STUDENT PERCEPTIONS OF TOTAL UNIVERSITY AND MAJOR FIELD ENVIRONMENTS

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ABSTRACT

STUDENT PERCEPTIONS OF TOTAL UNIVERSITY AND MAJOR FIELD ENVIRONMENTS

by John A. Centra

The Problem

Differences in student perceptions of the value climate of a complex university were investigated. Students reported on characteristics of both (1) the total university, and (2) their major field of study. Of interest were differences in student perceptions of the total university, and the relationship between perception of the total university and perception of major field.

Major field was interpreted as a "situational perspective" for student perception of the total university, while contrast-assimilation theory was used to describe how total setting and major field perceptions should be related. On the basis of these constructs, and past research, the following general hypotheses were formulated:

1. Student groups in the ten colleges of a complex university differ in their perception of total university and major field.
2. There is a positive relationship between student perceptions of the total university and their major field.
3. Four major field student groups selected from the Colleges of Arts and Letters, Business, Engineering, and Natural Science have contrasting perceptions of the total university and their major field on selected dimensions of the environment.

Methods and Procedure

A ten per cent sample of upper-class males and females was randomly selected from each of the ten upper division colleges at Michigan State University; 513 or 80 per cent completed the instrument. The instrument consisted of (1) Part I, the College and University Environment Scales (CUES), developed by C. Robert Pace[1], which contained 150 items and was used to measure student perceptions of the total university, and (2) Part II, 80 items selected from CUES used to measure student perceptions of major field. Students responded TRUE or FALSE to each item in Part I and Part II.

Each part of the instrument contained five scales or dimensions along which students described the total institution and their major field. The scales were: practicality, community, awareness, propriety, and scholarship. Reliability coefficients for individual scores on the five scales for each part of the instrument ranged from .40 to .82. Reliability coefficients based on group means for the five major field scales were above .90; and coefficients based on group means for the five total setting scales were above .67, with three of the five at or above .86.

The analysis of variance tested differences between mean scale scores for the groups. Scheffé's method was used to test predicted differences between pairs of mean scores after finding a significant difference by analysis of variance. Pearson product moment correlations tested the relationship between total setting and major field scores.

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Major Findings

Student groups in the ten colleges differed on the total setting community and scholarship scales, indicating that no one college within the university can be chosen to represent student perceptions of the total university. In addition, the differences suggest that variations in perceptions within a large university may be as great as variations between separate institutions, and that the variations found could provide important information about environmental influences of colleges within the university.

The results of the study also support the hypothesis that student perceptions of total setting are generally related to major field student perception. However, the four selected major field groups did not have contrasting perceptions of total setting and major field on selected dimensions of the environment, as predicted.

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1. C. Robert Pace, College and University Environment Scales, Princeton, New Jersey: Educational Testing Service, 1963.

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CHAPTER I

THE PROBLEM

Students are the group toward which most objectives of higher education are directed. One measure of the effectiveness of a college program is a comparison of the objectives of the program with the environmental emphases as seen by students. There should be consistency between the way students see features of the college, e.g. the curricula, teaching practices, and rules and regulations, and the intended influences of these features.

However, what students see as environmental emphases within the institution may vary according to a student's location within the total structure. In a large complex university particularly, students enrolled in the different colleges within the university may perceive the total setting in different ways. Because these colleges often differ in objectives, as well as in faculty, curricula, and regulations, students may be influenced by these differences in perceiving the total setting. Hence, in comparing a university's objectives with student perceived environmental emphases, it would be essential to be aware of academic sub-groups with differing purposes and influences. In fact, in complex universities, it may make better sense to concentrate on one of the parts of the total setting with which students are familiar: their major area of study.

Much of the past research on college environments, whether using potential stimuli in the environment[1], subjective descriptions by outside investigators[2,3], or perceptions of students[4], has studied the total college environment. Consequently, sub-environmental influences have been largely ignored, and these influences can be extremely important in affecting student behavior. As Trow[5] has stated:

> A college that is interested in learning more about itself may find it useful to study the nature and strength of the sub-cultures within its own student body. The gains from such a study may be more than mere academic enlightenment: the relative strengths of these sub-cultures can be influenced by administrative action. A college may choose to encourage, and not merely by words, those sub-cultures which support its purposes, and to discourage those which undercut and sabotage its educational efforts.

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1. Alexander W. Astin, Recent Studies of College Characteristics, (Inventory of College Characteristics), Presented at the annual meeting of American Personnel and Guidance Association, Minneapolis, 1965.

2. Edward E. Eddy, The College Influence on Student Character, Washington, D.C.: American Council on Education, 1959.

3. David Boroff, Campus U.S.A., New York: Harper Brothers, 1961.

4. C.Robert Pace and George G. Stern, "An Approach to the Measurement of Psychological Characteristics of College Environments," Journal of Educational Psychology, 49, 1958, pp. 269-277.

5. Martin Trow, "Administrative Implications of Analyses of Campus Cultures," The Study of Campus Cultures, Terry F. Lunsford, ed., Boulder, Colorado: WICHE and Center for the Study of Higher Education, February 1963, p. 105.

Purpose

The purpose of this study is to determine student groups' perception of selected aspects of the complex university environment in two references: (1) the total setting, and (2) the major field of study.

Perceptions cannot be observed directly, but they can be inferred from verbal reports. In this study perceptions are measured by the College and University Environment Scales (CUES) developed by C. Robert Pace[1], and will be administered using: (1) all items for the total university setting, and (2) selected items for the major field[2].

CUES is designed for the assessment of total college environments, under the assumption that students can accurately and with unanimity report on the total environment of their institution. But students in a complex university may not see the total setting similarly because they are subject to different influences within the university. One of these influences is the student's major area of study. Hence, this study investigates (1) perceptions of the total university by students grouped by their college of enrollment, (2) student perceptions of their major field of study, and (3) the relationship between student perception of major field and total setting perception. The hypotheses are stated below in broad research form.

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[1] C. Robert Pace, College and University Environment Scales, Princeton, New Jersey: Educational Testing Service, 1963, To be described more fully in Chapter III, Design of the Study.

[2] Permission to do so has been received from both Dr. Pace and the Educational Testing Service.

Hypotheses

The following hypotheses pertain to upper level colleges within a large university:

I. In a large complex university, differences in total setting perception will be found by student groups enrolled in upper level colleges within the university.

II. In a large complex university, differences in major field perception will be found by student groups enrolled in upper level colleges within the university.

