EFFECTIVENESS OF THE PITTSBURGH JUNIOR ACHIEVEMENT PROGRAM IN CHANGING ATTITUDES OF PARTICIPATING STUDENTS TOWARD BUSINESS AND WORK

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INTRODUCTION

The political, judicial, military, and corporate segments of society have come to be known as the establishment. There appears to be, among some of the youth of today, a noticeable anti-establishment attitude. Rioting among college and high school students, burning and bombing of buildings, vandalism, and disruption of stockholders' meetings by youthful shareholders, are fair measure of the current hostility of some young Americans toward what they describe as the "establishment." This attitude ranges from a cynical dislike of business and the "affluent society," to outright destruction of the symbols of power.

Along with the negative attitude toward business, there seems to be a negative attitude toward work per se, and students have been accused of feeling an alienation from the world of work. The literature of business education includes many studies that suggest that many people cannot hold jobs, not because they are lacking in skills, but because their attitudes are not in character with the business environment.

Many school projects and out-of-school agencies are being employed by the schools with the aim of improving student attitudes toward business, strengthening character traits which will contribute to success on the job, and

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providing information on career choice. Among these techniques have been cooperative work programs, simulated offices, career days, business speakers, and tours of business firms.

One agency, Junior Achievement, is an out-of-school activity which was conceived, in part, to create attitudes and interests among students which are considered to be helpful in the business atmosphere. Junior Achievement Incorporated, founded in 1919, has worked with more than one million high school students in a practical program of "learning-by-doing" in business. Junior achievers, as members of miniature companies, manufacture and sell actual products, pay wages and dividends, and issue stockholders' reports. Students who enter the program receive an over-all picture of the actual problems, responsibilities, and operations of the free enterprise system. Junior Achievement literature indicates that favorable attitudes are instilled and interest in business stimulated by Junior Achievement's emphasis on individual participation and responsibility.

The purpose of this study is to determine the effect Junior Achievement has on students participating in this activity in the Pittsburgh area. The study seeks to determine if Junior Achievement is influencing attitudes toward the free enterprise system, and attitudes toward work among young participants and if it is effective in enlightening students about various careers in the business world.

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I. BACKGROUND OF THE STUDY

Contemporary business literature suggests that young people in this country are becoming disenchanted with business as a career and seem to be shifting their loyalties and interests to the professional, academic, and social service fields.

> There very likely will be more interest in social service careers in the public sector and less concern about jobs in commerce and industry in the private, profit-making sector.[1]

Among the reasons often given for this apparent trend are an antipathy for business and a distrust and misunderstanding of the free enterprise system. During the late sixties the rash of riots on college campuses against the "establishment" began to have some effect upon the attitudes and thinking of students in high schools. High school students have shown their contempt mainly against big business and what has been called the "military-industrial complex," but these attitudes seem to prevail against the whole concept of free enterprise. A disaffection among the student population toward what they see as an over-emphasis on competition, the exploitation of workers, and the profit motive in business has become quite

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[1]Fred E. Crossland, "Student Careers and the '70's." Journal of College Placement, XXX (February-March, 1970), 31.

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apparent. Wilhelm and Herrick assert that this disaffection has been growing over the past 100 years.[1]

Business educators as well as businessmen, feel strongly that it is important to nurture and nourish among students, a more positive attitude toward business. Some people feel that there is a "communication gap" between business and youth. W. F. Rockwell of North American Rockwell Corporation has urged the businessman to sell business to the student as he sells his product to the consumer.[2] In a survey of colleges throughout the country in 1969, it was found that:

> Much of the antagonism on the campus is due to the failure of business itself to set its own image straight with the college generation. If students feel that corporations are heartless, it is because of experiences they have had with corporations, or the lack of a proper presentation. It starts with the presentation itself.[3]

The Junior Achievement program is an effort to present the story of American business to high school students; to give them some insight into how the free enterprise system works and to acquaint them with career opportunities that might exist for them in the business community.

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[1]Ross Wilhelm and Theral T. Herrick, "Free Enterprise in Today's World," Business Education Meets the Challenge of Today's World, ed. by Frank W. Lanham, National Business Education Yearbook No. 4 (Washington, D. C.: National Business Education Association, 1966), p. 83.

[2]W. F. Rockwell, Jr., "Who's Confused--The Student or Us?" Journal of College Placement, XXVII (February-March, 1967), 88-90.

[3]James A. Foley and Robert K. Foley, The College Scene (New York: Cowles Book Company, 1969), p. 106.

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The fact is that American society is business oriented. Business expresses the way in which we use land, labor, and capital to manufacture and distribute necessities as well as luxuries; indeed, all of the products and services on which modern life depends. Joseph W. McGuire feels that:

> It is of vital importance, not only to business, but also to our American society, that the public image of business be held without prejudice or bias in either direction and that we recognize business accomplishments while we try to rectify omissions and solve the difficulties these create. . . . We need to hold a balanced and truthful image of it so that we can understand and, in the final analysis, try to perfect it.[1]

The United States has managed to distribute its wealth better than any other nation in history, even though inequities and inequalities still exist. It is, therefore, important that young people in particular understand the basic principles of the free enterprise system. Since there is reason to believe that the younger an individual is, the easier it is to establish a new attitude or to change one already held, it is preferable that some of the understandings be gained during the high school years. Remmers and Whisler[2] concluded that the younger the student, the less likely he is to have formulated definite attitudes, the lower his resistance to change, and the greater his receptivity to conditioning stimuli. The Junior Achievement program is aimed toward the high school students, predominantly tenth-graders,

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[1]Joseph W. McGuire, Business and Society (New York: McGraw-Hill Book Company, 1963), p. 209.

[2]H. H. Remmers and L. D. Whisler, "Further Studies in Attitudes, Series III," Studies in Higher Education, XXXIV (Purdue University, 1938), p. 97.

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and is an attempt to encourage attitudes among them that are favorable to business. "John M. Arthur, board chairman of Duquesne Light Co. . . . thinks J. A. is the 'perfect vehicle' for communicating a business philosophy to young people."[1]

The exact measurement and evaluation of attitudes is a very difficult task. Attitudes themselves are of an abstract nature, and may be estimated only indirectly through questions dealing with concrete issues. The attitude of an individual toward an institution, an idea, or an event is always a composite or combination of several underlying beliefs. But it is attitude that influences an individual's behavior and performance in most situations. His actions at various levels and in different situations are really reflections of his attitudes toward the factors connected with those situations.[2]

The word, "attitude," has been defined in many different ways. Fred Kerlinger states: "An attitude . . . is a predisposition to think, feel, perceive, and behave toward a cognitive object."[3] A cognitive object is an object which can be seen or recognized; anything of which the subject is aware.

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[1]Jack Markowitz, "Business Today," Pittsburgh Post-Gazette, February 18, 1971, p. 27.

[2]Allen L. Edwards, Techniques of Attitude Scale Construction (New York: Appleton-Century-Crofts, Inc., 1957), p. 101.

[3]Fred N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart and Winston, Inc., 1969), p. 483.

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Another definition, by Howard K. Kendler, is that:

> The term attitude is applied to an individual's predisposition to respond in a characteristic way to some stimulus in his social environment. Basically, an attitude is a tendency to behave either positively or negatively toward any social cue whatever--an institution, a person, a situation, an idea, or a concept.[1]

Perhaps one of the most comprehensive definitions is that which appears in a book by Allen L. Edwards and reads as follows:

> We shall, following Thurstone (1946), define an attitude as the 'degree of positive or negative affect associated with some psychological object.' By a psychological object, Thurstone means any symbol, phrase, slogan, person, institution, ideal, or idea toward which people can differ with respect to positive or negative affect.[2]

It is the last definition which applies most closely to this study, one purpose of which is to measure the changes in attitude of a group of students toward an institution after an exposure lasting approximately seven months. The attitudes to be measured are those held toward the American business and free enterprise system and work per se, the measurement consisting of a positive or negative reaction or a degree of like or dislike reaction to selected questions.

Attitudes may be formed in several ways. They may be the result of a single traumatic experience or repeated experiences or exposures to the object in question. The attitudes of parents often constitute a definite influence

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[1]Howard H. Kendler, Basic Psychology (New York: Appleton-Century-Crofts, Inc., 1963), p. 572.

[2]Edwards, op. cit., p. 2.

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upon the formation of the attitudes of offspring, as do those of peers, or other respected persons. Mass media, public events, and even entertainment programs also play a role in forming attitudes. A weak attitude, formed by a single experience may be reinforced by later experiences. Campbell has stated:

> It is a commonplace observation that for human and other organisms, behavior is modified as a result of experience, that somehow a person retains residues of experience of such a nature as to guide, bias, or otherwise influence later behavior.[1]

There are two major ways of changing attitudes. The first is to intervene directly in the physiological system and is accomplished by the use of surgery or shock or drug administration. The second and most common method involves a change of environment, or persuasion. Persuasion is the method used in advertising, political campaigning, classroom teaching, argument, and in its extreme form, "brain washing." Most methods of persuasion are sometimes described by the term "propaganda."

The principles governing effective propaganda were summarized in a set of rules by Krech and Crutchfield in 1948.

1. The message should meet the existing needs of the audience.
2. Messages that allow an audience to identify with people possessed of some prestige will be more effective than those that do not.

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[1]Donald T. Campbell, Investigations of Man as Socius: Their Place in Psychology and the Social Sciences, Vol. VI of Psychology: A Study of a Science, ed. by Sigmund Koch (7 vols.; New York: McGraw-Hill Book Company, 1963), p. 97.

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3. A message that is consistent with what a person already believes will be more readily accepted than one which is not.

4. A message that clarifies an ambiguous subject or situation will be more effective than one concerning a situation already clearly defined.[1]

These rules can be subverted by anyone wishing to persuade others to believe information which is not true. But in spite of the sinister reputation which propaganda holds, it remains a legitimate method of persuading persons to change their attitudes toward almost any object.

Attitudes are more difficult to change than many people assume from their acquaintance with modern mass media and public relations campaigns. One of the reasons for this difficulty is that attitudes are formed from many intangible and complex reactions; another is that people are often unaware of the real reasons for holding their attitudes. The possibility and degree of change will be influenced by how strongly the attitude is held in the first place. It has been established, however, that attitudes are more easily changed by de-emphasizing inconsistencies between the old attitude and the attitude to which the individual is to be changed. It would seem, therefore, that an individual can be persuaded to adopt an attitude which appears to be consistent with the one already held.

Several lines of evidence support the idea that a direct attempt to persuade a person to give up his present

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[1]D. Kretch and R. A. Crutchfield, Theory and Practice of Social Psychology (New York: McGraw-Hill Book Company, 1948), cited by Howard H. Kendler, Basic Psychology (New York: Appleton-Century-Crofts, Inc., 1963), pp. 584-85.

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attitude and accept a conflicting one is not as effective as one which de-emphasizes the inconsistency between the old and the new attitude.[1]

Many studies have attempted to show that education plays an important role both in forming and changing attitudes. Remmers and Whisler,[2] in studying the effect of instruction on students' attitudes toward agricultural practices, concluded that educational material is effective in changing attitudes. Emme[3] and Hunter,[4] working independently, each determined that reliable changes in attitudes of college students are brought about generally in the direction of liberalism and that these changes are affected more directly by the teachers than the courses themselves. Hovland, Janis, and Kelley stated that: "We assume that opinions, like other habits, will tend to persist unless the individual undergoes some new learning experience."[5]

There is evidence then that attitudes can be changed, in one direction or another through education, whether formal or informal. "It is widely accepted that cognitions bearing on the object of an attitude form a major component of the

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[1]Kendler, op. cit., p. 597.

[2]Remmers and Whisler, op. cit., p. 99.

[3]Earle E. Emme, "Changes in Student Attitudes," Phi Delta Kappan, XXV (January, 1943), 109-11.

[4]E. C. Hunter, "Changes in Attitudes of Women Students During Four Years of College," Journal of Social Psychology, XVI (November, 1942), 243-57.

[5]C. I. Hovland, I. L. Janis, and H. H. Kelley, Communication and Persuasion (New Haven, Connecticut: Yale University Press, 1953), p. 10.

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structure of the attitude toward that object."[1] The individual is not born with these cognitions or awarenesses, but must acquire them through some learning situation, or persuasion, or exposure to particular situations.[2]

It is the investigator's opinion that attitudes can be changed through exposure to various cognitions and associations. It is his opinion also that the Junior Achievement program is a learning situation which can cause some attitudes of participants to change and others to become reinforced through exposure to a realistic business setting and the participation in actual business practices. Some of the negative attitudes held originally by students might have been caused by erroneous information and a misconception of what is true and what is false about the American business system.

> There are many agencies to instruct us, such as the home, the school, the church, and various mass media. Through them we are continually exposed to views which are widely shared in our society.[3]

The approach used by Junior Achievement is to instruct students in the procedures of operating a business on their own, to illustrate common business practices, and to point up by actual contact, what it is like to work with other people in a company or a corporation.

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[1]Anthony G. Greenwald, "Cognitive Learning, Cognitive Response to Persuasion, and Attitude Change," Social Psychology (New York: Academic Press, 1968), p. 148.

[2]Ibid.

[3]John W. Gardner, Excellence (New York: Harper & Brothers, 1961), p. 75.

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Business educators and employers are aware that a great majority of workers do not succeed in their initial jobs, or are denied promotion, and the reasons for their failure are usually personality difficulties and inadequate education and experience in human relations. The literature of business contains many references to this problem. The pioneer study dealing with adjustment of office workers to their work was done by Charters and Whitley,[1] in 1924. A study by Finkelhor[2] in 1941 found that personality traits are a factor both in obtaining and holding jobs, and in associations with employers and fellow employees on the job. Liquori's[3] 1955 study also stressed the importance of desirable personality traits in the business office. A study by Liles[4] for the National Office Management Association in 1959 indicated that the problem of occupational adjustment was still of major proportions. The Bureau of Vocational Guidance at Harvard University, in a study of why men are discharged, found that 70 per cent of the reasons for dismissal may be associated with inadequate or faulty

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[1]W. W. Charters and Isadore B. Whitley, Analysis of Secretarial Duties and Traits (Baltimore: Williams and Wilkins Company, 1924).

[2]Dorothy C. Finkelhor, "Occupational Adjustments of Beginning Office Workers" (unpublished Ph.D. dissertation, University of Pittsburgh, 1941), pp. 102-08.

[3]Frank Edward Liquori, "Problems of Beginning Office Workers" (unpublished Ph.D. dissertation, University of Pittsburgh, 1955), pp. 126-28.

[4]Guidance in Business Education, Monograph No. 83, (Cincinnati, Ohio: South-Western Publishing Company, 1959).

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personality traits. Approaching the problem from another aspect, the Carnegie Institute found that job success in 85 per cent of the cases studied was due to controllable personality factors.[1] Some of the more important personality traits for success in the business field are responsibility, leadership, persistence on the job, personal relations, and social relations. These qualities all have a connection with or in some way spring from the individual's attitudes.

Students participating in Junior Achievement come from homes where various attitudes toward business and work are held. They come also from neighborhoods with varying social, cultural, and economic backgrounds. A possible result of new associations made through Junior Achievement participation is change in or reinforcement of desirable attitudes. It is possible that Junior Achievement experiences can serve to form or to alter, in one way or another, the attitudes of the participants.

There is a feeling among today's students that school is irrelevant to real life. Estelle Popham writes:

> Studies show that as many as 55 per cent of today's high school students feel that what is being taught in the school is irrelevant to their life goals.[2]

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[1]Frank J. Dame and Albert Brinkman, Guidance in Business Education, Third Edition (Cincinnati, Ohio: South-Western Publishing Company, 1961), p. 264.

[2]Estelle Popham, "The Changing School Population," The Emerging Content and Structure of Business Education, ed. by Ray G. Price, National Business Education Yearbook No. 8 (Washington, D.C.: National Business Education Association, 1970), p. 26.

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Perhaps an antidote for this feeling is more actual involvement in real business experience; and textbooks alone can provide neither a realistic atmosphere nor a challenge to create, to decide, to react, or to perform. Perhaps one explanation for the failure of students to develop an adequate business personality may be that extracurricular activities are out of the reach of many business students. They claim they are too busy to take part in this phase of school life.[1] In an article by Garbin and Echols, the point is made that:

> In contemporary American society, the learning of the appropriate attitudes and norms toward work is exceedingly difficult because most youth are denied meaningful work experience.[2]

Many business educators have stressed the importance of helping students acquire favorable attitudes toward business as well as toward work. Herbert Tonne believes that in the business program, the inculcation of attitudes and ideals is more important than is the teaching of facts and skills. He stresses further that this type of teaching is best done indirectly.[3]

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[1]Ibid., p. 29

[2]A. P. Garbin and Frank H. Echols, Jr., "The Changing Social Scene," The Emerging Content and Structure of Business Education, ed. by Ray G. Price, National Business Education Yearbook No. 8 (Washington, D. C.: National Business Education Association, 1970), p. 3.

[3]Herbert A. Tonne, Estelle L. Popham, and Herbert M. Freeman, Methods of Teaching Business Subjects, Third Edition (New York: McGraw-Hill Book Company, 1965), pp. 79-82.

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School systems attempt to teach or inculcate positive attitudes toward business and work through expanded cooperative work-experience programs. Simulated office programs are seen as another avenue through which to involve students in actual business operations. As an adjunct to these programs, certain extracurricular activities may promote the development of attitudes and interests thought to be of benefit to the student, to business, and to the whole of society. Programs such as Junior Achievement claim to be an indirect means for developing desirable attitudes. In Junior Achievement, each participant has a chance to work with others in the operation of a business and to learn at firsthand the concepts central to management, production, and sales. The participant learns by doing. Perhaps this is a better way of encouraging attitude formation and change than the formal classroom atmosphere. The investigator feels, therefore, that it is important to investigate those changes in student attitudes toward business and work which may occur through participation in the Junior Achievement program.

Through participation in the Junior Achievement program, it is thought that students will obtain an over-all picture of the typical foundation and operation of a company. Cook and Lanham have suggested that this kind of concept be introduced into the formal educational setting. "We propose the development of a real corporation in which the students will do real work, for real money, using real material, in a

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realistic setting."[1] In conversations with staff members of Junior Achievement, the opinion is expressed that the Junior Achievement concept would work well as a part of the high school business program.

Junior Achievement, as an extracurricular experience, makes it possible for students to perform actual business functions within a realistic setting. Junior achievers participate in business operations through the selling of stock; manufacturing and distributing an actual product; issuing stockholders' reports; paying wages and dividends; keeping company records; and finally, liquidating the company at the end of the project. Throughout the program, students learn also to make decisions concerned with production, sales, and profit for their particular company. All activities, instead of being explained by a teacher or textbook only, are live, real, and experienced by the students. The key word in the Junior Achievement program is experience. This is in keeping with the theory expressed by John Dewey that:

> An experience, a very humble experience, is capable of generating and carrying any amount of theory (or intellectual content), but a theory apart from an experience cannot be definitely grasped even as a theory.[2]

The Junior Achievement program operates with advisers in each company who are, for the most part, people from the world of business who work voluntarily to counsel, advise,

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[1]Fred S. Cook and Frank W. Lanham, "The Simulated Office vs. Actual Experience." Business Education World, XLIX (New York: McGraw-Hill Book Company, October, 1968), 7.

[2]John Dewey, Democracy and Education (New York: The MacMillan Company, 1916), p. 169.

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and help the students toward attainment of their goals. Business teachers serving as part of the advisory system could maintain their acquaintanceship with current business practices through this association. If it can be shown that participation in Junior Achievement is a valuable supplement to business studies, serious consideration should be given to its incorporation into the school curriculum; for it follows that many more students could be reached if this were the case.

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II. THE JUNIOR ACHIEVEMENT PROGRAM

A. History

The original plan for Junior Achievement was initiated by Theodore N. Vail, president of American Telephone and Telegraph Company, Horace Moses, president of Strathmore Paper Company, and Senator Murray A. Crane in Springfield, Massachusetts in 1919.

The first group, called the Mechanics Club, was established on May 7, 1920 and had 16 members. From this beginning the organization has evolved into an international non-profit corporation, operating in all 50 of the states and 10 foreign countries, but enjoying local autonomy. Junior Achievement was incorporated nationally in 1942 with headquarters in New York City. In 1970 there were in the United States 659 centers with over one hundred and four thousand teenage members operating approximately seven thousand miniature companies which were sponsored by about five thousand counseling firms. The national organization of Junior Achievement and its relationship to the area organizations is shown by a chart in Appendix A, page 129.

Junior Achievement was incorporated in Pittsburgh in 1939, through the efforts of H. W. Robinson, then president of Westinghouse Electric Corporation. J. Blair Easter was

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the first full time program director. The first year, five Junior Achievement companies were organized; and during the next few years, the companies were guided by advisers from business and industry but were not yet sponsored by business firms. In 1959, Junior Achievement of Pittsburgh, Incorporated was expanded to include all of Southwest Pennsylvania. There are now ten Junior Achievement centers in this area, which in 1970-71 included 182 Junior Achievement companies having approximately four thousand, two hundred members participating in the program. An organizational chart of the Southwest Pennsylvania area appears in Appendix A, page 130.

The Pittsburgh Center, with which the present study deals, conducts its operations at the Junior Achievement Building located at 339 Boulevard of the Allies in Pittsburgh. This building was renovated in 1969 specifically for Junior Achievement use and is said to be the finest Junior Achievement center in America.[1] During the 1970-71 season, the Pittsburgh Center was comprised of 101 companies, numbering approximately twenty-six hundred achievers who represented about eighty public and private schools throughout Pittsburgh and Allegheny County. The Pittsburgh Center is the headquarters for Junior Achievement of Southwest Pennsylvania, Incorporated. The staff organizational chart is shown in Appendix A, page 131.

