzed using hierarchical MMRC techniques. The dependent variables of

each of the MMRC equations indicate value-level choice (see Table VII). This section discusses some general results of the analyses as they relate to the problems addressed by this research.

#### Problem One--Model One

Model One was developed to satisfy the requirements of Problem One. The model contains a number of confounding variables, and it is designed to determine if the study of accounting alters the individual's value choices.

The percentage of explained variance that is attributable to all of the samples varies from 5 to 25 per cent, and the percentage that is attributable to the accounting samples varies from 0 to 13 per cent (Table VIII). These results do not support a conclusion that the study of accounting has a major effect on the value-level choices of individuals. For this reason, no further discussion of Problem One and Model One will be presented.

#### Problems Two and Three--Model Two

Model Two was developed to satisfy the requirements of Problems Two and Three. Model Two is designed to develop value-level profiles of the sample groups and to allow a comparison of those profiles between sample groups. Model Two is not purported to deal with the question of cause; therefore, it contains only two confounding variables, time and administrator, as compared to the twenty-eight confounding

variables used in Model One. The time variable was included to remove the effect of any general population value-level change between 1978 and 1980. The administrator variable was included to remove the effects caused by the use of more than one individual to administer the data test package.

TABLE VIII  
EXPLAINED VARIANCE ATTRIBUTABLE TO SAMPLE GROUPS\*

Value-Level	All Samples	Accounting Samples
2	.25	.13
3	.09	.03
4	.05	.03
5	.10	.00
6	.14	.11
7	.14	.10

\*Model One analyzed using HMMRC techniques (Chapter IV).

Subsequent sections of this chapter develop the value-level profiles of the samples and their comparisons. For ease of discussion, the following abbreviations are used in the text (1) EA--Elementary Accounting, (2) IA--Intermediate Accounting, (3) SA--Senior Accounting, (4) EH--Elementary History, (5) SH--Senior History, (6) SE--Senior Economics, (7) SF--Senior Finance, (8) SP--Senior Psychology, (9) V-L--value-level, and (10) A-M--adjusted mean.

## General Results--Value-Levels

Discussion of Table IX

Table IX presents the adjusted means (A-Ms) by value-level (V-L) for each sample. The size of the V-L A-Ms determine their relative influence on the characteristics of the samples. The two dominant V-Ls (two V-Ls with the highest A-Ms) indicate the characteristics that should be considered when dealing with the population or a significant portion of that population.

In addition, depending on the relative sizes of the V-L A-Ms within the sample, the V-L with the third highest A-M may also influence the characteristics of the population. However, this influence would be less than that of the two primary V-Ls.

Finally, the V-Ls within a sample with lower than the the third highest A-M have little, if any, influence on the characteristics of the sample. These V-Ls can normally be disregarded when dealing with the population. Of course, when dealing with individuals within a population, the individual's V-Ls must be considered no matter what may be the V-Ls of the population.

For example, in the Elementary Accounting (EA) sample, V-Ls four and two are dominant and V-L seven ranks third. In dealing with this population, the instructor would establish an unambiguous class structure (V-L four),

TABLE IX  
ADJUSTED MEANS\*

Sample	Sample Size	Value-Levels**					
		2	3	4	5	6	7
<u>Accounting</u>							
Elementary	354	.9483	.0219	1.5314	.2905	.4401	.7679
Intermediate	55	.7363	-.0005	1.6812	.2751	.5167	.7867
Senior	145	.6638	.0041	1.5430	.2337	.6179	.9263
<u>History</u>							
Elementary	186	.7462	.0153	1.4279	.2513	.7095	.8655
Senior	34	.5074	.0036	1.4795	.1129	.6182	1.2811
<u>Other</u>							
Economics	44	.6940	-.0025	1.4135	.2824	.4833	1.1274
Finance	64	.7934	.0288	1.4760	.2959	.4149	.9911
Psychology	71	.4065	-.0025	1.2374	.3527	.7754	1.2305

\*Model Two analyzed using HMMRC techniques (Chapter IV).

\*\*The dependent variable was coded 2 if chosen and 0 otherwise. Table V, Chapter IV explains the method of calculation of the adjusted means. If a value-level was one of the two highest choices for each individual in a sample, its adjusted mean would be 2.0000.

providing strong, close supervision (V-L two) while allowing some degree of individual choice (V-L seven).

#### Discussion of Table X

The V-Ls for each sample are presented on Table X in significant-choice order. The significant choices comprise



the V-L profiles of the samples; they are developed by comparing the V-L A-Ms within the sample by means of  $t$  tests at an .05 confidence level. Therefore, the degree of influence of each V-L on specific populations is indicated by the position of the V-L in the sample's profile.

When the A-Ms of two or more V-Ls within a sample are not significantly different, they are members of the same significant V-L choice. Any difference in V-L influence is statistically valid only when the V-Ls involved are members of different significant choices. For instance, the V-L profile of the Intermediate Accounting (IA) sample contains three significant choices, the first choice is V-L four, the second choice consists of V-Ls seven, two, and six, and the third choice is V-L five. In dealing with this population, the instructor would first consider the characteristics associated with V-L four, followed by the characteristics associated with V-Ls seven, two, and six.

However, even non-significant differences in V-L A-Ms may indicate a difference in V-L influence. For instance, within the Senior Economics (SE) sample, there is no significant difference between the A-M's of V-Ls four and seven, which indicates that they form a single significant choice. However, Table X shows that for five of the eight samples there are significant differences between the A-Ms of V-Ls four and seven, and the rank of V-L four to V-L seven is the same in all eight samples. This consistent pattern

TABLE X  
VALUE-LEVEL PROFILES<sup>a</sup>

Samples	Significant Choices <sup>b</sup>				
	1st	2nd	3rd	4th	5th
<u>Accounting</u>					
Elementary	4	2	7	6	5
Intermediate	4	7, 2, 6 <sup>c</sup>	5	. . .	. . .
Senior	4	7	2, 6	5	. . .
<u>History</u>					
Elementary	4	7, 2, 6	5	. . .	. . .
Senior	4, 7	6, 2	. . .	. . .	. . .
<u>Other</u>					
Economics	4, 7	2, 6, 5 <sup>d</sup>	. . .	. . .	. . .
Finance	4	7, 2	6, 5	. . .	. . .
Psychology	4, 7	6	2, 5	. . .	. . .

<sup>a</sup>Model Two analyzed using HMMRC techniques (Chapter IV).

<sup>b</sup>Value-levels are listed in descending order of their adjusted means presented in Table IX. Any value-levels with an adjusted mean not significantly different from zero are omitted from this table.

<sup>c</sup>The adjusted mean of value-level six is not significantly different from the adjusted mean of value-levels five, seven, and two. The adjusted means of value-level seven and two are significantly different from the adjusted mean of value-level five.

<sup>d</sup>The adjusted mean of value-level two is significantly different from the adjusted mean of value level five but not from that of value-level six. Value-level six is not significantly different from value-level five.

$t$  tests of significance between the adjusted means obtained for each value-level.

(1, pp. 185, 186, 331; 2, p. 142).

$$t = \frac{\bar{Y}_{ik} - \bar{Y}_{jk}}{\sqrt{\frac{\bar{s}d^2_{Y_i - \hat{Y}_i}}{n_i} + \frac{\bar{s}d^2_{Y_j - \hat{Y}_j}}{n_j}}}$$

indicates that V-L four has more influence on the samples than does V-L seven.

The use of Tables IX and X can be further illustrated by the following example. According to its V-L A-Ms (Table IX), the Elementary History (EH) sample is dominated by V-Ls four and seven with V-L two ranking third. Since V-Ls seven and two are in the same significant choice (Table X), there is no statistical indication that their influences on this population are different. However, Table X shows that, in seven out of eight samples, V-L seven is ranked ahead of V-L two, and that, in four out of those seven samples, they are in different significant choices. Therefore, the characteristics of V-Ls four and seven would be given major consideration and those of V-L two would be given minor consideration when dealing with the EH population.

#### Value-Levels

V-L four has the highest A-M and is the highest significant choice in all samples; therefore, the characteristics associated with V-L four can be expected to influence all of the populations. For instance, all populations desire the instructor to develop an unambiguous class structure; as an example of this structure, assignments should be handed in on specific dates.