III. A positive relationship exists between perception of major field, grouped by colleges, and total setting perception.

Four college groups have been selected on the basis of past research and probable major field homogeneity within each. The four groups and the major fields are:

1. College of Arts and Letters

   Majors in art; English; comparative literature; foreign languages; music and philosophy.

   Exclude majors in history and religion.

2. College of Business

   Majors in accounting and financial administration; hotel, restaurant and institutional management; business law, insurance, and office administration; marketing and transportation administration; and management.

   Exclude majors in economics; secretarial; and business teacher education.

3. <u>College of Engineering</u>

   All majors.

4. <u>College of Natural Science</u>

   Include all science and mathematics majors.

   Exclude nursing and pre-professional majors.

The following hypotheses relate to these four groups and are stated in <u>College and University Environment Scales</u> press patterns.

I. Perception of major field will differ as follows:

   A. the College of Arts and Letters sub-group will perceive a strong awareness press, and a weak practicality press.

   B. the College of Business sub-group will perceive a strong practicality press and a weak awareness and scholarship press.

   C. both the Engineering and Natural Science sub-groups will perceive a strong scholarship press and a weak practicality and awareness press.

II. The relationship between major field and total setting perception will be one of contrast for selected groups on selected CUES dimensions. Predictions are:

   A. the Arts and Letters sub-group, in comparison to other sub-groups, will perceive less total setting press on the awareness scale.

   i.e., they will feel they are more aware than others?

   B. the Engineering and Natural Science sub-groups, in comparison to other sub-groups, will perceive less total setting press on the scholarship scale.

C. the Business sub-group, in comparison to the other sub-groups, will perceive less total setting press on the practicality scale.

III. On the community and propriety scales, the relationship between major field and total setting will be positive (perceptual assimilation).

Theory

This study involves two social psychological theories: reference group theory and contrast-assimilation effects in perception. Reference group theory is used to explain how major field becomes a comparison reference for student perception of the total university, and contrast-assimilation effect theory, as delineated by Berkowitz[1], is employed to describe the contrasts and similarities between student groups' perception of their major and the total setting.

Reference Group Theory

The reference group concept has had varying emphases and meaning. Hyman[2], who first used the term "reference group", found that judgments of one's economic status shift with changes in the group used as reference: for example, using all adults in the United States, or only persons in one's occupation produced significant shifts in judgments.

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[1] Leonard Berkowitz, "The Judgmental Process in Personality," *Psychological Review*, 67, 1960, pp. 130-142.

[2] H.H. Hyman, "The Psychology of Status," *Archives of Psychology*, No. 269, 1942.

Newcomb[1] demonstrated the usefulness of the reference group concept with a college population. In his important Bennington College study, he interpreted student attitude change during the college years as shifts or resistance to shifts in reference groups. Newcomb's interpretation is similar to that of Kelley[2], known as the comparison function of reference groups:

> A group functions as a comparison reference group for an individual to the extent that the behavior, attitudes, circumstances, or other characteristics of its members represent standards or comparison points which he uses in making judgments and evaluations.

Kelley's emphasis on the comparison function of reference groups is not too unlike Shibutani's[3] definition of reference group as, "that group whose presumed perspective is used by an actor as the frame of reference in the organization of his perceptual field."

Both Shibutani's and Kelley's meanings are made operational to the college culture by Becker's[4] use of "situational perspectives" to explain the variations in how college students look at their college

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[1] Theodore M. Newcomb, Social Psychology, New York: Dryden, 1950.

[2] Harold H. Kelley, "Two Functions of Reference Groups," Readings in Social Psychology, Revised Edition, Newcomb and Hartley, eds., New York: Henry Holt and Company, 1952, p. 413.

[3] Tamotsu Shibutani, "Reference Groups and Social Control," Human Behavior and Social Processes, Arnold M. Rose, ed., Boston: Houghton Miflin Company, 1962, p. 132.

[4] Howard S. Becker, "Student Culture," in The Study of Campus Cultures, Terry F. Lunsford, ed., Boulder Colorado: WICHE and the Center for the Study of Higher Education, February 1963, pp. 11-25.

experiences and act while in college. Situational perspectives refer to the ideas and actions developed within specific situations, with the student finding himself in a variety of specific situations as he moves through a university. Becker contrasts these to institutional perspectives, which are the more generalized notions and patterns of behavior which students share in reference to the university, and are held by almost all students in the university.

The Concept of Contrast-Assimilation

Berkowitz has applied the mechanisms of contrast and assimilation to social perception as follows: it is assumed that all judgments are made by comparing the stimulus with some kind of standard. This standard might also be known as an anchorage category, reference point, or reference group. When the stimulus and the standard are close or similar, the subject tends to underestimate or even or even to fail to perceive the distance (assimilation). But when the gap is relatively large, there is a tendency to overestimate the distance (contrast)[1].

Application of Theory to this Study

In this study students report on an environment of which they are a part, the total university setting; and can be expected to use as a reference membership group their major field of study, a group that determines much of their immediate contact with the university.

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[1] Berkowitz, "The Judgmental Process in Personality," Psychological Review, 1960, pp. 130-134.

The major field membership group becomes in Kelley's terms, a comparison reference group, and in Becker's terms, a situational perspective. That is, the faculty, students, ideas and actions within a major field become specific standards for viewing the total university.

The relationship between student groups' perception of major field and total setting is explained by the concept of contrast and assimilation as described by Berkowitz. Contrast describes the perceptual relationship between major field and total setting when, for example, a major field group rates itself relatively "high" (in comparison to major field perception by other groups) on a selected press dimension, and the total setting as relatively "low" on this same dimension. When major field and total setting perception are relatively consistent, assimilation has contributed. Hence, although each student group is responding to the same total setting, their perceptions can be expected to differ. The direction of these differences as well as the specific major fields are predicted on the basis of past research reviewed in the next chapter.

Overview

In Chapter II, the review of literature is limited to studies in which students have assessed some part or all of their college environment.

In Chapter III, the methodology and procedures used to conduct the study, as well as the statistical models used to test the hypotheses are presented.

The results are analyzed in the fourth chapter.

CHAPTER II

REVIEW OF LITERATURE

Past research pertaining to student perceptions of their college environment consists of three categories:

1. Student groups' perceptions of the total setting, according to major field of study classification.
2. Student groups' perceptions of their own major field of study.
3. Student groups' perceptions of both their own major field of study and the total setting.

In addition to discussing research in each of these categories, included in this chapter is a review of a national study of college environments which applied the perceptual mechanisms of assimilation and contrast in interpreting student perceived intellectual climates.

