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CHANGING IRRATIONAL BELIEFS OF STUDENTS: THE EFFECT OF TEACHERS

by

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ABSTRACT

The present investigation was carried out in an effort to determine whether individual teachers exercise influence on the changing of irrational beliefs of students. Previous investigations have documented changes but have not attempted to identify the source of these changes.

Responses to the Irrational Ideas Inventory were grouped in seven different ways. Analysis of variance and Scheffe multiple comparisons of means were carried out in an effort to determine if there was significant difference between irrational ideas held by teachers, students at the beginning of the school year, and students at the end of the school year. Analysis of variance showed significant difference in several cases, but multiple comparison of means showed this significance to be due to differences in teachers' and students' beliefs. In no case was there a significant shift by students to those ideas held by their teachers.

Chi Square analysis of movement towards and away from teachers' beliefs by students showed significant results in 2 of 10 cases. This is in agreement with evaluation by administration and guidance personnel of the effect teachers would have on changing irrational beliefs. Evaluation by administration and guidance personnel were in agreement with the numerical results of movement in 8 out of

10 cases.

The results of analysis lead one to the conclusion that while there is a general movement by students towards Irrational Ideas held by their teachers, this movement is insufficient to produce statistically significant results.

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CHAPTER I

INTRODUCTION

The past several years have produced many studies concerned with the changes that occur in the beliefs and attitudes of individuals. Many studies have been concerned with the changes that occur when individuals are exposed to the so-called "world of work". While these longitudinal studies document significant changes in belief and attitude, they do not attempt to relate these changes to attitudes and beliefs held by the individuals with whom the subjects were in contact. While many studies report significant changes in the subjects' beliefs and attitudes, they do not report on the beliefs and attitudes of the persons that are probably responsible for the attitude or opinion change.

Baller, Charles, and Miller (1967) undertook a follow-up study of mentally retarded, dull and comparison groups that were first studied in early life in the middle and late 1930's. The purpose of Baller et al's study was to (a) locate those subjects who had been studied some thirty years earlier, (b) to study the present status and functioning of these persons, and (c) to search for principal causes of varying levels of life adjustment. From the persons located, Baller et al were able to distinguish adequately and inadequately functioning adults. Adequate functioning was described as achievement of social and

vocational adjustment. From objective evaluation of the persons involved in their research, the investigators were able to identify three factors related to self-concept and adequacy of functioning. These were: (1) early experience, (2) the influence of significant others, and (3) vocational experience.

There have been many studies undertaken that have been concerned with the factor of vocational experience as a contributor to improved self-concept and adequacy of adjustment. Sanche (1968), in a study of educationally retarded youth in four Saskatchewan cities found that the groups who had experience in a Cooperative School-Work Training Program had significantly higher self-concept scores and significantly fewer irrational beliefs than did a control group who did not have a similar program.

Many subjective evaluations concerning the value of work experience programs may be found in the literature. Amelio (1968) stated that students in a cooperative work experience program "are learning to become mature men and women" (p. 25). Prescott (1968) suggested that a work study program in child-care services resulted in improved self-concept of the girls participating in the program. Gysbers and Moore (1968) reported that work experience was of value in making the transition from school to work an easier event.

The degree to which the work-study concept has been accepted as significant as a vehicle for development of

knowledge, skills, and attitudes of youth can be seen from the fact that for the fiscal year 1970, the United States Congress has provided financial assistance in the amount of 70 millions of dollars for Cooperative Vocational Education and Work-Study Programs (Minear, 1969).

While there is little doubt that students derive some real benefits from work experience, there have been those that feel we may be over emphasizing work-study.

Bottoms and Reynolds (1969) said that work-experience programs are founded on a false assumption that work experience in and of itself will produce desirable changes. Bottoms and Reynolds (1969) stated

> Work experience programs which make no provision for helping the student assess his experience in terms of more appropriate behavior could further intensify his alienation. (p. 24)

Bottoms and Reynolds (1969) presented arguments for specialized training for persons engaged as coordinators for work-study programs and suggested certain personal characteristics that would be desirable in such people. They seemed to suggest that it is not so much the work experience per se that results in the reported improvements, but is rather the influence of significant others.

Trent and Medsker (1968), after a four year longitudinal study of some 10,000 high school graduates stated

> Under the circumstances the evidence considered suggests that the work world is not conducive to that open, flexible disposition, and spirit of inquiry that is so important to the attainment of the environment

and the fullest realization of potentials. (p. 177)

Trent and Medsker (1968) reported that the greatest changes in attitudes, beliefs, and values occurred amongst youth who attended and graduated from college. These youth would have been exposed to various others of differing attitudes, beliefs, and values during their college careers. The results of this study would again lead one to credit the influence of significant others as an important factor in attitude and belief formation.

A. The Purpose of the Study

The purpose of this study was to further investigate the tenet that relationship with significant others leads to changes in beliefs and attitudes.

Sanche (1968) found a significant decrease in irrational ideas of students after they had become involved in work experience programs. The specific problem investigated by this study was whether irrational ideas of students changed in such a manner as to become more congruent with the irrational ideas held by their vocational teachers.

Null Hypotheses Investigated by the Study

1. There is no significant difference in irrational ideas held by teachers, students at the beginning of the school year and students at the end of the school year.
2. There is no significant movement, either towards or away from the teachers in changes in irrational ideas of students.

B. Need for the Study

Baller, Charles, and Miller (1967) reported that early experience, the influence of significant others, and vocational experience were important factors that were related to development of self-concept and adequacy of functioning. This third factor, vocational experience, has received much attention. The effects of early experience have also been studied rather extensively. There has also been some effort at determining the influence of significant others, but determination of this influence still remains a more neglected area of inquiry than early experience or vocational experience. In view of the recent criticisms of the work-experience factor (Bottoms and Reynolds, 1969), together with suggestions as to the importance of significant others (Bottoms and Reynolds, 1969; Friesen, 1967; Johnston, 1969), there is a need to examine the effects of significant others. More specifically, there is a need to determine if close association with a significant other (a teacher) over a period of time will result in a significant change in beliefs of a student. If, as Bottoms and Reynolds (1969) suggest, behavioral and attitude change is significantly affected by this relationship, then this would hold implications for many practices in the educational system. Questions such as; "What is the optimal length of exposure to the teacher to produce attitude change?"; "Are work-experience programs necessary to produce desired behavioral and attitudinal changes?"; and "What kinds of teachers do

we want our young exposed to if there is a gravitation towards the teacher's orientation?", would become more relevant.

C. Assumptions of the Study

The following assumptions impose limitations on the study. It was assumed that

1. Irrational ideas held by vocational teachers remain more stable than irrational ideas held by students.
2. Students entering the grade 10 vocational program at Yorkton are not unlike students who entered the same program one and two years earlier.

D. Delimitations of the Study

The study was delimited to

1. Grade 10, 11, and 12 students enrolled in a full time vocational program at the Yorkton Regional High School in 1969/70.
2. Vocational teachers responsible for conducting vocational classes in which the above students are in attendance.

E. Operational Definitions

For the purpose of this study the following definitions were used:

Irrational Ideas: Irrational ideas as formulated by Ellis (1962) and as measured by the Irrational Ideas Inventory of Zingle (1965).

Students: All students enrolled in full time vocational classes at the Yorkton Regional High School during the 1969-1970 school year.

Vocational Teachers: All vocational teachers who were responsible for conducting classes in which the above students were in attendance.

F. Method

Data Collection

In late September, 1969, Zingle's (1965) Irrational Ideas Inventory was administered to all students enrolled in full time vocational courses at the Yorkton Regional High School. Students were assured that their response would be held in confidence and were encouraged to express their own opinion. The Irrational Ideas Inventory was again administered to the same students in early June, with the same assurances.

Vocational teachers completed the Irrational Ideas Inventory at a noon hour meeting on April 20, 1970. They were asked to place themselves in the position of students when considering items that were directly related to students. Assurance was given that their responses to items would be held in confidence.

Two school administrators and two guidance counselors

were asked for their opinions on whether individual teachers would have an effect on the changing beliefs of students. While this information was not subjected to analysis, it is reported as a subjective evaluation of teachers' ability to affect changing beliefs.

Data Analysis

Arithmetic means were calculated for each item of the Irrational Ideas Inventory of Zingle (1965). These items were grouped according to Irrational Idea or Factor groupings presented in Table 3-2 and analysis of variance performed to identify significant difference between teachers' pre-test and post-test scores on each grouping. The Scheffe (1959) S-method of multiple comparison of means was used to determine which groups were responsible for producing significant difference. These analyses were carried out for three separate groupings of items:

1. Zingle's (1965) grouping.
2. Allen's (1970) grouping selected by data analysis and Ellis, and,
3. Grouping arrived at from factor analysis of response of all individuals involved in this study.

A Chi Square analysis was carried out using these same three groupings to test for significant movement toward or away from irrational ideas of teachers.

CHAPTER II

THEORY AND REVIEW OF RELATED LITERATURE

The review of related literature is organized under four broad headings. First, Irrational Ideas as formulated by Ellis (1962) are presented. Second, selected theories of attitude and belief change are reviewed. Third, research concerned with changes in attitudes and beliefs is reported, and fourth, research and opinion regarding attitudes and beliefs held by high school teachers and students are considered.

Irrational Ideas

Ellis (1962) reported that in his practice of psychotherapy he became disturbed over the limitations of classical approaches to the resolving of mental problems. This disturbance forced Ellis to question the techniques of classical psychoanalytic theory, as well as other analytic methods. Ellis (1962) stated

> The more I began to question the efficacy of psychoanalytically - oriented therapy (and, for that matter, of all kinds of therapy that I had ever heard of or utilized), the more convinced I became that something essential was lacking in its theory and practice. (p. 9)

This continual questioning led Ellis (1962) to the formulation of Rational - Emotive Psychotherapy, or RT. The theory of RT rests heavily on stimulus-response theory, but with a uniquely human intervening variable. Ellis

(1962) called his theory the A-B-C theory where (A) is the stimulus which produces (C) the response and (B) is the individual's beliefs concerning (A). It is this (B), the individual's beliefs, in the A-B-C theory that is at the root of psychological problems. Ellis (1962) stated; "In existing society our family and other institutions directly and indirectly indoctrinate all of us so that we grow up to believe many superstitious, senseless ideas" (p. 60). It is these irrational beliefs that result in emotional and psychological disturbances.

As Ellis (1962) stated

> The central theme of RT is that man is a uniquely rational, as well as a uniquely irrational, animal; and that his emotional or psychological disturbances are largely a result of his thinking illogically or irrationally; and that he can rid himself of most of his emotional or mental unhappiness, ineffectuality, and disturbance if he learns to minimize his irrational thinking. (p. 36)

Ellis (1962) also maintained that human emotion and thinking are functionally the same. Thinking takes the form of self talk, or internalized sentences, that the person tells himself. Feeling, or emotion results from these internalized sentences. Much of what we call emotion is essentially nothing more than a strongly evaluative kind of thought resulting from superstition, prejudice and senseless ideas. When these internalized sentences or thoughts are illogical or irrational, the result is emotional disturbance. To overcome this mental disturbance the individual must be able to overcome irrationality in internalizing

sentences, and replace these sentences with others that are logical and rational.