With the exception of the EA sample, V-L seven has the second highest A-M, and it is the highest or second highest

significant choice in each of the samples (in the EA sample, it ranks third); therefore, the characteristics associated with V-L seven are prevalent in all populations. For instance, all of the populations learn best when allowed to make some choices within the class structure. (V-L seven influences the EA population the least of the eight populations tested.)

V-L three was seldom chosen by individuals in any sample, and its A-Ms are close to zero; therefore, the characteristics associated with V-L three are not found in any of the populations. For instance, none of the populations exhibit a ruthless desire for self-satisfaction no matter what the cost to others.

V-L five has the lowest A-M among significant choices in all samples (V-L three is not a significant choice); therefore, the characteristics associated with V-L five are not found to a significant degree in any population. For instance, none of the populations are characterized by a desire to manipulate rules to personal advantage; however, some individuals within the populations could exhibit such characteristics.

Except for the EA sample, the A-Ms of V-Ls two and six rank third or fourth in all samples; therefore, V-Ls two and six have only minor influence, if any, on the characteristics of these seven populations. Some individuals within the populations, however, will exhibit the characteristics of these V-Ls.

## General Results--Value-Level Comparisons

### Discussion of Table XI

The relative size of the A-Ms (Table IX) indicate the prevalence of the characteristics associated with the various V-Ls within each sample. The V-L profiles (Table X) indicate the relationships between the V-Ls within each sample. Table XI presents the results of a comparison of the A-Ms by V-L between samples. Where a significant difference was found, it is indicated in the table by an "S." Statistical  $t$  tests, incorporating a .05 confidence level, were used to make the comparisons.

### Accounting Samples

All three accounting populations are dominated by V-L four, which must be the first V-L to be considered when dealing with these populations. Given the size of their A-Ms, V-Ls five and three have little or no influence on the accounting populations and can be ignored.

The influence of V-L two decreases between EA and IA and between IA and SA. The decrease in influence becomes a significant difference (Table XI) as the accounting sequence is completed. Therefore, the prevalence of V-L two characteristics within the accounting population decreases as the accounting sequence is completed.

TABLE XI  
SIGNIFICANCE OF DIFFERENCES BETWEEN SAMPLE  
ADJUSTED MEANS\*

Samples	Value-Levels					
	2	3	4	5	6	7
A. <u>Elementary Accounting to:</u>						
Elementary History	S	-	-	-	S	-
Intermediate Accounting	-	-	-	-	-	-
Senior Accounting	S	-	-	-	-	-
B. <u>Senior Accounting to:</u>						
Intermediate Accounting	-	-	-	-	-	-
Senior History	-	-	-	-	-	-
Senior Economics	-	-	-	-	-	-
Senior Finance	-	-	-	-	-	-
Senior Psychology	-	-	S	-	-	S

\*S = significant difference at the .05 level.

t test within each of the HMMRC equations.

$$t = \frac{\bar{Y}_{ik} - \bar{Y}_{ij}}{\sqrt{s_{Y_i-\hat{Y}_i}^2 \left( \frac{1}{n_{ik}} + \frac{1}{n_{ij}} \right)}} \quad (1, p. 331).$$

V-Ls seven and six appear to increase in influence as the accounting sequence is completed. However, the differences are always non-significant and therefore not statistically valid.

Given these significant and non-significant differences, the characteristics of the accounting populations will change as the sequence is completed. The V-L four dominant characteristics do not change, but they are modified by different secondary characteristics.

#### Accounting and Other Disciplines

While there are differences in the V-L concentrations in accounting as compared to other disciplines, most of the differences are not significant (Table XI). The V-L profiles (Table X) of the samples indicate different significant choices for the various samples.

In all comparisons made in this study between the accounting samples and samples for other disciplines, the A-M of V-L four is higher in the accounting sample and the A-M of V-L seven is lower. V-L two characteristics are more prevalent in the accounting samples except when accounting is compared with the economics and finance samples. V-L six characteristics follow a reverse pattern; they are more prevalent in the accounting samples only when compared to the economics and finance samples. The characteristics of V-L three have no influence on any of the samples.

Given these significant and non-significant differences in V-L characteristics, the characteristics which must be considered when dealing with various whole populations are different. When dealing with individuals within any of the

populations, the individual's V-L choices must be considered and not the V-L choices of the population.

#### Chapter Summary

Chapter V reviews the results of an analysis of the data collected in this research. The results include a test-retest reliability measurement of the Values For Learning scale. The results of this test-retest comparison support a contention that the scale is reliable.

The results obtained from an analysis utilizing Model One (which contains a number of confounding variables) and dealing with Problem One are presented in an overview section. This analysis indicates that the study of accounting has little effect on an individual's V-L choices.

In other sections, V-L profiles are developed for each of the eight samples involved in this research. Comparisons are made among the profiles of the accounting samples, and the SA and EA profiles are compared to the profiles of other disciplines. These comparisons utilize Model Two, which contains only two confounding variables and which is concerned with V-L choices and not the causes of those choices. Consistent non-significant and significant differences in V-L choices were found among the various populations. Chapter VI discusses the conclusions that are based on the results presented in this chapter, and it suggests some possible expansions of this research.



## Chapter Bibliography

1. Cohen, Jacob and Patricia Cohen, Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences, Hillsdale, Lawrence Erlbaum Associates, Publishers, 1975.
2. Downie, N. M. and R. W. Heath, Basic Statistical Methods, 2nd ed., New York, Harper and Row, 1965.

## CHAPTER VI

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FURTHER RESEARCH

#### Summary

Since accounting is one of the basic tools that is needed in order to understand such areas as personal finance, the national budget, and employee evaluation, it affects everyone, directly or indirectly. All individuals could benefit from having the ability to understand and utilize the information that is presented in financial and managerial reports. In addition, the complexity of knowledge required of those who enter the accounting profession has been and is expanding significantly.

Given these factors, elementary accounting education must satisfy the two basic functions of (1) serving as the only formal accounting education for a large number of students, and (2) motivating and preparing a smaller number of students for further study in accounting. Advanced courses must prepare different types of individuals to be accounting professionals and to face its challenging environment.

In order to accomplish these objectives, both accounting educators and the structure of accounting courses must serve the needs of students who have a wide variety of underlying

motivational characteristics which indicate how an individual or student will react in various situations. For instance, some students perform at their best in a class in which the instructor has established rigid rules; other students prefer a loose classroom atmosphere in which they have more autonomy.

One method of measuring the underlying motivational characteristics of both groups and individuals utilizes the Graves' Value-Level Theory and its associated measurement scales (Chapter III). Values, as used in Graves' theory, are the basis for the individual's attitudes, beliefs, and behavioral characteristics. Therefore, if the intervening variables of a situation are known, the value-level of an individual may explain his actions or predict what his actions will be when faced with various stimuli.

Since individuals function at different value-levels in different life arenas (e.g., the learning arena or the working arena), the life arena of concern must be determined when measuring value-levels. For instance, at work one individual may operate as a value-level two, Tribalistic, who desires close supervision by his leader, while at home the same individual may operate as value-level six, Sociocentric, who desires group harmony and group action.

Certain educational methods, such as the use of television and self-paced courses, affect individuals according to their underlying value-levels. For instance, a self-paced course could work well for an individual who is able to work

alone with minimal instruction (value-level seven); if the course has well-defined, detailed structure, it could also satisfy the requirements of a value-level four individual. On the other hand, a self-paced course might not work for an individual who desires a great deal of contact with his instructor-leader (value-level two), or for an individual who prefers group activity (value-level six). Similarly, an individual's reaction to class structure is based on his underlying value-levels. A value-level six individual enjoys group discussion and interaction with the instructor. On the other hand, a value-level two individual prefers that the instructor lecture without requiring group interaction.

In order to select the educational methods and the class structure that will have the greatest potential for the accomplishment of his objectives, the instructor may want to consider the dominant value-levels of the group or individuals involved. If so, the instructor will want to determine (1) the value-levels of the group or individuals, and (2) the educational methods and structure that are appropriate to use with each value-level.

This study deals with three issues raised by the preceding discussion. The major problems (as outlined in Chapter I) are (1) the possible influence of the study of accounting on the value-level choices of the individual, (2) a comparison of value-level choices of students taking different courses within the accounting sequence, and (3) a comparison of the

value-level choices between the accounting populations and the populations of four other disciplines. Sixteen hypotheses that relate to these three problems were selected for testing in this study.