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[1]Annual Report of Junior Achievement, Southwest Pennsylvania, Inc., 1970.

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B. Aims and Objectives

The program of Junior Achievement is tailored to provide a learning experience which can help youngsters to become better employees and employers and also, better informed citizens. The objectives, as quoted from the Junior Achievement Company Manual, are to provide:

1. Experience in the organization, operation, and management of a business.
2. Knowledge of the values, freedoms, and responsibilities of our business system.
3. Motivation for leadership through the development of skills, abilities, and confidence.
4. Demonstration of the relationships within business and between business and the community.
5. Supplement to the formal educational experience of youth by a constructive, learning-by-doing experience.
6. Preview of career opportunities in business.[1]

It is claimed that these objectives are accomplished, in part, through the Junior Achievement emphasis on individual participation and responsibility. Each member assumes several roles in his company: He will be a salesman, a production worker, a director, and in many cases, an officer of the company. In a 1966 survey by Opinion Research Corporation, benefits claimed by past participants are:

Getting along and working with other people.

Improving your abilities to express yourself to others.

Broadening your personal interests.

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[1]Junior Achievement Company Manual (New York: Junior Achievement Inc., 1966), p. 2.

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Developing leadership talents and capabilities.

Understanding your own personal strengths and weaknesses.

Adding practical experience to classroom studies.

Encouraging you to continue your education after high school.

Deciding on the kind of work or career you want.[1]

The Junior Achievement program provides advisers to guide the companies, interpret experiences in Junior Achievement and relate them to the business system.

Facilities, such as meeting rooms, tools and equipment, and work areas are provided where the Junior Achievement companies may carry on the processes of operating small business enterprises.

Information is given through the Company Manual, demonstrations, lectures, and other activities on the principles of business, the legal functions of a company, taxation, pricing, selling, production, and various economic understandings.

Leadership is provided through community participation of educators, business personnel, and civic leaders. The over-all aim of the organization is to help student participants to gain a better appreciation of the American business system of private enterprise.

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[1]Opinion Research Corporation, The Value of Junior Achievement, Research Report of the Public Opinion Index, Princeton, New Jersey, December, 1966 (Princeton, New Jersey: Opinion Research Corporation, 1966), pp. 6-11.

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C. Recruitment and Selection

Making students aware of its existence has been a function of the Junior Achievement center staff members. These staff members visit the schools in their area during the month preceding the start of the program for purposes of recruitment. Cooperation by the school administrations varies; some schools permit the Junior Achievement representatives to address the entire student body, while others limit the address to students who have previously indicated some interest. Application blanks are given to all students interested in joining Junior Achievement.

In 1970, a recruitment corps of returning Junior Achievement members was established at the Pittsburgh Center, the first such corps in the country. These students augment visits by the staff members of Junior Achievement to explain and publicize the program within their own schools and encourage fellow students to participate in the program.

Some teachers, believing Junior Achievement to be a valuable experience, encourage the participation of their students. Dr. Inez Ray Wells of Ohio State University has this to say:

> All teachers, and especially business teachers, who are interested in furthering an understanding of economic principles and of business organization and management, and who are interested in helping their pupils gain an informed outlook, can be of assistance in encouraging student interest and participation in Junior Achievement.[1]

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[1]Inez Ray Wells, "Junior Achievement," Business Education World, XXXII (May, 1952), 427.

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All prospective members receive a formal invitation by mail to appear on a designated evening for a personal interview with an adviser at the Pittsburgh Center. Each prospect must fill out a fact sheet prior to the interview. Interviews are held Monday through Thursday evenings of the week before the beginning of the program.

Companies strive to maintain an equal balance of male and female members. If a company is becoming overbalanced, an applicant may be rejected immediately so that he may have a chance to apply to another company. If, for any reason, the applicant is not satisfied with the first company to which he is sent, he may reapply to other companies.

Applicants who express interest in banking, auditing, public relations, and other special companies, are granted interviews with those firms and are notified of their acceptability immediately so that those who do not qualify may apply to a production company.

It is the task of the advisers to select prospective achievers for the companies they will be counseling during the program year. During the interview, the adviser will review the fact sheet which contains information on the applicant's background and experience and try to determine whether he is genuinely interested. For production companies, sales potential or ability is sought--and for service companies, special skills may be preferred. Each applicant is made aware that attendance is vital to the success of his company. The applicant is told that he will be notified if he has been selected.

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After the interview, the adviser fills out a grading sheet giving his estimate of the applicant's strong and weak points. When interviews have been completed for an evening, the whole adviser team, usually numbering three persons, discusses all applicants and makes final selection of members for each company.

Selected members are notified by mail to report for their first company meeting to be held the following week on the same night and in the same room in which they were interviewed.

D. Make-up and Operation of a Junior Achievement Company

Each company is made-up of 20-25 high school students, guided by three advisers and is set up in the form of a corporation, owned by stockholders. Each company determines how much capitalization it will need to begin its operations, with the average capitalization being about $150. Each member of the company must buy one share of stock and is expected to sell shares to other individuals outside the company at $1 per share, with no one person owning more than one share of stock in a company. The entire company serves as the board of directors which elects the following officers: President, Corporate Secretary, Treasurer, Vice President for Manufacturing, and Vice President for Sales. At least two officers are appointed: Personnel Director, and Safety Director. Other officers may be appointed at the discretion of the particular company, such as Assistant Treasurer, Assistant

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Secretary, Purchasing Manager, Production Manager, Research and Development Manager, Quality Control Manager, Sales Manager, or Promotion Manager. All meetings are conducted according to parliamentary rules; instructions are contained in the Manual.

Organization at the local level varies according to the size of the community, but the structure remains the same. Each local achievement center operates with the help of the following participants:

1. Achievers: Any high school students in grades 10, 11, or 12 who become members of Junior Achievement companies.
2. Advisers: Members of counseling firms or organizations who voluntarily give advice and counsel to the Junior Achievement companies.
3. Sponsoring firms: Business firms and organizations which provide one or more teams of advisers for Junior Achievement companies.[1]
4. Contributors: Business firms, organizations, or individuals that provide funds for the Junior Achievement center, office, and staff.
5. Stockholders: Individuals who buy a share of stock in a Junior Achievement company.
6. Customers: Individuals who purchase the products of the Junior Achievement companies.

Each company is chartered by the national organization upon payment of a $2 charter fee and the signature of each company member signifying his acceptance of the bylaws. The company will be named by its members by majority vote.

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[1]For a list of firms sponsoring Junior Achievement mini-companies at the Pittsburgh Center for 1970-71, see Appendix A, page 132.

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Prior to the first meeting, company advisers will have developed several ideas for products to be manufactured and sold. The company members will discuss the various choices and then vote for their selection. If the members do not approve any of the proposed products, they may select another after engaging in research and upon approval of the board of directors. The price of the product is determined by the members with the help of the advisers and information contained in the manual, including a "Break-Even Chart."

After the company is capitalized, a bank account is opened with a Junior Achievement bank or a commercial bank, raw materials are purchased and rent is paid for space occupied, at the rate of $4 a month.

The wages for production workers are decided upon by the company members and average 20 cents an hour. Salaries are paid to the officers of the company ranging from $2 a month for minor officers to $4 a month for the president. Commissions on products sold are decided by each company and usually average 10 per cent of the selling price on each article sold. Wages, salaries, and commissions may be raised as the company increases in efficiency. The national average gross sales of a Junior Achievement company is $600; in Pittsburgh, it is approximately $1,000.

Manufacture of products is begun as soon as possible after the first meeting. Machinery and tools are provided by the Junior Achievement center but rent is charged to the companies for their use. The importance of following safety

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rules and procedures is stressed by the production adviser who gives instructions in using tools and machinery.

Each company liquidates its assets in May. At that time the inventory of products and materials is sold, all debts are paid, a dividend is declared if a profit has been made, and an annual report is presented to all stockholders. If a company has liquidated without making a profit, its remaining assets are prorated among the stockholders.

An organizational chart of a typical Junior Achievement company is shown in Appendix A, page 133.

E. Duties of Management

The elected officers of each Junior Achievement company assume their duties beginning with the fifth meeting, but they will be trained by the local staff and coached by an adviser during the third and fourth meetings. The Junior Achievement Company Manual quotes the officers' duties as follows:

> PRESIDENT: The President presides at all meetings, starting with his installation at the fifth meeting. He appoints department heads and managers; plans, in cooperation with the advisers, schedules of operations for the company, and exercises general supervision of the company. He is empowered to sign checks and other official documents of the company. He reports to the directors and to the stockholders. He is responsible for calling all business meetings including Board of Directors meetings.
>
> The company President is the executive responsible for the proper functioning of all departments of the company, and for building the company spirit of cooperation.
>
> He should regularly check on the work of his officers, and require monthly reports from all departments. He should make sure that any required reports are turned in to local J. A. headquarters.

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CORPORATE SECRETARY: The Secretary keeps minutes of meetings, issues notices of stockholders' meetings, maintains the records of stockholders and publishes the Annual Report. He also carries on company correspondence, and is the Awards Officer for his company providing information on all proper awards to eligible members. He notifies members of date of next Board Meeting.

The Secretary is responsible for the safekeeping of important company papers such as the Company Bylaws, the company organization papers, the company charter, the Board meeting minutes, the duplicate stock certificates, and the list of stockholders.

TREASURER: The Treasurer has custody of monies of the company, is empowered to write and sign checks, keep the official financial records as prescribed by Junior Achievement, Inc., and makes regular monthly reports to local J. A. headquarters on forms provided. He may be aided by an assistant if needed.

VICE-PRESIDENT MANUFACTURING: The Vice-President Manufacturing, working with the President and Production Adviser, plans and prepares a production program, and assigns, trains, and supervises all production workers. He is responsible for quality, efficiency, and safety. He requisitions tools and raw materials, and if there is no Purchasing Manager, he also prepares a purchase order for each item purchased. He may appoint an assistant if needed.

With the help of the Production Adviser, he trains all company employees in their production jobs. He may be aided by a Safety Director.

VICE-PRESIDENT SALES: The Vice-President Sales, with the advice and counsel of the Sales Adviser, plans and prepares a sales program for the company. He is the chief sales officer, leading and instructing all members in their sales efforts. He trains and supervises all salesmen. He develops and administers sales incentives. He maintains sales and commission records.[1]

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[1]Junior Achievement Company Manual, op. cit., p. 19.

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F. Types of Companies

Most of the Junior Achievement companies are production companies which follow the procedures of a regular manufacturing firm--capitalizing, selling stock, producing and selling a product. But, in the larger areas, including the Southwest Pennsylvania area, other kinds of companies are organized also. They include auditing companies, banking companies, radio companies, advertising companies, public relations companies, and newspaper companies.

The Pittsburgh Center is the largest center in the Southwest Pennsylvania area and the members of approximately one hundred companies meet there, about twenty-five companies each evening from 7:00 p.m. to 9:00 p.m., Monday through Thursday. About twenty-three of these companies are production companies and the other two are service companies.

At the Pittsburgh Center four banking companies are established to serve the production companies which meet on each of the four evenings. The bank for the specific evening will handle all of the monies from capital stock sales and finished goods sales of the companies assigned to it. These banks will also handle rents paid, salaries of the officers and workers of each company, and sales and other taxes; finally, at the end of the program, the banks will attend to the liquidation of the companies and the dispersal of capital returns to the stockholders. The banking companies, each of which is sponsored by a Pittsburgh bank, perform all of the functions of actual banks in relation to industry.

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The auditing companies are sponsored by Pittsburgh accounting firms and consolidate all of the financial records of the other companies. Each company must submit monthly financial statements to its particular auditing company, which services the companies operating on each specific evening. As is the case with the banking companies, the auditing companies perform all of the functions of actual accounting firms.

In 1970, a public relations company was added to the Pittsburgh Center to manage the publicity and public relations for all of the companies at the center. It is sponsored by a public relations firm and arranges for press releases, the publicizing of trade fairs, and so forth.

Radio, advertising, and newspaper companies are established wherever there is sufficient interest among the junior achievers and when a radio, advertising, or newspaper company is willing to sponsor one.

G. Trade Fairs

Twice during the Junior Achievement year, trade fairs are held by the Junior Achievement of Southwest Pennsylvania area at large local suburban shopping centers. In 1971, these fairs were conducted at the Monroeville Mall, located 10 miles east of Pittsburgh, in late January, and at the South Hills Village, 10 miles south of Pittsburgh, in late February. The fairs help to maintain interest in Junior Achievement and to acquaint the general public with the Junior Achievement program

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and its accomplishments. In addition, the fairs provide another market for products which are usually sold door-to-door.

Participants in the trade fairs are companies from Junior Achievement of Southwest Pennsylvania, Incorporated, which encompasses ten centers, including the Pittsburgh Center. Each company whose members desire to participate in a trade fair must sign a contract two weeks before the fair and must pay rent for space used. The rental fee plus a penalty must be paid for failure to fullfill the contract. Some companies participate in one fair and not the other and some participate in both.

Each company maintains its own booth and must display a sign showing the company name, the selling price, the number of stockholders, and the names of the schools represented by members. The booth is manned by at least two achievers and one adviser at all times during the trade fair. The members are responsible for packaging their products, keeping inventories, and keeping track of their finances. Awards are given for the six best booths and these are judged according to neatness, and how effectively the theme of the trade fair is integrated into the booth design.

The trade fairs in 1971 were considered by the staff to be very successful. The first fair had 103 participating companies, and the sales totaled about five thousand dollars for the two-day event. The second fair had 107 participating companies and the sales total was about eight thousand dollars.

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One interesting sidelight to the fairs was the fact that since several companies had produced the same product, some price cutting was observed although the companies are advised never to cut prices below the cost of manufacturing the products. When these "sales" took place, customers were observed shopping for the best buy on these particular items.

The events seem to provide some lessons in salesmanship as well as financial manipulations. Participants in Junior Achievement are given a booklet called the "J. A. How to Sell Book," which contains instructions and tips on good salesmanship practices. Although the booklet deals mainly with door-to-door selling, the information on presentation of product, combating sales resistence, courtesy, and appearance applies to any type of selling. The investigator found many instances in which the achievers apparently were using the procedures outlined in the book, but one or two cases of high pressure selling (which the book says to avoid) were noticed. There were a few cases also where students seemed to have no interest in selling their products. Some companies performed better than others; but in general, the students were neatly dressed, courteous, and enthusiastic about their products. The products themselves were, for the most part, well-made, attractive, and appeared to be worth the price.

H. Awards

Junior Achievement sponsors several contests, conferences, and scholarships each year. Among these are an

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achiever award, junior executive award, and executive award. Many Junior Achievement areas hold local contests for officer-of-the-year with the winners of these contests participating in the national contest. Awards of scholarships and money are given to the winners in the categories of president, marketing executive, corporate secretary, treasurer, production executive, purchasing manager, safety director, and personnel director. Conferences are held at the local, regional, and national levels each year where awards are given in many categories, including public speaking, one hundred dollar sales club, and "Miss Junior Achievement." Companies compete at each level for a company-of-the-year award based on company records and over-all activity. Individual cities give a variety of local awards for Junior Achievement companies at the end of the year. These contests and awards provide incentives for the members and recognition for doing outstanding work.

Summary

Junior Achievement considers that it offers a number of advantages to participating students. It teaches the methods and procedures of business, the duties connected with various positions in business, the skills of selling, buying, organizing, producing, bookkeeping and record keeping, and presents opportunities for analyzing and understanding business problems. It illustrates the principles of the business world; how profits are made or not made, what makes a company

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successful, the relationships between workers and managers, and the relationship of business to the community at large.

Student participants have opportunities to meet businessmen, work with other people and compete for scholarships and other awards. Social functions, dances, and parties sponsored by Junior Achievement provide avenues for social expression and growth.

Personnel of Junior Achievement believe that their program is a well-rounded one from the standpoint of business; that it will instill positive attitudes in its participants toward business and work and will provide an opportunity to explore career possibilities in business.

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III. REVIEW OF RELATED RESEARCH

An extensive review of the literature revealed that very little formal research in evaluating outcomes of the Junior Achievement program has been done. Although this organization has been operating for over fifty years, it is only recently that the outcomes of participation in the program have come under investigation. The investigator located four studies dealing with participation of students in Junior Achievement. Two were undertaken by a private research corporation under contract to the National Headquarters of Junior Achievement, Incorporated and two by individuals as doctoral dissertations.

A study titled "Junior Achievement Alumni Evaluate Their Experience in Junior Achievement"[1] was commissioned by Junior Achievement, Incorporated and completed in November 1966. The research was conducted by an Opinion Research Corporation research team under the direction of Joseph R. Goeke, Vice-President, in collaboration with Richard D. Best, Research Director, and Carolyn S. Weymar, Project Director.

A questionnaire was developed based upon hypotheses generated from group discussions held with two groups of

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[1]Joseph R. Goeke, et al., "Junior Achievement Alumni Evaluate Their Experience in Junior Achievement," Opinion Research Corporation (Princeton, New Jersey: Opinion Research Corporation, 1966).

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Junior Achievement alumni and research staff members of Opinion Research Corporation at the Elizabeth, New Jersey Junior Achievement Center. The data for the study were obtained by use of a questionnaire and personal interviews. The subjects were 552 alumni of the Junior Achievement program in 23 cities across the country, including Pittsburgh. The subjects had completed their last year in Junior Achievement four to eight years before the study was made.

The purpose of the study was to evaluate the Junior Achievement program from the point of view of the individual participants and also to identify possible areas of improvement for the program.

The study revealed that alumni are enthusiastic about Junior Achievement and that most believed their participation in the program was a valuable personal experience with a lasting influence upon their lives. The Junior Achievement alumni responded that Junior Achievement had provided them with an accurate picture of the business world along with practical training in business skills such as selling, production, and accounting. Junior Achievement was seen by some alumni as providing an opportunity for meeting and learning to work together with students from other schools, thus enhancing their abilities for personal relationships. In addition, many alumni indicated that their experience helped to foster personal growth, teach responsibility, and develop leadership capabilities. Some alumni thought the Junior Achievement experience was of help in deciding the career they wanted.

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Some replied that they had been offered jobs as a result of contacts made through Junior Achievement or had used advisers as references when applying for jobs. Most alumni felt that more should be done to publicize Junior Achievement.

A second study titled "Effectiveness of Junior Achievement: A Before and After Study" was completed in August of 1967 and was conducted by the research team from Opinion Research Corporation that had done the Alumni study. A total of 1153 current achievers from 24 Junior Achievement areas representing a cross section of Junior Achievement areas participated in the study as an experimental group. Due to the random selection, Junior Achievement of Southwest Pennsylvania was not included. A control group of 693 randomly selected high school non-achievers was used in the study. Data from both groups were collected by means of a self-administered questionnaire. Students were tested prior to the beginning of the Junior Achievement program in the fall of 1966 and again at the end of the program year in the spring of 1967. The results of the fall test show that there is no significant difference between those who participate in Junior Achievement and those who do not.

The test was in the form of a questionnaire, the purpose of which was to elicit information about which facets

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[1]Joseph R. Goeke, et al., "Effectiveness of Junior Achievement: A Before and After Study," Opinion Research Corporation (Princeton, New Jersey: Opinion Research Corporation, 1967).

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of the Junior Achievement program achievers believed had been beneficial to them.

The purposes of this study were to help determine the immediate impact of the Junior Achievement program upon participants and to measure the effectiveness of the program's materials and procedures, to learn in which areas improvements could be made.

A summary of the findings indicated:

a. That participants in Junior Achievement said that the program made them more knowledgeable about business, and better informed about career opportunities.

b. That achievers showed modest gains when compared with non-achievers on ideological questions dealing with government regulation of business, productivity, and the main determinants of wages and salaries in our system. Further analysis of the study revealed that on questions dealing with competition, profits, government vs. competition, and monopolies, there was some decline in attitudes favorable to business. Study of the data suggested the possibility that many attitudes and ideas about business held by youth grow out of the cultural and family environment in which they have been raised.

c. That achievers said that participation in Junior Achievement helped them in their personal growth and development.

d. That achievers had a more favorable image of business leaders than that held by students in the control group.

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e. That both boys and girls had high praise for Junior Achievement although girls were somewhat more enthusiastic than boys.

A study by William Atkins Mays, titled "The Junior Achievement Movement,"[1] was completed as a Ph.D. dissertation at Ohio State University in 1954. At the time of the study, Dr. Mays was Program Director for Junior Achievement of Columbus and so had firsthand experience with the program.

The purpose of the Mays study was to compile and evaluate data relative to the contributions of the Junior Achievement movement from a nationwide sample.

Fifty area directors were involved in the study and the director of each area was issued a packet of inquiries to distribute in the following manner: 1 to the executive director, 5 to business and industrial executives, 2 to educators participating in the program, 5 to advisers of Junior Achievement companies, 5 to parents of achievers, and 5 to achievers. Additional inquiries distributed in Columbus, included 1 for the executive director, 18 to business executives, 50 to advisers, 2 to educators participating in the program, and 50 to achievers. Out of 1291 forms distributed, a total of 150 were completed and returned; of these, 89 were from achievers.

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[1]William Atkins Mays, "The Junior Achievement Movement" (unpublished Ph.D. dissertation, The Ohio State University, 1954).