Gordon (1962) said much the same thing as Ellis when she stated that belief is

> ... the attitude of acceptance as true of any particular concept or proposition - which as has already been suggested, constitutes the pivot in the stimulus-response pattern; it thus plays a predominant part in relating cognitive mental process to behavior and action. The stereotyping of this particular mental content is therefore likely to have most far-reaching effects, and consequently would ultimately tend to become one of the principal concerns of the social psychologist. (p. 12)

Ellis (1962) presented eleven irrational ideas that are prevalent in Western Society and which he felt will inevitably lead to widespread neurosis. These irrational ideas are

> (1) The idea that it is a dire necessity for an adult human being to be loved or approved by virtually every significant other person in his community. (p. 61)
>
> (2) The idea that one should be thoroughly competent, adequate, and achieving in all possible respects if one is to consider oneself worthwhile. (p. 63)
>
> (3) The idea that certain people are bad, wicked, or villainous and that they should be severely blamed and punished for their villainy. (p. 65)
>
> (4) The idea that it is awful and catastrophic when things are not the way one would very much like them to be. (p. 69)
>
> (5) The idea that human unhappiness is externally caused and that people have little or no ability to control their sorrows and disturbances. (p. 72)

> (6) The idea that if something is or may be dangerous or fearsome one should be terribly concerned about it and should keep dwelling on the possibility of its occurring. (p. 75)
>
> (7) The idea that it is easier to avoid than to face certain life difficulties and self-responsibilities. (p. 78)
>
> (8) The idea that one should be dependent on others and need someone stronger than oneself on whom to rely. (p. 80)
>
> (9) The idea that one's past history is an all-important determiner of one's present behavior and that because something once strongly affected one's life, it should indefinitely have a similar effect. (p. 82)
>
> (10) The idea that one should be quite upset over other people's problems and disturbances. (p. 85)
>
> (11) The idea that there is invariably a right, precise, and perfect solution to human problems and that it is catastrophic if this perfect solution is not found. (p. 87)

Zingle (1965) began with Ellis' (1962) theory of irrational ideas and constructed a 122 item Irrational Ideas Inventory as a research instrument. Since that time there have been several studies involving the use of this inventory, or an adaptation of it, as a measure of irrational ideas.

Zingle (1965) reported a positive correlation between underachievement and possession of irrational beliefs among underachieving high school students.

Hoxter (1967) started with Zingle's (1965) Irrational Ideas Inventory but did not include all eleven of the irrational beliefs on a new instrument he designed. Hoxter (1967) argued that beliefs one, three, ten and eleven were

not applicable to the fourteen-year-old population he was going to study. Hoxter's (1967) abridgement of Zingle's (1965) instrument contained forty-seven items and was restricted to irrational ideas two, four, five, six, seven, and nine.

Using this new instrument Hoxter (1967) studied two groups of culturally deprived fourteen-year-old pupils representing two kinds of behavior. These behaviors were labelled "problem" and "non-problem". "Problem" behavior was defined as practice of truancy, overly aggressive acts, stealing, interfering with discipline and profane language. The problem behavior group were referred to as "stream disoriented", while the non-problem group were referred to as "stream oriented". Hoxter (1967) reported significantly more irrational beliefs among the "stream disoriented" group.

Sanche (1968) used Hoxter's (1967) abridgement of Zingle's (1965) Irrational Ideas Inventory in a study to determine the changes in irrational beliefs and self-concept of educationally retarded youths. Sanche (1968) reported significantly fewer irrational beliefs among students enrolled in a Cooperative School-Work-Training Program after being in the program for a period of time.

Allen (1970) maintained that studies using the Irrational Ideas Inventory of Zingle (1965) and other instruments have implicitly assumed that irrational beliefs can be divided into the categories delineated by Ellis (1962).

They have also assumed that the irrational beliefs are sufficiently comparable to be incorporated into a single inventory.

Allen (1970), by item and cluster analysis, found that the original eleven subtests could not be separated empirically. A sixty-five item test was developed that demonstrated sufficient internal consistency to form a single score representing a tendency toward irrational belief.

In addition to these studies using the I-I Inventory there have been several others that are not directly related to this investigation. Taft (1968) showed a significant confirmation of the relationship between anxiety measures and irrational tendencies as measured by the I-I Inventory. This lends support to the suggestion that irrational beliefs lead to sustained negative emotion.

McPhail (1969) compared Rotter's (1966) theory on belief in external control and Ellis' theory on irrational beliefs. Her major hypothesis was that belief in external control, a generalized expectancy about the nature of reinforcements and the nature of the world, would be related to irrational thinking, as defined by Ellis. Contrary to the hypothesis, the results showed no significant relation between scores on Rotter's I-E Scale and the I-I Inventory. A re-examination of the I-E Scale questioned the validity and reliability of this instrument, as well as its theoretical base.

Fox (1969) showed a significant relationship between persons scoring high on the Life Orientation Scale, an instrument developed by Fox, and the I-I Inventory. Low scorers on the Life Orientation Scale are described as being authoritarian, closeminded, uncritical in their thinking and dogmatic.

Conklin (1965) did an item analysis on the I-I Inventory, using the responses of the 751 students in Zingle's sample, and found 25 items which best distinguished overachievers, average achievers and underachievers. Conklin (1965) also showed significant correlation between scores obtained on the Barron's Complexity Scale and his revised I-I Inventory. Persons who score high on the Barron's Complexity Scale are described as being non-conforming, complex and impulsive.

Davies (1970) constructed a 60 item Adult Irrational Ideas Inventory, (A-I-I). In support of Ellis' writings a significant difference was found in irrational beliefs of a representative sample and both mental patients and alcoholics. When mental patients and alcoholics were compared, no difference was found.

The overcoming of emotional disturbance, according to Ellis (1962), is dependent upon changes in the belief system of the individual. There have been many theories that have attempted to explain the mechanism of belief and attitude change. Since this change in belief was emphasized

by Ellis (1962), it was considered important that other theories be reviewed. For this reason, selected theories of attitude and belief change were reviewed in the section to follow.

Selected Theories of Attitude and Belief Change

Sherif and Hovland's Assimilation-Contrast Theory

Sherif and Hovland(1961) hold that persons tend to form reference scales after repeated exposure to varied stimuli. Once these scales are formed, any new stimulus may be placed along one of these scales. Sherif (1935) showed that these scales were formed in judgments of the illusory perceived movement of a small light in a dark room. These illusory movements tend to become stabilized with a characteristic range and central value. Sherif and Hovland (1961) stated that social stimuli do not result in such clear cut scale formation because of lack of well defined objective standards. Nevertheless, scales do develop. Stimuli which exert large influence or serve as end points to these scales, in terms of this theory, are called anchors. These anchors may be either internal or external to the individual. An attitude is viewed as an internal anchor and a stimulus is viewed as an external anchor. The term "contrast" refers to a shift in judgment away from an anchor, and "assimilation" refers to a shift in judgment toward an anchor.

According to the assimilation-contrast theory, the effect of persuasion (external anchor) upon attitude and

opinion (internal anchor), depends on the degree of discrepancy between the persuasion and the attitude. If the persuasion advocates a position not too discrepant from the attitude, then assimilation will result, or the attitude will shift towards the position advocated by the external anchor. The important point in this theory is that if attitudes are to change, then the persuasion must lie on the individual's scaled latitude of acceptance.

Osgood and Tannenbaum's Congruity Theory

Osgood and Tannenbaum (1955) developed a theoretical model for predicting the amount and direction of change in an attitude. The theory states that changes in evaluation will always be in the direction of increased congruity with the existing frame of reference. The theory can be stated in mathematical terms for both associative assertions and dissociative assertions. The mathematical constructs involved in analysis of an associative assertion are:

Pojl = doj2 - dojl* (This equation symbolizes the total pressure towards congruity of the first object of judgment) and

Poj2 = dojl - doj2 (This equation symbolizes the total pressure towards congruity of the second object of judgment.

---

* oj refers to object of judgment

d refers to degree of polarization of that attitude

P refers to pressure towards congruity for a given judgment associated with another by an assertion

When two objects of judgment are associated the pressure is towards congruity. Both objects do not change equally however. The degree of movement can be expressed by the following equations.

$$ACoj1 = \frac{|doj2|}{|doj1| + |doj2|} Poj1^{**}$$

$$ACoj2 = \frac{|doj1|}{|doj1| + |doj2|} Poj2$$

An example of an association assertion will make these formulae clear. Objects of judgment are placed on a seven point scale from (+3) to (-3). If Churchill (+1) praised Hitler (-2), the following would occur as the individual attempted to move toward congruity.

$Poj1 = doj2 = doj1$

$Poj1 = -2 - (+1)$

$Poj1 = -3$

$Poj2 = doj1 = doj2$

$Poj2 = +1 = (2)$

$Poj2 = +3$

The total pressure towards congruity for Churchill would be -3, and for Hitler +3. The result would be that Churchill would be evaluated less highly, while Hitler would be evaluated more highly. With these values it is now possible to calculate the predicted change.

** AC refers to attitude change

$$ACoj1 = \frac{|doj2|}{|doj1| + |doj2|} Poj1$$

$$ACoj1 = \frac{2}{1 + 2} (-3)$$

$$ACoj1 = -2$$

$$ACoj2 = \frac{|doj1|}{|doj1| + |doj2|} Poj2$$

$$ACoj2 = \frac{1}{1 + 2} (+3)$$

$$ACoj2 = +1$$

The prediction is that Churchill will change two units in a negative direction and Hitler will change one unit in a positive direction.

The theory also allows for mathematical correction of incredulous associations and dissociations.

Osgood and Tannenbaum (1955) stated

> The theoretical model presented in this paper, while not pretending to account for all variables relating to attitude change, does attempt to cover those variables believed to be most significant with respect to the direction of change to be expected in any given situation. These variables are (a) existing attitude toward the source of the message, (b) existing attitude toward the concept evaluated by the source, and (c) the nature of the evaluating assertion which relates source and concept in the message. (p. 42).

Roger's Necessary and Sufficient Conditions of Therapeutic Personality Change

Rogers (1957) listed six conditions which he considered to be necessary and sufficient for therapeutic personality change. These six conditions were:

> (1) Two persons are in psychological contact.
>
> (2) The first, whom we shall term the client, is in a state of incongruence, being vulnerable or anxious.
>
> (3) The second person, whom we shall term the therapist, is congruent or integrated in the relationship.
>
> (4) The therapist experiences unconditional positive regard for the client.
>
> (5) The therapist experiences an empathic understanding of the client's internal frame of reference and endeavors to communicate this experience to the client.

> (6) The communication to the client of the therapist's empathic understanding and unconditional positive regard is to a minimal degree achieved. (p. 96)

Studies Concerned with Attitude and Opinion Change

Several studies concerned with attitude and opinion change will be presented as they point to the fact that attitudes and opinions change in many different circumstances. One factor that is common to all is that there is contact with other individuals, and perhaps it is this contact that is in some way responsible for the reported change.

Trent and Medsker (1968) studied some 10,000 youths from the time they left high school until four years later. These youths were studied in terms of (a) whether they completed college (college persisters), (b) whether they withdrew with partial completion of college (withdrawals) or (c) whether they entered direct employment or homemaking upon leaving high school (employed youths). The factor that most distinguished the college persisters from the other groups was the development of autonomy amongst the college persisters. Autonomy was defined as being open-minded and having a flexible disposition. Background factors that distinguished the college persisters were parents' education, the youth's level of academic aptitude,

and the youth's religious orientation. The college group experienced greater changes in their attitudes and perceived themselves as more individualistic, independent and liberal than did the other groups. The sub-group experiencing least change in attitudes were girls who proceeded directly from high school to marriage.

Costin (1968) studied 103 students enrolled in an introductory psychology course at the University of Illinois. His investigation indicated that students with "closed minds" did not reveal any greater resistance to learning general principles of behavior than those with "open minds". The "closed minded" students did show greater resistance to changing specific false beliefs about human behavior though; presumedly because these beliefs were more socially controversial and emotionally laden than the general principles of behavior.

Johnson (1969) studied 80 student teachers and 80 supervising teachers over a ten week student teaching experience. The study was designed to determine whether change in student teachers dogmatism was a function of the degree of dogmatism of the supervising teacher. Of the 80 student teachers in the sample, 53 moved in the direction of the supervising teacher on the variable of dogmatism. Student teachers who scored lower than the supervising teachers tended to shift more readily than student teachers who scored higher than supervising teachers.

Sereno (1968) found that the effects of high source credibility upon change of attitude is greater amongst persons who are highly ego-involved on an issue.