Two models (Chapter IV) were developed to test the hypotheses. The first model, which relates to Problem One, is designed to isolate any influence of the study of accounting on the value-level choices of the individual. The second model, which relates to Problems Two and Three, is designed to develop and compare value-level profiles for the various samples; unlike the first model, it is not concerned with causes.

Data were obtained from eight samples (Chapter IV) using the demographic scale (Appendix A) and the Values For Learning Scale (Appendix B). Hierarchical Multiple Multiple Regression Correlation techniques (Chapter IV) were used to analyze the data and to obtain adjusted means for each value-level within each sample. The adjusted means were compared by the use of t tests for significant differences at an .05 confidence level.

The analyses resulted in the development of value-level profiles for each sample. While few significant differences were found when the value-level profiles of the various samples were compared, consistent patterns of significant and non-significant differences were noted (Chapter V).

## Conclusions

The following conclusions are based on material presented in Chapters I through V. The value-level theory and the value-level descriptions are discussed in Chapter III. Value-levels and their characteristics are also listed in Table I, Chapter I and in Appendix G. The models that were developed for this research and the methods of analysis are presented in Chapter IV. Finally, the results of the analysis of the data collected for this research are discussed in Chapter V. The conclusions are presented in the subsections of (1) Problem One--Model One, (2) Value-Level Profiles--Model Two, (3) Problem Two--Model Two, (4) Problem Three--Model Two, (5) the Problem of Non-Significance, and (6) Applicability of Findings.

### Problem One--Model One

Problem one.--Does the study of accounting influence individuals with certain behavioral characteristics (as measured by the Graves' Value-Level Theory and associated scales) to continue the study of accounting and, at the same time, influence individuals with different characteristics to discontinue the study of accounting?

Model one.-- $Y_i = A_i + B_1X_1 + \dots + B_{35}X_{35} + e.$

Conclusion.--The study of accounting is not a major causal factor affecting the individual's value-level choices.

Model One is designed to determine if the study of accounting affects the value-level choices of individuals who are involved in its study. The percentage of explained variance (Table VIII) that is attributable to the study of accounting indicates that after the removal of the confounding influences included in this model, the study of accounting has, at most, a minor effect on an individual's value-level choices.

Value-Level Profiles--Model Two

$$\text{Model two.}--Y_i = A_i + B_1X_1 + B_2X_2 + B_{29}X_{29} + \dots \\ + B_{35}X_{35} + e.$$

Hypotheses One through Eight were designed to develop value-level profiles (significant value-level choices) for each of the various populations which are involved in this research. Since value-level three is not significantly different from zero in any sample, it has no influence on either populations or individuals; therefore, no further discussion of value-level three will be presented. In this subsection, the null hypotheses and related conclusions are presented for Hypotheses One through Eight. Subsequently, a review of the value-levels is presented that (according to the value-level profiles) should be considered when dealing with the populations.

When dealing with individuals within a population, the value-level choices of the individual are of primary concern, not the value-level choices of the population. For instance,

when developing a general class structure for an elementary accounting course, value-levels four and two would be of primary concern, which indicates a desire for an unambiguous class structure and close supervision. Yet some individuals within the Elementary Accounting population, who are dominated by value-level seven characteristics, would desire a great deal of autonomy within a loose general class structure.

Null hypothesis one.--Elementary Accounting student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).

Conclusion.--Elementary Accounting student populations exhibit significant value-level choices in the order of (1) value-level four, (2) value-level two, (3) value-level seven, (4) value-level six, and (5) value-level five.

Null hypothesis two.--Elementary History student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).

Conclusion.--Elementary History student populations have three significant value-level choices in the order of (1) value-level four, (2) value-levels seven, two, and six, and (3) value-level five.

Null hypothesis three.--Intermediate Accounting student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).



Conclusion.--Intermediate Accounting student populations have three significant value-level choices in the order of (1) value-level four, (2) value-levels seven, two, and six, and (3) value-level five.

Null hypothesis four.--Senior Accounting student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).

Conclusion.--Senior Accounting student populations have four significant value-level choices in the order of (1) value-level four, (2) value-level seven, (3) value-levels two and six, and (4) value-level five.

Null hypothesis five.--Senior Finance student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).

Conclusion.--Senior Finance populations have three significant value-level choices in the order of (1) value-level four, (2) value-levels seven and two, and (3) value-levels six and five.

Null hypothesis six.--Senior Economics student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).

Conclusion.--Senior Economics student populations have two significant value-level choices in the order of

(1) value-levels four and seven and (2) value-levels two, six, and five.

Null hypothesis seven.--Senior History student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).

Conclusion.--Senior History student populations have two significant value-level choices in the order of (1) value-levels four and seven and (2) value-levels six and two.

Null hypothesis eight.--Senior Psychology student populations will not exhibit any significant concentration of value-levels (all levels will be equally represented).

Conclusion.--Senior Psychology student populations have three significant value-level choices in the order of (1) value-levels four and seven, (2) value-level six, and (3) value-levels two and five.

General conclusions, hypotheses one through eight.--These conclusions represent the value-level profiles of each sample group as developed during the analysis of data collected for this research. The relative influence of each value-level on specific populations is indicated by the position of the value-level in the sample profile and the size of its adjusted mean relative to the size of the adjusted means of the other value-levels within the sample. Even though a value-level may

be dominant in more than one population, its degree of influence in each population may be different.

All of the populations tested in this study are dominated by value-level four. This indicates that all of the populations would prefer an instructor who has developed a clear, complete class structure; the instructor should specify assignments completely and establish firm due dates for assignments well in advance. However, all value-levels (as indicated by the adjusted means presented in Table IX) have varying degrees of influence on the characteristics of each population. Therefore educators should develop a course structure that will satisfy dominant value-level four characteristics and modify it according to the needs of the population involved.

As an example, in seven of the eight populations, value-level seven has the second strongest influence; therefore, the class structure developed for these populations should be modified to allow some degree of autonomy within a highly structured framework. The degree of modification desired by each of the populations depends on the relative strength of the influences of value-levels four and seven on the characteristics of the population. According to the data there would be less need for modification of the value-level four class structure in the Senior Accounting population than in the Senior Psychology population (see Tables IX and X).

Since value-level five is the lowest significant choice in all cases, its characteristics need not be considered when dealing with any of the populations. Some individuals within each of the populations, however, may exhibit value-level five characteristics.

Value-levels two and six rank third or fourth in seven of the eight populations. Therefore, depending on the relative size of all value-level adjusted means within each sample, value-levels two and six may influence the characteristics of a sample.

General conclusions, populations.--Value-level four dominates the Elementary Accounting (EA) population, and value-level two has the second strongest influence on this population; therefore, the characteristics associated with these two value-levels should guide the instructor in developing class structure and when choosing methods for education of this population. For instance, the instructor should establish a clear and consistent class structure (value-level four) and be aware that the population needs strong, close supervision (value-level two).

Value-level four also is dominant among the populations of Intermediate Accounting, Senior Accounting, Elementary History, and Senior Finance. Although value-level seven is a separate significant choice in only the Senior Accounting sample, it has the second highest adjusted mean in all four

of these samples. While value-level four would have the strongest influence in each of these four populations, the developed structure and chosen methods should be modified by some consideration of the characteristics associated with value-level seven. In the Intermediate Accounting, Elementary History, and Senior Finance populations, the chosen structure and methods should be further modified by some consideration of the characteristics associated with value-level two; therefore, the instructor would need to supervise these three populations more closely than would be necessary with the Senior Accounting population. In the Senior History, Senior Economics, and Senior Psychology populations, value-levels four and seven form a significant choice and must be considered as the dominant value-levels of these three populations.

#### Problem Two--Model Two

Problem two.--Is there a change in the primary value-level(s) concentration of students and the accounting student population as students progress from elementary through advanced Accounting?

$$\begin{aligned} \text{Model two.} \text{--} Y_i = & A_i + B_1X_1 + B_2X_2 + B_{29}X_{29} + \dots \\ & + B_{35}X_{35} + e. \end{aligned}$$

Hypotheses Nine through Eleven were developed to test for significant value-level choice differences among the three accounting populations (Elementary, Intermediate, and Senior).

Null hypothesis nine.--Elementary Accounting and Intermediate Accounting student populations will not exhibit significant value-level differences.

Conclusion.--There are no significant value-level differences between the Elementary and Intermediate Accounting student populations.