The studies to be reported in the first three categories above used a similar approach: students responded to several statements relating to their school, or major field of study, deciding whether each statement was generally characteristic or not characteristic. True-false responses were used in each case. The majority of statements used in all of these studies to be reported were developed by Pace and Stern and were originally known as the College Characteristics Index (CCI)[1]. Using the needs-press

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[1] Pace and Stern, "An Approach to the Measurement of Psychological Characteristics of College Environments," Journal of Educational Psychology, 1958, pp. 269-277.

relationship introduced by Henry Murray[1], statements in the CCI measured environmental press, a feature of the environment which is relevant to the satisfaction or frustration of a need. Previously, Stern had developed the Activities Index (AI)[2] as a measure of individual needs. The 30 environmental press scales in the CCI were assumed to be counterparts of the 30 personality need scales in AI. But a factor analytic study of the AI and the CCI by Saunders[3] revealed that except for one large factor which concerns intellectual needs and the intellectuality of environments, each instrument produces its own set of factors. Hence, except as noted, the two instruments are not entirely parallel.

Pace[4] has concluded that college environments can be measured in their own right, rather than as counterparts to personality need. Using items from CCI, he recently developed the College and University Environment Scales (CUES) to differentiate between college environments. Since the CCI is the antecedent of CUES, research using it, or parts of it, are particularly pertinent to this study.

Total Setting Perception According to Major Field of Study. In 1960, Stern[5] reported a study he conducted in which the entire class at Syracuse

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[1] Henry Murray, Explorations in Personality, New York: Oxford University Press, 1938.

[2] George G. Stern, Preliminary Manual: Activities Index--College Characteristics Index, Syracuse: Syracuse University Psychological Research Center, 1958.

[3] David R. Saunders, A Factor Analytic Study of the AI and the CCI, Princeton, New Jersey: Educational Testing Service, 1962.

[4] Pace, College and University Environment Scales, 1963, p. 8.

[5] George G. Stern, "Student Values and Their Relationship to the College Environment," Research on College Students, Hall T. Sprague, ed.; WICHE and Center for Study of Higher Education, 1960, pp. 67-104.

University was given the CCI. Students from 16 different major fields responded to total setting characteristics. Perceptions were significantly different in three fields: education, forestry and business administration. Note Business administration students considered the University to be intellectually weak, whereas education and forestry majors found the school intellectually challenging, although for different reasons. On the impulse expression scale, education students found the University quite provocative, while forestry students experienced restraints[1].

Using the CUES scales, Pace has also reported a significant difference in total setting perception. At two institutions, engineering Note - students reported a greater scholarship press than business students[2].

None of these studies investigated major field perception; hence, that relationship cannot be examined. The Stern study is formidable in that an entire senior class reported, although only ten items were included for each of 30 scales.

Student Groups' Perceptions of Their Major Field of Study. To identify variables which differentiate between major fields of study, Thistlethwaite[3] Note compared different undergraduate fields on faculty and student press, and student values. His sample consisted of exceptionally talented students who had received scholarships or recognition awards in the third annual National Merit Scholarship competition. Students were contacted at the end of their sophomore year.

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[1] Stern, "Student Values and Their Relationship to the College Environment," Research on College Students, 1960, p. 92.

[2] Pace, College and University Environment Scales, 1963, p. 58.

[3] Donald L. Thistlethwaite, "Development of Motivation to Seek Advanced Training," Journal of Educational Psychology, 53, April 1962, pp. 53-64.

Returns were received from 1,086 students; 67 per cent of the designated sample. Both the high ability of the sample, and the low percentage return introduce some bias in the results. But the use of students at 335 different colleges provides an excellent cross-sample of perceived press within a field of study.

For the Thistlethwaite study, students responded to a 200-item Inventory of College Characteristics, with approximately half of the items patterned after the Pace and Stern[1] CCI.

Of the 20 press scales, 10 represented faculty press and 10 represented student press. On all but one of the 20 scales, major fields differed at the .01 level of significance. Thistlethwaite found press patterns for 15 major fields, as indicated in Table 2.1.

Wilson and Lyons[2] also found differences in major field press when they used the College Characteristics Index to appraise student perceptions of work-study college programs. The instrument was administered to 1,339 students in 26 institutions: cooperative (work-study) and non-cooperative, two-year and four-year, and public and private institutions.

The major field press patterns found were comparable to Thistlethwaite's. They were[3]: (1) The liberal arts and engineering programs, both cooperative and non-cooperative, show fairly intense press for intellectuality and achievement, while business programs show less press in this area; (2) At liberal arts institutions, students perceived

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[1] Stern, Preliminary Manual: Activities Index--College Characteristics Index, 1958.

[2] James W. Wilson and Edward H. Lyons, Work-Study College Programs, New York: Harper and Brothers, 1961.

[3] Ibid., p. 40.

Table 2.1

MAJOR FIELD PRESS PATTERNS IN FIFTEEN MAJOR FIELDS[1]

Major Fields	Findings
1. Engineering Physics Chemistry Mathematics Biology	1.1 strong faculty and student press for scientism 1.2 weak faculty and student press for humanism, estheticism, and reflectiveness
2. History Philosophy English Sociology Political Science Language	2.1 strong faculty and student press for humanism, estheticism, and reflectiveness 2.2 moderate or weak faculty and student press for scientism, compliance, and vocationalism
3. Business	3.1 strong faculty press for vocationalism 3.2 weak faculty and student press for scientism and humanism
4. Economics Psychology Education	4.1 middle of most of the press scales

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[1] Thistlethwaite, "Development of Motivation to Seek Advanced Training," Journal of Educational Psychology, April 1962, p. 55.

encouragement for more independence and nonconformity; while in the business programs, on the other hand, there was a high press for order and conformism.

Major Field and Total Setting Perception by the Same Student Groups. Recently, Pace[1] reported a diagnostic evaluation of the environments at nine colleges. Selecting items from the CCI, he developed the College Characteristics Analysis (CCA) for the study of sub-cultures within a complex college or university. In addition to reporting on the total setting, students were instructed to report what, in their experience and opinion, is or is not true of the particular part of the university they knew best: their own academic field or area, and the students with whom they associate most commonly and closely. Thus, the 180 items in the CCA were equally divided as follows: (1) Part I, College or University as a Whole; (2) Part II, Major Academic Field; and, (3) Part III Student Colleagues.