Johnston, Cartwright and Cooper (1968) attempted to determine the effects of an 18 hour training course in changing the attitudes of teachers toward illiterate adults. It was found that a period of actual teaching had more effect on changing the attitudes of teachers than did the 18 hour training course.

Attitudes and Beliefs Held by High School Teachers and Students

Hamilton (1969) studied 52 elementary and secondary teachers who were engaged in post graduate study at the University of Bridgeport. The investigation was designed to determine some of the current values that experienced teachers held. Hamilton (1968) found that teachers do not believe that students are ready to accept liberty if it carries the requirement of total accountability. The teachers felt that "young people regard middle-aged people as complacent, indifferent, hypocritical, or perhaps as cowards" (Hamilton, 1969, p. 280). Teachers expressed a concern for social justice and felt that it is now technologically possible to achieve this goal. Sex was considered to be a personal matter which should not be constrained by social consequences. Finally, the teachers believed "that there are universal virtues that transcend

the shouts of alienation, lostness, and meaninglessness that can provide life with a purpose" (Hamilton, 1969, p. 281).

Friesen, (1967) studied ten selected Canadian high schools situated in Alberta, Manitoba, and Ontario. The sample included private, rural, small city and metropolitan schools. Friesen (1967) stated that

> the peer group is a powerful element in the high school society. Apparently it will influence the behavior of students much more than the teacher, especially in areas where the social system of the peer-group is permitted to operate without too much restraint. (p. 22)

Considering subjective evaluations of the value climate in the high school, Broudy (1967, p. 116) has said "I have found that young people - even the wildest protestors - do not reject honesty, decency, kindness, dignity of the person, yes, even chastity." Ringkamp (1968) suggested that Catholic students with whom he has been associated seem to have values that are very compatible with those of their teachers.

Summary

The literature reviewed above lends support to the theory that significant others are of considerable influence in the formation of beliefs and attitudes (Johnson, 1969; Sereno, 1969). The studies also point out that if attitudes are to change, then the advocated change must be in some way compatible with an individual's internal frame of reference (Costin, 1968; Johnson, 1969; Sherif and

Hovland, 1961).

The importance of the peer-group is emphasized as a powerful element in attitude change among high school students (Friesen, 1967), and finally, there appears to be no great discrepancy between attitudes held by teachers and those held by their students (Broudy, 1967) (Ringkamp, 1968).

Studies using the I-I Inventory have supported the validity of this instrument and reported logical connections between the phenomena measured in each of the studies and Ellis' concept of irrational beliefs. Then irrational beliefs have been shown to be related to student achievement, anxiety, life orientation, mental illness and alcoholism.

CHAPTER III

RESEARCH PROCEDURE

Evidence from previous research suggests that the Irrational Idea Inventory is a valid and reliable measure of irrational beliefs.

Initially, Zingle ensured content validity by submitting the Inventory to three judges, familiar with Ellis' work, who were asked to label the items according to the belief they felt each item measured. Intercorrelations with Zingle's classification ranged from .75 to .85. Subsequently scores on the I-I Inventory have shown significant relationship to such diverse phenomena as achievement, anxiety, life orientation and mental illness.

Previous research has emphasized changing irrational beliefs of individuals placed in different environments or changing irrational beliefs of individuals with obvious initial difference in life adjustment. To this point there has been little effort to relate changes that have taken place in irrational beliefs to the beliefs of individuals with whom the subjects have come in contact. The purpose of this study has been to investigate the relationship that may exist between changing irrational beliefs of individuals and the beliefs of significant others that may play a role in changing these beliefs.

Population

In late September 1969, all students enrolled in full-time vocational courses[1] in the Yorkton Regional High School during the 1969-1970 academic year completed the Irrational Ideas Inventory of Zingle (1965). The students were encouraged to answer the questions with regard to the fact that their responses would be held in confidence.

Students completed the same inventory in early June and were again given assurances that they need not be concerned regarding their responses.

All vocational teachers completed the Inventory in April, 1970. Teachers were asked to place themselves in the place of students when answering items that were directly related to students. Teachers were given assurance that their responses would be held in confidence.

Table 3-1 shows the number and distribution of students who completed the September and June inventories. The table assigns students to the teacher from whom they were taking the major portion of their vocational course work.

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[1] A full-time vocational course consisted of one hour each day for Grade ten students and two hours each day for Grades eleven and twelve students.

TEACHER	SEPTEMBER INVENTORY		JUNE INVENTORY	
	GRADE X	GRADE XI & XII	GRADE X	GRADE XI & XII
1	10	5	10	4
2	16	10	14	10
3	19	17	15	17
4	16	21	15	19
5	14	17	14	17
6	19	5	16	5
7	15	20	13	20
8	21	8	16	8
9	19	30	17	23
10	10	5	9	5
TOTAL	159	138	139	128

TABLE 3-1

NUMBER OF STUDENTS COMPLETING ZINGLE'S (1965) I.I. INVENTORY

The thirty students who completed the September inventory, but who did not complete the June inventory, represent students who withdrew or transferred to other schools during the year. The September inventory of these students was removed and their responses were not considered during the analysis of the data.

Method of Data Analysis

The Irrational Ideas Inventories were subjected to analysis by forming seven different groupings in an attempt

to determine the effects of exposure to a particular teacher. Specifically, these seven different analysis groupings were constructed in the following manner.

A. The mean response for each of the 122 items of the inventory was calculated for each group of students in Table 3-1. This gave the following information for each of the 122 items.

(a) teachers' scores on each item.

(b) mean September score for Grades X, XI & XII combined on each item

(c) mean September score for Grade X on each item

(d) mean September score for Grade XI & XII combined on each item

(e) mean June score for Grades X, XI & XII combined on each item

(f) mean June score for Grade X on each item

(g) mean June score for Grades XI & XII combined on each item

B. The items were grouped according to the groupings used by Zingle (1965), (see Table 3-2)*. For example, Items 1, 12 23, 34, 45, 56, 67, 78, 88, 97, 105 and 113 were grouped for Irrational Idea No. 1. The teacher scores, the mean student scores (September) and the mean student scores (June) were subjected to analysis of variance using this

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* Table 3-2 reports the number of the test items associated with each irrational idea or factor for the three groupings used. For example I.I. No. 4 for Allen's combined categories consists of test items 15, 59, 70 and 81, for a total of four items.

grouping. Scheffe (1959) multiple comparison of means was also performed using this grouping. Analysis of variance and Scheffe (1959) multiple comparison of means were carried out using the groups of items for each of Zingle's eleven groupings. Specifically, analysis of variance and Scheffe (1959) multiple comparison of means were performed for the following;

Analysis 1. (a) Teachers
(b) Grades X, XI and XII (September)
(c) Grades X, XI and XII (June)

Analysis 2. (a) Teachers
(b) Grade X (September)
(c) Grade X (June)

Analysis 3. (a) Teachers
(b) Grades XI and XII (September)
(c) Grades XI and XII (June)

C. Factor analysis was carried out using the responses of all who completed the inventory.* From varimax rotated factors, eleven factors were extracted with no overlapping with a minimum commonality factor of 0.397. (See Table 3-2).

Table 3-3 shows the eigenvalues of the eleven factors.

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* The University of Alberta Division of Educational Research Services Facto 3 program was used for this step. The program finds eigenvectors in order of their eigenvalues from largest to smallest. After determining the unrotated factor matrix, the program carries out a Varimax rotation.

I.I.OR FACTOR NUMBER	ZINGLE	TOTAL	ALLEN (COMBINED)	TOTAL	FACTOR ANALYSIS LIMIT @ .397	TOTAL
1	1,12,23,34,45,56,67,78,88,97,105,113	12	34,45,97,105,113	5	15,17,34,35,39,45,48,49,50,61,79,92	13
2	2,13,24,35,46,57,68,79,89,98,106,114,122	13	35,79,106,122	4	37,38,55,66,88	5
3	3,14,25,36,47,58,69,80,90,99,107,115,119	13	36,119	2	67,69,73,78,89,103	6
4	4,15,26,37,48,59,70,81	8	15,59,70,81	4	47,86,106,107,112,114,115	7
5	5,16,27,38,49,60,71,82,91,100,108,116,120	13	49,91,100,108	4	24,98,117	3
6	6,17,28,39,50,61,72,83,92,101,109	11	39,72,83,92	4	121	1
7	7,18,29,40,51,62,73,84,93,102,110,117,121	13	102,117	2	12,31,54,	3
8	8,19,30,41,52,63,74,85,94,103,111,118	12	19,85	2	51,57,60,68,71	5
9	9,20,31,42,53,64,75,86,95	9	9	1	1,19,41,72	4
10	10,21,32,43,54,65,76	7	43,76	2	64,102	2
11	11,22,33,44,55,66,77,87,96,104,112	11	33,112	2	76	1

TABLE 3-2

I.I. INVENTORY ITEMS CONTAINED IN EACH OF THE ELEVEN SUBTESTS

FACTOR	EIGENVALUE
1	8.058
2	4.962
3	3.855
4	2.597
5	2.456
6	2.205
7	2.100
8	2.003
9	1.969
10	1.902
11	1.837

TABLE 3-3

EIGENVALUES OF THE ELEVEN FACTORS ISOLATED

The items were grouped according to the eleven factors resulting from this analysis, for example, factor 1 contained items 15, 17, 34, 35, 39, 45, 48, 49, 50, 61, 79 and 92., (see table 3-2). Analyses of variance and multiple comparison of means were again carried out as before, for each of the three following;

Analysis 1. (a) Teachers

(b) Grades X, XI and XII (September)

(c) Grades X, XI and XII (June)

Analysis 2. (a) Teachers

(b) Grade X (September)

(c) Grade X (June)

Analysis 3. (a) Teachers

(b) Grades XI and XII (September)

(c) Grades XI and XII (June)

Analyses of variance and multiple comparison of means were not performed on factors six and eleven since only one item was included with respect to these factors.

D. The items were then grouped according to the grouping developed by Allen (1970). The grouping used was for items selected by Ellis and by Allen's (1970) analysis. For example, items 34, 45, 97, 105 and 113 were grouped for Irrational Idea No. 1, (see Table 3-2). Analyses of variance and multiple comparison of means were again carried out, this time for only the following:

Analysis 1. (a) Teachers

(b) Grades X, XI and XII (September)

(c) Grades X, XI and XIII (June)

Analyses of variance and multiple comparison of means were not performed for grouping nine, as this group contained only one item.

As a further step the arithmetic means of each grouping were examined to determine whether the students' response tended to move towards or away from the teachers' mean. A+ indicates that the students' mean score on the grouping moved in the direction of the teachers' score. A- indicates that the students' score moved away from the teachers'. A "0" indicates that the students' mean score did not change.

A Chi Square analysis was carried out using the expected frequency of one half of the total number of categories showing movement. That is, if a student moved towards the teacher on two categories, away from the teacher on eight categories and did not move in one category, then the expected frequency towards the teachers' mean would be five and the expected frequency of movement away from the teachers' mean would be five.

A Chi Square analysis was carried out for the movement of students associated with each of the ten teachers involved in the study.

Finally, Guidance and Administration personnel were asked to give their opinion on the effects each teacher would have on changing the basic beliefs of students in their classes.

CHAPTER IV

RESEARCH FINDINGS

(1) Analyses of Variance and Scheffe Multiple Comparisons of Means

Analyses of variance and Scheffe multiple comparisons of means were performed to test the null hypothesis

> "There is no significant difference in irrational ideas held by teachers, students at the beginning of the school year and students at the end of the school year."

The results of the analyses of variance are reported in Tables 4-1A through 4-7A. The results of Scheffe multiple comparisons of means are reported in Tables 4-1B through 4-7B.