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A summary of the findings indicated:

a. That 49 per cent of the 89 achievers responding stated that they had joined Junior Achievement to learn about business.

b. That of the advisers, parents, and achievers responding, 46 per cent agreed that the achiever's chance of employment had increased "very much," as a consequence of participation in Junior Achievement.

c. That 55 per cent of the adult respondents believed that Junior Achievement contributed "average appreciation" of the free enterprise system; 29 per cent felt that it contributed "much appreciation."

d. That 60 per cent of the parents indicated that Junior Achievement experience had contributed an "average" amount to development of self-confidence.

e. That of the executives responding, 44 per cent indicated the best return on their investment in Junior Achievement was the satisfaction derived from providing young people with the opportunity to increase their knowledge of business operations.

The study concluded that two of the major weaknesses in Junior Achievement were that it did not reach enough people and that advisers lacked training for the tasks imposed upon them by Junior Achievement. The major strengths indicated were Junior Achievement's contribution to the community, business organizations, and the achievers themselves; the development of appreciation of the free enterprise system; the

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participation of people from different "levels;" and the development of self-confidence and cooperation through working together.

A study titled "A Measurement of Selected Economic Understandings of Junior Achievers"[1] was completed by Bobbye Joan Wilson at Ohio State University in 1967 as a Ph.D. dissertation.

The purpose of the study was to determine the growth of junior achievers in understanding selected economic concepts.

Dr. Wilson devised the test used, in the following manner: Selecting economic concepts believed to be those which should be known and understood by all Americans and which were taken from the Overman study, she submitted these concepts to a jury of Junior Achievement advisers for ranking purposes. This jury eliminated any questions which did not bear on the concepts taught by Junior Achievement. After ranking, the concepts were submitted to a research seminar for suggestions and criticism; the rewritten questions were then sent to a jury of nine leading business and economic educators across the country for validation.

The study involved an experimental group of 150 first-year achievers and a control group of 150 high school students not participating in Junior Achievement. The pretest was

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[1]Bobbye Joan Wilson, "A Measurement of Selected Economic Understandings of Junior Achievers" (unpublished Ph.D. dissertation, The Ohio State University, 1967).

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administered by the Junior Achievement advisers at the beginning of the program and the posttest in the same manner at the end of the program.

In addition to the main study at Columbus, tests were administered to groups from Charlotte, North Carolina and Chattanooga, Tennessee for purposes of comparison at the time the posttest was given in Columbus.

A summary of the findings indicated:

a. That the experimental group scored significantly higher than the control group on the selected economic understandings test.

b. That grade-point averages, socio-economic level, and I. Q. scores are accurate predictors of achievers' posttest scores on the test of selected economic understandings.

c. That neither sex, grade level, nor holding an office were accurate predictors of achievers' success on the test of economic understandings.

d. That the Columbus achievers scored significantly higher on the posttest than did the achievers of Chattanooga, but not significantly higher than those of Charlotte.

Dr. Wilson concluded that, based on the findings of her study, Junior Achievement had made a contribution to the selected economic understandings of achievers beyond the scope of economic understandings developed in the school.

The four studies reviewed each dealt with the Junior Achievement program and have attempted to determine whether

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some identifiable benefits are derived from participation in the program by high school students.

Some inconsistencies were discovered regarding the immediate impact of the Junior Achievement program upon its participants. Dr. Wilson found that students in Junior Achievement increased their economic knowledge beyond that gained in the classroom. Mr. Goeke, in his alumni study found that alumni of the Junior Achievement program interviewed five to eight years later, claimed to benefit over that period of time from having been in the Junior Achievement program. In his before-and-after study, Mr. Goeke found that attitudes changed very little and on some questions changed negatively after participation in the program. He suggested that attitudes formed by the family and cultural environment will often prevail. The Mays study appears to be inconclusive regarding assumed benefits derived from Junior Achievement experience, possibly because of the small number of achievers involved in the sample.

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IV. THE PROBLEM

A. Statement of the Problem

The primary purpose of this study is to determine whether participation in the Junior Achievement program at the Pittsburgh Center effects changes in the achievers in: Attitudes toward business in the free enterprise system, the development of desirable occupational personality traits, and career interests in the field of business. A secondary purpose is to determine the attitudes held by Junior Achievement advisers toward the free enterprise system.

B. Elements of the Problem

More specifically, the study seeks to determine answers to the following questions.

1. Does participation in Junior Achievement help achievers to acquire a more positive attitude toward business in the free enterprise system, as measured by questions on the role of Profits, Competition, Production, Capital, and Freedom from Government Intervention selected from a business economics test developed by the Opinion Research Corporation? In the present study, the selected items will be referred to as the Business Inventory.

    a. Does the geographic distribution of achievers within Allegheny County have any apparent affect on changing their attitudes toward business?

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b. Does the sex of achievers have any apparent affect on changing their attitudes toward business?

2. Does participation in Junior Achievement accomplish any changes in achievers' personality traits, as measured by scales of Sociability, Social Sensitivity, Leadership, Self-Confidence, and Mature Personality selected from Project Talent's Student Activities Inventory?

a. Is the difference in geographic distribution of achievers within Allegheny County reflected in the development of personality traits?

b. Is the difference in the sex of achievers reflected in the development of their personality traits?

3. Does participation in Junior Achievement accomplish a change in the interests or vocational preferences of achievers in business occupations, as measured by scales of Business-Management, Sales, Computation, Office Work, and Miscellaneous selected from Project Talent's Interest Inventory?

a. Is the difference in geographic distribution of achievers within Allegheny County reflected in changes in their interests and vocational preferences?

b. Is the difference in the sex of achievers reflected in changes in their interests and vocational preferences?

4. Do advisers at the Pittsburgh Junior Achievement Center share the attitudes generally held by business executives, as measured by the same Business Inventory given the achievers?

C. Hypotheses

1. For the purposes of this study, it is assumed that participation in Junior Achievement helps achievers acquire

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a more positive attitude toward business in the free enterprise system. It is further hypothesized that:

a. There is no difference in attitude change toward business between achievers attending schools in the city of Pittsburgh and those attending suburban schools within Allegheny County.

b. There is no difference in attitude change toward business between male and female achievers.

2. For the purposes of this study, it is assumed that participation in Junior Achievement contributes to strengthening of desirable personality traits of achievers. It is further hypothesized that:

a. There is no difference in personality development between achievers attending schools in the city of Pittsburgh and those attending suburban schools within Allegheny County.

b. There is no difference in personality development between male and female achievers.

3. For the purposes of this study, it is assumed that participation in Junior Achievement accomplishes a change in the interests and vocational preferences for business occupations of the achievers. It is further hypothesized that:

a. There is no difference in changes in interests and vocational preferences between achievers attending schools in the city of Pittsburgh and those attending suburban schools within Allegheny County.

b. There is no difference in changes in interests and vocational preferences between male and female achievers.

D. Limitations of the Problem

1. The investigator had no part in the selection of the students for participation in Junior Achievement in Pittsburgh for the academic year 1970-71.

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2. Since the instruments used were not validated, standardized published tests, and only one form of each test was available, the results obtained may differ from those that other tests may have yielded.

3. Because of the time limitation of 30 minutes imposed upon the investigator for administration of the tests, a more extensive testing program might yield answers differing from those found in this study.

4. Regularity of attendance, which is voluntary, at the weekly meetings of Junior Achievement companies may have been a limiting factor in the findings of this study.

E. Delimitations of the Problem

1. This research study is concerned with the influence of Junior Achievement upon first-year student participants only, who complete the program.

2. The sample was taken from the population of students applying for membership in Junior Achievement at the Pittsburgh Center only, for the session beginning October 1970, and ending in May 1971.

F. Definition of Terms

For clarity in understanding some of the terms and expressions used in this study, the following definitions are given:

Attitude toward business: The degree of positive or negative feelings associated with questions on the ideology

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and principles of the American business system of free enterprise, as measured by the Business Inventory presented in Appendix B, page 137.

Attitude toward work: The degree of positive or negative feeling associated with statements concerning personality traits that are related to occupational success, as measured by the Student Activities Inventory presented in Appendix B, page 138.

High School Students: Those students enrolled in grades 10, 11, and 12 whether the school itself be known as junior high, middle, intermediate, or senior high school.

City schools: Those schools that are within the geographical boundary of the city of Pittsburgh.

Suburban schools: Those schools that are outside the city boundary of Pittsburgh, but still within Allegheny County.

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V. PROCEDURE AND DATA

A. Population

The population consisted of all first-year junior achievers who completed the 1970-71 Junior Achievement program at the Pittsburgh Center. In 1970-71, the Pittsburgh Center accepted approximately twenty-six hundred members. Of this number, approximately twenty-two hundred are first-year members, the majority of which are tenth-grade students, with a decreasing number of eleventh- and twelfth-grade students.

The attrition rate of achievers is approximately 35 to 40 per cent throughout the program year. Some of the factors causing this attrition are a deterioration of school grades, transportation difficulties, loss of interest, poorly qualified advisers, and conflicts with other extracurricular activities.

The present study is confined to the Pittsburgh Center because of its relatively large size and the fact that achievers are drawn from approximately eighty schools throughout Allegheny County, representing city and suburban, public and private schools of varying sizes.

The population of advisers consisted of approximately three hundred and thirty advisers who participated in the

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1970-71 Junior Achievement program at the Pittsburgh Center. Advisers are men and women representing the business firms in the district which sponsor Junior Achievement miniature companies. They are responsible for counseling achievers on production, sales, duties of officers, and all other aspects of operating their companies. The advisers either volunteer or are asked to serve in this capacity. Some corporations sponsor as many as six to eight miniature companies and send teams of advisers for each.

B. The Sample

The investigator received permission from Mr. Karl Flemke, Executive Vice-President of Junior Achievement of Southwest Pennsylvania, Incorporated to sample about 12 per cent of the first-year Junior Achievement applicants and the advisers of Junior Achievement companies prior to their first training session.

The sample of achievers for this study was drawn in the following manner: The week prior to the beginning of the Junior Achievement program, all interested students were interviewed at the Pittsburgh Center of Junior Achievement of Southwest Pennsylvania, Incorporated, by Junior Achievement advisers on the evenings of October 12 through 15.

The procedure was to select at random, one of the first eight individuals applying, who were first-year applicants, and then to continue selecting every eighth first-year applicant. A self-administered test, consisting of

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three parts, was given to the selected individuals in the auditorium of the Pittsburgh Center after completion of their interviews. A total of 405 first-year applicants were tested during the interview week. Of this number, 80 either were not accepted as achievers or did not choose to join. The sample then totaled 325 first-year achievers, who began the program. By January 1, 1971, 49 of the sample had dropped out of the Junior Achievement program leaving 276 first-year achievers still in the sample. The attrition of students for the remainder of the program was 74 and the number of first-year achievers in the sample who completed the program was 202.

The posttest, using the same instruments as the pretest, was administered on April 12 through 15 and again on April 19 through 22 for achievers who were absent during the preceding week. Names of the achievers in the sample were submitted to their advisers, who directed these individuals to report to the auditorium for the purpose of taking the posttest. Eight achievers who took the pretest and completed the program were absent during both weeks in which the posttest was administered and were eliminated from the final sample used for analysis. For a distribution of the final sample according to school, area, and sex, see Table 1 on page 52.

On September 16, 1970, at their first training session, the Business Inventory section of the test used in the present study was administered to the advisers. No posttest

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TABLE 1

DISTRIBUTION OF STUDENTS PARTICIPATING IN THE STUDY IN REGARD TO SCHOOL, AREA, AND SEX

City Schools

Name	Male	Female	Name	Male	Female	
Allegheny	2	0	Perry	1	0	
Bishop's Latin	1	0	Sacred Heart	0	1	
Carrick	1	2	St. Josephs	0	1	
Central Catholic	1	0	St. Justin	0	5	
Domenic	0	1	St. Mary of Mount	2	0	
Elizabeth Seton	0	1	St. Mary's	0	1	
Gladstone	0	2	St. Rosalia	0	1	
Hilltop Catholic	4	9	Schenley	0	4	
Holy Innocents	0	1	South High	2	1	
Langley	1	1	South Hills High	1	6	
North Catholic	8	0	So. Side Catholic	3	0	
Oliver	3	3	Taylor Allderdice	7	3	
Peabody	4	3	Ursuline Academy	0	1	
			Westinghouse	1	1	
Total			27 Schools	42	48	90

Suburban Schools

Name	Male	Female	Name	Male	Female	
Avalon	0	2	Montour	2	0	
Avonworth	4	3	Mt. Lebanon	2	0	
Baldwin	0	4	North Allegheny	2	2	
Bellevue	1	1	North Hills	3	1	
Bethel Park	2	2	Penn Hills	1	0	
Bishop Boyle	1	0	St. Elizabeth	0	1	
Canevin	3	2	St. Frances Acad.	0	1	
Carlynton	0	1	Shadyside Academy	1	0	
Carson	4	8	Shaler	10	8	
Chartiers Valley	3	1	S. Hills Catholic	3	0	
Fox Chapel	3	1	Sto-Rox	5	2	
Holy Ghost	0	2	Swissvale	2	0	
Homestead	1	3	Thomas Jefferson	0	2	
Linton	1	0	West Allegheny	1	2	
Total			28 Schools	55	49	104
TOTAL SAMPLE			55 Schools	97	97	194

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was administered to these individuals as the purpose was to compare the attitudes of the advisers with those generally held by business executives and foremen who were asked the same questions as part of a test given in 1951 by Opinion Research Corporation.[1]

The investigator was allowed 15 minutes before the meeting began to administer the test. The advisers were handed test blanks as they arrived and asked to fill them in after they were seated. No names were asked for and only two advisers refused to participate in this survey of opinions. Some advisers arrived late and others did not attend this meeting so that all of the advisers were not tested. A total of 181 advisers at the Pittsburgh Junior Achievement Center completed the test.

C. The Instruments

The data on which the findings of this study are based were obtained by a test made up of three parts: A Business Attitude Inventory, a Personality Inventory, and an Interest Inventory. The test was self-administered; and because only one form of each scale was available, the same form was employed in both the pretest and posttest. Students were handed a test form and a pencil and seated as they arrived at the auditorium. Most of the students had finished

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[1]Opinion Research Corporation, Economic Test for Company Use, A Report of the Public Opinion Index for Industry, Princeton, New Jersey, January 1951 (Princeton, New Jersey: Opinion Research Corporation, 1951).

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within 30 minutes; but no time limit was imposed, and all students were given time to complete the test.

Attitudes toward business and the free enterprise system were measured by selected items from an attitude and economic scale developed by Dr. Claude Robinson, founder of Opinion Research Corporation, in 1951. The investigator visited the corporation offices and obtained permission from Joseph R. Goeke, Vice-President, for the use of this scale.

Dr. Robinson developed the scale by presenting a list of statements to a group of known right-wingers and a group of known left-wingers. He selected for his scale statements which discriminated between believers and non-believers in the American economic and business system. The test was then administered to executives; and these individuals attained very high scores on the items which favored American business and very low scores on items which did not favor it, indicating that the statements were discriminatory. The items retained were those on which the executives received high scores. There are no additional data available from Opinion Research Corporation on the validity and reliability of this scale.

A version of the scale was used by Opinion Research Corporation in a study of high school students titled "The High School Market for Economic Education" in 1951. A

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[1]Opinion Research Corporation, "The High School Market for Economic Education, Report of the Public Opinion Index for Industry, Princeton, New Jersey, June, 1951 (Princeton, New Jersey: Opinion Research Corporation, 1951).

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duplicate study titled "High School Students' Views on our Business and Economic System"[1] was undertaken in 1964 to measure whether student views had changed in that time. The two studies by Opinion Research Corporation reviewed in Chapter III of this study each employed a different version of Dr. Robinson's scale and the investigator feels that these uses of the scale have established a face validity for the items in the scale.

The investigator selected 15 items dealing with principles and ideology of the free enterprise system which were scored by a two-category scale of "agree" and "disagree." Although the questions do not have "right" and "wrong" answers, each question will elicit either a favorable or unfavorable reaction toward the free enterprise system as seen from the viewpoint of the business executives as ascertained previously by Dr. Robinson.

In scoring the test, a value of 1 was given for an answer favorable to the free enterprise system and a value of 0 for an answer which was unfavorable. The range of possible scores was, therefore, between 0 and 15. For a copy of the Business Inventory used in this study, see Appendix B, page 137.

Personality traits and career interests were measured by selected scales taken from tests developed for Project

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[1]Opinion Research Corporation, High School Students' Views on Our Business and Economic System, Report of the Public Opinion Index for Industry, Princeton, New Jersey, October, 1964 (Princeton, New Jersey: Opinion Research Corporation, 1964).

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Talent. Project Talent is a research project which is largely supported by the United States Office of Education and has collected many types of data from approximately one-half million high school students throughout the country.

> The tests used to secure data in Project Talent were developed specifically for this nationwide project and were designed to be representative of the best type of tests available. . . . In the spring of 1960, a two-day battery of tests was administered to nearly 500,000 students in grades 9 through 12 in 1,359 public, private, and parochial schools in all parts of the country.[1]

The tests were developed by the American Institutes of Research specifically for Project Talent.

Personality traits in the present study were measured by scales taken from the section of Project Talent called Student Activities Inventory. Since "personality" is subject to so many interpretations and shades of meaning, the Project Talent staff adopted a definition for the word as it is used in their scales.

> For purposes of the project, personality was defined as 'the sum of a person's personal characteristics, as indicated by the things he does and his usual way of doing them.'[2]

In constructing the Student Activities Inventory, several sources of behavioral adjectives were studied; since many were inappropriate for high school students, the

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[1]George W. Anderson and Marshall R. Keyser, "Project Talent and its Relation to Business and Education," Delta Pi Epsilon Journal, X (Boulder, Colorado: Delta Pi Epsilon, November, 1968), 28.

[2]J. C. Flanagan, et al., Design for a Study of American Youth (Boston: Houghton Mifflin Company, 1962), p. 130.

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following criteria were adopted:

1. The behavior occurs in high school and is observable.
2. It can be defined well enough to be identified by a high school student.
3. It is reasonable to expect a high school student to be able to rate himself on this behavior.
4. The behavior can be expected to be importantly related to future behavior.[1]

Judging behavioral adjectives by these criteria left about two thousand words which were then analyzed, grouped together logically and psychologically and called a "trait." Each trait was defined by grouping adjectives that describe similar types of behavior. For example: The trait leadership is typified by "leader," "lead," "follow," "decision," etc.

The validity for the Activities Inventory scale was approached by correlating the personality scales and the interest scales with a priori expectations. The Project Talent staff believe that: "In general, the data supply encouraging evidence regarding the construct validity of the personality scales in the Project Talent Student Activities Inventory."[2]

The staff began with 20 preliminary scales which were then pretested, combined, and refined into ten final scales. The selected scales used in the present study and their reliabilities are shown in Appendix D, page 150.

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[1]Ibid., p. 142.

[2]J. C. Flanagan, et al., The American High School Student, Technical Report to the U. S. Office of Ed., Cooperative Research Project, No. 635 (Pittsburgh: Project Talent Office, University of Pittsburgh, 1964), p. 7-2.

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> They (reliability coefficients) are not high, but it must be remembered that the half-test scores that were inter-correlated were very short and not wholly equivalent in content. The reliability coefficients of the final scales are probably considerably better.[1]

In developing the items for the tests, previous work in personality measurement was considered as well as careful theoretical analysis of the behavior of high school students. There was little difference in the variability on the scores between male and female students. The entire battery of Project Talent tests was concerned only with "normal" high school students.

The scales selected for the present study were: Sociability, Social Sensitivity, Leadership, Self-Confidence, and Mature Personality. Mature Personality had been formed by Project Talent by combining scales for Productivity, Persistence, Responsibility, and Social Adjustment. For a description and a sample of each of the traits used in the present study, see Appendix D, page 153. For a list of related items for specific traits of the Student Activities Inventory, see Appendix D, page 151.

The test was scored on the following five point rating scale:

A. Extremely well
B. Quite well
C. Fairly well
D. Slightly
E. Not very well

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[1]Ibid., p. 7-2.

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In scoring the inventory, each item is represented by either a positive or a negative symbol, according to the desirability of the trait involved. When the item is marked "+" it is scored as 4 for option A, 3 for option B, 2 for option C, 1 for option D, and 0 for option E. When the item is marked "-" it is scored 0 for option A, 1 for option B, 2 for option C, 3 for option D, and 4 for option E. The range of possible scores was from 0 to 240, including one non-scoring item. For a list of the positive and negative desirability of items from the Student Activities Inventory, see Appendix D, page 152.

In the present study, career interests were measured by scales taken from the section of Project Talent called "Interest Inventory." In constructing this inventory, staff members of Project Talent viewed other interest inventories, including the Strong Vocational Interest Blank and the Kuder Preference Record, using these as a basis for their selections of items. Several experimental forms of the scales were devised and reviewed by advisory panels. One form was tried out with over six hundred high school students and it was found that the number of items could be reduced from 300 to 205 without limiting the scope of the inventory. The final form contained 16 scales.

The validity for the Interest Inventory was established through a pilot test using the Kuder Preference Record and the Project Talent Interest Inventory. The results showed

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a high correlation between the two scales suggesting that the inventories are measuring much the same thing.[1]

The reliability coefficients exceeded .70 for eleven of the scales and .45 for the remaining five. These levels are generally considered quite acceptable for group measurement. Some of the scales, including Business-Management, were modified after the preliminary tests. The final form would probably show an increase in the reliability coefficients.[2] The reliabilities for the Interest Inventory scales are shown in Appendix E, page 159.

A rating scale of five categories was used in this inventory.

A. I would like this very much.
B. I would like this fairly well.
C. Indifferent or don't know much about it.
D. I would dislike this a little.
E. I would dislike this very much.

The scoring of the interest inventory in the present study was handled as follows: 4 points for option A, 3 for option B, 2 for option C, 1 for option D, and 0 for option E. The range of possible scores was from 0 to 204. Twenty-nine non-scoring items were included in the form of the inventory used in the present study.