The nine schools Pace studied were: Bennington, Swarthmore, Antioch, St. Olaf, DePauw, Eastern Washington, Mississippi, Florida, and San Jose. At the last five, a personality measure was also administered. Each of these schools gave one of the following: the Heston Personal Adjustment Inventory, the Allport-Vernon-Lindzey Study of Values, the Stern Activities Index, or the California Psychological Inventory.

Among the conclusions reached by Pace were:

1. There are significantly deviant sub-groups; they tend to be of certain types, and there are probably more of them

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[1] C. Robert Pace, The Influence of Academic and Student Sub-Cultures in College and University Environments, Cooperative Research Project No. 1083, University of California, Los Angeles, 1964.

than the present study reveals. But the atmosphere of the college as a whole, even in the case of the largest or most complex, is dominant.

2. In the colleges where personality tests were analyzed, there were significant differences between the sub-groups and the college composite in 23 per cent of the cases[1].

Considering only the four largest institutions studied, 18 per cent of the major field sub-group scores differed significantly from the college composite and were consistent with major field press reported by Thistlethwaite. Keeping in mind that the CCA contains four press dimensions (i.e. emphasis toward humanism, scientism, practicality and welfare), Pace found[2]:

1. The nursing sub-groups were high in welfare.
2. The business sub-groups were typically low on humanism and scientism, but high on the practicality dimension.
3. The natural science fields were typically low on the welfare dimension and high on the scientism dimension.
4. Education groups were typically high on practicality and welfare.
5. In no other groups were concentrated patterns evident.

Personality differences found between academic sub-groups, the second general conclusion, is also noteworthy. Relating CCA dimensions to relevant personality measures, Pace found that the location of

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[1] Pace, The Influence of Academic and Student Sub-Cultures in College and University Environments, 1964, pp. 207-208.

[2] Ibid., p. 207.

significant differences in personality characteristics "shows a concentration in certain sub-groups that is generally similar to the concentration of environmental press differences in the sub-groups"[1]. For example, business students tend to be below the average of their university on personality characteristics relevant to the humanistic and scientific scales, but above average on characteristics related to practicality. This pattern is identical to the perceived major field press by business students. Therefore, students who choose and remain in a field of study tend to have a pattern of personality/value characteristics ✓ related to the environmental press of this major field as seen by those same students.

Stern[2] also found that students in the same field have needs profiles which differ significantly from those students in other fields. But in four studies, the personality, ability and other characteristics of students were compared to their perceptions of the total environment. McFee[3] found that total press scores were uncorrelated with their corresponding needs scale scores, the coefficients all falling between -.01 and +.06. And Pace[4] reported no correlations significantly greater than zero when CUES scores were correlated with the Heston Personality Inventory

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[1] Pace, The Influence of Academic and Student Sub-Cultures in College and University Environments, 1964, p. 208.

[2] Stern, "Student Values and Their Relationship to the College Environments," Research on College Students, 1960, p. 92.

[3] Ann McFee, "The Relation of Students' Needs to Their Perceptions of a College Environment," Journal of Educational Psychology, 52, February, 1961, p. 26.

[4] Pace, College and University Environment Scales, 1963, p. 56.

and the ACE Psychological Examination. Pace[1] also reported that males and females perceived the total setting similarly, except for differences at some colleges on the propriety and community scales. Most recently, Berdie[2] found no simple and direct relationships between freshman perceptions of press at the University of Minnesota and such variables as ability, grade point average and parental background. Hence, in these four studies, the student's descriptions of the institution were apparently not related to the descriptions provided of himself, or to the student's sex.

Of particular interest in Pace's nine-college study is a comparison of student perceptions of their own major field and the total setting of their particular institution. For this analysis, institutions must be looked at individually. Of the nine institutions, the largest are the University of Florida and San Jose State College, each with approximately 12,000 students. The San Jose study was more thorough, with a sample of 306 students representing these sub-groups: English, psychology, biological sciences, mathematics-physics, elementary education, academic (subject) education, engineering, business administration, art, social science, and "other sciences".

On the humanistic dimension, there was contrast in the way San Jose students looked at their particular major field compared to the total setting[3]. More specifically, among the eleven sub-groups,

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[1] Pace, <u>College and University Environment Scales</u>, 1963, p. 56.

[2] Ralph F. Berdie, <u>Perceptions of the University of Minnesota</u>, A Progress Report, mimeo, 1965.

[3] Pace, <u>The Influence of Academic and Student Sub-Cultures in College and University Environments</u>, 1964, p. 189.

engineering ranked seventh highest in major field perception on humanism, but these same students ranked second in their perception of total setting press on this scale. Likewise, business administration ranked ninth and fourth respectively. Hence, in contrast to their major field perception, both groups saw the total environment press as being more humanistic. On the other hand, English majors ranked third in major field press on this same dimension, while scoring eleventh (last) in their total setting perception.

For the eight remaining sub-groups, major field correlated (rank) .84 with total setting perception. Therefore, on humanism, and for these major fields at San Jose, student groups perceived their own major field and the total institution in a relatively similar manner.

On the practicality scale, art students perceived a highly practical and status-oriented environment at San Jose in general, but definitely not in the art program specifically.

Further comparisons of major field/total setting perception at the other colleges studied by Pace would be of doubtful value. Sampling procedures at all nine institutions seriously limit the results. From each institution, a proportional sample representing each major field Note should have been randomly chosen. But this was not the case. Some major fields were over-represented, and others not represented at all. And the median for these sub-groups numbered only 16, with three-fifths of the groups having between 10 and 19 members[1].

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[1] Pace, The Influence of Academic and Student Sub-Cultures in College and University Environments, 1964, p. 28.

Another limitation of the study was in the number of items used. Both major field and total setting press were assessed by 60 items for each, and the four scales within contained only 15 items each. These shortcomings were improved by Pace's College and University Environment Scales, developed subsequently.

Contrast and Assimilation in Interpreting Findings From a National Study. Recently, Davis[1] reported an extensive study in which he used assimilation and contrast to interpret the findings. With 33,982 graduating seniors sampled from 135 American colleges and universities in 1961, questions were asked to determine the intellectual values of individuals sampled, and the perceived intellectual climate of their campus. The latter was defined as the probability a student will check, "A basic general education and appreciation of ideas" as "Most important to the typical student here."