Note from Table 4-1A (results of analysis of variance) that significance at the .05 level or greater was found in the following cases:

Teacher No. 1 - I.I. No.'s 1, 3, and 7

Teacher NO. 2 - I.I. No. 3

Teacher No. 4 - I.I. No. 6

Teacher No. 5 - I.I. No.'s 1, 2, and 3

Teacher No. 6 - I.I. No.'s 3 and 7

Teacher No. 7 - I.I. No.'s 3, 5 and 7

Teacher No. 8 - I.I. No.'s 3, 6 and 7

Teacher No. 10 - I.I. No. 5

Table 4-1B (Scheffe multiple comparison of means) shows that the significant differences can be attributed to differences in students' and teachers' beliefs, rather than

a change in students' beliefs.

The Irrational Idea most often significantly different was No. 3. This belief was stated by Ellis (1962) as:

> The idea that certain people are bad, wicked, or villainous and that they should be severely blamed and punished for their villainy. (p. 65)

Note from Table 4-2A (result of analysis of variance) that significance at the .05 level or greater was found in the following cases:

Teacher No. 1 - I.I. No.'s 1, 3 and 7

Teacher No. 2 - I.I. No. 3

Teacher No. 4 - I.I. No. 6

Teacher No. 5 - I.I. No. 's 1 and 10

Teacher No. 6 - I.I. No.'s 3 and 7

Teacher No. 7 - I.I. No.'s 1, 3, 5, and 7

Teacher No. 8 - I.I. No.'s 3, 6, and 7

Teacher No. 10 - I.I. No. 5

Table 4-2B (Scheffe multiple comparison of means) shows that the significant differences can be attributed to differences in students' and teachers' beliefs, rather than a change in students' beliefs. Irrational Idea No.3 again emerges as the belief showing the greatest difference.

Note from Table 4-3A (results of analysis of variance) that significance at the ,05 level or greater was found in the following cases:

Teacher No. 1 - I.I. No.'s 1, 3 and 10

Teacher No. 2 - I.I. No. 3

Teacher No. 4 - I.I. No.'s 6 and 7

Teacher No. 5 - I.I. No.'s 1, 2 and 4

Teacher No. 6 - I.I. No.'s 7 and 11

Teacher No. 7 - I.I. No.'s 5 and 7

Teacher No. 8 - I.I. No.'s 3 and 7

Table 4-3B (Scheffe multiple comparison of means) shows that the significant differences can be attributed to differences in students' and teachers' beliefs, rather than a change in students'beliefs. Irrational Idea No. 7 emerges as the belief most often significantly different. This belief was stated by Ellis (1962) as;

> The idea that it is easier to avoid than to face certain life difficulties and self-responsibilities. (p. 78)

There was no significant difference shown in any of the Irrational Ideas for the Zingle groupings of teachers No. 3 and 9.

Note from Table 4-4A (results of analysis of variance) that significance at the .05 level or greater was found in the following cases:

Teacher No. 1 - I.I. No. 1

Teacher No. 2 - I.I. No. 6

Teacher No. 3 - I.I. No. 4

Teacher No. 4 - I.I. No. 6

Teacher No. 5 - I.I. No.'s 1 and 6

Teacher No. 6 - I.I. No. 6

Teacher No. 8 - I.I. No.'s 1 and 6

Teacher No. 10 - I.I. No. 10

Table 4-4B (Scheffe multiple comparison of means) shows that the significant differences can be attributed to differences in students' and teachers' beliefs, rather than a change in students'beliefs. Irrational Idea No. 6 emerges as the belief most often significantly different. This belief was stated by Ellis (1962) as;

> The idea that if something is or may be dangerous or fearsome one should be terribly concerned about it and should keep dwelling on the possibility of its occurring. (p. 75)

Note from Table 4-5A (result of analysis of variance) that significance at the .05 level or greater was found in the following cases:

Teacher No. 1 - Factor no. 1

Teacher No. 2 - Factor No. 4

Teacher No. 4 - Factor No. 1

Teacher No. 5 - Factor No. 1

Teacher No. 7 - Factor No.'s 1 and 4

Teacher No. 8 - Factor No. 1

Teacher No. 9 - Factor No. 7

Table 4-5B (Scheffe multiple comparison of means) shows that the significant differences can be attributed to differences in students' and teachers' beliefs, rather than a change in students' beliefs. The factor most often

significantly different was Factor No. 1. Since no statement of the beliefs represented by factors has been developed, the inventory items composing the factors are presented. These items are:

15. I worry about little things.

17. I sometimes worry about my health.

34. Sometimes I feel that no one loves me.

35. I find it difficult to take criticism without feeling hurt.

39. Riches are a sure basis for happiness in the home.

45. Jeers humiliate me even when I know that I am right.

48. I frequently feel self-conscious about my appearance.

49. My feelings are easily hurt.

50. Sometimes I am troubled by thought of death.

61. I worry about eternity.

79. I worry about tests.

92. I tend to worry over possible troubles.

100. It hurts me when my friends are unkind.

Note from Table 4-6A (results of analysis of variances) that significance at the .05 level or greater was found in the following cases.

Teacher No. 1 - Factor No.'s 1 and 3

Teacher No. 2 - Factor No. 4

Teacher No. 3 - Factor No. 3

Teacher No. 4 - Factor No.'s 1 and 10

Teacher No. 5 - Factor No. 1

Teacher No. 6 - Factor No. 1

Teacher No. 7 - Factor No.'s 1 and 4

Teacher No. 8 - Factor No. 1

Teacher No. 9 - Factor No. 7

Table 4-6B (Scheffe multiple comparison of means) shows that the significant differences can be attributed to differences in students' and teachers' beliefs, rather than a change in students' beliefs. Factor No. 1 again appears as the factor most often significantly different.

Note from Table 4-7A (results of analysis of variance) that significance at the .05 level or greater was found in the following cases.

Teacher No. 1 - Factor No. 1

Teacher No. 2 - Factor No. 4

Teacher No. 4 - Factor No. 1

Teacher No. 5 - Factor No. 1

Teacher No. 7 - Factor No.'s 1 and 4

Teacher No. 8 - Factor No. 1

Teacher No. 9 - Factor No. 7

Table 4-7B (Scheffe multiple comparison of means) shows that the significant differences can be attributed to differences in students' and teachers' beliefs, rather than a change in students' beliefs. Factor No. 1 again appears as the factor most often significantly different.

(2) Chi Square Analysis

Chi Square analysis was performed to test the null hypothesis

> "There is no significant movement either towards or away from the teacher in irrational ideas of students."

The results of this analysis are shown in Tables 4-8 and 4-10. Table 4-8 reports the results of analysis of movement of the students' means in Tables 4-1 through 4-7. Note from this table that the null hypothesis can be rejected at the 5% level or greater in (a) Zingle's Item Grouping - Grade X, (b) Allen's Item Grouping - Grades X, XI and XII combined.

Table 4-10 reports the results of analysis of movement of the students' means reported in Table 4-9. The null hypothesis can be rejected at the 5% level or greater for (a) Teacher No. 6 and (b) Teacher No. 9.

Subjective evaluation by administration and guidance counselors is reported in Table 4-11. Note from this table that there is a fair degree of polarization of opinion. This is particularly so in the cases of Teachers 1, 2, 3, 5, and 7.

A comparison between Table 4-9 and 4-11 shows agreement with this subjective evaluation where opinion is polarized, with the exception of Teacher No. 7 and Teacher No. 10.

Teacher	IRRATIONAL IDEA OR FACTOR NUMBER																							Total		Net
		1		2		3		4		5		6		7		8		9		10		11		+	−	
1	−	0.0034	+	0.2013	−	0.0487	−	0.9230	−	0.7997	−	0.1902	0	0.0393	−	0.4730	−	0.9608	−	0.1732	+	0.4789		2	8	−6
2	−	0.2942	+	0.9316	−	0.0187	+	0.2818	+	0.8125	−	0.3834	−	0.1498	+	0.4979	−	0.5351	+	0.5480	+	0.9200		6	5	+1
3	+	0.8990	+	0.6850	−	0.3697	+	0.9099	+	0.4818	−	0.2366	−	0.0882	+	0.9213	+	0.1182	−	0.9217	−	0.8238		6	5	+1
4	+	0.8380	−	0.7412	−	0.1195	−	0.3036	−	0.8346	−	0.0000	−	0.1200	+	0.4729	+	0.9991	+	0.0744	+	0.8343		5	6	−1
5	−	0.0078	+	0.0171	+	0.0478	+	0.0771	+	0.5595	+	0.1007	+	0.4400	+	0.6580	−	0.8678	−	0.2181	−	0.2362		7	4	+3
6	−	0.8689	+	0.8572	+	0.0213	+	0.2619	+	0.6127	+	0.1114	+	0.0044	−	0.9743	+	0.8552	+	0.8819	+	0.0877		9	2	+7
7	−	0.0720	−	0.4234	+	0.0333	−	0.2943	−	0.0008	+	0.1822	−	0.0014	+	0.7259	−	0.8096	−	0.8395	−	0.6852		3	8	−5
8	+	0.5473	−	0.3651	+	0.0204	+	0.3413	+	0.8334	−	0.0074	+	0.0078	+	0.7927	−	0.5257	−	0.8574	−	0.5819		6	5	+1
9	+	0.9784	−	0.0721	+	0.4065	+	0.9930	−	0.5051	−	0.7937	−	0.2645	+	0.9071	0	0.2474	−	0.3570	+	0.9526		5	5	0
10	+	0.4389	+	0.4173	+	0.4283	−	0.7164	+	0.0284	+	0.8482	−	0.9780	−	0.3631	+	0.7881	+	0.9573	+	0.7112		8	3	+5
Net +or −		0	+	2	+	2	+	2	+	2	−	2		3	+	4	−	1	−	2	+	2				+6

TABLE 4-1A

P VALUES FOR ANALYSIS OF VARIANCE
ZINGLE'S ITEM GROUPING
(TOTAL SAMPLE)

TEACHER	COMPARISON OF MEANS	IRRATIONAL IDEA OR FACTOR NUMBER							
		1	2	3	5	6	7		
1	TEACHERS/STUDENTS (SEPT.)	0.0287		0.2172			0.0836		
	TEACHERS/STUDENTS (JUNE)	0.0060		0.0575			0.0836		
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.8109		0.7825			1.0000		
2	TEACHERS/STUDENTS (SEPT.)			0.2477					
	TEACHERS/STUDENTS (JUNE)			0.0192					
	STUDENTS (SEPT.)/STUDENTS (JUNE)			0.4544					
4	TEACHERS/STUDENTS (SEPT.)					0.0000			
	TEACHERS/STUDENTS (JUNE)					0.0000			
	STUDENTS (SEPT.)/STUDENTS (JUNE)					0.8873			
5	TEACHERS/STUDENTS (SEPT.)	0.0355	0.0301	0.0537					
	TEACHERS/STUDENTS (JUNE)	0.0158	0.0674	0.7252					
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.9404	0.9344	0.2433					
6	TEACHERS/STUDENTS (SEPT.)			0.0240			0.0117		
	TEACHERS/STUDENTS (JUNE)			0.1769			0.0191		
	STUDENTS (SEPT.)/STUDENTS (JUNE)			0.6270			0.9797		
7	TEACHERS/STUDENTS (SEPT.)			0.0490	0.0110		0.0118		
	TEACHERS/STUDENTS (JUNE)			0.1214	0.0015		0.0034		
	STUDENTS (SEPT.)/STUDENTS (JUNE)			0.9051	0.7547		0.8903		
8	TEACHERS/STUDENTS (SEPT.)			0.0311		0.0253	0.0138		
	TEACHERS/STUDENTS (JUNE)			0.0912		0.0191	0.0445		
	STUDENTS (SEPT.)/STUDENTS (JUNE)			0.8810		0.9925	0.8819		
10	TEACHERS/STUDENTS (SEPT.)				0.0409				
	TEACHERS/STUDENTS (JUNE)				0.1167				
	STUDENTS (SEPT.)/STUDENTS (JUNE)				0.8791				

TABLE 4-1B
PROBABILITY VALUES FOR SCHEFFE MULTIPLE COMPARISON OF MEANS
(SAME GROUPING AS 4-1A)