For a complete copy of the instruments used to gather data for the present study, see Appendix B.

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[1]J. C. Flanagan, et al., Designing the Study, Technical Report to the U. S. Office of Ed., Cooperative Research Project, No. 635 (Pittsburgh: Project Talent Office, University of Pittsburgh, 1960), p. VIII-42.

[2]Flanagan, et al., The American High School Student, p. 6-2.

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D. Statistical Methods Used to Analyze the Data

To determine the effectiveness of the Junior Achievement program at the Pittsburgh Center for the year 1970-71, the investigator employed three inventories: A Business Inventory, a Personality Inventory, and an Interest Inventory. Further, each of these inventories is divided into five specific dimensions. The statistical analysis was performed on the differences between pretest scores and posttest scores attained by the students involved in the study. For a pretest-posttest mean difference to be considered significant in the study, the probability of that difference occurring by chance will be statistically less than 5 times in a hundred. The alpha error for all tests, therefore, will be controlled at the 5 per cent level of confidence.

A comparison of the three inventories was accomplished through the use of a multivariate and univariate one-way analysis of variance program called NYBMUL, Version 4, June, 1968, developed at the State University of New York at Buffalo by Jeremy D. Finn.[1]

This program performs a multivariate test of equality of mean vectors, calculates a multivariate F-ratio and then calculates for each variable a univariate F-ratio. To test the subhypotheses of school location and sex for each inventory,

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[1]Jeremy D. Finn, NYBMUL, A Report on the Fortran Program to Perform Univariate and Multivariate Analysis of Variance and Covariance at the State University of New York at Buffalo, June 18, 1969 (Buffalo, New York: Computing Center Press, 1969).

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the same program was employed, using a two-way, 2 X 2 analysis of variance; thus giving the effect of school location and the effect of sex of the achievers plus any interaction that may have occurred.

Further statistical evaluation was performed on the dimensions which may have exhibited changes brought about among the achievers. For the dimensions of the Business Inventory, proportional scores were calculated and a critical ratio test of differences of proportions was performed.[1] This type of analysis was necessary since there were not enough items in each specific dimension to establish a variance. The analysis of the dimensions of the Activities and Interest Inventories was performed by the NYBMUL program of multivariate and univariate analysis of variance.

A secondary purpose of the study was to investigate the attitudes held toward the free enterprise system by the Junior Achievement advisers and how these attitudes reflect those attitudes held by top executives and foremen. An informal analysis was made of these attitudes by comparing the percentage scores of the advisers to those of business executives and foremen whose percentage scores were available from a previous study.

The statistical analyses were completed by utilizing the services of the IBM 360/OS of the University of Pittsburgh Computer Center.

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[1]George A. Ferguson, Statistical Analysis in Psychology and Education (New York: McGraw-Hill Book Company, 1966), pp. 178-81.

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VI. ANALYSIS AND INTERPRETATION OF THE DATA

To study the over-all effect of the three discrete inventories used to evaluate the effectiveness of the Junior Achievement program upon participating high school students, the scores for each of the inventories were analyzed by a multivariate one-way analysis of variance procedure which yielded a multivariate F-ratio for the three inventories. The analysis also yielded a univariate F-ratio for each inventory separately.

To study the effects of school location and sex of the achievers, a multivariate two-way analysis of variance procedure was employed using differences in scores which yielded a multivariate F-ratio for the three inventories. This analysis also yielded a univariate F-ratio for each separate inventory which allows for an analysis of each of the subhypotheses.

In the interest of further research and to further identify the nature of the influence of the Junior Achievement program upon participating high school students, the specific dimensions of each inventory were further analyzed to determine whether there were any significant differences in the achievers' responses related to each particular dimension prior to participating in the program when compared to responses given after completing the program.

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The method of data analysis presented in this chapter is that of summarizing the over-all findings of the inventories and then presenting an analysis of each inventory separately with the related findings of the five dimensions which make-up the inventories.

The percentage scores of the advisers on the Business Inventory were not statistically analyzed since only one test was given, the percentage scores of which were compared to the percentage scores of executives and foremen taken from a previous study.

Table 2 shows that analysis of total scores for all of the three inventories produced a multivariate F-ratio of 7.58 for 3 and 188 degrees of freedom which exceeds the F-value of 2.66 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that there is

TABLE 2

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF ACHIEVERS FROM THE BUSINESS, ACTIVITIES, AND INTEREST INVENTORIES

F-Ratio for Multivariate Test of Equality of Mean Vectors is 7.58 for 3 and 188 Degrees of Freedom; P Less Than .0001

Variable	df	Mean Square	Univariate F	P Less Than
Business Inventory	1	113.66	22.54*	.001
Activities Inventory	1	86.31	0.17	.68
Interest Inventory	1	10.89	0.02	.90

*Significant at .05

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a significant difference among the mean differences from the pretest mean to the posttest mean of the three inventories.

Further examination of Table 2 on page 64 reveals that the Business Inventory contributed to the significant change of over-all mean vectors, with achievers' mean scores on the Personality and Interest Inventories remaining relatively unchanged from the pretest to the posttest.

Table 3 records an analysis of the effect of the geographical location of achievers' schools by pretest-posttest difference scores which resulted in a multivariate F-ratio of 1.19 for 3 and 188 degrees of freedom which does not exceed the F-value of 2.26 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that there is no significant difference among the mean differences from the pretest mean to posttest mean of the three inventories in relation to the location of schools attended by achievers.

TABLE 3

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF CITY AND SUBURBAN ACHIEVERS FROM THE BUSINESS, ACTIVITIES, AND INTEREST INVENTORIES

F-Ratio for Multivariate Test of Equality of Mean Vectors is 1.19 for 3 and 188 Degrees of Freedom; P Less Than .32

Variable	df	Mean Square	Univariate F	P Less Than
Business Inventory	1	0.03	0.01	.99
Activities Inventory	1	53.67	0.17	.68
Interest Inventory	1	2068.18	3.49	.06

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An analysis of the variable, sex, on the pretest-posttest difference scores, shown in Table 4, results in a multivariate F-ratio of 1.65 for 3 and 188 degrees of freedom which does not exceed the F-value of 2.66 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that there is no significant difference

TABLE 4

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF MALE AND FEMALE ACHIEVERS FROM THE BUSINESS, ACTIVITIES, AND INTEREST INVENTORIES

F-Ratio for Multivariate Test of Equality of Mean Vectors is 1.65 for 3 and 188 Degrees of Freedom; P Less Than .18

Variable	df	Mean Square	Univariate F	P Less Than
Business Inventory	1	18.10	3.49	.06
Activities Inventory	1	97.59	0.31	.58
Interest Inventory	1	489.98	0.83	.36

among the mean differences between the pretest-posttest means of the three inventories in relation to sex of the achievers.

An analysis of whether the variables of school location and sex of the achievers had any effect on the pretest-posttest difference scores results in a multivariate F-ratio of 4.47 for 3 and 188 degrees of freedom which exceeds the F-value of 2.66 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that there is a significant interaction among the mean differences from the

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pretest mean to the posttest mean of the three inventories in relation to school location and sex of the achievers.

Table 5 reveals that the mean scores of the achievers according to the variables of school location and sex contributed the significant interaction on the Interest Inventory. No significant interaction occurred between the variables in either the Business or the Activities Inventories.

TABLE 5

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF ACHIEVERS ON THE INTERACTION OF SCHOOL LOCATION AND SEX FROM THE BUSINESS, ACTIVITIES, AND INTEREST INVENTORIES

F-Ratio for Multivariate Test of Equality of Mean Vectors is 4.74 for 3 and 188 Degrees of Freedom; P Less Than .003

Variable	df	Mean Square	Univariate F	P Less Than
Business Inventory	1	1.39	0.27	.60
Activities Inventory	1	80.49	0.26	.61
Interest Inventory	1	7712.22	13.01*	.001

*Significant at .05

A. Data from the Business Inventory

Hypothesis 1 of this study assumes that participation in Junior Achievement helps achievers acquire more positive attitudes toward business in the free enterprise system. To determine the effect that the Junior Achievement program had on the participating members, the Business Inventory was administered to a randomly selected sample of 194 first-year

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achievers prior to the beginning of the program and again at the end of the program for the year 1970-71.

Table 6 records the results of the analysis of variance employed to test for significance of the difference between the pretest and the posttest mean scores. The results of this analysis show a univariate F-ratio of 22.54 for 1 and 384 degrees of freedom which exceeds the F-value of 3.86 needed for significance at the 5 per cent level of confidence.

TABLE 6

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF ACHIEVERS FROM THE BUSINESS INVENTORY*

Source of Variation	Sum of Squares	df	Mean Square	Univariate F	P Less Than
Between	113.66	1	113.66	22.54**	.001
Within	1935.36	384	5.04		

*Adapted from Table 2
**Significant at .05

The data produce sufficient evidence to indicate that participation in the Junior Achievement program causes students to acquire more favorable attitudes toward business in the free enterprise system; therefore, hypothesis 1 is accepted.

Subhypotheses a and b assume that there is no difference in attitude change toward business between achievers attending schools in the city of Pittsburgh and achievers attending schools within Allegheny County[1] or between male

[1]For the sake of clarity, these two groups will henceforth be referred to as city achievers and suburban achievers.

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and female achievers. For determining whether the variables of school location and sex of the achievers had any significant part in changing student attitudes favorably toward business in the free enterprise system and if any interaction occurred between these two variables, a two-way analysis of variance of difference scores was performed, with results shown in Table 7.

TABLE 7

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES BETWEEN SCHOOL LOCATION AND SEX OF ACHIEVERS FROM THE BUSINESS INVENTORY*

Source of Variation	Sum of Squares	df	Mean Square	Univariate F	P Less Than
Location	0.03	1	0.03	0.005	.94
Sex	18.10	1	18.10	3.49	.06
Interaction	1.39	1	1.39	0.27	.60
Within	973.84	188	5.18		

*Adapted from Tables 3, 4, and 5

The univariate F-ratio for geographical location of schools of the achievers is .005 for 1 and 188 degrees of freedom which does not exceed the F-value of 3.90 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that there is no significance between the mean differences from the pretest mean to the posttest mean of the achievers in relation to the geographical location of the schools they attend. The data do not produce sufficient evidence to indicate a difference in attitude

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change between city achievers and suburban achievers; therefore subhypothesis a is not rejected.

The univariate F-ratio for sex of achievers is 3.49 for 1 and 188 degrees of freedom which does not exceed the F-value of 3.90 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that there is no significance between the mean differences from pretest mean to posttest mean of the achievers in relation to their sex. The data do not produce sufficient evidence to indicate a difference in attitude change between male and female achievers; therefore, subhypothesis b is not rejected.

The univariate F-ratio for the interaction between the two variables of school location and sex of achievers is .27 for 1 and 188 degrees of freedom which does not exceed the F-value of 3.90 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that no interaction between school location and sex of the achievers has occurred.

The mean, standard deviation, and mean difference scores for the total, city, suburban, male, and female groups of achievers on the Business Inventory reveal that the posttest means exceed the pretest means in each of the groups under investigation, as shown in Table 8 on page 71. These data are presented merely as descriptive information.

Summary. Analysis of the Business Inventory reveals that first-year participants in the Junior Achievement program changed their attitudes toward the free enterprise

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TABLE 8

MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCE OF SCORES ACCORDING TO TOTAL SAMPLE, SCHOOL LOCATION, AND SEX OF ACHIEVERS FROM THE BUSINESS INVENTORY

Group	N	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Difference
Total	194	8.66	2.12	9.74	2.36	1.08
City	90	8.43	2.26	9.53	2.57	1.10
Suburban	104	8.86	1.98	9.92	2.17	1.06
Male	97	8.59	2.24	9.97	2.36	1.38
Female	97	8.73	2.00	9.52	2.35	0.78

system in a positive direction; the difference between pretest mean and posttest mean being highly significant.

The Junior Achievement program made a significant contribution to the development of favorable attitudes of the students toward the American free enterprise system. The program was equally effective in changing attitudes toward business of city achievers and suburban achievers, and for male and female achievers.

This finding appears to support claims made in the literature of Junior Achievement that high school students, by participating in a "learn-by-doing" program will gain experience in the actual operation of business, and using this experience will form favorable attitudes toward the free enterprise system.

The factors influencing the achievers' attitude changes toward business are probably to be found among the

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activities performed in the miniature companies. Achievers actually organize and capitalize companies, manufacture products, keep company records, pay rent, taxes, and dividends, and earn money as salaries, wages, and commissions. Because of the large number of companies at the Pittsburgh Center, many of them produce the same product and must compete with each other in the sale of these products; thus gaining some insight into business competition. These experiences apparently bring about an awareness among the achievers of the major procedures followed by firms in the world of business which causes the achievers to acquire more favorable attitudes toward the ideologies and principles of business in the free enterprise system.

The mean differences of city achievers and suburban achievers are approximately the same. The mean difference of the male achievers, however, is greater than that of the female achievers although this difference is not significant.

There is no significant interaction between the two variables of school location and sex of the achievers.

Related findings on the five dimensions which make-up the Business Inventory.

The items of the Business Inventory can be classified according to the following five specific dimensions: Profits, Competition, Production and Salaries, Capital, and Freedom from Government Intervention. The items of each dimension are listed in Appendix C, page 146.

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Table 9 shows the results of proportional difference analysis of paired observations on the specific dimension of Profits. An analysis of the data reveals that the total sample of achievers' scores shows a positive mean difference of 11.35 per cent between pretest mean and posttest mean, giving

TABLE 9

MEAN PROPORTIONS OF PAIRED PRETEST-POSTTEST FAVORABLE RESPONSES ON ITEMS RELATING TO PROFITS FROM THE BUSINESS INVENTORY

Group	N	Pretest	Posttest	Mean Difference	Critical t-Score
Total	194	47.40	58.75	11.35	2.70*
City	90	46.29	56.29	10.00	1.73
Suburban	104	48.39	60.89	12.50	2.08
Male	97	51.20	61.16	9.96	1.63
Female	97	43.65	56.36	12.71	2.19

*Significant at .05

a critical t-score of 2.70 for 193 degrees of freedom which exceeds the t-value of 1.97 needed for significance at the 5 per cent level of confidence. Therefore, the data present sufficient evidence that achievers develop more favorable attitudes toward the role of Profits in our business system.

Further analysis indicates that achievers, whether from city or suburban schools, show a positive attitude development, but no significant difference exists between city and suburban achievers. The same analysis is true for male and female achievers.

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Table 10 illustrates the results of proportional difference analysis of paired observations on the specific dimension of Competition. An analysis of the data indicates that

TABLE 10

MEAN PROPORTIONS OF PAIRED PRETEST-POSTTEST FAVORABLE RESPONSES ON ITEMS RELATING TO COMPETITION FROM THE BUSINESS INVENTORY

Group	N	Pretest	Posttest	Mean Difference	Critical t-Score
Total	194	68.90	75.26	6.36	1.65
City	90	63.70	71.48	7.78	1.46
Suburban	104	73.40	78.53	5.13	0.93
Male	97	71.48	73.88	2.40	0.45
Female	97	66.32	73.20	6.88	1.29

the total sample of achievers' scores shows a positive mean difference of 6.36 per cent between the pretest mean and the posttest mean, giving a critical t-score of 1.65 for 193 degrees of freedom which does not exceed the t-value of 1.97 needed for significance at the 5 per cent level of confidence. Therefore, the data do not present sufficient evidence that achievers develop more favorable attitudes toward the role of Competition in the free enterprise system. The data indicate also that there is no significant difference between city and suburban achievers or between male and female achievers in their attitudes on this dimension.

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Table 11 records the results of proportional differences of paired observations on the specific dimension of Production and Salaries. An analysis of the data reveals

TABLE 11

MEAN PROPORTIONS OF PAIRED PRETEST-POSTTEST FAVORABLE RESPONSES ON ITEMS RELATING TO PRODUCTION AND SALARIES FROM THE BUSINESS INVENTORY

Group	N	Pretest	Posttest	Mean Difference	Critical t-Score
Total	194	50.20	59.63	10.57	2.48*
City	90	52.22	58.52	6.30	1.01
Suburban	104	48.40	61.54	13.14	2.25
Male	97	48.46	65.64	17.18	2.83
Female	97	51.89	54.64	2.75	0.46

*Significant at .05

that the total sample of achievers' scores shows a positive mean difference of 10.57 per cent between the pretest mean and the posttest mean, giving a critical t-score of 2.48 for 193 degrees of freedom which exceeds the t-value of 1.97 needed for significance at the 5 per cent level of confidence. Therefore, the data present sufficient evidence that achievers acquired more favorable attitudes toward the role of Production and Salaries in the free enterprise system.

The data indicate also that though no significant change between the scores of city achievers and those of suburban achievers is apparent, male achievers' scores show a positive mean difference of 17.18 per cent and female

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achievers' scores show a positive mean difference of only 2.75 per cent. This is a difference of 2.37 standard deviations which is significant at the 5 per cent level of confidence. It may be assumed, therefore, that there is a significant difference between the per cent mean differences from the pretest mean to the posttest mean on the dimension of Production and Salaries in relation to the sex of the achievers.

Table 12 shows the results of proportional difference analysis of paired observations on the specific dimension of Capital. An analysis of the data indicates that the total

TABLE 12

MEAN PROPORTIONS OF PAIRED PRETEST-POSTTEST FAVORABLE RESPONSES ON ITEMS RELATING TO CAPITAL FROM THE BUSINESS INVENTORY

Group	N	Pretest	Posttest	Mean Difference	Critical t-Score
Total	194	62.13	66.87	4.74	1.21
City	90	60.56	67.23	6.67	1.17
Suburban	104	63.46	66.59	3.13	0.58
Male	97	58.44	65.13	6.69	1.20
Female	97	65.98	68.82	2.84	0.48

sample of achievers shows a positive mean difference of 4.74 per cent between the pretest and posttest scores, giving a critical t-score of 1.21 for 193 degrees of freedom which does not exceed the t-value of 1.97 needed for significance at the 5 per cent level of confidence. Therefore, the data present

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sufficient evidence that first-year achievers do not acquire more favorable attitudes toward the role of Capital in the free enterprise system. The data indicate also that there is no significant difference in the mean score gain between city and suburban achievers or between male and female achievers.

Table 13 illustrates the results of proportional difference analysis of paired observations on the specific dimension of Freedom from Government Intervention. An analysis of the data reveals that the total sample of achievers' scores shows a positive mean difference of 9.80 per cent between the pretest mean and posttest mean, giving a critical t-score of 1.60 for 193 degrees of freedom which does not exceed the t-value of 1.97 needed for significance at the 5 per cent level of confidence. Therefore, the data present sufficient evidence that achievers do not develop more favorable attitudes toward the role of Freedom from Government Intervention in the

TABLE 13

MEAN PROPORTIONS OF PAIRED PRETEST-POSTTEST FAVORABLE RESPONSES ON ITEMS RELATING TO FREEDOM FROM GOVERNMENT INTERVENTION FROM THE BUSINESS INVENTORY

Group	N	Pretest	Posttest	Mean Difference	Critical t-Score
Total	194	54.33	59.53	9.80	1.60
City	90	55.55	62.78	7.23	1.14
Suburban	104	52.88	57.21	4.33	0.69
Male	97	51.03	60.83	9.80	1.60
Female	97	57.22	58.76	1.54	0.24

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free enterprise system. The data indicate also that there is no significant difference in mean score gain between city and suburban achievers or between male and female achievers.

Summary. An analysis of the differences in the achievers' responses prior to participating in the Junior Achievement program, when compared to their responses after completing the program, reveals that a positive mean score difference is shown by the achievers on all five dimensions. Only on the dimension of Profit and the dimension of Production and Salaries, however, was the change significant.

As members of miniature companies, achievers work with "Break-Even Charts," to establish prices of products, pay rent, taxes, and sales commissions, and pay dividends to stockholders. These experiences probably serve to give some appreciation of the way in which profits are made and distributed, or why, when profits are not made, companies fail. These experiences apparently result in changes of attitudes by students on the role of Profits in our business system.

Approximately three-fourths of the company members serve as production workers, receiving hourly wages; the remaining members serve as management officials receiving regular salaries. Individual companies sometimes encounter the problems of producing more products than they can distribute, causing them to operate at a loss.

From these experiences, achievers may be made aware of the necessity for capable officers and management personnel, and the errors of overproduction. They may also gain

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an appreciation of some of the concerns faced by management personnel. It may be the increased awarenesses and appreciations which effected the attitude changes toward the role of Production and Salaries in business.

No significant difference in mean scores was indicated between city and suburban achievers on any of the dimensions of the Business Inventory. Production and Salaries was the only dimension in which male and female achievers' scores showed a significant difference; the male achievers' registered a significantly greater change than the female achievers. The investigator could find no obvious reason for this discrepancy, since both boys and girls appear to participate about equally in production and management within Junior Achievement companies. One possible explanation for the greater attitude change evidenced by male achievers on this dimension may be that in American society, the male is traditionally cast in roles of both producer and manager.

B. Data from the Student Activities Inventory

Hypothesis 2 of this study assumes that participation in Junior Achievement contributes to the strengthening of desirable personality traits of the achievers. To determine the effect that the Junior Achievement program had on participating members, the Student Activities Inventory was administered to a randomly selected sample of 194 first-year achievers prior to the beginning of the program and again at the end of the program for the year 1970-71.

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Table 14 illustrates the results of the analysis of variance which was employed to test for significance of the difference between the pretest and the posttest mean scores.