Davis found that this perceived value climate was directly related to what he called the "true" value climate, that is, the proportion of seniors who endorse intellectual values. Then, using the individual values of students as their reference position, Davis showed that perceptions of value climates are distorted toward their own value positions. This he interpreted as perceptual assimilation. Perceptual contrast was in evidence when students with high grades gave lower

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[1] James A. Davis, "Intellectual Climates in 135 American Colleges and Universities: A Study in Social Psychophysics," Sociology of Education, 37, Winter 1963, pp. 110-128.

estimates of the intellectuality of their campus than did students with poorer grades. Further evidence of this latter type of perceptual contrast was found in an unpublished study of Honors College students at Michigan State University[1]. In that study, student groups with the highest grade point averages rated the University lowest on perceived intellectuality.

The Davis study was notable for the number of institutions and students in the sample. But unfortunately, the results are limited since only the intellectuality dimension was investigated, and this on the basis of one item only. The study has been reviewed here because it applied perceptual assimilation and contrast to its findings. However, it used individual rather than group responses, and it did not consider major field of study as a variable in perception of the total climate.

Summary

The previous research can be summarized as follows:

1. Larger and more complex institutions had greater variation in total setting perception.
2. There was no direct and simple relationship between student total setting perception and individual need, sex, personality, academic ability, grade point average, or parental background; but total setting perception was related to students' major field of study.

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[1] John A. Centra, A Study of Honors College and Other High Ability Students at Michigan State University, Unpublished Office Report, Office of Institutional Research, Michigan State University, 1964.

3. Major fields of study differed, (a) in their students' perception of environmental press within the field, and (b) in value and personality patterns characteristic of students in each field.
4. Perceptual contrast was noted as follows: (a) student groups in engineering, business administration, English and art contrasted perception of their own major field and the total setting on some environmental dimensions (this was a relative contrast), and (b) students with high grade point averages perceived a less intellectual climate at their institution than did students with lower grade point averages.
5. Perceptual assimilation was noted as follows: (a) for most major fields, student groups tended to perceive the total setting and their major field similarly, and (b) student endorsement of an intellectual value was positively related to their perception of intellectualism at their institution. This latter, however, was measured by one statement only and would seem to be inconclusive.

Without making a replication, within this study results were combined from past studies to predict the relationship between student perception of total setting and major field in a complex institution. This study then interprets these predictions within the framework of reference group and contrast-assimilation effects theory.

CHAPTER III

DESIGN

The nature of the sample and the instrument, a restatement of the testable hypotheses, and the statistical methods used are discussed in this chapter.

Sample

The population from which the sample was chosen consisted of upper-class males and females at Michigan State University during Winter term, 1965. These students were juniors and seniors who were not: (1) first term juniors; (2) last term seniors; or, (3) transfers with less than four terms at M.S.U. Groups 1 and 3 were eliminated because they were not likely to be sufficiently familiar with either their major field or the total environment at M.S.U. to make judgments; group 2 was excluded because students nearing graduation were likely to be more oriented toward post-college plans, and would tend to view their college experiences with a different perspective. In Table 3.1 an analysis of the sample population by college within the University is presented.

A ten per cent proportional sample was chosen from each of the ten upper level colleges within the University. The sample was randomly selected from an alphabetical list of names from each college. Because some of those chosen were away from the campus during the term (e.g. student teaching) or were only part-time students, the final sample was not an exact ten per cent proportion from each college. The sample finally chosen and those that responded to the questionnaire used in the study are presented in Table 3.1.

Table 3.1

SUMMARY OF POPULATION, SAMPLE, AND QUESTIONNAIRE RETURNS FOR EACH OF THE COLLEGES AND SUB-GROUPS STUDIED, MALES AND FEMALES

College	Population* N	Sample N	Returns N	Percentage Returns %
Agriculture	375	42	37	88
Arts and Letters	1,026	110	79	72
Business	1,173	101	83	82
Communication Arts	336	32	25	78
Education	953	67	52	78
Engineering	305	44	42	95
Home Economics	351	40	33	82
Natural Science	746	83	67	81
Social Science	1,276	96	77	80
Veterinary Medicine	214	28	18	64
Total	6,755	643	513	80
Arts and Letters Sub-Group		86	63	73
Business Sub-Group		85	71	84
Natural Science Sub-Group		76	61	80

* Population of Juniors and Seniors at Michigan State University Winter Term 1965; excluded are first term juniors, last term seniors, and transfers who have been at M.S.U. for less than four terms.

As indicated in Table 3.1, 80 per cent of the total sample responded. The College of Engineering with 95 per cent returns had the highest percentage; the College of Veterinary Medicine was lowest with 64 per cent returns.

Different procedures were employed to obtain responses from on and off-campus students. With the cooperation of Resident Assistants, students living in residence halls on campus completed the instrument in their rooms. Students living off-campus were administered the instrument in Eustace Hall on the Michigan State University campus. Students in this latter group who were unable to participate on campus were mailed the instrument. Approximately seven per cent of all returns were completed in this way.

The majority of the sample, 60 per cent, lived off-campus. Because a like proportion of both on and off-campus students responded, 60 per cent of the returns were also from off-campus.

Academic ability and achievement for the sample returns from each college are presented in Table 3.2. Ability was indicated by College Qualifying Test (CQT) scores taken at entrance, and achievement by current grade point average. Mean grade point average for each college ranged from highs of 2.85 and 2.82 for Natural Science and Engineering respectively, to 2.45 for Agriculture and 2.43 for the Business sub-group. Students in the College of Natural Science and the College of Engineering also had the highest CQT mean total scores (154.6 and 148.6 respectively), while students in Home Economics had the lowest CQT mean total (121.9). Mean CQT verbal scores ranged from 56.8 for Communication Arts to 45.5 for the College of Education. The Arts and Letters sub-group, with 55.0, also had a high mean CQT verbal score.

Table 3.2

SUMMARY OF ABILITY AND GRADE POINT AVERAGE FOR STUDENTS IN THE STUDY, BY COLLEGES AND SUB-GROUPS

College	Mean C.Q.T.* Verbal Score	Mean C.Q.T.* Total Score	Mean** G.P.A.
Agriculture	46.1	134.6	2.45
Arts and Letters	54.1	143.9	2.72
Business	50.0	138.6	2.50
Communication Arts	56.8	137.0	2.66
Education	45.5	123.8	2.50
Engineering	47.4	148.6	2.82
Home Economics	47.8	121.9	2.57
Natural Science	52.2	154.6	2.85
Social Science	53.8	138.7	2.54
Veterinary Medicine	52.5	137.6	2.61
Arts and Letters Sub-Group	55.0	144.4	2.77
Business Sub-Group	49.8	137.0	2.43
Natrual Science Sub-Group	52.8	156.0	2.88

* College Qualifying Test score, Verbal and Total. Total includes Verbal, Numerical, and Information. Taken at time of entrance to Michigan State University.