Teacher		1		2		3		4		5		6		7		8		9		10		11	Total +	Total −	Net
		IRRATIONAL IDEA OR FACTOR NUMBER																							
1	−	0.0083	+	0.2848	+	0.0371	+	0.9850	−	0.6724	−	0.2791	−	0.0215	−	0.5410	+	0.8835	+	0.3332	+	0.5638	6	5	+1
2	−	0.1283	+	0.6559	+	0.0030	+	0.3178	+	0.7997	−	0.6594	−	0.1103	+	0.4757	−	0.6025	+	0.1746	+	0.7214	7	4	+3
3	+	0.3527	+	0.4074	+	0.3981	+	0.9551	+	0.3344	−	0.1629	−	0.0857	+	0.8096	+	0.1206	+	0.8435	+	0.8271	9	2	+7
4	−	0.8628	+	0.8524	−	0.2115	−	0.4425	−	0.9542	+	0.0001	+	0.3371	−	0.3823	+	0.9790	−	0.1096	+	0.8489	5	6	−1
5	−	0.0083	+	0.0617	+	0.1692	+	0.2081	+	0.8554	+	0.1094	+	0.8791	+	0.3591	−	0.8180	+	0.0382	−	0.2097	8	3	+5
6	−	0.7256	−	0.8976	+	0.0153	+	0.3125	+	0.5736	+	0.1043	+	0.0031	−	0.9898	+	0.9836	+	0.7563	+	0.2696	8	3	+5
7	−	0.0200	+	0.5177	−	0.0120	−	0.3351	−	0.0004	−	0.1959		0.0007	+	0.6530	−	0.8591	−	0.5654	+	0.6246	3	8	−5
8	+	0.5341	−	0.4576	+	0.0275	−	0.2878	+	0.8591	+	0.0035	+	0.0111	+	0.8959	−	0.5524	+	0.8909	+	0.4242	8	3	+5
9	−	0.9789	−	0.0870	−	0.2461	+	0.9698	−	0.5718	+	0.7720	+	0.2299	+	0.9895	+	0.3084	−	0.4960	+	0.9431	6	5	+1
10	+	0.3780	+	0.7811	−	0.3774	0	0.8541	+	0.0194	+	0.5081	−	0.9771	−	0.3755	+	0.9562	+	0.8851	+	0.6841	7	3	+4
Net +or −	−	4	+	4	+	2	+	3	+	2	+	2		0	+	2	+	2	+	4	+	8			+25

TABLE 4-2A

P VALUES FOR ANALYSIS OF VARIANCE
ZINGLE'S ITEM GROUPING
GRADE TEN

TEACHER	COMPARISON OF MEANS	IRRATIONAL IDEA OR FACTOR NUMBER							
		1	3	5	6	7	10		
1	TEACHERS/STUDENTS (SEPT.)	0.0472	0.0424			0.0572			
	TEACHERS/STUDENTS (JUNE)	0.0143	0.2110			0.0477			
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.8728	0.7130			0.9964			
2	TEACHERS/STUDENTS (SEPT.)		0.0087						
	TEACHERS/STUDENTS (JUNE)		0.0139						
	STUDENTS (SEPT.)/STUDENTS (JUNE)		0.9822						
4	TEACHERS/STUDENTS (SEPT.)				0.0000				
	TEACHERS/STUDENTS (JUNE)				0.0000				
	STUDENTS (SEPT.)/STUDENTS (JUNE)				0.9636				
5	TEACHERS/STUDENTS (SEPT.)	0.0445					0.0672		
	TEACHERS/STUDENTS (JUNE)	0.0147					0.0913		
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.8903					0.9861		
6	TEACHERS/STUDENTS (SEPT.)		0.0153			0.0088			
	TEACHERS/STUDENTS (JUNE)		0.3348			0.0145			
	STUDENTS (SEPT.)/STUDENTS (JUNE)		0.3052			0.9801			
7	TEACHERS/STUDENTS (SEPT.)	0.1282	0.0668	0.0172		0.0125			
	TEACHERS/STUDENTS (JUNE)	0.0251	0.0189	0.0005		0.0012			
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.7389	0.8540	0.4376		0.6737			
8	TEACHERS/STUDENTS (SEPT.)		0.0376		0.0100	0.0201			
	TEACHERS/STUDENTS (JUNE)		0.1262		0.0144	0.0511			
	STUDENTS (SEPT.)/STUDENTS (JUNE)		0.8420		0.9883	0.9192			
10	TEACHERS/STUDENTS (SEPT.)			0.0258					
	TEACHERS/STUDENTS (JUNE)			0.1137					
	STUDENTS (SEPT.)/STUDENTS (JUNE)			0.7849					

TABLE 4-2B
PROBABILITY VALUES FOR SCHEFFE MULTIPLE COMPARISON OF MEANS
(SAME GROUPING AS 4-2A)

Teacher	IRRATIONAL IDEA OR FACTOR NUMBER																						Total +	Total −	Net
		1		2		3		4		5		6		7		8		9		10		11			
1	−	0.0014	+	0.1118	−	0.0419	−	0.6425	+	0.9700	+	0.0674	+	0.2735	−	0.3757	+	0.8001	−	0.0448	+	0.5161	6	5	+1
2	+	0.6494	+	0.9267	+	0.0235	−	0.1470	+	0.6906	+	0.1384	−	0.1949	+	0.5973	−	0.4967	−	0.9947	−	0.8659	6	5	+1
3	+	0.9821	+	0.6822	+	0.3974	+	0.8853	−	0.7939	−	0.3405	−	0.1982	+	0.9988	−	0.2556	+	0.7536	+	0.7330	7	4	+3
4	+	0.9224	+	0.6603	+	0.1235	−	0.2024	−	0.6935	−	0.0000	−	0.0455	+	0.5228	0	0.9913	+	0.0625	+	0.7970	6	4	+2
5	−	0.0104	+	0.0129	+	0.1207	+	0.0259	+	0.2492	+	0.0644	+	0.1818	−	0.8951	+	0.8222	−	0.5896	+	0.2732	8	3	+5
6	−	0.8302	−	0.5620	+	0.0638	−	0.2756	−	0.5936	+	0.4101	+	0.0303	−	0.8134	+	0.5812	−	0.9674	−	0.0250	4	7	−3
7	+	0.1631	−	0.3777	−	0.1572	−	0.2609	−	0.0021	+	0.1826	−	0.0032	+	0.7579	−	0.7475	−	0.9640	−	0.7099	3	8	−5
8	−	0.5074	−	0.2707	−	0.0277	+	0.4410	+	0.6203	−	0.0581	+	0.0099	+	0.5572	+	0.5330	−	0.7830	−	0.8433	5	6	−1
9	+	0.9838	−	0.0646	+	0.6173	+	0.9941	−	0.6211	−	0.8134	+	0.3829	−	0.8273	−	0.1262	−	0.2873	+	0.9568	5	6	−1
10	+	0.3830	+	0.8792	+	0.2271	0	0.5243	+	0.2088	+	0.6675	0	0.9829	−	0.3284	+	0.9589	−	0.0602	+	0.4794	7	2	+5
Net +or −	+	2	+	2	+	4	−	1		0	+	2	+	1		0	+	1	−	6	+	2			+7

TABLE 4-3A

P VALUES FOR ANALYSIS OF VARIANCE
ZINGLE'S ITEM GROUPING
GRADE ELEVEN AND TWELVE

TEACHER	COMPARISON OF MEANS	IRRATIONAL IDEA OR FACTOR NUMBER								
		1	2	3	4	5	6	7	10	11
1	TEACHERS/STUDENTS (SEPT.)	0.0187		0.7055					0.3366	
	TEACHERS/STUDENTS (JUNE)	0.0024		0.0470					0.0454	
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.7234		0.2329					0.5027	
2	TEACHERS/STUDENTS (SEPT.)			0.0475						
	TEACHERS/STUDENTS (JUNE)			0.6668						
	STUDENTS (SEPT.)/STUDENTS (JUNE)			0.9873						
4	TEACHERS/STUDENTS (SEPT.)						0.0000	0.1075		
	TEACHERS/STUDENTS (JUNE)						0.0000	0.0827		
	STUDENTS (SEPT.)/STUDENTS (JUNE)						0.7930	0.9912		
5	TEACHERS/STUDENTS (SEPT.)	0.0337	0.0235		0.0410					
	TEACHERS/STUDENTS (JUNE)	0.0254	0.0549		0.0874					
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.9923	0.9311		0.9269					
6	TEACHERS/STUDENTS (SEPT.)							0.0425		0.0717
	TEACHERS/STUDENTS (JUNE)							0.1261		0.0477
	STUDENTS (SEPT.)/STUDENTS (JUNE)							0.8682		0.9808
7	TEACHERS/STUDENTS (SEPT.)					0.0097		0.0125		
	TEACHERS/STUDENTS (JUNE)					0.0069		0.0106		
	STUDENTS (SEPT.)/STUDENTS (JUNE)					0.9906		0.9979		
8	TEACHERS/STUDENTS (SEPT.)			0.1626				0.0163		
	TEACHERS/STUDENTS (JUNE)			0.0334				0.0568		
	STUDENTS (SEPT.)/STUDENTS (JUNE)			0.7398				0.8612		

TABLE 4-3B
PROBABILITY VALUES FOR SCHEFFE MULTIPLE COMPARISON OF MEANS
(SAME GROUPING AS 4-3A)

Teacher	IRRATIONAL IDEA OR FACTOR NUMBER																						Total +	Total −	Net
		1		2		3		4		5		6		7		8		9		10		11			
1	−	0.0001	−	0.1215	−	0.4722	+	0.9709	+	0.2612	−	0.1148	+	0.3764	+	0.7092			+	0.9482	+	0.8751	6	4	+2
2	−	0.0778	+	0.9710	−	0.7387	+	0.0721	+	0.9244	−	0.0298	+	0.9028	+	0.1756			0	0.4079	+	0.1360	6	3	+3
3	0	0.0784	+	0.9774	+	0.8538	+	0.0149	+	0.8524	−	0.5440	+	0.6424	0	0.3275			−	0.8476	+	0.3148	6	2	+4
4	+	0.8529	+	0.9428	+	0.1384	−	0.7838	+	0.7490	−	0.0000	−	0.2660	−	0.1284			+	0.9701	+	0.6645	6	4	+2
5	−	0.0008	+	0.2330	−	0.9278	+	0.7954	+	0.4829	−	0.0288	0	0.9903	+	0.7227			−	0.1864	+	0.2634	5	4	+1
6	+	0.1517	−	0.9550	+	0.9144	+	0.1658	−	0.5026	+	0.0504	+	0.4085	−	0.1128			−	0.2492	−	0.9861	5	5	0
7	+	0.1288	+	0.9125	0	0.6661	+	0.9516	−	0.2440	+	0.1262	−	0.2526	+	0.2596			+	0.7792	+	0.8586	7	2	+5
8	−	0.0032	+	0.2206	+	0.4359	+	0.0849	+	0.6827	+	0.0002	−	0.9451	−	0.3846			+	0.9463	+	0.8795	7	3	+4
9	+	0.2433	+	0.0732	+	0.1394	+	0.9615	+	0.9538	+	0.8386	−	0.4033	+	0.9734			−	0.9537	+	0.9260	8	2	+6
10	+	0.6134	+	0.5526	−	0.1699	−	0.5443	+	0.7745	+	0.6544	−	0.2538	−	0.9358			−	0.0153	0	0.9784	4	5	−1
Net +or −	+	1	+	6	+	1	+	6	+	6		0	−	1	+	1			−	1	+	7			+26

TABLE 4-4A

P VALUES FOR ANALYSIS OF VARIANCE
ALLEN'S (1970) ITEM GROUPING
(TOTAL SAMPLE)