TABLE 14

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF ACHIEVERS FROM THE ACTIVITIES INVENTORY*

Source of Variation	Sum of Squares	df	Mean Square	Univariate F	P Less Than
Between	86.31	1	86.31	0.17	.68
Within	192268.80	384	500.70		

*Adapted from Table 2

The results of this analysis show a univariate F-ratio of .17 for 1 and 384 degrees of freedom which does not exceed the F-value of 3.86 needed for significance at the 5 per cent level of confidence. The data produce sufficient evidence to indicate that participation in the Junior Achievement program did not have an effect on strengthening the personality traits of the achievers; therefore, hypothesis 2 cannot be accepted.

Subhypotheses a and b assume that there is no difference in personality development between city and suburban achievers or between male and female achievers. For determining whether the variables of school location and sex of the achievers had any part in personality development, and if any interaction occurred between these two variables, a

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two-way analysis of variance of difference scores was performed with results shown in Table 15.

TABLE 15

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES BETWEEN SCHOOL LOCATION AND SEX OF ACHIEVERS FROM THE ACTIVITIES INVENTORY*

Source of Variation	Sum of Squares	df	Mean Square	Univariate F	P Less Than
Location	53.67	1	53.67	0.17	.68
Sex	97.59	1	97.59	0.31	.58
Interaction	80.49	1	80.49	0.26	.61
Within	58971.84	188	313.68		

*Adapted from Tables 3, 4, and 5

The univariate F-ratio for geographical location of schools of achievers is .17 for 1 and 188 degrees of freedom which does not exceed the F-value of 3.90 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that the mean difference between the pretest and posttest means of the achievers in relation to the geographical location of the schools they attend is not significant. The data do not produce sufficient evidence to indicate a difference in personality development between city achievers and suburban achievers; therefore, subhypothesis a is not rejected.

The univariate F-ratio for sex of achievers is .31 for 1 and 188 degrees of freedom which does not exceed the F-value of 3.90 needed for significance at the 5 per cent

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level of confidence. It may be assumed, therefore, that the mean difference between the pretest and posttest means of the achievers in relation to their sex is not significant. The data do not produce sufficient evidence to indicate a difference in personality development between male and female achievers; therefore, subhypothesis b is not rejected.

The univariate F-ratio for the interaction between the two variables of school location and sex of the achievers is .26 for 1 and 188 degrees of freedom which does not exceed the F-value of 3.90 needed for significance at the 5 per cent level of confidence; therefore, it may be assumed that no interaction between school location and sex of the achievers has occurred.

Table 16 records the means and standard deviations of the pretest and the posttest scores and the mean difference for the total, city, suburban, male, and female groups

TABLE 16

MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCE OF PRETEST-POSTTEST SCORES OF ACHIEVERS FROM THE ACTIVITIES INVENTORY

Group	N	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Difference
Total	194	160.69	21.94	159.85	22.80	-0.84
City	90	159.67	22.01	159.14	23.13	-0.53
Suburban	104	161.58	21.94	160.56	22.61	-1.02
Male	97	163.16	21.17	163.04	23.53	-0.12
Female	97	158.22	22.52	156.62	21.68	-1.60

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of first-year achievers on the Activities Inventory. An analysis of the data reveals that the posttest means were all lower than the pretest means in each of these variables. These data are presented merely as descriptive information.

Summary. Analysis of the Student Activities Inventory indicates that participation in the Junior Achievement program by first-year achievers fails to accomplish any significant changes in achievers' personality traits, the difference between pretest and posttest means not being significant.

This finding appears to contradict Junior Achievement claims that benefits derived from participation by students in Junior Achievement include personal and social development, at least in their immediate manifestation. However, it is possible that some personal and social development may have taken place which will not become apparent until achievers become more mature.

A possible reason why achievers showed no apparent change in personality development after their participation in Junior Achievement may be that personality traits are social and cultural in origin and a seven-month experience such as Junior Achievement is too short a time period for any changes which may have been brought about to become apparent.

Although both city and suburban achievers had lower mean scores on the posttest, the suburban achievers showed a greater decrease, but the difference is not significant.

Male and female achievers also had lower mean scores on the posttest, the female achievers showing a greater decrease, although the difference is not significant.

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No significant interaction between the two variables of school location and sex of the achievers is indicated.

Related findings on the five specific dimensions which make-up the Student Activities Inventory.

The items of the Activities Inventory can be classified according to the following five specific dimensions: Sociability, Social Sensitivity, Leadership, Self-Confidence, and Mature Personality.

A multivariate analysis of the pretest-posttest scores of the sample of 194 first-year achievers for all of the five dimensions produces a multivariate F-ratio of 3.65 for 5 and 382 degrees of freedom which exceeds the F-value of 2.24 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that the mean vectors of the five dimensions are significantly different from zero on the pretest-posttest mean difference scores.

An examination of Table 17 on page 85 reveals that only on the dimension of Leadership do the achievers register a mean difference, indicating a significant change in this trait. Leadership has a univariate F-ratio of 8.22 for 1 and 386 degrees of freedom which exceeds the F-value of 3.86 needed for significance at the 5 per cent level of confidence.

None of the univariate F-ratios of the remaining four dimensions of the Activities Inventory exceeds the F-value of 3.86 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that the only dimension of the five in which achievers' scores show a significant

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TABLE 17

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF THE FIVE DIMENSIONS THAT MAKE-UP THE ACTIVITIES INVENTORY

Variable	df	Mean Square	Univariate F	P Less Than
Sociability	1	59.55	1.44	.23
Social Sensitivity	1	0.09	0.01	.93
Leadership	1	95.01	8.22*	.004
Self-Confidence	1	38.99	1.06	.30
Mature Personality	1	19.06	0.15	.70
Within	386			

*Significant at .05

difference among the mean differences is the personality trait of Leadership, with the mean scores of the achievers in the remaining dimensions not changing significantly. A limiting factor in the findings on the dimension of Leadership may have been the fact that this dimension contained only 5 items. The items were scored, however, on a five point scale which would allow for a variance of from zero to twenty-five on this dimension.

The pretest-posttest means, standard deviations, and mean difference score for the total sample of achievers on the five dimensions of the Activities Inventory are shown in Table D in Appendix D. An examination of the means for the pretest-posttest scores of the achievers on the dimension of Leadership shows a pretest mean of 10.02 and a posttest mean

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of 11.01, indicating a significant positive development in the personality trait of Leadership among the achievers.

An analysis of the effect of the variable of school location by pretest-posttest difference scores shows a multivariate F-ratio of 1.52 for 5 and 186 degrees of freedom which does not exceed the F-value of 2.26 needed for significance at the 5 per cent level of confidence. An examination of Table 18, however, shows that the achievers' mean difference score on the dimension of Social Sensitivity has a univariate F-ratio of 5.21 for 1 and 190 degrees of freedom which exceeds the F-value of 3.89 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that there is a significant difference in means between achievers attending city schools and those attending suburban schools on the dimension of Social Sensitivity.

TABLE 18

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF CITY AND SUBURBAN ACHIEVERS ON THE FIVE DIMENSIONS OF THE ACTIVITIES INVENTORY

Variable	df	Mean Square	Univariate F	P Less Than
Sociability	1	0.86	0.03	.86
Social Sensitivity	1	47.90	5.21*	.02
Leadership	1	4.71	0.44	.51
Self-Confidence	1	0.60	0.02	.90
Mature Personality	1	0.19	0.01	.96
Within	190			

*Significant at .05

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Tables E and F in Appendix D record the pretest-posttest means, standard deviations, and mean difference scores of the city and suburban achievers on the five dimensions of the Activities Inventory. Within the dimension of Social Sensitivity, the city achievers registered a pretest mean of 19.49 and a posttest mean of 20.03, an increase of .54; whereas the suburban achievers registered a pretest mean of 20.26 and a posttest mean of 19.85, a decrease of .41. This difference of .95 is significant at the 5 per cent level of confidence. None of the achievers' mean scores on the four remaining dimensions shows a significant difference in means for the variable of school location.

An analysis of the effect of the variable of sex of the achievers is shown in Table 19. The pretest-posttest difference scores result in a multivariate F-ratio of .99 for 5 and 186 degrees of freedom which does not exceed the F-value

TABLE 19

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF MALE AND FEMALE ACHIEVERS ON THE FIVE DIMENSIONS OF THE ACTIVITIES INVENTORY

Variable	df	Mean Square	Univariate F	P Less Than
Sociability	1	7.16	0.27	.61
Social Sensitivity	1	16.21	1.76	.19
Leadership	1	13.00	1.23	.27
Self-Confidence	1	13.63	0.39	.53
Mature Personality	1	8.02	0.08	.77
Within	190			

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of 2.26 needed for significance at the 5 per cent level of confidence. An examination of Table 19 on page 87 reveals that none of the univariate F-ratios of the five dimensions of the Activities Inventory exceeds the F-value of 3.89 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that there is no significant difference between male and female group means on any of the five dimensions of the Activities Inventory. Tables G and H in Appendix D illustrate the pretest-posttest means, standard deviations, and mean differences of the male and the female achievers on the five dimensions of the Activities Inventory.

An analysis of whether the interaction of the variables of school location and sex of the achievers has any effect on the pretest-posttest difference scores results in a multivariate F-ratio of 2.04 for 5 and 186 degrees of freedom which does not exceed the F-value of 2.26 needed for significance at the 5 per cent level of confidence. An examination of Table 20 on page 89 reveals, however, that the dimension of Sociability has a univariate F-ratio of 4.45 for 1 and 190 degrees of freedom which exceeds the F-value of 3.89 needed for significance at the 5 per cent level of confidence. None of the remaining four dimensions has a univariate F-ratio that exceeds the F-value of 3.89 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that Sociability is the only personality trait on which achievers' mean scores show a significant interaction between school location and sex. For a profile

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TABLE 20

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF ACHIEVERS ON THE INTERACTION OF SCHOOL LOCATION AND SEX ON THE FIVE DIMENSIONS OF THE ACTIVITIES INVENTORY

Variable	df	Mean Square	Univariate F	P Less Than
Sociability	1	119.91	4.45*	.04
Social Sensitivity	1	27.44	2.98	.09
Leadership	1	4.26	0.40	.53
Self-Confidence	1	0.73	0.02	.89
Mature Personality	1	42.24	0.44	.51
Within	190			

*Significant at .05

of this interaction, see Figure 1 which records the mean difference scores of city male and female achievers and the mean difference scores of suburban male and female achievers.

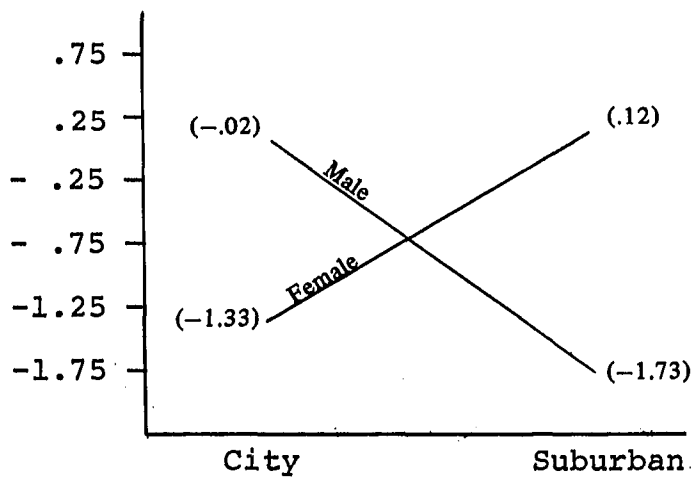

Figure 1. Profile of interaction between school location and sex of achievers on the dimension of sociability.

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Summary. An analysis of the differences in the achievers' responses prior to participating in the Junior Achievement program, when compared to their responses after completing the program, reveals that only the mean scores of the personality trait of Leadership show a significant difference.

Approximately half of the members of Junior Achievement hold some office in their particular company, ranging from President down to such offices as Safety Director, Production Manager, and the like, including assistants for most of the higher offices. Many of these officers are called upon to lead others in some manner, whether in the department of production, sales, or general management. It would appear that this experience of leading others resulted in many of the achievers showing some development in the trait of Leadership. The many awards given to outstanding officers may have served as motivation to the achievers for developing the trait of Leadership.

An analysis of the data concerning the variable of school location indicates that only the means of the trait of Social Sensitivity show a significant difference between city and suburban achievers; the city achievers scoring significantly higher than the suburban achievers.

It is difficult for this investigator to establish why one segment of the sample would show more development in the trait of Social Sensitivity than another segment. The reasons why the city achievers showed more development in

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this trait apparently lie in cultural and social differences between city achievers and suburban achievers. It is possible that contact between the two groups through working together in the Junior Achievement companies had some bearing on this finding.

No significant difference is indicated between male and female achievers on any of the five personality traits of the Student Activities Inventory.

An analysis of the data concerning interaction between the variables of school location and sex of the achievers reveals that only on the personality trait of Sociability does a significant interaction occur. A possible explanation for the interaction might be that the trait of Sociability is related to the trait of Social Sensitivity and the interaction might have been caused by the same factors affecting the difference between city and suburban achievers on the trait of Social Sensitivity.

C. Data from the Interest Inventory

Hypothesis 3 of this study assumes that participation in Junior Achievement accomplishes a change in the interests and vocational preferences for business occupations of the achievers. To determine the effect that the Junior Achievement program had on participating members, the Interest Inventory was administered to a randomly selected sample of 194 first-year achievers prior to the beginning of the program and again at the end of the program for the year 1970-71.

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The results of the analysis of variance which was employed to test for significance of the difference between the pretest and the posttest mean scores is shown in Table 21. The outcome of this analysis reveals a univariate F-ratio of .02 for 1 and 384 degrees of freedom which does not exceed the F-value of 3.86 needed for significance at the 5 per cent level of confidence. The data produce sufficient

TABLE 21

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF ACHIEVERS FROM THE INTEREST INVENTORY*

Source of Variation	Sum of Squares	df	Mean Square	Univariate F	P Less Than
Between	10.89	1	10.89	0.02	.90
Within	278784.00	384	726.00		

*Adapted from Table 2

evidence to indicate that participation in the Junior Achievement program did not have an effect in accomplishing a change in the interests and vocational preferences for business occupations of the achievers; therefore, hypothesis 3 cannot be accepted.

Subhypotheses a and b assume that there is no difference in changes of interests and vocational preferences between the city achievers and suburban achievers or between male achievers and female achievers. For determining whether the two variables of school location and sex of the achievers had any part in changing their interests and

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vocational preferences for business occupations, and if any interaction occurred between these two variables, a two-way analysis of variance of difference scores was performed with results shown in Table 22.

TABLE 22

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES BETWEEN SCHOOL LOCATION AND SEX OF ACHIEVERS FROM THE INTEREST INVENTORY*

Source of Variation	Sum of Squares	df	Mean Square	Univariate F	P Less Than
Location	2068.18	1	2068.18	3.49	.06
Sex	489.98	1	489.98	0.83	.36
Interaction	7712.22	1	7712.22	13.01**	.001
Within	111408.80	188	592.60		

*Adapted from Tables 3, 4, and 5
**Significant at .05

The univariate F-ratio for geographical location of schools of the achievers is 3.49 for 1 and 188 degrees of freedom which does not exceed the F-value of 3.90 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that the mean difference between the pretest and posttest means of the achievers, in relation to the geographical location of the schools they attend, is not significant. The data do not produce sufficient evidence to indicate a significant difference in the change of interests and vocational preferences for business occupations between city achievers and suburban achievers; therefore, subhypothesis a is not rejected.

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The univariate F-ratio for sex of the achievers is .83 for 1 and 188 degrees of freedom which does not exceed the F-value of 3.90 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that the mean difference between the pretest and posttest means of the achievers, in relation to their sex is not significant. The data shown in Table 22 on page 93 do not produce sufficient evidence to indicate a significant difference in the change of interests and vocational preferences for business occupations between male and female achievers; therefore, subhypothesis b is not rejected.

The univariate F-ratio for the interaction between the two variables of school location and sex of the achievers is 13.01 for 1 and 188 degrees of freedom which exceeds the F-value of 3.90 needed for significance at the 5 per cent level of confidence, as recorded in Table 22 on page 93. It may be assumed, therefore, that a significant interaction between school location and sex of the achievers has occurred. For a profile of this interaction, see Figure 2 on page 95. An analysis of Figure 2 shows that the mean difference of city male achievers is lower than the mean difference of city female achievers but that the mean difference of suburban males is higher than the mean difference of suburban females.

The means and standard deviations of the pretest and posttest scores and the mean difference of the means for the total, city, suburban, male, and female groups of first-year achievers on the Interest Inventory are presented merely as

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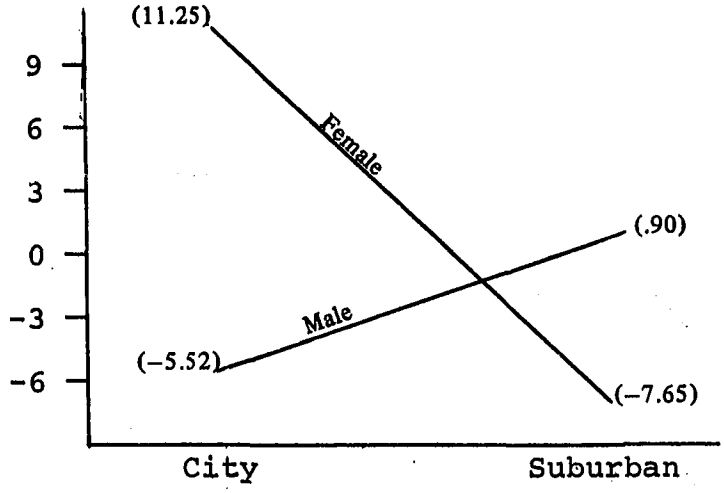

Figure 2. Profile of the interaction between school location and sex of achievers from the Interest Inventory.

descriptive information and are shown in Table 23. Analysis of the data reveals that the posttest means of the total sample, suburban, and male achievers were lower than their pretest means. The posttest means of city and female achievers were higher than their pretest means.

TABLE 23

MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCE OF PRETEST-POSTTEST SCORES OF ACHIEVERS FROM THE INTEREST INVENTORY

Group	N	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Difference
Total	194	105.78	26.64	105.44	27.29	-0.34
City	90	106.09	26.84	108.98	27.33	2.89
Suburban	104	105.51	26.59	102.38	27.01	-3.13
Male	97	106.40	26.66	104.53	27.88	-1.87
Female	97	105.15	26.74	106.36	26.80	1.21

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Summary. Analysis of the Interest Inventory indicates that participation in the Junior Achievement program by first-year achievers fails to accomplish any significant changes in their interests and vocational preferences for business occupations; the difference between pretest and posttest mean scores not being significant. This finding is in agreement with the findings of the Project Talent survey which indicated that the business interests of students show a decline in grades nine through twelve. Apparently the Junior Achievement experience did not reverse this tendency.

A possible reason why the achievers showed no change in their interests in business occupations might be that the Junior Achievement program does not emphasize specific occupations within business but rather, presents an over-all picture of business procedures. Another reason may be that through participation in Junior Achievement, students tend to narrow their interests which would not be reflected by the instrument used to measure these changes.

An investigation of the variable of school location does not show any significant difference between the mean scores of city achievers and suburban achievers. The city achievers, however, had a higher mean score on the posttest than on the pretest; whereas, the suburban achievers had a lower mean score on the posttest than on the pretest. The mean difference score between the achievers attending city schools and those attending suburban schools is not significant.

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Regarding the variable, sex, the male achievers had a lower mean score on the posttest than on the pretest but the female achievers had a higher mean score on the posttest than on the pretest. The mean difference score between male and female achievers is not significant.

There is a significant interaction between the variables of school location and sex of the achievers.

Related findings on the five specific dimensions which make-up the Interest Inventory.

The items of the Interest Inventory can be classified according to the following five specific dimensions: Business-Management, Sales, Computation, Office Work, and Miscellaneous.

A multivariate analysis of the pretest-posttest scores of the sample of 194 first-year achievers for all of the five dimensions produces a multivariate F-ratio of .85 for 5 and 382 degrees of freedom which does not exceed the F-value of 2.24 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that the five mean vectors are not significantly different from zero on the pretest-posttest mean difference scores.

An examination of Table 24 on page 98 shows that none of the univariate F-ratios of the five dimensions of the Interest Inventory exceeds the F-value of 3.86 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that none of the mean differences between the pretest and posttest means of the achievers on

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TABLE 24

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF THE FIVE DIMENSIONS THAT MAKE-UP THE INTEREST INVENTORY

Variable	df	Mean Square	Univariate F	P Less Than
Business-Management	1	4.12	0.05	.83
Sales	1	67.64	1.90	.17
Computation	1	2.98	0.04	.84
Office Work	1	2.17	0.04	.83
Miscellaneous	1	14.89	0.25	.62
Within	386			

each dimension of the Interest Inventory are significant. Table J in Appendix E illustrates the pretest-posttest means, standard deviations, and mean difference scores of achievers on the five dimensions of the Interest Inventory.

An analysis of the effect of the variable of school location by pretest-posttest difference scores records a multivariate F-ratio of 1.54 for 5 and 186 degrees of freedom which does not exceed the F-value of 2.26 needed for significance at the 5 per cent level of confidence.

An examination of Table 25 on page 99, however, shows that the Miscellaneous dimension has a univariate F-ratio of 4.83 for 1 and 190 degrees of freedom which exceeds the F-value of 3.89 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore, that there is a significant difference between pretest and posttest means of

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TABLE 25

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF CITY AND SUBURBAN ACHIEVERS FROM THE FIVE DIMENSIONS OF THE INTEREST INVENTORY

Variable	df	Mean Square	Univariate F	P Less Than
Business-Management	1	2.53	0.04	.87
Sales	1	121.57	3.28	.07
Computation	1	26.51	0.54	.46
Office Work	1	52.91	2.25	.14
Miscellaneous	1	240.60	4.83*	.03
Within	190			

*Significant at .05

city achievers and suburban achievers on the dimension of Miscellaneous.