** Cumulative Grade Point Average through Fall Term 1964.

Instrumentation

The instrument of this study consisted of two parts. Part I was the College and University Environment Scales (CUES) developed by C. Robert Pace[1], which was used to measure student perceptions of the University as a whole. Part II consisted of 80 items selected from CUES, which with some editing measured student perceptions of major field of study[2].

CUES contains 150 statements about varied aspects of university environment: facilities of the campus, faculty, curricula, student life, and other features about the intellectual-social-cultural climate. Students responded TRUE or FALSE to each statement: TRUE when they thought the statement was generally characteristic of the University, was a condition which existed, an event which occurred or might occur, was the way most people acted; and FALSE when they thought the contrary. All 150 statements in CUES were used in Part I, and each student responded to both Part I and Part II.

Development of the Instrument

A panel of four professional persons from the Office of Institutional Research and Evaluation Services at Michigan State University helped in selecting and revising appropriate items from CUES for use in this study.

Part I, Total Setting. Fourteen items in Pace's CUES used the word "college" instead of "university". In order to be more certain that

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[1] Pace, College and University Environment Scales, 1963.

[2] The 80 items for Part II may be found in Appendix A.

students related to the total university and not just their college within the University, these items were changed by replacing "college" with "university".

Directions for Part I asked students to relate statements to Michigan State University.

Part II, Major Field of Study. The panel of judges agreed that 80 CUES items were applicable to the students' major field of study. Most of the items were duplicated verbatim from Part I. A few required minor changes. For example, the item, "Everyone has a lot of fun at this University," became "Everyone has a lot of fun here."

The directions for Part II asked each student to relate each statement to "courses, classroom activities, students, professors, and in general, to conditions as you would find them in your major field of study or areas closely related."

Preliminary Test of the Instrument

The instrument was given to six upper-class students to determine clarity of directions and items. These students were also interviewed, and on this basis the directions were expanded, and some major field items were further clarified.

Description of the Scales

Five scales described characteristics of total setting and major field of study:

Scale 1 Practicality - Emphasis is on personal status and practical benefit. Order and supervision are characteristic of the administration and of the classwork. Status is gained by

knowing the right people, being in the right groups, and doing what is expected.

Scale 2 Community - Items in this scale describe a friendly, cohesive, group-oriented atmosphere. Emphasized are group welfare and congeniality, rather than personal autonomy or detachment.

Scale 3 Awareness - High scores indicate emphases on personal, poetic, and political understanding. A search for personal meaning, a wide range of creative and appreciative relationships to the arts, and a concern for society are evident.

Scale 4 Propriety - Items in this scale reflect the degree to which politeness, protocol, and consideration are emphasized. Low scores reflect a more rebellious, assertive, convention-flouting atmosphere.

Scale 5 Scholarship - Competitive high academic achievement and intellectual discipline are emphasized. The pursuit of knowledge and theories, scientific or philosophical, is carried on rigorously and vigorously.

As shown in Table 3.3, each scale in Part I, Total Setting, contained 30 items. For Part II, Major Field of Study, the 80 items consisted of 15 in each of the practicality, community, and awareness scales; ten in the propriety scale; and 25 in the scholarship scale.

Table 3.3

NUMBER OF ITEMS IN EACH SCALE FOR PART I AND PART II

Scale	Part I Total University	Part II Major Field of Study
Practicality	30	15
Community	30	15
Awareness	30	15
Propriety	30	10
Scholarship	30	25
Total	150	80

Validity

Pace[1] derived the five scales, or dimensions, of CUES (Part I of this study) from a factor analysis of institutional mean scores on the Pace-Stern College Characteristics Index. Fifty institutions of various size and purpose were used for this analysis, and the five factors identified a set of dimensions along which perceptions of these college environments differed from one another.

Pace[2] validated each factor by correlating CUES scores with other known institutional data. He reported that: (1) the practicality scale was positively correlated with the number of fraternities and sororities, and the number of ROTC units; and negatively correlated with verbal ability of students enrolled, size of the library, proportion of Ph.D.'s on the faculty, and an institution's productivity of subsequent Ph.D.'s when the talent input of the institutions are roughly equated; (2) the community scale was negatively related to the number of students, the number of graduate students, the size of the town or city in which the campus is located, and faculty-student ratio; (3) the awareness scale was positively correlated with verbal ability of students, library volumes, percentage of Ph.D.'s on the faculty, percentage of seniors in the liberal arts and the percentage of students who go to graduate school; it was negatively correlated with the number of fraternities and sororities, and with required chapel; (4) the propriety scale was correlated with

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[1] Pace, College and University Environment Scales, 1963, pp. 13-17.

[2] Ibid., pp. 63-65.

the percentage of females in the student body and with the absence of fraternities, sororities and ROTC units; and, (5) the scholarship scale was positively related to high verbal ability among students, an institution's productivity of subsequent Ph.D.'s in the natural sciences (with talent input equated), and library resources. Scholarship scores were negatively correlated with the number of fraternities and sororities.

These correlational studies provide some validity for the scales when measuring total setting perception. Major field items were approved by a panel of higher education evaluators, and student reactions to the items and directions were consulted. The above methods are sufficient to claim content validity for items in each scale of the second part of the instrument, perception of major field of study.

Correlations of College Qualifying Test Scores with Perception of Total Setting and Major Field

This study focused on the relationship between major field and total setting perception. In research terms, major field perception was the independent variable and total setting perception the dependent variable. To establish the independent variable, the effect of individual academic ability on perception was investigated.

Using the College Qualifying Tests (CQT) taken at time of entrance to Michigan State University, verbal and total scores for each subject in the study were correlated with their scale scores on Part I and Part II. This was done for each of the ten colleges of the University. The total CQT score includes the verbal score as well as numerical and information part scores. Thus, for each college and each of the five scales measuring total setting perception, correlations with CQT verbal and total scores are shown in Table 3.4. Correlations with major field perception are shown in Table 3.5.