TEACHER	COMPARISON OF MEANS	IRRATIONAL IDEA OR FACTOR NUMBER							
		1	4	6	10				
1	TEACHERS/STUDENTS (SEPT.)	0.0015							
	TEACHERS/STUDENTS (JUNE)	0.0003							
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.5553							
2	TEACHERS/STUDENTS (SEPT.)			0.0706					
	TEACHERS/STUDENTS (JUNE)			0.0479					
	STUDENTS (SEPT.)/STUDENTS (JUNE)			0.9669					
3	TEACHERS/STUDENTS (SEPT.)		0.0192						
	TEACHERS/STUDENTS (JUNE)		0.0643						
	STUDENTS (SEPT.)/STUDENTS (JUNE)		0.7293						
4	TEACHERS/STUDENTS (SEPT.)			0.0000					
	TEACHERS/STUDENTS (JUNE)			0.0000					
	STUDENTS (SEPT.)/STUDENTS (JUNE)			0.8761					
5	TEACHERS/STUDENTS (SEPT.)	0.0036		0.0768					
	TEACHERS/STUDENTS (JUNE)	0.0018		0.0429					
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.9261		0.9274					
6	TEACHERS/STUDENTS (SEPT.)			0.0545					
	TEACHERS/STUDENTS (JUNE)			0.2173					
	STUDENTS (SEPT.)/STUDENTS (JUNE)			0.6487					
8	TEACHERS/STUDENTS (SEPT.)	0.0125		0.0006					
	TEACHERS/STUDENTS (JUNE)	0.0052		0.0007					
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.7838		0.9946					
10	TEACHERS/STUDENTS (SEPT.)				0.0258				
	TEACHERS/STUDENTS (JUNE)				0.0206				
	STUDENTS (SEPT.)/STUDENTS (JUNE)				0.8939				

TABLE 4-4B
PROBABILITY VALUES FOR SCHEFFE MULTIPLE COMPARISON OF MEANS
(SAME GROUPING AS 4-4A)

Teacher	IRRATIONAL IDEA OR FACTOR NUMBER																						Total +	Total −	Net
		1		2		3		4		5		6		7		8		9		10		11			
1	−	0.0000	0	0.9390	−	0.0661	+	0.1972	+	0.9084			−	0.6871	−	0.9793	−	0.9316	+	0.9503			3	5	−2
2	+	0.7292	−	0.9884	0	0.9980	+	0.0035	+	0.9164			−	0.4417	+	0.8606	0	0.7449	−	0.7079			4	3	+1
3	−	0.1784	+	0.6272	−	0.1149	−	0.4293	−	0.8752			+	0.7285	−	0.8849	+	0.5511	+	0.7331			4	5	−1
4	−	0.0208	+	0.9988	+	0.7962	0	0.1076	+	0.9909			+	0.8361	−	0.8985	+	0.1323	−	0.0604			5	3	+2
5	+	0.0000	+	0.9965	+	0.9749	+	0.7876	−	0.3209			−	0.4218	+	0.8284	−	0.2033	−	0.9134			5	4	+1
6	+	0.0502	+	0.9521	+	0.9365	+	0.9499	+	0.8812			+	0.0645	−	0.7770	+	0.9581	−	0.4696			7	2	+5
7	−	0.0023	−	0.9854	−	0.6743	−	0.0303	+	0.0810			−	0.8370	+	0.6276	+	0.3217	−	0.4314			3	6	−3
8	−	0.0000	−	0.9734	+	0.8848	−	0.0721	+	0.8342			0	0.9061	+	0.7774	+	0.1002	0	0.6592			4	3	+1
9	+	0.2936	−	0.9550	+	0.4525	+	0.8557	+	0.8837			+	0.0218	+	0.1414	+	0.1577	−	0.0829			7	2	+5
10	+	0.4463	+	0.9439	+	0.5234	+	0.9620	0	0.9914			−	0.4409	−	0.7759	+	0.8482	+	0.8181			6	2	+4
Net +or −		0	+	1	+	3	+	3	+	5			−	1		0	+	5	−	3					+13

TABLE 4-5A

P VALUES FOR ANALYSIS OF VARIANCE
GROUPING DEVELOPED FROM FACTOR ANALYSIS
(TOTAL SAMPLE)

TEACHER	COMPARISON OF MEANS	IRRATIONAL IDEA OR FACTOR NUMBER							
		1	4	7					
1	TEACHERS/STUDENTS (SEPT.)	0.0004							
	TEACHERS/STUDENTS (JUNE)	0.0002							
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.9801							
2	TEACHERS/STUDENTS (SEPT.)		0.0075						
	TEACHERS/STUDENTS (JUNE)		0.0165						
	STUDENTS (SEPT.)/STUDENTS (JUNE)		0.9299						
4	TEACHERS/STUDENTS (SEPT.)	0.0751							
	TEACHERS/STUDENTS (JUNE)	0.0364							
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.9448							
5	TEACHERS/STUDENTS (SEPT.)	0.0000							
	TEACHERS/STUDENTS (JUNE)	0.0000							
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.8309							
7	TEACHERS/STUDENTS (SEPT.)	0.0121	0.0689						
	TEACHERS/STUDENTS (JUNE)	0.0066	0.0604						
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.9718	0.9975						
8	TEACHERS/STUDENTS (SEPT.)	0.0004							
	TEACHERS/STUDENTS (JUNE)	0.0003							
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.9993							
9	TEACHERS/STUDENTS (SEPT.)			0.0377					
	TEACHERS/STUDENTS (JUNE)			0.0416					
	STUDENTS (SEPT.)/STUDENTS (JUNE)			0.9965					

TABLE 4-5B
PROBABILITY VALUES FOR SCHEFFE MULTIPLE COMPARISON OF MEANS
(SAME GROUPING AS 4-5A)

Teacher	IRRATIONAL IDEA OR FACTOR NUMBER																						Total +	Total −	Net
		1		2		3		4		5		6		7		8		9		10		11			
1	−	0.0004	+	0.9505	−	0.0357	+	0.2683	+	0.8958			−	0.9638	+	0.9897	+	0.9537	+	0.9525			6	3	+3
2	−	0.7418	0	0.9842	−	0.9985	+	0.0070	+	0.9445			−	0.3701	+	0.8926	−	0.8314	−	0.6386			3	5	−2
3	−	0.0738	−	0.9882	−	0.0433	+	0.2847	−	0.8824			+	0.8467	−	0.8667	+	0.6573	−	0.8992			3	6	−3
4	0	0.0467	+	0.9995	−	0.8588	−	0.1045	+	0.9950			−	0.8094	+	0.8337	+	0.1192	0	0.0211			4	3	+1
5	+	0.0000	+	0.9974	−	0.8179	+	0.9168	−	0.5692			−	0.1841	+	0.9159	+	0.1014	−	0.9024			5	4	+1
6	+	0.0388	+	0.9929	+	0.8060	+	0.8857	−	0.9164			+	0.1301	−	0.8265	+	0.9143	+	0.3890			7	2	+5
7	−	0.0002	+	0.9950	−	0.3733	−	0.0379	+	0.1426			+	0.7964	+	0.6995	+	0.3550	−	0.4169			5	4	+1
8	+	0.0000	−	0.9828	+	0.9158	−	0.0556	+	0.8421			−	0.8686	−	0.9348	+	0.0717	+	0.6541			5	4	+1
9	0	0.3542	+	0.9462	+	0.2884	+	0.9929	+	0.9351			−	0.0433	−	0.1573	+	0.1720	−	0.1329			5	3	+2
10	+	0.2901	−	0.9375	+	0.7933	+	0.9342	+	0.9981			−	0.8474	−	0.9629	+	0.6460	−	0.7716			5	4	+1
Net + or −		0	+	3	−	2	+	4	+	4			−	4		0	+	8	−	3					+10

TABLE 4-6A

P VALUES FOR ANALYSIS OF VARIANCE
GROUPING DEVELOPED FROM FACTOR ANALYSIS
GRADE TEN

TEACHER	COMPARISON OF MEANS	IRRATIONAL IDEA OR FACTOR NUMBER							
		1	3	4	7	10			
1	TEACHERS/STUDENTS (SEPT.)	0.0028	0.1477						
	TEACHERS/STUDENTS (JUNE)	0.0016	0.0440						
	STUDENTS(SEPT.)/STUDENTS(JUNE)	0.9812	0.7880						
2	TEACHERS/STUDENTS (SEPT.)			0.0103					
	TEACHERS/STUDENTS (JUNE)			0.0450					
	STUDENTS(SEPT.)/STUDENTS(JUNE)			0.7686					
3	TEACHERS/STUDENTS (SEPT.)		0.1822						
	TEACHERS/STUDENTS (JUNE)		0.0509						
	STUDENTS(SEPT.)/STUDENTS(JUNE)		0.7594						
4	TEACHERS/STUDENTS (SEPT.)	0.0958				0.0313			
	TEACHERS/STUDENTS (JUNE)	0.0958				0.0313			
	STUDENTS(SEPT.)/STUDENTS(JUNE)	1.0000				1.0000			
5	TEACHERS/STUDENTS (SEPT.)	0.0000							
	TEACHERS/STUDENTS (JUNE)	0.0005							
	STUDENTS(SEPT.)/STUDENTS(JUNE)	0.5952							
6	TEACHERS/STUDENTS (SEPT.)	0.0436							
	TEACHERS/STUDENTS (JUNE)	0.6990							
	STUDENTS(SEPT.)/STUDENTS(JUNE)	0.2245							
7	TEACHERS/STUDENTS (SEPT.)	0.0108		0.0912					
	TEACHERS/STUDENTS (JUNE)	0.0004		0.0666					
	STUDENTS(SEPT.)/STUDENTS(JUNE)	0.4638		0.9853					
8	TEACHERS/STUDENTS (SEPT.)	0.0001							
	TEACHERS/STUDENTS (JUNE)	0.0003							
	STUDENTS(SEPT.)/STUDENTS(JUNE)	0.9591							
9	TEACHERS/STUDENTS (SEPT.)				0.0938				
	TEACHERS/STUDENTS (JUNE)				0.0605				
	STUDENTS(SEPT.)/STUDENTS(JUNE)				0.9370				

TABLE 4-6B
PROBABILITY VALUES FOR SCHEFFE MULTIPLE COMPARISON OF MEANS
(SAME GROUPING AS 4-6A)

Teacher	IRRATIONAL IDEA OR FACTOR NUMBER																						Total		Net
		1		2		3		4		5		6		7		8		9		10		11	+	−	
1	−	0.0000	−	0.9183	+	0.3317	+	0.0969	+	0.9356			−	0.1686	−	0.8190	+	0.6690	−	0.8350			4	5	−1
2	+	0.0570	0	0.9921	−	0.9982	+	0.0033	+	0.8687			−	0.6097	+	0.8017	+	0.5507	+	0.7459			6	2	+4
3	+	0.3417	+	0.9929	+	0.1090	−	0.6148	−	0.8617			+	0.7311	+	0.9187	+	0.4999	−	0.8330			6	3	+3
4	−	0.0114	+	0.9979	+	0.9159	−	0.1037	+	0.9746			+	0.8530	−	0.9544	+	0.1388	−	0.1889			5	4	+1
5	+	0.0000	+	0.9982	−	0.6520	+	0.6762	−	0.2222			−	0.6972	+	0.6462	−	0.3836	+	0.9280			5	4	+1
6	+	0.4268	+	0.9934	−	0.8257	−	0.8679	−	0.7840			+	0.2242	+	0.6130	+	0.9034	+	0.8613			6	3	+3
7	+	0.0114	−	0.9583	−	0.8463	−	0.0272	+	0.0623			−	0.8019	+	0.5883	−	0.2876	−	0.4454			3	6	−3
8	−	0.0010	−	0.9457	+	0.8472	+	0.0863	+	0.8263			−	0.9514	+	0.4574	+	0.1781	−	0.9474			5	4	+1
9	+	0.2646	−	0.9560	+	0.5826	−	0.7633	+	0.8394			+	0.0271	+	0.1565	+	0.1433	−	0.0793			6	3	+3
10	−	0.2166	+	0.9057	+	0.1872	+	0.9187	−	0.9323			−	0.1992	+	0.3451	0	0.9883	+	0.8401			5	3	+2
Net + or −	+	2	+	1	+	2		0	+	2			−	2	+	6	+	5	−	2					+14