Null hypothesis ten.--Elementary Accounting and Senior Accounting student populations will not exhibit significant value-level differences.

Conclusion.--There is one significant difference in value-level choice between Elementary and Senior Accounting student populations; the adjusted mean of value-level two is higher in the Elementary Accounting sample than in the Senior Accounting sample.

Null hypothesis eleven.--Intermediate Accounting and Senior Accounting student populations will not exhibit significant value-level differences.

Conclusion.--There are no significant differences in value-level choice between Intermediate and Senior Accounting student populations.

Value-choice differences, hypotheses nine through eleven.--According to these conclusions, there is only one significant value-level choice difference among the three accounting

populations. However, consistent patterns of non-significant differences indicate that (1) the influence of value-level two decreases as the accounting sequence progresses, which is a pattern that culminates in a significant difference between Elementary and Senior Accounting; (2) the influences of value-levels seven and six increase as the accounting sequence progresses; and (3) the influence of value-level five decreases as the sequence is completed.

While value-level five does not have a strong influence on any of the three populations, it decreases in influence as the sequence is completed. This decrease may indicate that the educational process tends to reduce the materialistic and manipulative characteristics of the individuals involved.

The increase in the influence of value-levels six and seven indicates that, as the accounting sequence progresses, the populations develop more concern for group activity and group harmony (value-level six) and, at the same time, more interest in making more choices of their own within a class that is still more structured than autonomous (value-level seven). Both of these changes could be a product of the educational process and the sequence of courses involved. For example, all individuals at North Texas State University are required to take courses in the humanities and the social sciences. This broad-based education may affect the value-level choices of individuals since such exposure may increase

students' concern for others or cause them to desire more autonomy within the classroom structure.

The decrease in the influence of value-level two may be due to the natural maturation of the students, or it could be caused by the educational process. However, Table IX indicates that the influence of value-level two also decreases in the history sequence as it does in the accounting sequence. In addition, this research indicates that the study of accounting does not have a major effect on the value-level choices of the individual; therefore, the decrease in value-level two influence is probably due to attrition since individuals with strong value-level two characteristics may leave the academic environment, or change value-level characteristics.

#### Problem Three--Model Two

Problem three.--Do other disciplines attract individuals with the same mix of value-levels as those attracted to accounting or do they attract individuals with a different mix of value-levels?

$$\begin{aligned} \text{Model two.}--Y_i &= A_i + B_1X_1 + B_2X_2 + B_{29}X_{29} + \dots \\ &+ B_{35}X_{35} + e. \end{aligned}$$

Hypotheses Twelve through Sixteen were developed to test for significant value-level differences between accounting populations and some non-accounting populations. These populations are (1) Elementary Accounting and Elementary



History, (2) Senior Accounting and Senior History, (3) Senior Accounting and Senior Economics, (4) Senior Accounting and Senior Finance, and (5) Senior Accounting and Senior Psychology. The null hypotheses and related conclusions presented in this subsection are divided into the three groups of (1) Elementary Accounting and Elementary History, (2) Senior Accounting and two disciplines that are similar to accounting, and (3) Senior Accounting and two disciplines that are unlike accounting.

Null hypothesis twelve.--Elementary Accounting and Elementary History student populations will not exhibit significant value-level differences.

Conclusion.--There are two significant differences between the value-level choices of Elementary Accounting and Elementary History student populations. The adjusted mean of value-level two is higher and the adjusted mean of value-level six is lower in the Elementary Accounting sample than in the Elementary History sample.

Value choice differences, hypothesis twelve.--In addition to the two significant differences in value-level choice listed above, a review of the data in Tables IX and X indicates that value-level seven has a greater influence in Elementary History than in Elementary Accounting (Elementary History is a required course at North Texas State University, and it should contain a cross section of the general student

population). It appears that the Elementary Accounting population does not resemble the general student population as suggested in Chapter IV because it desires more structure and closer supervision in class. At the same time, one would expect the general population to exhibit more concern for group harmony (value-level six) and for autonomy (value-level seven) than the Elementary Accounting population.

Null hypothesis fourteen.--Senior Accounting and Senior Finance student populations will not exhibit significant value-level differences.

Conclusion.--There are no significant differences between the value-level choices of Senior Accounting and Senior Finance student populations.

Null hypothesis fifteen.--Senior Accounting and Senior Economics student populations will not exhibit significant value-level differences.

Conclusion.--There are no significant differences between the value-level choices of Senior Accounting and Senior Economics student populations.

Value choice differences, hypotheses fourteen and fifteen.--While there are no significant differences between the value-level choices of the Senior Accounting population and the populations of either Senior Finance or Senior Economics, some

consistent patterns are apparent from a review of the data in Tables IX and X. The influence of value-level two is higher in both Senior Finance and Senior Economics than it is in Senior Accounting, which indicates that these two populations desire closer supervision in comparison to the accounting population. However, the influence of value-level seven is also higher in the Senior Economics and Senior Finance populations, which indicates that these two populations desire more autonomy in comparison to the accounting population.

A review of the data in Tables IX and X resolves this apparent contradiction. Value-level seven has a higher adjusted mean than value-level two in both Senior Economics and Senior Finance. Therefore, value-level seven would have more influence than value-level two on the characteristics of these two populations, which means that these populations would prefer more autonomy rather than close supervision.

The influence of value-levels four and six are higher in Senior Accounting than in Senior Economics or Senior Finance. This indicates that the accounting population desires more structure and less autonomy, along with more concern for group harmony, than either of the other two populations.

Null hypothesis thirteen.--Senior Accounting and Senior History student populations will not exhibit significant value-level differences.

Conclusion.--There are no significant differences between the value-level choices of Senior Accounting and Senior History student populations.

Null hypothesis sixteen.--Senior Accounting and Senior Psychology student populations will not exhibit significant value-level differences.

Conclusion.--There are two significant differences in value-level choices between Senior Accounting and Senior Psychology student populations. The adjusted mean of value-level four is higher and the adjusted mean of value-level seven is lower in Senior Accounting than in Senior Psychology.

Value choice differences, hypotheses thirteen and sixteen.--In addition to the two significant differences listed in this conclusion, a review of the data in Tables IX and X indicates some consistent patterns in value-level differences between the Senior Accounting and the Senior History or the Senior Psychology populations. Since the influence of value-level two is lower in both the Senior History and Senior Psychology populations than in the Senior Accounting population, this indicates that the Senior Accounting population desires closer supervision than either of the other two populations.

The influence of value-level six is lower in the Senior Accounting population than in the Senior Psychology population, but its influence is about equal in the Senior History

population. Given the nature and purposes of the disciplines, one would expect the Senior Psychology students to be more group oriented than the students in either of these other two disciplines.

As in the previous comparisons of accounting populations to populations in two disciplines similar to accounting, the influence of value-level seven is lower in the Senior Accounting population than in either of the other two populations. On the other hand, the influence of value-level four is higher in the Senior Accounting population. These differences indicate that the Senior Accounting students desire more structure and have less need for autonomy than the other two student populations.

Summary of value choice differences.--Some significant differences were found when the value-level choices of the accounting populations were compared with the value-level choices of other populations (Table XI). In addition, several consistent patterns in value-level choice differences are apparent when the significant value-level choices (Table X) of the populations are compared, and when the adjusted means (Table IX) of the population value-levels are compared.

The influence of value-level four is less in the non-accounting disciplines than in the accounting discipline. This indicates that the accounting students desire more structure, have more respect for rules, and have more of an

attitude of sacrifice-now-for-a-later-reward than do students in the other disciplines. Since a large part of the accounting curriculum deals with the rules governing accounting and the accounting process, the educational process in accounting courses may reinforce such characteristics. As compared to disciplines unlike accounting, the differences in the influence of value-level four in accounting are greater than the differences in value-level four's influence in accounting as compared to disciplines similar to accounting.

While accounting does show an increase in the influence of value-level seven as students progress from Elementary to Senior Accounting, the influence of value-level seven is greater in the non-accounting populations than in the accounting populations. These differences indicate that the accounting populations exhibit less non-structured thought than other populations, and, as found by Shute (2) when he tested accounting populations, they exhibit little abstract reasoning ability.

The various significant and non-significant differences indicate that at both the senior and elementary levels there are different types of individuals in the accounting and non-accounting populations. This indicates that there is a need for educators to modify the class structure and educational methods according to the characteristics of the population involved.