Table 3.4

CORRELATIONS BETWEEN APTITUDE SCORES AND PERCEPTIONS OF THE TOTAL UNIVERSITY, BY COLLEGE

Scale and Aptitude Test*	College									
	Ag.	A & L	Bus.	Com. Arts	Ed.	En.	Home Ec.	Nat Sci.	Soc. Sci.	Vet. Med.
Practicality										
Verbal CQT	-.22	.15	.09	-.10	-.16	.02	-.01	-.34**	-.24	-.47
Total CQT	-.25	.03	-.09	.25	-.14	-.16	.07	-.42**	-.15	-.40
Community										
Verbal CQT	-.15	.07	-.13	.11	.19	-.23	-.36	-.21	.03	.07
Total CQT	-.27	-.11	-.10	.24	-.02	-.36	-.42	-.18	.00	.05
Awareness										
Verbal CQT	.02	.02	-.02	.12	.29	-.02	-.36	-.23	.04	.02
Total CQT	-.02	-.15	-.07	.28	.03	-.16	-.29	-.30	.05	.15
Propriety										
Verbal CQT	-.10	-.11	.15	.48**	-.18	-.19	-.26	-.11	.15	-.32
Total CQT	-.09	-.13	.09	.30	-.07	-.20	-.46**	-.14	.02	-.29
Scholarship										
Verbal CQT	-.16	-.14	-.13	.08	.15	-.15	-.21	-.27	-.12	.11
Total CQT	-.18	-.14	-.10	.08	-.14	-.17	-.31	-.38**	-.17	.01

* College Qualifying Test scores, Verbal and Total. Total score includes Verbal, Numerical, and Information. Taken at time of entrance to Michigan State University.

** Significant at the .01 level.

Table 3.5

CORRELATIONS BETWEEN APTITUDE SCORES AND PERCEPTIONS OF MAJOR FIELD OF STUDY, BY COLLEGE

	College									
Scale and Aptitude Test*	Ag.	A & L	Bus.	Com. Arts	Ed.	En.	Home Ec.	Nat. Sci.	Soc. Sci.	Vet. Med.
Practicality										
Verbal CQT	-.21	-.29**	.17	-.20	-.23	-.01	.08	.09	-.26	-.47
Total CQT	-.22	-.21	-.07	-.10	-.16	-.17	.09	-.23	-.24	-.36
Community										
Verbal CQT	.04	-.06	-.21	-.06	.07	.00	-.14	-.17	.00	-.19
Total CQT	-.07	-.19	-.22	-.06	-.11	-.08	-.29	-.13	-.01	-.10
Awareness										
Verbal CQT	-.12	.17	-.16	.02	.31	.00	-.51**	-.17	-.01	-.42
Total CQT	-.27	-.02	-.30 **	.06	-.03	-.07	-.49**	-.14	.02	-.04
Propriety										
Verbal CQT	-.06	-.20	-.17	.19	.06	-.15	.16	.02	.14	-.33
Total CQT	-.05	-.12	-.19	.07	.11	-.22	.09	.02	.11	-.42
Scholarship										
Verbal CQT	-.16	.05	-.26	.02	.10	-.11	-.36	-.02	.07	.36
Total CQT	-.24	-.01	-.10	.05	-.09	-.12	-.38	-.15	.10	.60**

* College Qualifying Test scores, Verbal and Total. Total score includes Verbal, Numerical, and Information. Taken at time of entrance to Michigan State University.

** Significant at the .01 level.

Of the 200 correlations reported in these tables, ten were significant at the .01 level. This finding is slightly better than chance because two signficant correlations could be expected by chance alone. Furthermore, the correlations do not center on any one scale or major field. The results suggest that future research might look Note into cross-validation of the relationship between academic ability and perception of college settings, particularly in view of the low correlations found at DePauw University by Pace[1]. For 148 juniors at that institution, correlations of scores on the ACE Psychological Examination and the five CUES scales were -.11, .00, -.08, .01, and -.01.

Reliability

Usually, reliability is a function of the dispersion of individual scores, the object being to have test scores which are widely dispersed in order to maximize the discrimination between individuals. Of major interest in this study, however, were group scores; more specifically, the mean score for each college within the University.

As summarized in Table 3.6, individual score reliability was lower than the reliability based on group means for each scale in both parts of the instrument. Individual score reliability was computed by analysis of variance as first discussed by Hoyt[2]. Applying this test, the variance among students and the variance among items were subtracted from the total

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[1] Pace, College and University Environment Scales, 1963, p. 56.

[2] Cyril Hoyt, "Test Reliability Estimated by Analysis of Variance," Psychometrika, 6, June 1941, pp. 153-160.

Table 3.6

SCALE RELIABILITY BASED ON INDIVIDUAL SCORES AND GROUP MEANS FOR PART I AND PART II

Scale	Reliability* of Individual Scores		Reliability of Group Means	
	Part I	Part II	Part I	Part II
Practicality	.50	.40	.67	.90
Community	.58	.70	.87	.96
Awareness	.80	.72	.86	.93
Propriety	.69	.45	.71	.91
Scholarship	.78	.82	.91	.98

* Hoyt's reliability by analysis of variance.

variance. The remainder theoretically estimates the discrepancy between obtained variance and true variance and is also known as error variance. Thus, the coefficient of reliability for individual scores is:

$$r_{tt} = \frac{\text{Variance among individuals} - \text{error variance}}{\text{Variance among individuals}}$$

The reliability of group means, as discussed by Lindquist[1], can also be estimated by using this same error variance. In this case:

$$r_{tt} = \frac{\text{Variance among group means} - \text{error variance}}{\text{Variance among group means}}$$

All of the reliability coefficients for *individual scores* reported in Table 3.6 are below .82. Similarly, Berdie[2] reported individual score reliabilities ranging from .40 to .75 for the five CUES scales. Hence, it would appear that CUES should not be used for describing individuals, but as a group measure, CUES can be useful. The reliability coefficients based on *group means* (Table 3.6) are generally acceptable, particularly for Part II, with all five coefficients at .90 or above. Total setting perception had three scales at or above .86, and one each at .67 and .71.

Statistical Hypotheses

Following are the hypotheses of this study stated in testable form. For those hypotheses where theory and previous studies permit, alternates are also stated.

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[1] E.F. Lindquist, "Estimation of Variance Components in Reliability Studies," *Design and Analysis of Experiments in Psychology and Education*, Boston: Houghton Miflin Co., 1953.

[2] Berdie, *Perceptions of the University of Minnesota*, 1965, p. 3.

Hypotheses Pertaining to the Ten Upper Level Colleges

I. No difference will be found in total setting perception as measured by average scores for student groups enrolled in the ten upper level colleges within the University.

II. No difference will be found in major field perception as measured by average scores for student groups enrolled in the ten upper level colleges within the University.