TABLE 4-7A

P VALUES FOR ANALYSIS OF VARIANCE
GROUPING DEVELOPED FROM FACTOR ANALYSIS
GRADE ELEVEN AND TWELVE

TEACHER	COMPARISON OF MEANS	IRRATIONAL IDEA OR FACTOR NUMBER							
		1	4	7					
1	TEACHERS/STUDENTS (SEPT.)	0.0003							
	TEACHERS/STUDENTS (JUNE)	0.0002							
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.9938							
2	TEACHERS/STUDENTS (SEPT.)		0.0094						
	TEACHERS/STUDENTS (JUNE)		0.0110						
	STUDENTS (SEPT.)/STUDENTS (JUNE)		0.9968						
4	TEACHERS/STUDENTS (SEPT.)	0.0693							
	TEACHERS/STUDENTS (JUNE)	0.0174							
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.8280							
5	TEACHERS/STUDENTS (SEPT.)	0.0000							
	TEACHERS/STUDENTS (JUNE)	0.0000							
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.9493							
7	TEACHERS/STUDENTS (SEPT.)	0.0170	0.0610						
	TEACHERS/STUDENTS (JUNE)	0.0716	0.0571						
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.8155	0.9994						
8	TEACHERS/STUDENTS (SEPT.)	0.0076							
	TEACHERS/STUDENTS (JUNE)	0.0026							
	STUDENTS (SEPT.)/STUDENTS (JUNE)	0.9221							
9	TEACHERS/STUDENTS (SEPT.)		0.0340						
	TEACHERS/STUDENTS (JUNE)		0.0801						
	STUDENTS (SEPT.)/STUDENTS (JUNE)		0.7780						

TABLE 4-7B
PROBABILITY VALUES FOR SCHEFFE MULTIPLE COMPARISON OF MEANS
(SAME GROUPING AS 4-7A)

CATEGORIES AND GROUPS	X^2
(Table 4-1) Zingle's Item Grouping (Total sample)	0.3334
(Table 4-2) Zingle's Item Grouping (Grade X)	5.734
(Table 4-3) Zingle's Item Grouping (Grades XI and XII)	0.457
(Table 4-4) Allen's Item Grouping (Total sample)	7.192
(Table 4-5) Factor Analysis Grouping (Total sample)	2.0362
(Table 4-6) Factor Analysis Grouping (Grade X)	1.1628
(Table 4-7) Factor Analysis Grouping (Grades XI and XII)	2.2272

TABLE 4-8

CHI SQUARE ANALYSIS OF RESULTS

SHOWN IN TABLES 4-1 THROUGH 4-7

df = 1 REQUIRES A X^2 VALUE OF;

3.84 FOR REJECTION AT 5% LEVEL
6.64 FOR REJECTION AT 1% LEVEL

TEACHER NUMBER	ZINGLE'S CATEGORIES (TOTAL CLASS)		ALLEN'S CATEGORIES (TOTAL CLASS)		FACTOR CATEGORIES (TOTAL CLASS)		TOTAL +	TOTAL -	TOTAL MOVEMENT
	TOWARDS TEACHER MEAN	AWAY FROM TEACHER MEAN	TOWARDS TEACHER MEAN	AWAY FROM TEACHER MEAN	TOWARDS TEACHER MEAN	AWAY FROM TEACHER MEAN			
1	2	8	6	4	3	5	11	17	28
2	6	5	6	3	4	3	16	11	27
3	6	5	6	2	4	5	16	12	28
4	5	6	6	4	5	3	16	13	29
5	7	4	5	4	5	4	17	12	29
6	9	2	5	5	7	2	21	9	30
7	3	8	7	2	3	6	13	16	29
8	6	5	7	3	4	3	17	11	28
9	5	5	8	2	7	2	20	9	29
10	8	3	4	5	6	2	18	10	28

TABLE 4-9

TOTAL CLASS MOVEMENT FOR EACH TEACHER ON EACH

OF ZINGLE'S, ALLEN'S AND FACTOR ANALYSIS CATEGORIES

TEACHER NUMBER	x^2
1	1.2858
2	0.9260
3	0.5714
4	0.3104
5	0.8620
6	4.8000
7	0.3104
8	1.2858
9	4.1724
10	2.2858

TABLE 4-10

CHI SQUARE ANALYSIS OF CLASS

MOVEMENT IN RELATION TO TEACHER MEANS

df = 1 REQUIRES A x^2 VALUE OF;

3.84 FOR REJECTION AT 5% LEVEL
6.64 FOR REJECTION AT 1% LEVEL

TEACHER NUMBER	STRONG NEGATIVE EFFECT	SLIGHT NEGATIVE EFFECT	NO EFFECT	SLIGHT POSITIVE EFFECT	STRONG POSITIVE EFFECT
1		3	1		
2				4	
3			1	3	
4		1	2	1	
5			1	3	
6			2	2	
7			3	1	
8			2	2	
9			1	1	2
10	1	1	2		

TABLE 4-11

ADMINISTRATORS' AND GUIDANCE COUNSELORS' SUBJECTIVE EVALUATIONS OF INDIVIDUAL TEACHERS' EFFECTS ON BELIEF CHANGE

CHAPTER V

INTERPRETATION AND DISCUSSION

On the basis of analysis presented there are insufficient grounds to reject the first hypothesis:

> There is no significant difference in irrational ideas held by teachers, students at the beginning of the school year and students at the end of the school year.

From a total of 700 tests for significant difference (see Table 5-1) significant difference was found in only 87, Multiple comparisons of means shows that in each of these 87, the significant difference could be attributed to differences in students' and teachers' beliefs, rather than a polarization of beliefs. In no case was there a significant change in the students' beliefs.

Students and teachers show least agreement on Ellis' Irrational Idea No. 3.

> The idea that certain people are bad, wicked, or villainous and that they should be severely blamed and punished for their villainy.

and Irrational Idea No. 7.

> The idea that it is easier to avoid than to face certain life difficulties and self-responsibilities.

Students were more inclined to answer questions supporting both Irrational Idea No. 3 and Irrational Idea No. 7.

The following null hypothesis was tested by the use of Chi Square analysis;

There is no significant movement, either towards or away from the teachers in changes in irrational ideas of students.

When the data were subjected to the Chi Square analysis the null hypothesis can be rejected for Zingle's Item Grouping - Grade X and Allen's Item Grouping - Grades X, XI and XII combined.

While not significant in all categories, this tends to support the hypothesis that irrational beliefs do in fact change so as to become more congruent with those held by the teachers. The fact that the hypothesis could be rejected for a Grade X grouping suggests that younger students are more susceptible to this change.

The use of Chi Square analysis also led to rejection of the hypothesis for two of the ten teachers involved in the study. This is 20% of the sample and these results would strongly suggest that change towards the teacher is taking place. This could conceivably be a part of the ageing process - taking on the beliefs and values of the adult society; however, the strong agreement between subjective evaluation of administration and guidance personnel and the results of the Chi Square analysis leads one to suspect that individual teacher personality is a powerful and influential force on the students' developing value systems.

The sensitivity of the measuring instrument may not be sufficiently high to measure the change that takes

place and achieve significant results. Previous studies that have reported significant changes in students I-I scores have tended to use the instrument as a whole, rather than concentrating on the individual sub-test. Significant changes could occur when considering the Instrument in totality, and not be evident when considering individual sub-test or beliefs.

CONCLUSIONS

The analysis carried out in the present investigation make it appear doubtful that Irrational Ideas can be changed significantly by exposure to particular individuals. In no case were changes in students' Irrational Ideas significant.

While Analysis of variance leads to the conclusion that movement was not significant on any one Irrational Idea, the use of Chi Square leads to the conclusion that significant movement towards the teacher took place in two cases. The Chi Square analysis took into consideration all Irrational Ideas. These results would lead one to the conclusion that, while significant movement did not occur on any one particular Irrational Idea, there was a general movement by students towards the Irrational Ideas held by their teachers.

The high degree of agreement between the results of the Chi Square Analysis and the subjective evaluation of administration and guidance personnel make it appear that

a teacher's effect can be subjectively evaluated, at least to a small degree.

IMPLICATIONS FOR FURTHER RESEARCH

The high degree of agreement between subjective evaluation of the effect of individual teachers or the changing of students' beliefs is in need of further investigation.

The present investigation merely asked administration and guidance personnel to state whether they felt the teacher would have a positive or negative effect on the changing Irrational Ideas of students. A more sophisticated instrument, perhaps asking for evaluation of the effect the teacher would have on each of the eleven Irrational Ideas, may prove of value in isolating areas where subjective evaluation of teacher effect is valid. The present investigation showed that in 80% of the cases the subjective evaluation agreed with the Chi Square analysis. If there are areas of low predictive value (ie. Irrational Ideas No. 3 and 7) and these could be removed at will from analysis, then areas of high predictive value could be isolated.

If, in fact, some teachers are particularly suited to changing particular Irrational Ideas, and this fact can be isolated, then if a particular condition warrented it, a student could be placed with a teacher who would have the most desirable effect from the standpoint of reduction of Irrational Ideas.

Sherif and Hovland (1961) postulate limit to the changes that will occur in attitudes. If there is great variation between student and teacher attitude or belief, and the variation does not lie on the student's latitude of acceptance, then assimilation will not result. If the discrepancy does lie on the individual latitude of acceptance, then assimilation will occur. This theory would tend to limit the change that would occur, hence only relatively slight changes in belief or attitude could be expected over a short period of time since new acceptance scales would have to form.

Since in no cases were students' beliefs towards those held by the teacher significant, changes that did occur must have been relatively small. This lends support to Sherif and Hovland (1961) when they point that if attitudes are to change, then the persuasion must lie on the individual's scaled latitude of acceptance.

Further study, perhaps using the I-I Inventory in totality, rather than concentrating on the individual subtests, may show that the beliefs of students and teachers are less discrepant than this study would suggest.

Further study, on an individual class level of a group of students who have a tendency to change their beliefs in the direction of those held by their teacher could possibly isolate those factors that are involved in this change.

ZINGLE'S IRRATIONAL IDEAS ITEM GROUPING				ALLEN'S ITEM GROUPING				FACTOR ANALYSIS ITEM GROUPING			
Reference	Number of Teachers	Tests per Teacher	Number of Tests	Reference	Number of Teachers	Tests per Teacher	Number of Tests	Reference	Number of Teachers	Tests per Teacher	Number of Tests
Table 4-1A	10	11	110	Table 4-4A	10	10	100	Table 4-5A	10	9	90
Table 4-2A	10	11	110					Table 4-6A	10	9	90
Table 4-3A	10	11	110					Table 4-7A	10	9	90
Total Number of Tests			330	Total Number of Tests			100	Total Number of Tests			270
Grand Total of Number of Tests for Significant Difference 330 + 100 + 270 = 700											

TABLE 5-1

LAYOUT OF 700 TESTS FOR SIGNIFICANT

CHANGE IN STUDENT IRRATIONAL BELIEFS

B I B L I O G R A P H Y

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A P P E N D I X

THE ORIGINAL I-I INVENTORY

(Harvey Zingle)

I.I. INVENTORY

NAME _____

DATE _____ GRADE _____

TO THE STUDENT

This is a study of events and experiences in everyday life. You are asked to cooperate seriously and carefully in marking the items in this booklet. This is not an intelligence test. The best answer to each statement is your own first impression - there are no right or wrong answers.

Your answers will be treated with the strictest confidence and in no case will they be used to cause you any embarrassment.