Summary of conclusions.--Based on the results of the analyses of data presented in Chapter V, the conclusions indicate that (1) the study of accounting has little affect on the individual's value-level choices, (2) differences in value-level influence can be inferred from both significant and consistent non-significant differences in value-level adjusted means, (3) each population has dominant value-levels that influence its characteristics, (4) while value-levels four and seven are the dominant value-levels of all except one of the populations in this research, the extent of their influences vary, (5) the accounting populations have different value-level characteristics than do the populations of the four other disciplines tested, and (6) value-level profiles can be useful in developing solutions to the complex issues and problems facing educators.

#### The Problem of Non-Significance

There are two possible explanations for the small number of significant differences that are found in the comparison of the various population value-levels for this study. There could, in fact, be no differences other than the five significant differences shown by the data in Table XI.

If this were true, then there would be random differences indicated by the data in Tables IX and X. For example, the adjusted mean of value-level four for the accounting discipline would not be higher than the adjusted mean of value-level four

in all other disciplines tested. In this study, however, non-significant differences among each value-level's adjusted means are consistent in relationship to the significant differences found. The adjusted mean of value-level four, for instance, is lower in the non-accounting disciplines as compared to accounting and this mean is lowest in the discipline which is most unlike accounting, psychology.

The model or data collection methods may require refinement to eliminate outside influences. It is possible, for instance, that the tool, the Values For Learning scale, is sensitive enough to be affected by the ten-day measurement time span, the differences in classrooms (places of test administration), the differences between instructors, and the differences in the way the instructors introduced the test-package administrator; however, the number of subjects involved in this research should have mitigated such effects.

#### Applicability of Findings

While this study does not purport to solve the complex issues and problems facing the educator, it does provide a method for obtaining information and insights that should be useful in the development of needed solutions. This research did not collect information in order to develop a solution for specific problems. Instead, this study concentrated on establishing techniques for developing and comparing value-level profiles of populations, which is one step in the overall process of developing solutions.



Two of the issues in accounting education, as presented in Chapters I and II, are the structuring of a class around the needs of the students and the instructor addressing the different needs of the various individuals in his classes. To cope with these issues, the development of value-level profiles for a population would indicate the dominant and secondary characteristics that influence each individual within the population. The rank order of the value-levels within the value-level profiles, and the strengths of the value-levels' adjusted means, would indicate which value-levels should be considered in working with the population. Such value-level information should be considered when dealing with such problems as balancing the need for close supervision with the need for autonomy and when choosing educational methods applicable to the needs of the population.

The value-level comparisons within the accounting sequence indicate that the influence of value-level two decreases as the sequence is completed. Since Table IX data indicates that the same pattern occurs in the sequence of history courses, it is reasonable to assume that individuals who operate in value-level two tend to leave higher education.

This study found that the Elementary Accounting population does not resemble the general university student population. There are significant value-level differences between this population and the Elementary History population, which,

because it is a required course at North Texas State University, should contain a cross section of the general university student population.

As stated in Chapter I, observations of professional accounting populations indicate that they are dominated by value-levels four and five. The Senior Accounting population that was tested for this study is dominated by value-levels four and seven, with value-level five having a minimal, if any, influence. If the accounting profession is dominated by value-levels four and five, graduating accounting students would not be prepared for the manipulative atmosphere of the profession. The value-level profiles of the various divisions of the accounting profession would have to be developed, however, before any statistical comparison could be accomplished. Also, the observations of accounting professionals deal with the work arena and not with the learning arena with which this research was concerned (value-level comparisons are valid only within the same life arena).

The results of this study indicate that there are different value-level concentrations within the accounting sequence (elementary, intermediate, and senior courses). Educators could use this information to help structure the entire sequence of courses, to structure each class, to choose the appropriate educational methods to be used at various levels, etc. For instance, Elementary Accounting populations desire more instructor supervision than Senior Accounting populations.

This research indicates that the study of accounting as presently taught at North Texas State University does not have a major effect on the value-level choices of individuals. However, educators may desire to develop class structure and use methods that are designed to influence the value-levels of students. For instance, if educators want to encourage the prevalence of value-level six characteristics, they might require group activities and participation in class discussion. However, the relationships between value-level characteristics and various methods and structures would have to be explored before an effective program could be developed. Educators also would need to introduce such programs carefully since some students could be "turned off" instead of having their value-levels influenced.

#### Recommendations for Further Research

This study develops and compares value-level profiles for various student populations; although it does not purport to solve the complex issues and problems facing educators, it does introduce and develop one method of gaining some of the information and insights that are necessary in order to solve such problems. Further research will be required in order to develop more appropriate and precise solutions; a few of the many possible areas for additional research are presented and briefly discussed in this section.

1. Research studies should be conducted to determine the relationships between individuals' value-level choices

and their relative degree of academic success within different class structures (e.g., lecture and group discussion).

2. Research studies should be conducted to determine the relationships between individuals' value-level choices and their relative degree of academic success under different educational methods (e.g., self-paced and television).

If the class structure and educational methods applicable to each value-level could be determined, then the structure and methods facilitating optimal learning for each value-level could be selected. The studies suggested above would demonstrate how to increase the involvement of various types of individuals in the educational process by developing the structure and methods that are appropriate to their value-level characteristics.

3. Longitudinal research studies should be conducted to determine and compare the value-levels and changes in value-levels of individuals and groups as they progress through their academic careers.

By periodically testing the same group of individuals, the researcher can determine the value-levels and changes in value-levels of individuals who (1) remain in a discipline, (2) change disciplines, and (3) drop out of school. Given this type of information, educators can determine the types of individuals who are attracted to certain disciplines and develop class structure and methods accordingly. Also, programs could be developed to insure that such individuals

are aware of a possible career choice which might otherwise be overlooked. Further, such research may reveal a causal relationship between the study of a discipline and an individual's value-level choices.

4. Research studies should be conducted in accounting and other professions to develop and compare value-level profiles in specific areas of each profession (in accounting, such areas might be independent certified public practice, governmental accounting, and industrial accounting); value-level profiles should be developed for those individuals who are satisfied with and effective in their work.

A knowledge of the value-levels of various areas within a profession could be useful in matching individuals to the employment opportunities for which they are best suited. Such information could guide educators in developing courses to help students move more easily from the academic to the work environment.

5. Research studies should be conducted to evaluate and compare different forms of the measurement scale (e.g., insure that the language being used is appropriate for the subject population).

As discussed in Chapter III, the language used in the scales must be appropriate for the population being studied; therefore, the scales should be reviewed and tested prior to use. Graves suggests (1) that there are value-levels beyond the seventh value-level, and that man is progressing through

the value-levels. The scales may need to be revised to measure those value-levels.

## CHAPTER BIBLIOGRAPHY

1. Graves, Clare W., "Human Nature Prepares for a Momentous Leap," The Futurist, VIII (April, 1974), 72-87.
2. Shute, George E., Accounting Students and Abstract Reasoning: An Exploratory Study, Sarasota, American Accounting Association, 1979.

APPENDICES



## Appendix A

## STATISTICAL PARAMETER DATA FORM

The following information is requested in order to allow statistical analysis of the information gathered in this study.

ALL INFORMATION WILL BE HELD IN STRICTEST CONFIDENCE.