The pretest-posttest means, standard deviations, and mean differences of city and suburban achievers on the five dimensions of the Interest Inventory are presented in Tables K and L in Appendix E. In the Miscellaneous dimension, the pretest mean is 24.99 and the posttest mean is 26.58 for achievers attending city schools, which is an increase of 1.59; whereas, for achievers attending suburban schools, the pretest mean is 26.63 and the posttest mean is 25.98, a decrease of .65. This difference of 2.24 is significant at the 5 per cent level of confidence. In none of the remaining dimensions do the achievers show a significant difference in the mean scores for the variable of school location.

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An analysis of the data on the effect of the variable of sex of the achievers by pretest-posttest difference scores results in a multivariate F-ratio of .45 for 5 and 186 degrees of freedom which does not exceed the F-value of 2.26 needed for significance at the 5 per cent level of confidence. An examination of Table 26 reveals that none of the univariate F-ratios of the five dimensions of the Interest Inventory exceeds the F-value of 3.89 needed for significance at the 5 per cent level of confidence. It may be assumed, therefore,

TABLE 26

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF MALE AND FEMALE ACHIEVERS FROM THE FIVE DIMENSIONS OF THE INTEREST INVENTORY

Variable	df	Mean Square	Univariate F	P Less Than
Business-Management	1	8.97	0.15	.70
Sales	1	1.77	0.05	.83
Computation	1	10.27	0.21	.65
Office Work	1	44.48	1.89	.17
Miscellaneous	1	13.25	0.27	.61
Within	190			

that there is no significant difference between male and female group means on any of the five dimensions of the Interest Inventory. Tables M and N in Appendix E record the pretest and posttest means, standard deviations, and mean difference scores of the male and female achievers on the five dimensions of the Interest Inventory.

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An analysis of whether the interaction of the variables of school location and sex of the achievers had any effect on the pretest-posttest difference scores results in a multivariate F-ratio of 2.99 for 5 and 186 degrees of freedom which exceeds the F-value of 2.26 needed for significance at the 5 per cent level of confidence.

An examination of Table 27 reveals that an interaction between the two variables occurred in four of the dimensions. The univariate F-ratios of Business-Management, Computation, Office Work, and Miscellaneous all exceed the F-value of 3.89 needed for significance at the 5 per cent level of confidence.

TABLE 27

ANALYSIS OF VARIANCE OF PRETEST-POSTTEST SCORES OF ACHIEVERS ON THE INTERACTION OF SCHOOL LOCATION AND SEX FROM THE FIVE DIMENSIONS OF THE INTEREST INVENTORY

Variable	df	Mean Square	Univariate F	P Less Than
Business-Management	1	862.85	14.19*	.001
Sales	1	139.80	3.77	.054
Computation	1	279.40	5.72*	.018
Office Work	1	109.31	4.65*	.032
Miscellaneous	1	242.73	4.87*	.029
Within	190			

*Significant at .05

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In seeking a reason for the prevalence of interaction in the four dimensions, an examination of the correlation matrix reveals that all five dimensions of the Interest Inventory are correlated with each other (see Table O, Appendix E).

Figure 3 in Appendix E presents the profiles of significant interactions of the two variables in four dimensions of the Interest Inventory. Figure 3 shows that all four dimensions have the same configuration, with the mean difference score of city male achievers being close to or lower than the mean difference score of city female achievers, but the mean difference score of the suburban males is higher than the mean difference score of suburban female achievers.

Summary. An analysis of the difference in the achievers' responses prior to participating in the Junior Achievement program, when compared to their responses after completing the program, reveals that on none of the dimensions of the Interest Inventory do the achievers show a significant change.

An analysis of the data concerning the variable of school location indicates that a significant mean difference between city and suburban achievers occurred only on the Miscellaneous dimension.

There probably are many explanations of why the city achievers showed a significantly greater gain than the suburban achievers in the dimension of Miscellaneous. Some of the items in this dimension were, "buy stocks," "invest money," and "own your own business." One of the explanations

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may be that these values are often thought to be indigenous to the suburban population, many of whom are "white collar" workers, whereas the city population is considered to consist primarily of "blue collar" workers. Perhaps the aspirations of the city achievers were changed through their experience in Junior Achievement, causing them to desire the types of occupations delineated in the dimension of Miscellaneous.

No significant mean differences were indicated between male and female achievers on any of the five dimensions of the Interest Inventory.

An analysis of data concerning interaction between the variables of school location and sex of achievers reveals that significant interaction occurred in the dimensions of Business-Management, Computation, Office Work, and Miscellaneous. Investigation shows that the dimensions were all correlated with each other and this probably had the effect of making the achievers' scores in one dimension responsible for the four significant interactions.

D. An Assessment of Responses to the Business Inventory by Advisers

A secondary purpose of this study was to investigate the attitudes toward the American free enterprise system held by the Junior Achievement advisers at the Pittsburgh Center. To investigate these attitudes, the advisers were administered the same Business Inventory that was administered to the achievers, and the responses of the advisers were compared with the responses obtained when business

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executives and foremen were tested on these same items.[1] The results of the data are presented as descriptive information only, as it was not the intent of the investigator to assess any significant differences, but to place the attitudes of the advisers at the Pittsburgh Center in perspective with those attitudes generally held toward the free enterprise system by management personnel. It is assumed by the investigator that the attitudes held by top executives are those attitudes showing a bias toward free enterprise which are necessary to carry on the system of American business as it is currently practiced.

The advisers' responses indicating their attitudes were analyzed. Comparisons were made to the responses of business executives and foremen, and these responses are presented as per cent scores. The responses cannot be considered "right" or "wrong" as the questions are attitudinal rather than factual.

Table 28 on page 105 records the number and per cent of the responses considered to be appropriate by believers in the free enterprise system for executives, advisers, and foremen. The average per cent of responses expressing agreement with the principles of free enterprise to the items by the executives was 98 per cent; by advisers was 86 per cent; and by foremen was 69 per cent. A high percentage score

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[1]Opinion Research Corporation, Economics Test for Company Use, A Report of the Public Opinion Index for Industry, Princeton, New Jersey, January, 1951 (Princeton, New Jersey: Opinion Research Corporation, 1951).

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TABLE 28

NUMBER AND PER CENT OF FAVORABLE RESPONSES ON ITEMS BY EXECUTIVES, ADVISERS, AND FOREMEN FROM THE BUSINESS INVENTORY

Inventory Item	Executives N=304		Advisers N=181		Foremen N=1000	
	No.	%	No.	%	No.	%
1	283	93	169	93	760	76
2	304	100	173	96	810	81
3	289	95	156	86	440	44
4	301	99	153	85	710	71
5	298	98	115	64	770	77
6	289	95	133	73	510	51
7	298	98	157	87	650	65
8	301	99	163	90	790	79
9	301	99	180	99	840	84
10	298	98	170	94	680	68
11	301	99	153	85	780	78
12	295	97	166	92	740	74
13	301	99	163	90	720	72
14	295	97	154	85	590	59
15	295	97	130	72	620	62
AVERAGE		98%		86%		69%

would indicate a strong adherence to the ideology and principles of the American free enterprise system.

The results show that the advisers attained scores comparable to those of business executives on most items and higher than the foremen on all but one item. It may be of

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interest to note that of the 181 advisers who participated in the survey, 124 responded favorably to at least 13 of the items; of the 194 achievers, 7 responded favorably to at least 13 of the items on the pretest, and 25 responded favorably to at least 13 items on the posttest. In percentage form, these figures represent 68.5 per cent of the advisers; 3.5 per cent of the achievers on the pretest and 13 per cent of the achievers on the posttest responding favorably to at least 13 items of the Business Inventory.

The analysis of the advisers' responses is presented according to the five dimensions of the Business Inventory which are: Profits, Competition, Production and Salaries, Capital, and Freedom from Government Intervention. Answers considered to be favorable for scoring purposes are underlined in Tables 29-33 that follow. Within these tables, some percentages do not total 100 for the reason that a very small number of respondents failed to make a choice.

Table 29 on page 107 shows a comparison of the scores of executives, advisers, and foremen on specific items dealing with Profits. On these items, the average of favorable responses attained by executives was 97 per cent; the average of advisers was 81 per cent; and the average of the foremen was 61 per cent. In the dimension dealing with Profits, the responses of the advisers reflected those of the executives more nearly than they did those of the foremen. On the item concerning the distribution of profits and wages, 97 per cent of the executives responded favorably and 72 per cent of the

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advisers, indicating that the advisers' responses do not correspond as nearly with those of the executives as they do on most of the other items in the inventory.

TABLE 29

PER CENT OF RESPONSES BY EXECUTIVES, ADVISERS, AND FOREMEN ON ITEMS RELATING TO PROFITS FROM THE BUSINESS INVENTORY

Any company that makes 100 million dollars in profits in one year is very probably making too much profit.

	Executives	Advisers	Foremen
Agree	5	14	55
Disagree	95	86	44

On the Average, figuring the good years with the bad, industry makes a profit on sales of 20 per cent or more.

	Executives	Advisers	Foremen
Agree	1	13	21
Disagree	99	85	78

When a company makes big profits in any one year, it ought to raise wages.

	Executives	Advisers	Foremen
Agree	3	27	37
Disagree	97	72	62
AVERAGE	97%	81%	61%

A comparison of the responses of executives, advisers, and foremen on the dimension of Competition is shown in Table 30 on page 108. On these items, the average of favorable responses attained by executives was 96 per cent; the average of advisers was 88 per cent; and the average of foremen was 67 per cent. In the dimension of Competition, the

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responses of the advisers bore a closer resemblence to those of the executives than they did to those of the foremen.

TABLE 30

PER CENT OF RESPONSES BY EXECUTIVES, ADVISERS, AND FOREMEN ON ITEMS RELATING TO COMPETITION FROM THE BUSINESS INVENTORY

On the whole, competition is a good thing, but it is wasteful because it means too many companies make the same thing.

	Executives	Advisers	Foremen
Agree	6	7	23
Disagree	93	93	76

Consumers don't have much influence on prices. Companies set the price and the customer has to pay it.

	Executives	Advisers	Foremen
Agree	1	13	35
Disagree	98	87	65

When several companies in the same industry charge about the same price, that is good evidence that competition is not operating.

	Executives	Advisers	Foremen
Agree	3	14	40
Disagree	97	85	59
AVERAGE	96%	88%	67%

A comparison of the responses of executives, advisers, and foremen on the dimension of Production and Salaries is shown in Table 31 on page 109. On these items, the average of favorable responses attained by executives was 99 per cent; the average of advisers was 82 per cent; and the average of foremen was 76 per cent. On the three questions dealing with Production and Salaries, responses of the advisers

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TABLE 31

PER CENT OF RESPONSES BY EXECUTIVES, ADVISERS, AND FOREMEN ON ITEMS RELATING TO PRODUCTION AND SALARIES FROM THE BUSINESS INVENTORY

Management makes a mistake to urge more and more production from workers because that makes for overproduction which results in depression.

	Executives	Advisers	Foremen
Agree	0	4	18
Disagree	100	96	81

One of the faults of the business system in this country is that the owners get too much of the money companies make, compared to what employees get.

	Executives	Advisers	Foremen
Agree	1	15	28
Disagree	99	85	71

Top executives in most companies get high salaries because men with their knowledge and ability are hard to find.

	Executives	Advisers	Foremen
Agree	98	64	77
Disagree	2	35	23
AVERAGE	99%	82%	76%

approximated those of the foremen more nearly than they did those of the executives. Concerning the item on salaries of top executives, the advisers' responses averaged lower on this item than they did on any other item in the inventory, and this is the first of two items in which the advisers' responses did not approach those of the executives. This is the only question in the inventory on which the responses of the advisers deviated from those of the executives by even more than they deviated from the responses of the foremen.

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Table 32 shows a comparison on the responses of executives, advisers, and foremen on the dimension of Capital. The average of favorable responses attained by the executives was 98 per cent; the average of advisers was 89 per cent; and the average of foremen was 71 per cent. On the

TABLE 32

PER CENT OF RESPONSES BY EXECUTIVES, ADVISERS, AND FOREMEN ON ITEMS RELATING TO CAPITAL FROM THE BUSINESS INVENTORY

	Executives	Advisers	Foremen
Money invested in new machinery and equipment has increased output. The workers have got some of the increase but the larger share has gone to the owners.			
Agree	4	25	48
Disagree	95	73	51
You can't expect stockholders and employees to work together in harmony. Their interests are opposed.			
Agree	1	10	21
Disagree	99	90	79
The money companies pay to investors is a burden on the workers, since it means just that much less for wages.			
Agree	1	1	15
Disagree	99	99	84
Company profit not paid out in dividends should be taxed heavily because it is idle money.			
Agree	1	6	31
Disagree	98	94	68
AVERAGE	98%	89%	71%

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dimension of Capital, the responses of advisers approached those of executives more nearly than they did those of foremen. Agreement was very close between executives and advisers on three of the items, but on the item involving capital investment for new equipment, 95 per cent of the executives and 73 per cent of the advisers responded favorably, which places the advisers midway between the executives and the foremen on this item. This is the second of two questions in the inventory on which the advisers' responses did not closely correspond to those of the executives.

Table 33 records the comparison of the responses of the executives, advisers, and foremen on the dimension of Freedom from Government Intervention. The average of

TABLE 33

PER CENT OF RESPONSES BY EXECUTIVES, ADVISERS, AND FOREMEN ON ITEMS RELATING TO FREEDOM FROM GOVERNMENT INTERVENTION FROM THE BUSINESS INVENTORY

When a number of companies making the same thing start going out of business because of the competition, the government should step in and do something about it.

	Executives	Advisers	Foremen
Agree	2	7	25
Disagree	97	92	74

Here in the United States, there is no real danger of losing personal freedom, even if the government should take over more of our industries.

	Executives	Advisers	Foremen
Agree	1	9	27
Disagree	99	90	72
AVERAGE	98%	81%	73%

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favorable responses attained by executives was 98 per cent; the average of advisers was 81 per cent; and the average of foremen was 73 per cent. On the dimension of Freedom from Government Intervention, responses of the advisers were more nearly comparable to those of the foremen than they were to those of the executives.

A comparison of the favorable responses of the executives, the advisers, and the foremen with the achievers' posttest responses on the five dimensions of the Business Inventory is presented as a matter of general interest in Table A in Appendix C. Analysis of the data reveals that the achievers' posttest average of favorable responses is 65 per cent which is much the same as the foremen's average of 69 per cent. Further investigation shows that on the dimension of Competition, the achievers attained a higher percentage of favorable responses than the foremen.

For a comparison of favorable responses of the executives, advisers, and foremen with the posttest responses of the achievers on the 15 items of the Business Inventory, see Table B in Appendix C.

Summary. An analysis of the data on Pittsburgh Center Junior Achievement advisers' attitudes toward business indicates that the responses of the advisers were comparable to those of business executives and more favorable than those of foremen. The average per cent of favorable responses to the items of the inventory by executives was 98; by advisers was 86; by foremen was 69; and by achievers was 65.

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A contributing factor to the changing of achievers' attitudes toward business might be the attitudes held by the advisers themselves toward the system. It is important to know what attitudes the advisers are bringing to the students in their weekly meetings. Since the role of the advisers is an important element in the Junior Achievement program, it is interesting to note that the results of this assessment indicate that the majority of advisers have attitudes appropriate to carrying out their assigned task of counseling the achievers on the operation of the free enterprise system.

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VII. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A. Summary of Findings

This study was concerned with determining the effectiveness of the Junior Achievement program in changing attitudes favorably toward the American business system, developing desirable occupational personality traits, and stimulating career interests in the field of business of students participating in the program. The variation of responses between city and suburban, and male and female members in relation to changes in attitudes toward business, personality traits, and career interests were also investigated. The instrument employed in the study was a self-administered test consisting of three parts: A Business Inventory, a Student Activities Inventory, and an Interest Inventory.

The study was delimited to high school students participating in the Junior Achievement program for the first time during the program year 1970-71, at the Pittsburgh Center, and who had completed that program. A test was administered to a randomly selected sample of first-year achievers before the start of the program in October, 1970; the same test was administered again in late April, 1971 to those who completed the program. Of the students tested in October, 194 finished the program and were administered the posttest

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in April. This group constitutes the sample of participating achievers in this study. To study the effect of the variable, school location, the sample consisted of 90 achievers who attended schools in the city of Pittsburgh and 104 achievers who attended schools in suburbs within Allegheny County. To study the effect of the variable, sex, the sample divided into 97 male and 97 female achievers. The figures remained constant for each of the three inventories.

A secondary purpose of this study was to assess the attitudes held toward business by the Junior Achievement advisers of the Pittsburgh Center. The Business Inventory, which was the first part of the test employed in the study, was administered to 181 of the advisers at their first training session in September, 1970.

The following items summarize the findings concerning the effectiveness of the Junior Achievement program on participating high school students and Junior Achievement advisers.

1. Business Inventory. The sample of achievers averaged scores significantly higher on items of the Business Inventory in the test given at the end of the program than they had at the beginning of the program. This finding indicates that the Junior Achievement program helped participants to acquire more favorable attitudes toward business. Hypothesis 1 was accepted as stated: Participation in Junior Achievement helps achievers acquire a more positive attitude toward business in the free enterprise system.

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When the five dimensions of the Business Inventory were analyzed, it was found that on the dimensions of Profits, and Production and Salaries, achievers averaged gain scores which were statistically significant, thus indicating that achievers acquired positive attitudes toward business with regard to these two dimensions. On none of the remaining dimensions did the achievers show a significant difference between their pretest and posttest mean scores.

a. Location of Achievers' Schools. The mean scores of achievers attending schools in the city of Pittsburgh and achievers attending schools in suburban Pittsburgh were approximately the same. Subhypothesis a was accepted as stated: There is no difference in attitude change toward business between achievers attending schools in the city of Pittsburgh and those attending suburban schools within Allegheny County.

In analyzing the five dimensions of the Business Inventory, it was found that no significant mean difference occurred in change of attitude between city and suburban achievers on any of the dimensions.

b. Sex of Achievers. The mean score gain of male achievers was greater than that of female achievers, although the difference was not significant. Subhypothesis b was accepted as stated: There is no difference in attitude change toward business between male and female achievers.

In analyzing the five dimensions of the Business Inventory, it was found, however, that on the dimension of

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Production and Salaries, the mean score gain of male achievers was significantly greater than that of the female achievers.

c. Interaction. No significant interaction occurred between the two variables of school location and sex of the achievers on the Business Inventory.

2. Student Activities Inventory. The sample of achievers averaged lower scores on items of the Student Activities Inventory in the test given at the end of the program than they had when the test was given at the beginning of the program. The difference, however, was not significant. This finding indicates that participation in Junior Achievement did not appear to have changed the desirable occupational personality traits of students. Hypothesis 2 was rejected as stated: Participation in Junior Achievement contributes to strengthening of desirable personality traits of achievers.

An analysis of the five dimensions of the Student Activities Inventory revealed, however, that on the dimension of Leadership, achievers averaged a mean score gain which was statistically significant, thus indicating that junior achievers exhibited development in the personality trait of Leadership. On none of the remaining four dimensions did the achievers show a significant mean difference between their pretest and posttest mean scores.

a. Location of Achievers' Schools. The means of the achievers attending schools in the city of Pittsburgh and those of achievers attending schools in suburban

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Pittsburgh were lower on the posttest than they were on the pretest. However, there was no significant mean difference between these two groups of achievers on their pretest-posttest means. Subhypothesis a was accepted as stated: There is no difference in personality development between achievers attending schools in the city of Pittsburgh and those attending suburban schools within Allegheny County.

In analyzing the five dimensions of the Activities Inventory, it was found that in the one dimension of Social Sensitivity, the achievers attending city schools showed a mean score gain, but the mean of the achievers attending suburban schools was lower on the posttest than the mean on the pretest. This mean difference between city achievers and suburban achievers was statistically significant. On none of the remaining dimensions of the inventory did the achievers show a significant mean difference between their pretest and posttest mean scores.

b. Sex of Achievers. Male and female achievers both had lower mean scores on the posttest than they had on the pretest, the female achievers showing a greater decrease than the male achievers, although the mean difference was not significant. Subhypothesis b was accepted as stated: There is no difference in personality development between male and female achievers.

An analysis of the five dimensions of the Activities Inventory revealed that no significant mean difference occurred in personality development between city and suburban achievers on any of the dimensions.

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c. Interaction. No significant interaction was found to exist between the two variables of school location and sex of the achievers when the total Activities Inventory pretest-posttest means were analyzed. However, when the five dimensions of the inventory were analyzed, it was found that a significant interaction had occurred on the dimension of Sociability.

3. Interest Inventory. The sample of achievers averaged lower mean scores on the items of the Interest Inventory in the test given at the end of the program than they had when the test was given at the beginning of the program. The mean difference, however, was not significant. This finding indicates that participation in the Junior Achievement program did not effect changes in business interests of the achievers. Hypothesis 1 was rejected as stated: Participation in Junior Achievement accomplishes a change in the interests and vocational preferences for business occupations of the achievers.

When the five dimensions of the Interest Inventory were analyzed, it was found that on none of the dimensions was a significant mean difference between the pretest and posttest mean scores of the achievers indicated.

a. Location of Achievers' Schools. The mean difference score of the achievers attending schools in the city of Pittsburgh showed an increase from pretest to posttest and the achievers attending schools in suburban Pittsburgh showed a decrease in their mean difference. This

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difference, however, was not significant. Subhypothesis a was accepted as stated: There is no difference in changes in interests and vocational preferences between achievers attending schools in the city of Pittsburgh and those attending suburban schools within Allegheny County.