INSTRUCTIONS FOR MARKING ANSWERS

For each statement, decide whether your answer is "Yes" or "NO". If your answer is a definite "Yes" put an (X) on the end of the line where the "Yes" is typed. If your answer is a definite "No" put an (X) on the end of the line nearest the "No". If you are uncertain as to how you feel about the statement mark an (X) on the middle of the line. If the true answer is somewhere between the yes and no, put the "X" where it is most true for you.

Think carefully, but do not spend too much time on any one question. Let your own personal experience or opinion guide you to choose the answer you feel about each statement.

There is no time limit. Please mark every item.

1.	I would rather play by myself than with someone.	Yes		?	No
2.	I prefer to get things done very quickly rather than being slow and sure in movement.	Yes		?	No
3.	All human lives are equally sacred.	Yes		?	No
4.	I usually object when a person steps in front of me in a line of people.	Yes		?	No
5.	I have sometimes had a nickname which I didn't like very well.	Yes		?	No
6.	I am afraid in the dark.	Yes		?	No
7.	I prefer to accept suggestions rather than work them out for myself.	Yes		?	No
8.	It is better to tell your troubles to your friens than to keep them to yourself.	Yes		?	No
9.	Men are created equal in mental capacity.	Yes		?	No
10.	It is necessary to be especially friendly to new students.	Yes		?	No
11.	School promotions should be for intellectual merit alone.	Yes		?	No
12.	I like to be praised.	Yes		?	No
13.	It is foolish to let others see your emotions.	Yes		?	No
14.	To spare the rod is to spoil the child.	Yes		?	No
15.	I worry about little things.	Yes		?	No
16.	There are people who try to do me harm or hurt me.	Yes		?	No
17.	I sometimes worry about my health.	Yes		?	No

18.	Students should not be required to take courses for which they see no use.	Yes	'	? '	'	No
19.	I like to bear resonsibilities alone.	Yes	'	? '	'	No
20.	It is a big aid to health to say each morning, "Day by day in every way I am getting better and better."	Yes	'	? '	'	No
21.	Helping others is the very basis of life.	Yes	'	? '	'	No
22.	Firm convictions make for strength of character.	Yes	'	? '	'	No
23.	I feel that it is important to get on well with my teachers and principal.	Yes	'	? '	'	No
24.	Will power is the most important trait.	Yes	'	? '	'	No
25.	The "insanity plea" as a defence in murder trials is undesirable.	Yes	'	? '	'	No
26.	I must learn to "keep my head" when things go wrong.	Yes	'	? '	'	No
27.	I think that I am getting a square deal in life.	Yes	'	? '	'	No
28.	It is useless to worry about things that cannot be changed or corrected.	Yes	'	? '	'	No
29.	It is better to live a coward than die a hero.	Yes	'	? '	'	No
30.	I prefer to have someone with me when I receive bad news.	Yes	'	? '	'	No
31.	Some children are dull and unimaginative because of defective training in home and school.	Yes	'	? '	'	No
32.	Sympathy is the most divine passion of the human heart.	Yes	'	? '	'	No

33.	The good person is usually right.	Yes	'	?	'	No
34.	Sometimes I feel that no one loves me.	Yes	'	?	'	No
35.	I find it difficult to take criticism without feeling hurt.	Yes	'	?	'	No
36.	We are justified in refusing to forgive our enemies.	Yes	'	?	'	No
37.	It is all right to create a scene in order to get one's own way.	Yes	'	?	'	No
38.	Riches are a sure basis for happiness in the home.	Yes	'	?	'	No
39.	I worry over possible misfortunes.	Yes	'	?	'	No
40.	I have sometimes crossed the street to avoid meeting some person.	Yes	'	?	'	No
41.	I prefer to be alone.	Yes	'	?	'	No
42.	The boy who regularly stands at the foot of the class is often a great success after leaving school.	Yes	'	?	'	No
43.	I get disturbed when neighbours are very harsh with their children.	Yes	'	?	'	No
44.	I find it easy to set standards of "right" and "wrong".	Yes	'	?	'	No
45.	Jeers humiliate me even when I know that I am right.	Yes	'	?	'	No
46.	Admiration gratifies me more than achievement.	Yes	'	?	'	No
47.	Punishment is a sure cure for crime.	Yes	'	?	'	No
48.	I frequently feel self-conscious about my appearance.	Yes	'	?	'	No

			?	
49.	My feelings are easily hurt.	Yes		No
50.	Sometimes I am troubled by thoughts of death.	Yes	?	No
51.	If I were able to do so I would attend some other school than the one I am now attending.	Yes	?	No
52.	My folks are not reasonable to me when they demand obedience.	Yes	?	No
53.	Habits of pre-school years carried over into adult life may help determine our usefulness.	Yes	?	No
54.	I get annoyed when people are impolite to me.	Yes	?	No
55.	If one needs something badly enough and cannot buy it, there are times when it is all right to take it.	Yes	?	No
56.	I want people to like me better.	Yes	?	No
57.	Too much importance is attached to the possession of money and good clothes in this school.	Yes	?	No
58.	Criminals are really sick and should be treated like sick persons.	Yes	?	No
59.	I get terribly upset and miserable when things are not the way I would like them to be.	Yes	?	No
60.	This school provides adequate opportunity for me to meet and make friends.	Yes	?	No
61.	I worry about eternity.	Yes	?	No
62.	I need to learn how to keep from being too aggressive.	Yes	?	No

63.	I would like school better if teachers were not so strict.	Yes	'	? '	No
64.	Children outgrow their bad habits.	Yes	'	? '	No
65.	I get upset when I hear of people (not relatives or close friends) who are very ill.	Yes	'	? '	No
66.	It is all right to cheat in a game when you will not get caught.	Yes	'	? '	No
67.	My folks do not take time to become acquainted with my problems.	Yes	'	? '	No
68.	This school places too much emphasis upon grades.	Yes	'	? '	No
69.	The members of my family seem to criticize me a lot.	Yes	'	? '	No
70.	I get very angry when I miss a bus which passes only a few feet away from me.	Yes	'	? '	No
71.	I find that this school tends to make me unhappy.	Yes	'	? '	No
72.	I can walk past a grave yard alone at night without feeling uneasy.	Yes	'	? '	No
73.	I usually like to be somewhere else than at home.	Yes	'	? '	No
74.	I enjoy being alone more than being with my classmates.	Yes	'	? '	No
75.	A person who will not stand up for his rights as a teen-ager will probably not be able to stand up for his rights as an adult.	Yes	'	? '	No
76.	Other people's problems frequently cause me great concern.	Yes	'	? '	No
77.	Crime never pays.	Yes	'	? '	No

78. I wish that more affection were shown by more members of my family. Yes ' ? ' ' No

79. I worry about tests. Yes ' ? ' ' No

80. When I see movies about daring robberies, I usually hope the robber won't get caught in the end. Yes ' ? ' ' No

81. When things are not the way I would like them to be, and it is not in my power to change them, I calmly accept things the way they are. Yes ' ? ' ' No

82. I feel that life has a great deal more happiness than trouble. Yes ' ? ' ' No

83. I can face a difficult task without worry. Yes ' ? ' ' No

84. I avoid inviting others to my home because it is not as nice as theirs. Yes ' ? ' ' No

85. I prefer to be independent of others in making decisions. Yes ' ? ' ' No

86. A juvenile delinquent will almost surely be a criminal when he becomes an adult. Yes ' ? ' ' No

87. He that loses his conscience has nothing left that is worth keeping. Yes ' ? ' ' No

88. It is better to have friends than fame. Yes ' ? ' ' No

89. My folks appear to doubt whether I will be successful. Yes ' ? ' ' No

90. I feel guilty when I misbehave and I expect to be punished. Yes ' ? ' ' No

91. Sticks and stones will break my bones, but words will never hurt me. Yes ' ? ' ' No

92.	I tend to worry over possible troubles.	Yes	'	?	'	No
93.	Many of my classmates are so unkind or unfriendly that I avoid them.	Yes	'	?	'	No
94.	I tend to look to others for the kind of behavior they approve as right and wrong.	Yes	'	?	'	No
95.	If a child is brought up in a home where there is much quarreling and unhappiness he will probably be unhappy in his own marriage.	Yes	'	?	'	No
96.	People who unjustly criticize the government should be put in jail.	Yes	'	?	'	No
97.	When a friend ignores me I become extremely upset.	Yes	'	?	'	No
98.	If a person tries hard enough, he can be first in anything.	Yes	'	?	'	No
99.	The police may sometimes be right in giving a man the "third degree" to make him talk.	Yes	'	?	'	No
100.	It hurts me when my friends are unkind.	Yes	'	?	'	No
101.	I worry about the possibility of an atomic attack by some foreign power.	Yes	'	?	'	No
102.	I often spend more time in trying to think of ways of getting out of something than it would take me to do it.	Yes	'	?	'	No
103.	I feel my parents have dominated me too much.	Yes	'	?	'	No
104.	I know there is a God.	Yes	'	?	'	No

105. I find it very upsetting when people who are important to me are indifferent to me. Yes ? No

106. When a person is no longer interested in doing his best he is done for. Yes ? No

107. The best way to teach a child right from wrong is to spank him when he is wrong. Yes ? No

108. It is impossible at any given time to change one's emotions. Yes ? No

109. I frequently do things that I am afraid of doing in order to prove to myself that there is nothing intrinsically frightful about these things. Yes ? No

110. I am happiest when I am sitting around doing little or nothing. Yes ? No

111. Cooperation is better than competition. Yes ? No

112. It is sinful to doubt the Bible. Yes ? No

113. It makes me uncomfortable to be different. Yes ? No

114. People who do not achieve competency in at least one area are worthless. Yes ? No

115. People who perform acts which are immoral do so because they are too stupid or too ignorant to refrain from doing so. Yes ? No

116. Unhappiness largely comes from within and is largely created by the unhappy person himself. Yes ? No

117.	I am naturally a lazy person.	Yes		?		No
118.	It is better to take risks and to commit possible errors than to seek unnecessary aid of others.	Yes		?		No
119.	Persons who are punished for their "sins" usually change for the better.	Yes		?		No
120.	It would be terrible or catastrophic to be a cripple.	Yes		?		No
121.	I follow a definite study schedule during the school term.	Yes		?		No
122.	Most people can be truly outstanding in at least one area of their work.	Yes		?		No

FORM USED BY ADMINISTRATION

AND GUIDANCE FOR SUBJECTIVE EVALUATION

OF TEACHER EFFECT ON CHANGING

IRRATIONAL BELIEFS.

Using your knowledge of the personality of the following teachers, please indicate on the scale the relative influence you feel each teacher would have on changing basic beliefs of students in their classes.

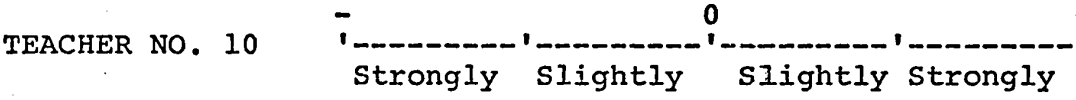
A "+" indicates that you feel the students will tend to take on beliefs of the teacher.

A "-" indicates that you feel the student will take on beliefs opposite to those held by the teacher.

A "0" indicates you feel the student will not change his beliefs.

	-		0		+
TEACHER NO. 1	Strongly	Slightly	Slightly	Strongly	
TEACHER NO. 2	Strongly	Slightly	Slightly	Strongly	
TEACHER NO. 3	Strongly	Slightly	Slightly	Strongly	
TEACHER NO. 4	Strongly	Slightly	Slightly	Strongly	
TEACHER NO. 5	Strongly	Slightly	Slightly	Strongly	
TEACHER NO. 6	Strongly	Slightly	Slightly	Strongly	
TEACHER NO. 7	Strongly	Slightly	Slightly	Strongly	
TEACHER NO. 8	Strongly	Slightly	Slightly	Strongly	
TEACHER NO. 9	Strongly	Slightly	Slightly	Strongly	

TEACHER NO. 10



Form completed by Administration and Guidance Counselors for subjective evaluation of teacher effect on changing beliefs.