Date \_\_\_\_\_

Name \_\_\_\_\_ SSN \_\_\_\_\_

Permanent address \_\_\_\_\_

Mailing address \_\_\_\_\_

General

AGE	SEX	MARTIAL STATUS	VETERAN
	Male <input type="checkbox"/> 1	Single <input type="checkbox"/> 1	Yes <input type="checkbox"/> 1
	Female <input type="checkbox"/> 2	Married <input type="checkbox"/> 2	No <input type="checkbox"/> 2
		Seperated <input type="checkbox"/> 3	
		Divorced <input type="checkbox"/> 4	

RACE	G.P.A.	MAJOR
Caucasian <input type="checkbox"/> 1	3.5-4.0 <input type="checkbox"/> 1	Accounting <input type="checkbox"/> 1
Black <input type="checkbox"/> 2	3.0-3.49 <input type="checkbox"/> 2	Business <input type="checkbox"/> 2
Oriental <input type="checkbox"/> 3	2.5-2.99 <input type="checkbox"/> 3	Comp. Sci. <input type="checkbox"/> 3
Mexican/Am. <input type="checkbox"/> 4	2.0-2.49 <input type="checkbox"/> 4	Econ. <input type="checkbox"/> 4
Other <input type="checkbox"/> 5	0.0-1.99 <input type="checkbox"/> 5	Math. <input type="checkbox"/> 5
	not NTSU <input type="checkbox"/> 6	Other <input type="checkbox"/> 6

Educational Background	Father	Mother	Self
Non-high school grad	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
High school grad.	<input type="checkbox"/> 2	<input type="checkbox"/> 2	<input type="checkbox"/> 2
College grad.	<input type="checkbox"/> 3	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Masters Degree	<input type="checkbox"/> 4	<input type="checkbox"/> 4	<input type="checkbox"/> 4
Doctorate	<input type="checkbox"/> 5	<input type="checkbox"/> 5	<input type="checkbox"/> 5
Technical or Vocation	<input type="checkbox"/> 6	<input type="checkbox"/> 6	<input type="checkbox"/> 6
Other	<input type="checkbox"/> 7	<input type="checkbox"/> 7	<input type="checkbox"/> 7

Previous ACIS 201 Experience

None  1    1/4  2    1/2  3    3/4  4    4/4  5

Work Background

	Father	Mother	Self
Accounting	<input type="checkbox"/> 1	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Finance	<input type="checkbox"/> 2	<input type="checkbox"/> 2	<input type="checkbox"/> 2
Business	<input type="checkbox"/> 3	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Education (other than 3 listed above)	<input type="checkbox"/> 4	<input type="checkbox"/> 4	<input type="checkbox"/> 4
Professional	<input type="checkbox"/> 5	<input type="checkbox"/> 5	<input type="checkbox"/> 5
Other	<input type="checkbox"/> 6	<input type="checkbox"/> 6	<input type="checkbox"/> 6

Course Work

previous Number of Courses

Finance \_\_\_\_\_  
 Management \_\_\_\_\_  
 Business \_\_\_\_\_  
 Math \_\_\_\_\_  
 Comp. Sci. \_\_\_\_\_  
 Other \_\_\_\_\_

Future Accounting Course

ACIS 202 Accounting Principles  1  
 ACIS 311 Income Determination  2  
 ACIS 312 Equity Accounting  3  
 AICS 327 Cost Accounting  4  
 ACIS 321 Adm. Accounting  5  
 ACIS 331 Taxation, Bus. Decisions  6  
 ACIS 201 Accounting Principles  7  
 NONE  8

Reasons for taking 201

Requirement  1  
 Major  2  
 Elective  3  
 Other  4

# VALUES FOR LEARNING®



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1. To me, education in our country should be designed to:
  - be an unstructured process where people have the opportunity to acquire any knowledge that is important to them.
  - be a fairly structured system, where requirements are clearly defined and students should take the courses prescribed by the school.
  - give people the skills they need to survive in this "dog-eat-dog" world of ours.
  - provide good teachers who are able to guide and direct students in the path that is best for them.
  - help people understand their basic humanness and teach people to live together in a spirit of brotherhood.
  - meet individual career needs and give students the tools they need to be financially successful in life.


TOTAL 12

2. The kind of teacher I like is one who:
  - tells me exactly what the assignments are and how to do them and is there when I need help.
  - keeps off my back because I don't like anybody telling me what to do or how to act.
  - outlines the course in detail, isn't always changing his/her mind, and makes sure that students follow the course outline.
  - understands the game of getting through school and knows how and when to bargain with students.
  - gets students working together in close harmony by being more a friend than a teacher.
  - gives me access to the information I need and leaves me alone to learn in my own way.


TOTAL 12

3. To motivate students I think a teacher should:
  - provide an open and supportive environment where students are able to relate to the instructor both as a teacher and a friend.
  - provide a flexible environment where students have some input into both what and how they learn.
  - let the students know who is in charge at all times. Otherwise, they will take advantage of the situation.
  - make sure students understand what's expected of them by maintaining updated, clear and detailed class outlines and rules.
  - let the students know that if they can't do the class work, he/she is always there to help them.
  - let the students know what's in it for them and how the course will help them achieve their career goals in life.


TOTAL 12

4. Grades are part of every school system. I think grading:
  - should be competitive and the good grades should go to those who get the job done regardless of how it gets done.
  - is just another way to "put down" the students and the good grades usually go to the teacher's favorites.
  - should be based on specified standards and be consistently and fairly applied to all students.
  - is best left in the hands of the teachers. They know what's best for us.
  - should not be so competitive or rigid that it causes conflict or hard feelings among the students.
  - is probably necessary, but I tend to rely on myself in determining whether or not I met my own learning objectives.


TOTAL 12



## Appendix C

## Coding

Original Variable	Value	Regression Variable	Value
1. Admin.	1 or 0	X <sub>1</sub>	1-main administrator 0-other
2. Time	1 or 0	X <sub>2</sub>	1-Fall 1978 0-Fall 1980
3. Age	any	X <sub>3</sub>	from 15 to 60
4. Sex	1-male 2-female	X <sub>4</sub>	1-male 0-female
5. Race	1-white	X <sub>5</sub>	1-yes, 0-no
	2-black	X <sub>6</sub>	1-yes, 0-no
	3-oriental	X <sub>7</sub>	1-yes, 0-no
	4-Mexican/ American	X <sub>8</sub>	1-yes, 0-no
	5-other		X <sub>5</sub> -X <sub>8</sub> all 0
6. Material	1-single	X <sub>9</sub>	1-yes, 0-no
	2-married	X <sub>10</sub>	1-yes, 0-no
	3-separated	X <sub>11</sub>	1-yes, 0-no
	4-divorced		X <sub>9</sub> -X <sub>11</sub> all 0
7. Veteran	1-yes 2-no	X <sub>12</sub>	1-yes, 0-no
8. Education	Father	X <sub>13</sub>	1-non-high- school
			2-high school
	Mother	X <sub>14</sub>	3-college
			4-masters
			5-doctorate
	Self	X <sub>15</sub>	6-technical/ vocation
			7-other
9. Work Back- ground Father	1-accounting	X <sub>16</sub> X <sub>17</sub> X <sub>18</sub> X <sub>19</sub>	1-yes, 0-no
	2-finance		1-yes, 0-no
	3-business		1-yes, 0-no
	4-education		1-yes, 0-no
	5-profession		1-yes, 0-no
	6-other		X <sub>16</sub> -X <sub>19</sub> all 0

Original Variable	Value	Regression Variable	Value
9. Work Back-ground Mother	1-accounting	X <sub>20</sub> X <sub>21</sub> X <sub>22</sub> X <sub>23</sub>	1=yes, 0=no
	2-finance		1=yes, 0=no
	3-business		1=yes, 0=no
	4-education		1=yes, 0=no
	5-profession		1=yes, 0=no
	6-other		X <sub>20</sub> -X <sub>23</sub> all 0
9. Work Back-ground Self	1-accounting	X <sub>24</sub> X <sub>25</sub> X <sub>26</sub> X <sub>27</sub>	1=yes, 0=no
	2-finance		1=yes, 0=no
	3-business		1=yes, 0=no
	4-education		1=yes, 0=no
	5-profession		1=yes, 0=no
	6-other		X <sub>24</sub> -X <sub>27</sub> all 0
10. List of account-ing courses	1=yes 0=no for each of the courses listed	X <sub>28</sub>	sum of all courses identified with a 1.
11. Class identity	1-accounting elementary	X <sub>29</sub>	1=yes, 0=no
	2-history elementary	X <sub>30</sub>	1=yes, 0=no
	3-accounting intermediate	X <sub>31</sub>	1=yes, 0=no
	4-accounting senior	X <sub>32</sub>	1=yes, 0=no
	5-history senior	X <sub>33</sub>	1=yes, 0=no
	6-economics senior	X <sub>34</sub>	1=yes, 0=no
	7-finance senior	X <sub>35</sub>	1=yes, 0=no
	8-psychology senior		X <sub>29</sub> -X <sub>35</sub> all 0
12. Values Scale			
a. question	0-12	none	none
b. question total	0-12	none	none
c. total by level	0-96	Y <sub>1</sub> , Y <sub>2</sub> , Y <sub>3</sub> Y <sub>4</sub> , Y <sub>5</sub> , Y <sub>6</sub>	0-not chosen level 1-2nd highest choice 2-highest choice

Original Variable	Value	Regression Variable	Value
d. total of levels	96	none	none

<sup>1</sup>Variables 1, 2, and 11 are not completed by the subject.