In analyzing the five dimensions of the Interest Inventory, a significant mean difference between the means of achievers attending city schools and achievers attending suburban schools was found in the dimension of Miscellaneous only.

b. Sex of Achievers. The female achievers showed a mean score gain when comparing the pretest mean to posttest mean, but male achievers showed lower mean scores on the posttest than on the pretest. However, the mean difference score between female and male achievers was not significant. Subhypothesis b was accepted as stated: There is no difference in changes in interests and vocational preferences between male and female achievers.

An analysis of the five dimensions of the Interest Inventory revealed no significant mean differences between male and female achievers on any of the dimensions.

c. Interaction. A significant interaction occurred between the two variables of school location and sex of the achievers on the Interest Inventory.

An analysis of the five dimensions of the Inventory revealed that a significant interaction occurred between school location and sex on four of the dimensions with the

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fifth dimension of Sales nearing the point of significance. Further investigation indicated that scores of the achievers on all five of the dimensions were correlated with each other and that an interaction on one of these dimensions could have affected the other four.

4. Attitudes of Advisers. An assessment of the attitudes toward the American business system held by advisers at the Pittsburgh Center revealed that their attitudes are generally favorable to the free enterprise system when compared to the attitudes held by business executives and more favorable than those of the foremen.

Further investigation of the five dimensions of the Business Inventory revealed that the mean scores of the advisers were highest and resembled most nearly those of the executives on the two dimensions of Competition and Capital. On the dimensions of Production and Salaries, and Freedom from Government Intervention, the attitudes of the advisers more nearly resembled those of the foremen than those of the executives.

Since only one test was administered to the advisers, these data are to be interpreted merely as comparisons.

B. Statement of Conclusions

The primary purpose of this study was to determine whether high school students' attitudes toward business are changed, desirable occupational personality traits developed, and interests in business careers stimulated by participation

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in the Junior Achievement program at the Pittsburgh Center which lasts for seven months. A secondary purpose was to assess the attitudes toward business held by Junior Achievement advisers of the Pittsburgh Center.

The following conclusions are predicated upon an analysis of the findings of this study and are summarized as follows:

1. The Junior Achievement program made a significant contribution to the development of favorable attitudes of students toward business in the American free enterprise system. This conclusion is based upon the fact that students scored significantly higher on the Business Inventory given at the end of their first year in Junior Achievement than they had on the same test given before the beginning of the program.

2. The Junior Achievement program did not contribute significantly to the development of desirable occupational personality traits of participating students. This conclusion is based upon the fact that there was no significant mean difference between the scores of the achievers on the Student Activities Inventory given before the beginning of the program and the same test given at the end of their first year of the program.

3. The Junior Achievement program did not effect changes in the career interests of students in the field of business. This conclusion is based upon the fact that there was no significant mean difference between the scores of

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students on the Interest Inventory given before the beginning of the program and the same test given at the end of their first year of the program.

4. The effect of the Junior Achievement program was the same whether the students attended schools in the city of Pittsburgh or suburban schools within Allegheny County. This conclusion is based upon the lack of a significant difference between the mean scores of students attending schools in the city of Pittsburgh and those of students attending suburban schools within Allegheny County in any of the three inventories on the test given before the beginning of the program and the same test given at the end of their first year of the program.

5. The effect of the Junior Achievement program was the same whether the students were male or female. This conclusion is based upon the fact that there was no significant difference between the mean scores of male and female students in any of the three inventories on the test given before the beginning of the program and the same test given at the end of their first year of the program.

6. Advisers of the Junior Achievement program hold attitudes more similar to those of American business executives, which are considered to be favorable to the ideology and principles of the free enterprise system, than they do to those of foremen in industry. This conclusion is based upon an analysis of the advisers' responses to the Business Inventory.

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7. The conclusions of this study are predicated upon findings concerning the Junior Achievement Pittsburgh Center which is in a large metropolitan area and should not be generalized to other areas.

C. Recommendations

The following recommendations are based on the findings and experience gained from the present study:

1. Students in tenth, eleventh, and twelfth grades should be encouraged to participate in the Junior Achievement program because such participation serves to enlighten them regarding the principles and practices of business in the free enterprise system.

2. Because advisers bring to the Junior Achievement program current, up-to-date, business practices and office procedures, teachers of business subjects should be encouraged to take part in the program along with the advisers. This experience would serve to make the business teacher cognizant of up-to-date business practices and, therefore, more effective in the classroom learning situation.

D. Recommendations for Further Research

The findings of the present study suggest numerous possibilities for additional research into the effectiveness of the Junior Achievement program.

1. For further insight into the fact that achievers appeared to show significant development in the personality

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trait of Leadership, a study to determine whether holding office in a Junior Achievement company was responsible for this development is indicated.

2. An investigation is recommended of eighth and ninth grade students to identify those students who appear to possess the personality trait of Leadership. These students could then be encouraged to participate in the Junior Achievement program so that this Leadership trait could have an opportunity to develop.

3. A study is recommended to determine if the development of the personality trait of Leadership persists through the ensuing years and whether individuals who showed a development of the trait in their Junior Achievement experience continue to exhibit this quality.

4. An investigation to determine why achievers attending schools in the city of Pittsburgh showed a mean score gain in the personality trait of Social Sensitivity and those attending suburban schools failed to show a mean score gain in the development of this trait, would be relevant.

5. To determine why achievers attending schools in the city of Pittsburgh showed a mean score gain in the interest dimension of Miscellaneous, indicating a desire for such activities as stock investment, business ownership, and technical work but students attending suburban schools showed a mean score decline on this dimension, a study should be undertaken.

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6. A study of second-year junior achievers in order to determine the value of an additional year of experience in the development of attitudes toward business and the development of personality traits necessary for business occupations would seem to be in order.

7. An investigation controlling the variable of self-selection of achievers and its relationship to the effectiveness of the Junior Achievement program is recommended.

8. Because of the importance of the advisers in the Junior Achievement program, further study is recommended on their abilities and training, and on their effectiveness in counseling high school students in the Junior Achievement companies.

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APPENDICES

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APPENDIX A

Junior Achievement Material

National Organizational Chart 129

Area Organizational Chart 130

Staff Organizational Chart. 131

Sponsoring Firms of Mini-companies. 132

Mini-company Organizational Chart 133

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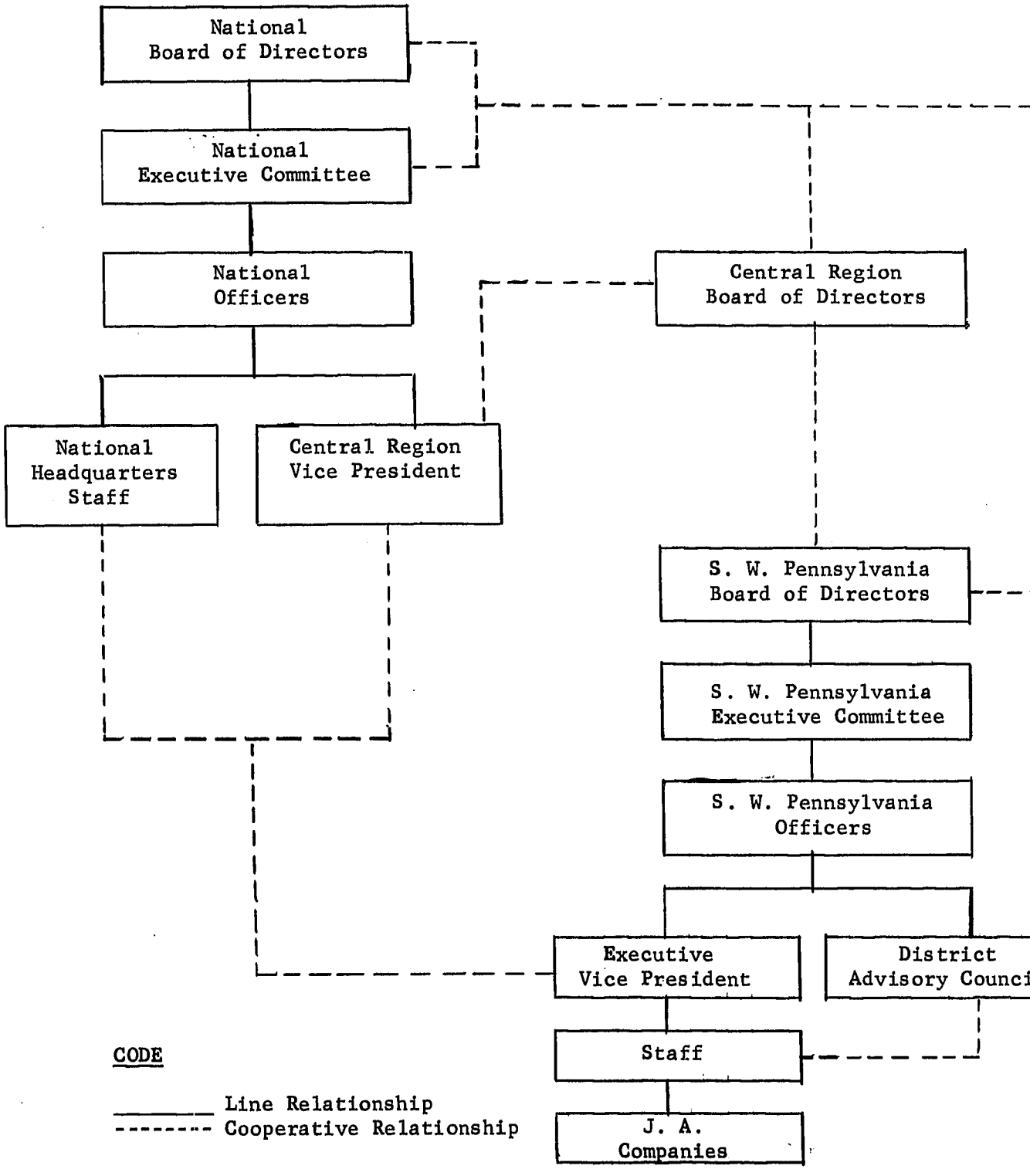
ORGANIZATION CHART -- AREA AND NATIONAL RELATIONSHIPS

National Office
Junior Achievement, Inc.
909 Third Avenue
New York, New York 10022

Regional Office
Junior Achievement, Inc.
19630 Center Ridge Road
Rocky River, Ohio 44116



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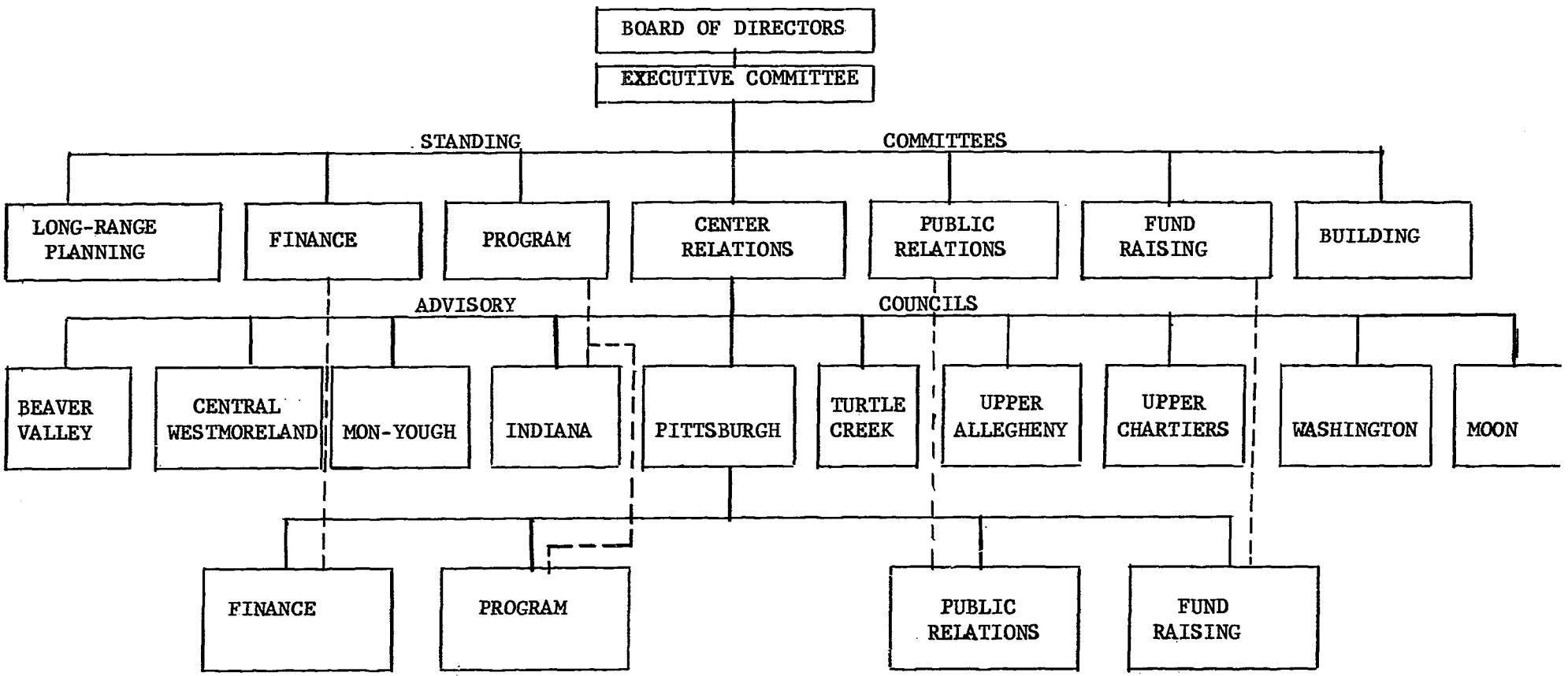
JUNIOR ACHIEVEMENT SOUTHWEST PENNSYLVANIA, INC.

ORGANIZATION CHART



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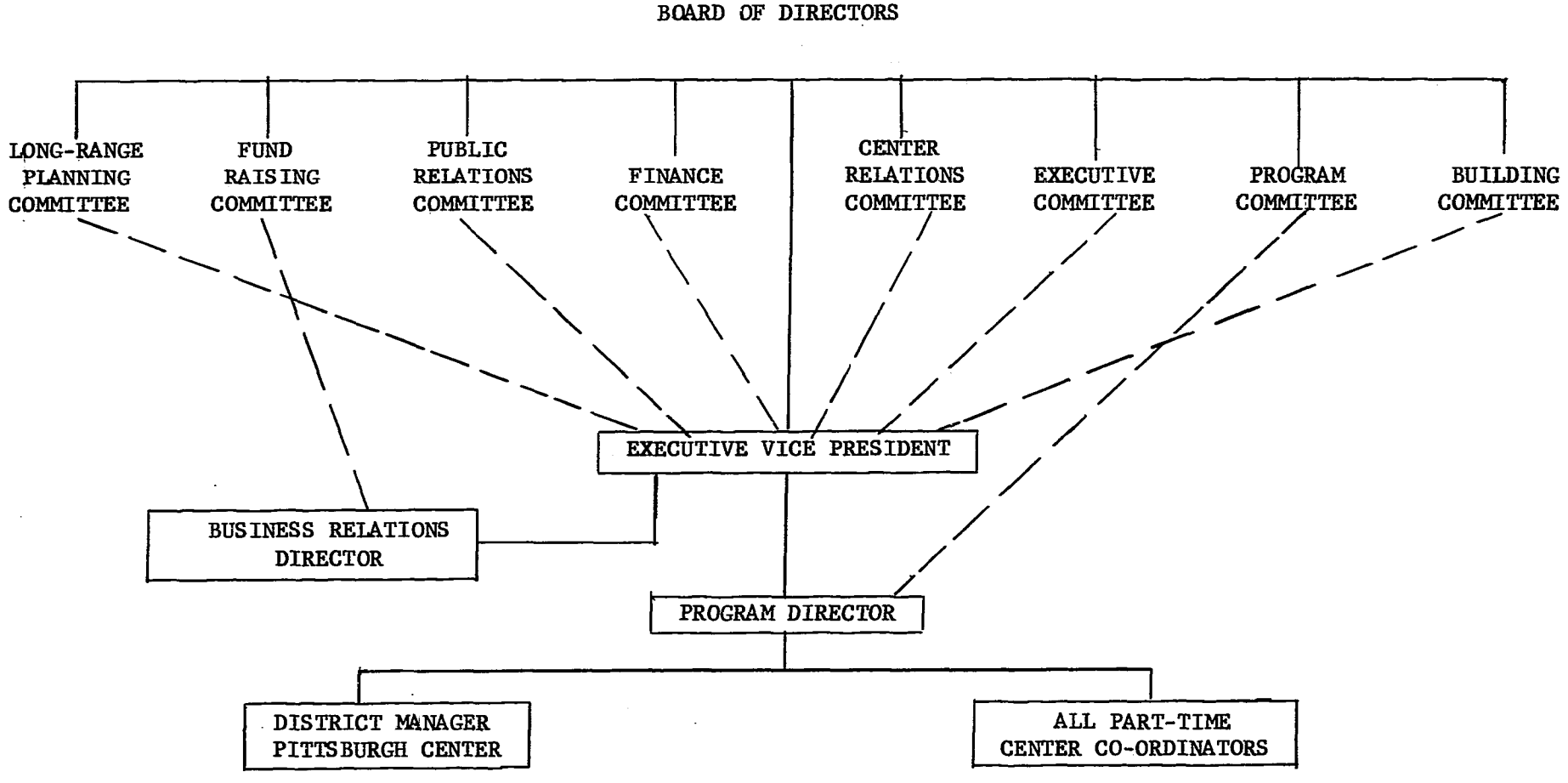
STAFF ORGANIZATION



FIRMS SPONSORING JUNIOR ACHIEVEMENT COMPANIES AT THE PITTSBURGH CENTER

Aluminum Co. of America (3)
Allegheny Ludlum Steel (3)
Allis Chalmers Company (2)
Arthur Anderson & Co. (1)
Bell Telephone Co. (3)
Blaw-Knox Company (2)
Calgon Company (1)
Columbia Gas Company (3)
Dravo Corporation (2)
Dun & Bradstreet, Inc. (2)
Duquesne Light Company (2)
E. L. Weigand Company (1)
Equitable Gas Company (2)
Fisher Scientific Co. (2)
Gulf Oil Company (4)
Harbison-Walker Co. (1)
H. J. Heinz Company (2)
Heppenstall Company (1)
Humble Oil Company (1)
IBM Corporation (2)
J. & L. Steel Company (6)
Kaufmann's Dept. Store (2)
Ketchum, McCloud & Grove (1)
Koppers Company (3)
Mackintosh-Hemphill (2)
Main LaFrentz & Company (1)
Mellon Bank and Trust Co. (2)
Midland-Ross Corporation (2)
Mine Safety Appliances Co. (1)
North American Rockwell (2)
PPG Industries, Inc. (4)
Peoples Natural Gas Co. (2)
Pittsburgh National Bank (2)
Pittsburgh Junior Ad Club (1)
Price Waterhouse & Co. (1)
Public Relations Society (1)
Rockwell Manufacturing Co. (1)
Rust Engineering Co. (1)
Ryerson Steel Company (2)
Sears, Roebuck & Company (2)
Signet Corporation (1)
Swindell-Dressler Company (2)
Touche Ross & Company (1)
United Airlines (2)
United Engineering & Foundry (1)
Universal-Cyclops (2)
U. S. Steel Corporation (8)
Westinghouse Air Brake Co. (3)
Westinghouse Electric Corp. (2)
Western Pa. National Bank (2)

Note: Numbers in parentheses indicate how many mini-companies each firm is sponsoring for the year 1970-71.