<sup>2</sup>The SSN is a part of the control code for each subject. Names and addresses were obtained for possible future communication. Previous ACIS 201, course work, and Reason for ACIS 201 not used in this study. (See Appendix B.)

## Appendix D

## Data Correction

Demographic Data

The raw data, as entered from the original documents, were tested by computer program for the errors listed below. For errors found, the record was checked against the original data to see if a keypunch error occurred. When the error was unable to be corrected due to missing data, the missing data function of the MMRC package was used. If more than two errors were present, the subject was dropped from the sample.

The following represent acceptable ranges of data:

15	age	60	(X <sub>3</sub> )
0	sex	3	(X <sub>4</sub> )
0	marital	5	(X <sub>9</sub> , X <sub>10</sub> , X <sub>11</sub> )
0	vet	3	(X <sub>12</sub> )
0	race	6	(X <sub>5</sub> , X <sub>6</sub> , X <sub>7</sub> , X <sub>8</sub> )
0	education	8	(X <sub>13</sub> , X <sub>14</sub> , X <sub>15</sub> )
0	work	2	(X <sub>16</sub> -X <sub>27</sub> )
0	course	2	(X <sub>28</sub> )

Note: The regression variable will not accept the same range, see Appendix C.

Value Scale

Each question on the individual measurement must add to twelve and the total for all eight must be ninety-six. In the data review, the totals were tested and incorrect totals



were checked against the original data. If an error is present and is not a keypunch error,

- |  |  |
|--|--|
| 1. question all blank                        | all levels worth 2                             |
| 2. question total in error<br>by 1           | correct the value of<br>the highest value by 1 |
| 3. question total in error<br>by more than 1 | divide error amount<br>among the levels        |

If more than two questions were incomplete, the subject was dropped from the analysis.

## Appendix E

## Graves and Mankind's Development

Graves was convinced that the value theory applied not only to individuals but also to groups and even to all mankind. According to Graves, it represented the growth of mankind from pre-history to the present. Of course, the development is not complete and the systems seven and above are still emerging.

<u>Value Level*</u>	<u>Mankind Development</u>
1	Early humans "reacted" to their physiological needs with little thought and no planning. They simply "reacted" to their needs and to the environment.
2	When humans formed hunting tribes, they developed the "deny self now to authority" (of the tribe or tradition). There was little self-awareness but a continuing tribal life (40,000 years).
3	When humans attained a sense of "self," they began to realize that they would die and, for them, life would end. This realization caused them to seek for themselves no matter what the cost to others (10,000 years).
4	The need for some overall plan of life to explain all of the problems, suffering, and death lead to the "deny self for later reward" system. This led to a belief in a "divine" rule and the three great religions of the world [Christianity, Islam, and Buddhism] (2,000 years).
5	The age of "enlightenment and the birth of science and industrialism" indicated the emergence of this level. The power of reasoning and science could create the "good life" (150-200 years).

<u>Value Level*</u>	<u>Mankind Development</u>
6	Wealth and power had not provided peace or love and acceptance. A concern for the quality of human relations became important with a rejection of materialism and technology (30 years). (Note: the years between levels has compressed.)
7	Not yet complete but there is some evidence of its existence

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\*Charles L. Hughes and Vincent S. Flowers, Value Systems Theory and Management Application, Center for Values Research, Inc., Dallas, 1978, pp. 8-11.

## Appendix F

## The Value-Level Theory as a General Framework\*

The Value-Level Theory may be viewed as an organizational framework in which an individual may view other information, methods, and techniques. For instance, Graves included not only psychological but also developmental and neuropsychological concepts in the theory.

1. Individuals must be developmentally ready, both physically and socially, for a level progression or it will not occur;
2. In looking at the brain and the value theory, it would appear that the even numbered systems would be dominated by the right side of the brain while the odd numbered systems would be dominated by the left side. The left side being more self-oriented and more analytical;
3. Neuropsychological data indicate that the adult psychology is a developing, emergent process as are the levels.

Other theories may be viewed in the framework provided by Graves. Maslow proposes five need levels for humanity. The needs form a hierarchy which indicates that the lower levels must be sufficiently satisfied prior to a higher level being entered. Of course, Graves states that progression through the value-levels is consecutive, and only after the previous levels' existential needs have been satisfied.

<u>Maslow</u>	<u>Graves</u>
Physiological	1
Safety	2, 3, 4
Social	6
Esteem	5
Self-Actualize	7

For those who argue that this is really only a two-factor system, Graves indicates the two major categories of deny self and express self. Of course, Graves states that these are only more abstract summary categories that can be further subdivided into the unique value-levels.

MacGregor's theory X-theory Y analysis of the way management views workers can also be related to the Graves theory. For instance, a level five, Manipulator, individual views people who are not interested in wealth and position and not willing to work to achieve wealth and position as being (1) lazy and uninterested in work, (2) needing to be driven to accomplish anything, and (3) lacking in initiative and innovative ability.

On the other hand, a level six, Sociocentric, individual who is interested in harmony, acceptance, and the "good" of all mankind views others as (1) requiring interesting and challenging work to motivate them (turned off by other types of work), (2) being innovative and having a great deal to offer, and (3) having initiative given the appropriate group surroundings.

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\*Charles L. Hughes and Vincent S. Flowers, Value Systems Theory and Management Application, Center for Values Research, Inc., Dallas, 1978, pp. 6, 25-29.

## Appendix G

## Level Learning System\*

<u>Level</u> Graves	<u>Learning Systems</u>
1. Automatic Existence	"Habituation. (The individual adapts to his environment by a process of becoming accustomed to certain things.)"
2. Tribalistic	"Classical conditioning. (The individual learns through the association of one thing with another.)"
3. Egocentric	"Operant conditioning. People learn best when they are rewarded."
4. Sainly Existence	"Avoidant learning. People learn best when they are punished for errors."
5. Materialistic	"Expectancy. Types learn best when the outcome of their behavior meets their expectations."
6. Personalistic	"Observational. People learn by watching other people and observing how they react."
7. Cognitive	"Learning in any form."

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Clare W. Graves, "Human Nature Prepares for a Momentous Leap," The Futurist, VIII (April, 1974), 78.

## BIBLIOGRAPHY

### Books

- Bem, Daryl J., Beliefs, Attitudes, and Human Affairs, Belmont, Brooks/Cole Publishing Company, 1970.
- Cohen, Jacob and Patricia Cohen, Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences, Hillsdale, Lawrence Erlbaum Associates, Publishers, 1975.
- Cronbach, Lee J., Essentials of Psychological Testing, 2nd ed., New York, Harper and Row, 1964.
- Downie, N. M. and R. W. Heath, Basic Statistical Methods, 2nd ed., New York, Harper and Row, 1965.
- Edwards, James Don, editor, Accounting Education Problems and Prospects, Sarasota, American Accounting Association, 1974.
- Flowers, Vincent S. and Charles L. Hughes, Values for Marriage, Dallas, Center for Values Research, Inc., 1975.
- Hilgard, Ernest R. and Gordon H. Bower, Theories of Learning, 4th ed., Englewood Cliffs, Prentice-Hall, Inc., 1975.
- Hughes, Charles L. and Vincent S. Flowers, Value Systems Analysis Theory and Management Application, Dallas, Center for Values Research, Inc., 1978.
- Janis, Irving L. and others, Personality: Dynamics, Development, and Assessment, New York, Harcourt, Brace, and World, Inc., 1969.
- Krech, David, Richard S. Crutchfield, and Norman Livson, Elements of Psychology, 3rd ed., New York, Alfred A. Knopf, 1974.
- Myers, M. Scott, Managing Without Unions, Reading, Addison-Wesley, 1976.
- Nie, Norman H. and others, Statistical Package for the Social Sciences, 2nd ed., New York, McGraw-Hill, Inc., 1975.
- Piaget, Jean and Barbel Inhelder, The Psychology of the Child, New York, Basic Books, Inc., 1969.

- Rokeach, Milton, Beliefs, Attitudes, and Values, San Francisco, Jossey-Bass, Inc., 1968.
- Shaw, Marvin E. and Jack M. Wright, Scales for the Measurement of Attitudes, New York, McGraw-Hill, Inc., 1967.
- Siegel, Sidney, Nonparametric Statistics for the Behavioral Sciences, New York, McGraw-Hill, Inc., 1956.
- Winer, B. J., Statistical Principles in Experimental Design, 2nd ed., New York, McGraw-Hill, Inc., 1971.

#### Articles

- Adler, F., "The Value Concept in Sociology," American Journal of Sociology, XXL (1956), 272-279.
- "Admissions Test Being Considered for Accounting," The CPA Letter, LX (February 25, 1980), 5.
- Agami, Abdel M., "Accounting Curricula and Education Needs of New Entrants to the Accounting Profession--A Synthesis," 1978 Southwest Regional AAA Proceedings, Baylor University, 1978, pp. 53-60.
- Amernic, Joel H. and Robin J. Enns, "Levels of Cognitive Complexity and the Design of Accounting Curriculum," The Accounting Review, LIV (January, 1979), 133-146.
- Anderson, Norman H., "Scales and Statistics: Parametric and Nonparametric," Psychological Bulletin, LVIII (1961), 305-316.
- Battista, Marianne S., "The Effect of Instructional Technology and Learner Characteristics on Cognitive Achievement in College Accounting," The Accounting Review, LIII (April, 1978), 477-485.
- Bailes, Jack C., "Lectures Versus Personalized Instruction: An Experimental Study in Elementary Managerial Accounting," The Accounting Review, LIV (January, 1979), 147-154.
- Buckley, Jay W., "Programmed and Non-Programmed Instruction: Integration Criteria in Curriculum Design," The Accounting Review, XLIII (April, 1969), 389-397.



- Buehlmann, David M., "Student Attitudes Toward Management Accounting and the Influence of the Management Accounting Course," Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 564-571.
- Clark, Edward T., Jr., "Systemic Thinking: A New Mode of Educational Thought," Education Tomorrow, IV (October, 1979), 1-2.
- Cleveland, Gerald L., "The Future of the Accounting Curriculum in a College of Business Administration," Researching the Accounting Curriculum: Strategies for Change, edited by William L. Farrara, Sarasota, American Accounting Association, 1975, pp. 1-5.
- DeCoster, Don and George Prater, "An Experimental Study of the Use of a Business Game in Elementary Accounting," The Accounting Review, XLVIII (January, 1973), 137-142.
- Fertakis, John P., "Toward a Revitalized Accounting I," Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 50-58.
- Flowers, Vincent S. and B. A. Coda, "A Human Resource Planning Model," Personnel, LI (January-February, 1974), 20-32.
- Flowers, Vincent S. and Charles L. Hughes, "Choosing A Leadership Style," Personnel, LV (January-February, 1978), 48-59.
- \_\_\_\_\_, "Why Employees Stay," Harvard Business Review, LI (July-August, 1973), 49-60.
- Goosen, Kenneth R., "The Potential of Programmable Calculators for Solving Educational Accounting Problems," 1978 Southwest Regional AAA Proceedings, Baylor University, 1978, pp. 71-82.
- Graves, Clare W., "Deterioration of Word Standards," Harvard Business Review, XLIV (September-October, 1966), 117-128.
- \_\_\_\_\_, "Human Nature Prepares for a Momentous Leap," The Futurist, VIII (April, 1974), 72-87.
- \_\_\_\_\_, "Levels of Existence: An Open System of Values," Journal of Humanistic Psychology, X (Fall, 1970), 131-155.

- Grossman, Steven D. and Robert H. Strawser, "Accounting and Behavioral Concepts: A Classroom Approach," The Accounting Review, LIII (April, 1978), 495-500.
- Hadley, Galen D. and Thomas E. Balke, "A Comparison of Academic and Practitioner Views of Content Levels in the Undergraduate Accounting Curriculum," The Accounting Review, LIV (April, 1979), 383-389.
- Hughes, Charles L. and Vincent S. Flowers, "New Goals in Personnel," Management by Objectives, IV (1974), 17-28.
- \_\_\_\_\_, "Shaping Personnel Strategies to Disparate Value Systems," Personnel, L (March-April, 1973), 8-23.
- \_\_\_\_\_, "Toward Existentialism in Management," The Conference Board Record, XII (September, 1975), 60-64.
- Kinard, J. C. and C. H. Stanley, "Rigidity or Systematic Flexibility?" Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 94-105.
- Kluckholm, C., "Values and Value-Orientations in the Theory of Actions," Toward a General Theory of Action, edited by T. Parsons and E. Shils, Cambridge, Harvard University Press, 1951, 388-533.
- Koehler, Robert W., "Television Related Instruction," Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 313-328.
- Langenderfer, Harold Q., "Society, Professions and Accounting Curricula," Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 38-49.
- Laughlin, E. J., J. W. Gentry, and C. A. May, "Comparison of Alternative Forms of Teaching Fundamentals of Accounting," The Accounting Review, LI (April, 1976), 347-351.
- Liao, Shu S., "Learner Directed Instruction: Additional Evidences," The Accounting Review, LIII (January, 1978), 155-161.
- Mautz, Robert K., "The Over-Intellectualization of Accounting Education," Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 30-37.

Myers, M. Scott and Vincent S. Flowers, "A Framework for Measuring Human Assets," California Management Review, XVI (Summer, 1974), 5-16.

\_\_\_\_\_ and Susan S. Myers, "Adapting to the New Work Ethic," The Business Quarterly, XXXVIII (Winter, 1973), 48-58.

\_\_\_\_\_, "Toward Understanding the Changing Work Ethic," California Management Review, XVI (Spring, 1974), 7-19.

Newton, James D. and others, "A Case Study of Comprehensive Educational Innovation," Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 547-561.

Rohan, Thomas M., "Should A Worker's Personality Affect Your Managing," Industry Week, CLXXXV (May 5, 1975), 28-38.

Smith, Jay M., "The Advanced Financial Accounting Curriculum--Recent Developments and the Need to Reconsider Content, Sequence and the Blending of Theory and Practice in Courses Beyond the Introductory Level," Researching the Accounting Curriculum: Strategies for Change, edited by William L. Ferrara, Sarasota, American Accounting Association, 1975, pp. 23-43.

Solomon, Lanny, "Improving Student Attitudes in the Beginning Accounting Course," The Accounting Review, L (July, 1975), 601-605.

Sundby, Lawrence C. and Ronald E. Carlson, "Student Attitudes Towards the Accounting Profession: A Behavioral Study," 1978 Southwest Regional AAA Proceedings, Baylor University, 1978, pp. 153-159.

Willingham, J. J., I. E. McNeill, and E. F. Collins, "Learning Theories and Accounting," Accounting Education: Problems and Prospects, edited by James Don Edwards, Sarasota, American Accounting Association, 1974, pp. 173-180.

Wilson, David A., "On the Pedagogy of Financial Accounting," The Accounting Review, LIV (April, 1979), 396-401.

Wu, Yew-Jen Marion, Michael F. Foran, and Paul A. Dierks, "An Examination of Curriculum Requirements for Managerial Accountants," 1978 Southwest Regional AAA Proceedings, Baylor University, 1978, pp. 61-70.

## Reports

Center for Values Research, Inc., "Measurement Scale:  
Values for Learning," Dallas, 1977.

\_\_\_\_\_, "Measurement Scale:  
Values for Living," Dallas, 1976.

\_\_\_\_\_, "Measurement Scale:  
Values for Working," Dallas, 1975.

Ferrara, William L., editor, Researching the Accounting Curriculum: Strategies for Change, Sarasota, American Accounting Association, 1975.

Flowers, Vincent S. and others, Managerial Values for Working, New York, American Management Association, January, 1975.

Roy, Robert H. and James H. MacNeil, Horizons for a Profession: The Common Body of Knowledge for Certified Public Accountants, New York, American Institute of Certified Public Accountants, 1967.

Shute, George E., Accounting Students and Abstract Reasoning: An Exploratory Study, Sarasota, American Accounting Association, 1979.

Staff of Institute for Business and Community Development, "Clare W. Graves' Theory of Levels of Human Existence and Suggested Managerial Systems for Each Level," Richmond, University of Richmond, 1976.

## Unpublished Material

Flowers, Vincent S., "Conceptual Foundation for Human Resource Accounting," unpublished doctoral dissertation, Department of Accounting, North Texas State University, Denton, Texas, May, 1974.

\_\_\_\_\_, Personal interviews with author, Dallas, 1978.

Hughes, Charles L., Personal interview with author, Dallas, July, 1979.