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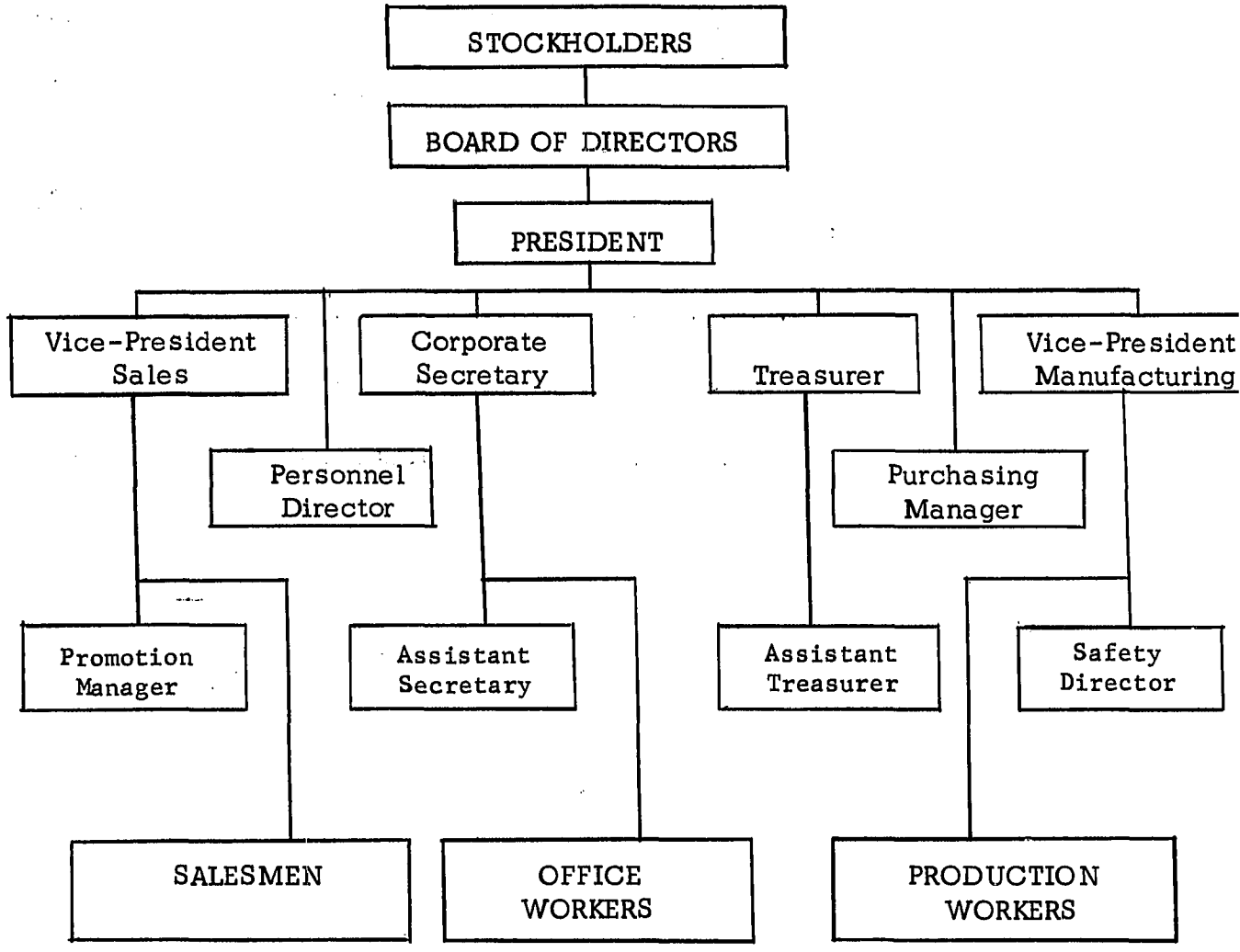

TYPICAL ORGANIZATION CHART

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APPENDIX B

Copy of the Tests

Instruction and Data Sheet for Pretest. 135

Instruction and Data Sheet for Posttest 136

Business Inventory given Students 137

Student Activities Inventory. 138

Interest Inventory. 140

Business Inventory given Advisers 142

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PLEASE NOTE:

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APPENDIX C

Material Related to the Business Inventory

Related Questions for Specific Dimensions 146

Table A: Responses from the Five Dimensions. 147

Table B: Responses on the Items. 148

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RELATED QUESTIONS FOR SPECIFIC SCALES OF THE BUSINESS INVENTORY

Questions related to specific scales of the Business Inventory are as follows:

Profits: Items 3, 11, 15.

Competition: Items 1, 7, 14.

Production and Salaries: Items 2, 4, 5.

Capital: Items 6, 8, 9, 10.

Freedom from Government Intervention: Items 12, 13.

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TABLE A

PER CENT OF FAVORABLE RESPONSES BY EXECUTIVES, ADVISERS, FOREMEN, AND JUNIOR ACHIEVERS FROM THE FIVE DIMENSIONS OF THE BUSINESS INVENTORY

Dimensions	Executives N=304	Advisers N=181	Foremen N=1000	Achievers N=194
Profits	97	81	61	60
Competition	96	88	67	77
Prod-Salaries	99	82	76	59
Capital	98	89	71	68
Freedom-Govt.	98	81	73	61
AVERAGE	98%	86%	69%	65%

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TABLE B

PER CENT OF FAVORABLE RESPONSES ON ITEMS BY EXECUTIVES, ADVISERS, FOREMEN, AND JUNIOR ACHIEVERS FROM THE BUSINESS INVENTORY

Inventory Items	Executives N=304	Advisers N=181	Foremen N=1000	Achievers N=194
1	93	93	76	83
2	100	96	81	64
3	95	86	44	81
4	99	85	71	42
5	98	64	77	70
6	95	73	51	35
7	98	87	65	77
8	99	90	79	81
9	99	99	84	79
10	98	94	68	75
11	99	85	78	45
12	97	92	74	52
13	99	90	72	70
14	97	85	59	72
15	97	72	62	53
AVERAGE	98%	86%	69%	65%

Note: Achievers' percentages compiled from their responses on the posttest.

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APPENDIX D

Material Related to the Student Activities Inventory

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Table F: Suburban Group for Five Dimensions. 156

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Table H: Female Group for Five Dimensions. 157

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TABLE C

SELECTED SCALES AND RELIABILITIES FROM THE STUDENTS ACTIVITIES INVENTORY [a]

Preliminary Scale	r_{11} [b]	Final Scale
1. Leadership	.403	Leadership
2. Productivity	.458	Mature Personality [c]
3. Persistence	.370	[c]
4. Social Adjustment	.512	[c]
5. Responsibility	.589	[c]
6. Sociability	.588	Sociability
7. Cheerfulness	.486	(Combined with Sociability)
8. Self-Confidence	.337	Self-Confidence
9. Social Sensitivity	.491	Social Sensitivity

[a] Table adapted from J. C. Flanagan, J. T. Dailey, M. R. Shaycoft, W. A. Gorham, D. B. Orr, and I. Goldberg, Designing the Study, Technical Report to the U. S. Office of Education, Cooperative Research Project, No. 635, (Pittsburgh: Project Talent Office, University of Pittsburgh, 1960), Table VIII-5, p. VIII-106 and Table VIII-8, p. VIII-112.

[b] Split-half coefficient corrected by the Spearman-Brown Prophecy Formula (N = 623).

[c] Mature Personality was formed from Productivity, Persistence, Social Adjustment, and Responsibility.

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RELATED QUESTIONS FOR SPECIFIC SCALES OF THE STUDENT ACTIVITIES INVENTORY

Questions related to specific scales of the student Activities Inventory are as follows:

Sociability: Items 5, 9, 17, 18, 21, 32, 37, 42, 47, 49, 53, 59.

Social Sensitivity: Items 10, 30, 33, 43, 48, 54, 60.

Leadership: Items 1, 7, 13, 25, 58.

Self-confidence: Items 2, 11, 14, 23, 26, 29, 34, 39, 44, 50, 55, 61.

Mature Personality: Items 3, 4, 6, 8, 12, 15, 16, 19, 20, 24, 27, 28, 31, 35, 36, 38, 40, 41, 45, 46, 51, 52, 56, 57.

Non-scoring: Item 22.

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POSITIVE AND NEGATIVE RATINGS OF ITEMS FROM THE STUDENT ACTIVITIES INVENTORY

The following items were scored as a positive trait:

1, 2, 3, 6, 7, 8, 9, 11, 12, 13, 15, 16, 18, 19, 20, 21, 25, 27, 28, 29, 30, 32, 33, 35, 36, 37, 38, 41, 42, 43, 45, 46, 48, 49, 52, 53, 54, 56, 57, 58, 59, 60, 61.

The following items were scored as a negative trait:

4, 5, 10, 14, 17, 23, 24, 26, 31, 34, 39, 40, 44, 47, 50, 51, 55.

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DESCRIPTION OF TRAITS USED IN THE STUDENT ACTIVITIES INVENTORY

The following are traits used in the Student Activities Inventory, a description, and a sample of the activity concerned.

1. SOCIABILITY: This refers to a tendency to like and to be with people, i.e., gregariousness. This is a highly important and observable aspect of behavior at the high school level. Few, if any, people really work alone, and the extent to which people have and make use of the ability to relate to others is a prominent determining factor in the direction and success of their later vocational and educational efforts.

   Sample: I take a big part in social activities.

2. SOCIAL SENSITIVITY: This trait involves the ability to put oneself in another's place. The person with social sensitivity is aware of and concerned with the feelings and desires of others.

   Sample: I don't like to see someone's feelings hurt.

3. LEADERSHIP: This trait concerns activities such as taking charge, giving orders and actively seeking responsibilities. The tendency to seek responsibility and to seek to "take charge" is considered desirable by many people, and is a major factor in vocational and educational choices.

   Sample: I like to make decisions.

4. SELF-CONFIDENCE: This includes a basic personal security manifested in confidence in one's own worth and social acceptability. It implies willingness to proceed on one's own and a certain independence of thought and action. Again, measures of self-confidence can be related to vocational and educational success.

   Sample: I'm equal to any occasion.

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5. MATURE PERSONALITY: This is a composite of four traits, productivity, persistence, responsibility, and social adjustment.

Productivity: This trait concerns the ability to get things done, particularly in good time. In measuring the extent to which a person tends to produce efficiently in good time, we are getting a measure of one of the aspects of human ability that society values most.

Sample: I work fast and get a lot done.

Persistence: This trait refers to a tendency to persevere in working on something until it is finished or accomplished. It is especially important in evaluating satisfaction with educational and career choices.

Sample: I usually stick to the things I start until I finish them.

Responsibility: This trait involves not the active seeking of responsibility but the willingness to accept and discharge responsibilities, even though they be distasteful, to the best of one's ability. The willingness to accept and discharge responsibilities is certainly one of the most important of the work attitudes or traits.

Sample: People say they can count on me.

Social Adjustment: This trait concerns reactions and interactions with others. At one end, it concerns helpfulness and cooperation; at the other, behavior which is distinctly and overtly antisocial and/or hostile. This trait is extremely important in the high school setting. It is probably related to sociability, but it has often been identified as a separate factor.

Sample: People seem to think I'm cooperative.[1]

---

[1]J. C. Flanagan, et al., Design for a Study of American Youth (Boston: Houghton Mifflin Company, 1962), pp. 226-32.

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TABLE D

MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCE OF PRETEST-POSTTEST SCORES OF THE TOTAL SAMPLE OF ACHIEVERS FOR THE FIVE DIMENSIONS THAT MAKE-UP THE ACTIVITIES INVENTORY N=194

Dimension	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Difference
Sociability	34.01	6.29	33.22	6.56	-0.79
Social Sensitivity	19.90	3.80	19.93	3.51	0.03
Leadership	10.02	3.39	11.01	3.41	0.99
Self-Confidence	30.64	5.80	30.01	6.32	-0.63
Mature Personality	66.12	10.96	65.68	11.80	-0.44

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TABLE E

MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCE OF PRETEST-POSTTEST SCORES OF THE CITY GROUP OF ACHIEVERS FOR THE FIVE DIMENSIONS THAT MAKE-UP THE ACTIVITIES INVENTORY N=90

Dimension	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Difference
Sociability	33.97	6.32	33.24	6.38	-0.73
Social Sensitivity	19.49	3.97	20.03	3.57	0.54
Leadership	10.13	3.60	10.96	3.44	0.82
Self-Confidence	30.33	5.92	29.64	6.67	-0.69
Mature Personality	65.73	11.02	65.27	11.57	-0.46

TABLE F

MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCE OF PRETEST-POSTTEST SCORES OF SUBURBAN GROUP OF ACHIEVERS FOR THE FIVE DIMENSIONS THAT MAKE-UP THE ACTIVITIES INVENTORY N=104

Dimension	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Difference
Sociability	34.04	6.29	33.20	6.74	-0.84
Social Sensitivity	20.26	3.63	19.85	3.48	-0.41
Leadership	9.91	3.22	11.05	3.39	1.13
Self-Confidence	30.91	5.70	30.33	6.02	-0.58
Mature Personality	66.45	10.95	66.13	12.03	-0.32

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TABLE G

MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCE OF PRETEST-POSTTEST SCORES OF THE MALE GROUP OF ACHIEVERS FOR THE FIVE DIMENSIONS THAT MAKE-UP THE ACTIVITIES INVENTORY N=97

Dimension	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Difference
Sociability	34.03	6.14	33.04	7.02	-0.99
Social Sensitivity	19.52	4.16	19.78	3.47	0.26
Leadership	10.52	3.38	11.77	3.29	1.26
Self-Confidence	31.43	5.63	31.07	5.59	-0.36
Mature Personality	67.69	10.19	67.40	11.57	-0.29

TABLE H

MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCE OF PRETEST-POSTTEST SCORES OF THE FEMALE GROUP OF ACHIEVERS FOR THE FIVE DIMENSIONS THAT MAKE-UP THE ACTIVITIES INVENTORY N=97

Dimension	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Difference
Sociability	33.98	6.47	33.40	6.10	-0.58
Social Sensitivity	20.29	3.39	20.08	3.57	-0.21
Leadership	9.52	3.35	10.24	3.36	0.72
Self-Confidence	29.86	5.89	28.95	6.84	-0.90
Mature Personality	64.55	11.52	63.95	11.83	-0.59

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APPENDIX E

Material Related to the Interest Inventory

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TABLE I

SELECTED SCALES AND RELIABILITY COEFFICIENTS OF THE EXPERIMENTAL FORM FROM THE INTEREST INVENTORY [a]

	Interest Inventory Scale	r_{AA} [b]
1.	Business-Management	.560
2.	Computational	.651
3.	Office Work	.826
4.	Sales	.736
5.	Miscellaneous	[c]

[a] This table was adapted from J. C. Flanagan, J. T. Dailey, M. R. Shaycoft, W. A. Gorham, D. B. Orr, and I. Goldberg, Designing the Study, Technical Report to the U. S. Office of Education, Cooperative Research Project, No. 635, (Pittsburgh: Project Talent Office, University of Pittsburgh, 1960), Table VIII-13, p. VIII-127.

[b] Split-half coefficient corrected by the Spearman-Brown Prophecy Formula (N = 655).

[c] No reliability coefficient reported for this scale.

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RELATED QUESTIONS FOR SPECIFIC SCALES OF THE INTEREST INVENTORY

Questions related to specific scales of the Interest Inventory are as follows:

Business-Management: Items 9, 10, 18, 25, 33, 44, 45, 52, 59, 60, 66, 67, 74, 75.

Sales: Items 11, 12, 34, 46, 68, 70, 71, 80.

Computation: Items 1, 2, 13, 26, 35, 47, 53, 54, 61, 69.

Office Work: Items 14, 19, 27, 36, 48, 55, 62.

Miscellaneous: Items 5, 8, 20, 21, 28, 40, 42, 49, 76, 77, 78, 79.

Non-scoring: Items 3, 4, 6, 7, 15, 16, 17, 22, 23, 24, 29, 30, 31, 32, 37, 38, 39, 41, 43, 50, 51, 56, 57, 58, 63, 64, 65, 72, 73.

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TABLE J

MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCE OF PRETEST-POSTTEST SCORES OF THE TOTAL SAMPLE OF ACHIEVERS FOR THE FIVE DIMENSIONS THAT MAKE-UP THE INTEREST INVENTORY N=194

Dimension	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Difference
Business-Management	29.42	9.22	29.63	9.46	0.21
Sales	16.38	5.70	15.55	6.22	-0.83
Computation	19.90	8.35	20.08	8.96	0.18
Office Work	14.15	6.56	14.01	7.36	-0.14
Miscellaneous	25.87	8.10	26.26	7.43	0.39

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TABLE K

MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCE OF PRETEST-POSTTEST SCORES OF THE CITY GROUP OF ACHIEVERS FOR THE FIVE DIMENSIONS THAT MAKE-UP THE INTEREST INVENTORY N=90

Dimension	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Difference
Business-Management	29.61	9.59	29.91	9.65	0.30
Sales	16.19	5.68	16.27	6.31	0.08
Computation	20.73	8.63	21.30	9.14	0.57
Office Work	14.69	6.24	15.07	7.52	0.38
Miscellaneous	24.99	8.47	26.58	7.53	1.59

TABLE L

MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCE OF PRETEST-POSTTEST SCORES OF SUBURBAN GROUP OF ACHIEVERS FOR THE FIVE DIMENSIONS THAT MAKE-UP THE INTEREST INVENTORY N=104

Dimension	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Difference
Business-Management	29.26	8.94	29.38	9.33	0.12
Sales	16.55	5.74	14.92	6.11	-1.63
Computation	19.18	8.06	19.02	8.71	-0.16
Office Work	13.69	6.82	13.09	7.13	-0.60
Miscellaneous	26.63	7.72	25.98	7.37	-0.65

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TABLE M

MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCE OF PRETEST-POSTTEST SCORES OF THE MALE GROUP OF ACHIEVERS FOR THE FIVE DIMENSIONS THAT MAKE-UP THE INTEREST INVENTORY N=97

Dimension	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Difference
Business-Management	32.25	9.19	32.26	9.38	0.01
Sales	16.01	5.56	15.09	6.13	-0.92
Computation	19.39	9.08	19.31	9.37	-0.08
Office Work	10.32	4.78	9.69	5.65	-0.63
Miscellaneous	28.23	6.85	28.29	6.31	0.06

TABLE N

MEANS, STANDARD DEVIATIONS, AND MEAN DIFFERENCE OF PRETEST-POSTTEST SCORES OF THE FEMALE GROUP OF ACHIEVERS FOR THE FIVE DIMENSIONS THAT MAKE-UP THE INTEREST INVENTORY N=97

Dimension	Pretest Mean	Pretest SD	Posttest Mean	Posttest SD	Mean Difference
Business-Management	26.68	8.40	27.00	8.83	0.40
Sales	16.75	5.84	16.00	6.31	-0.75
Computation	20.41	7.56	20.85	8.52	0.44
Office Work	17.99	5.82	18.32	6.27	0.33
Miscellaneous	23.51	8.58	24.23	7.94	0.72

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TABLE O

CORRELATION MATRIX OF THE FIVE DIMENSIONS OF THE INTEREST INVENTORY

	Business Mgmt	Sales	Compu-tation	Office Work	Miscel-laneous
Business-Mgmt	1.00				
Sales	.41	1.00			
Computation	.50	.40	1.00		
Office Work	.31	.45	.59	1.00	
Miscellaneous	.51	.45	.38	.36	1.00

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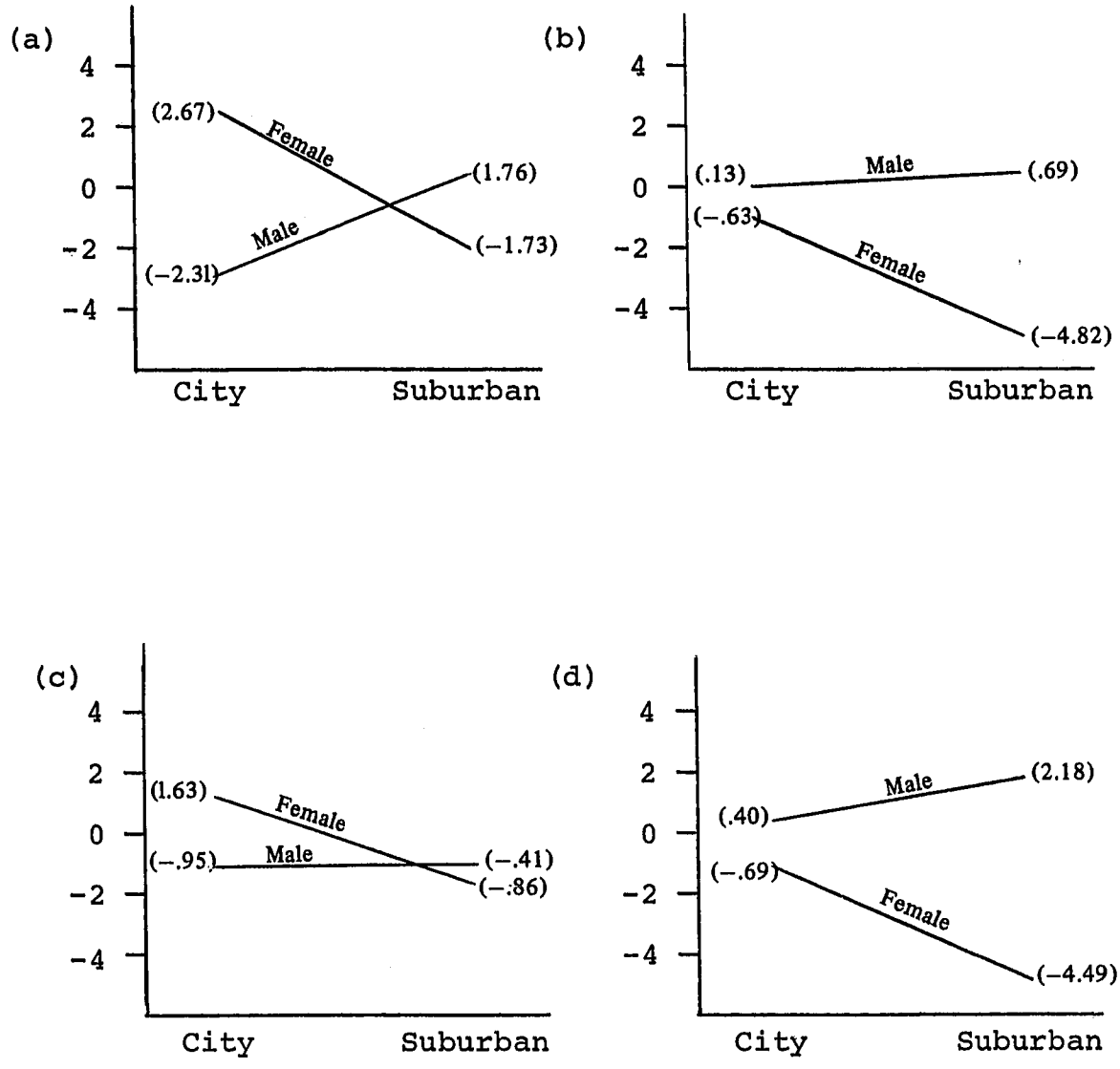

Figure 3. Profiles of the interaction of school location and sex of the achievers for the dimensions of (a) business-management; (b) computation; (c) office work; and (d) miscellaneous from the Interest Inventory.

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