III. There is not a positive relationship between student groups' perception of their major field, grouped by college, and total setting perception.

Hypotheses Pertaining to the Four Sub-Groups: Arts and Letters, Business, Engineering, and Natural Science

I. No difference in perception of major field press will be found by students enrolled in each sub-group.

Alternate Hypotheses:

A. On the practicality scale, the College of Business sub-group will perceive a stronger major field press as measured by average scores by each group.

B. On the awareness scale, the College of Arts and Letters sub-group will perceive a stronger press as measured by average scores by each group.

C. On the scholarship scale, the College of Natural Science sub-group and students in the College of Engineering will perceive a stronger press as measured by average scores by each group.

II. No difference in total setting perception will be found by students enrolled in each sub-group.

Alternate Hypotheses:

A. On the practicality scale, the Business sub-group will perceive less total setting press as measured by average scores by each of the groups.

B. On the awareness scale, the Arts and Letters sub-group will perceive less total setting press as measured by average scores by each group.

C. On the scholarship scale, the Engineering and Natural Science groups will perceive less total setting press as measured by average scores by each of the four groups.

III. For the community and propriety scales, there is not a positive relationship between perceptions that the four student groups have of their major field and total setting.

Analysis

Several statistical measures were used to test the hypotheses of the study.

Descriptive and Difference Statistics

Central tendency was employed to indicate the average perceptions of each student group on each of the scales. The mean scale scores thus indicated each group's perceptions of their major field and the total setting. Differences in the mean scores, indicating differences in perceptions among the groups, were tested by analysis of variance. The

tests were run on the Michigan State University electronic computer CDC 3600, using the program "One-Way Analysis of Variance, Unequal Sub-Classes."

Assumptions of Analysis of Variance. Four basic assumptions are made when using analysis of variance[1]:

1. Observations within groups must be mutually independent; that is, each observation is no way related to any of the other observations.

   Each of the college groups were from hypothetically different treatment populations, and students from each college were randomly selected.
2. The variance of the criterion measures is the same for each of these treatment populations. This assumption of homogeneous variance can be violated without serious risk, as shown by the Norton study cited by Lindquist[2]. Hays[3] concurs with this provided the number of cases in each sample is the same. But when different numbers appear in the various samples, Hays states that "violation of the assumption of homogeneous variances can have very serious consequences for the validity of the final inference." Because the various college groups differ considerably in sample size, Bartlett's[4] test for the

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[1] Lindquist, Design and Analysis of Experiments in Psychology and Education, 1953, pp. 73-78.

[2] Ibid., pp. 78-90.

[3] William L. Hays, Statistics for Psychologists, New York: Holt, Rinehart, and Winston, 1963, p. 379.

[4] Helen M. Walker and Joseph Lev, Statistical Inference, New York: Henry Holt and Company, 1953, pp. 193-195.

homogeneity of variance was performed.

3. The distribution of criterion measures for each treatment population must be normal. However, both Lindquist[1] and Hays[2] have stated that the normality assumption is not important, particularly if the n in each sample is relatively large. In this study eight of the ten college groups and all four sub-groups had more than 30 subjects.
4. The mean of the criterion measures must be the same for each treatment population (the null hypotheses).

Scheffé's Method. The analysis of variance indicates whether differences exist between the means of groups being studied. An additional test is needed to identify which means are significantly different. Scheffé[3] has developed one of the tests that can accomplish this purpose. By using "within mean squares" obtained in the analysis of variance and the n's of the respective means being tested, he established an interval for each pair of means which indicates their differences from each other.

Scheffé's test declares that $\bar{X}_i$ and $\bar{X}_j$ are significantly different at level α if the interval produced by

$$(\bar{X}_i - \bar{X}_j) \pm \sqrt{(k - 1)\, F\, \alpha}\ \sqrt{\mathrm{WMS}\left(\frac{1}{n_i} + \frac{1}{n_j}\right)}$$

does not include zero. $\bar{X}_i$ and $\bar{X}_j$ are the means being compared; k is

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[1] Lindquist, Design and Analysis of Experiments in Psychology and Education, 1953, p. 81.

[2] Hays, Statistics for Psychologists, 1963, p. 378.

[3] Henry Scheffé, "A Method for Judging All Contrasts in the Analysis of Variance," Biometrika, 40, June 1953, pp. 87-104.

the number of groups; $F \alpha$ is the value of the "F" distribution at the desired confidence level; WMS is the "within mean squares" which is an estimate of the variance; and n_i and n_j are the respective sizes of the groups being compared.

Assumptions of the Scheffé Test. The same assumptions made for the analysis of variance also apply to Scheffé's test. Because of the conservative nature of Scheffé's test, this study follows his suggestion of using a ten per cent confidence level[1].

Correlation Analysis

The Pearson product moment correlation coefficient has been used to measure the degree of relationship between perception of major field and perception of total university setting. In measuring this relationship, sub-scores for total setting perception, consisting only of items repeated for major field perception, were obtained. The sub-scores for each total setting scale were then correlated with major field scale scores. All correlations were obtained on the Michigan State University CDC 3600 with the CORE program, "Correlation and/or Regression Analysis."

Assumptions of Product Moment Correlation. The use of the product moment correlation assumes linearity of regression, homoscedasticity, and normal distributions for the variables[2]. Inspection of the data did not reveal any violent departure from these assumptions.

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[1] Scheffé, "A Method for Judging All Contrasts in the Analysis of Variance," Biometrika, 1953, p. 71.

[2] Quinn McNemar, Psychological Statistics, second edition, New York: John Wiley and Sons, 1955, pp. 122-143.

Summary

From each of the ten upper division colleges at Michigan State University, a ten per cent sample of upperclassmen was randomly selected; 513 or 80 per cent completed the instrument devised for this study. This instrument consisted of (1) Part I, the College and University Environment Scales (CUES), which measured student perceptions of the total university environment, and (2) Part II, 80 items selected from CUES, which with editing and a change in directions, measured student perceptions of their major field of study.

Each part of the instrument contained five scales: practicality, community, awareness, propriety, and scholarship. For Part I, (CUES), each scale contained 30 items. For Part II, the practicality, community, and awareness scales contained 15 items each; the propriety scale had 10 items; and 25 items were selected for the scholarship scale.

Pace reported validity studies in which objective features of several institutions were correlated with CUES scale scores; these validated scales as measurements of total setting environment. Validity of Part II, Major Field, was established by content alone.

Grade point averages and aptitude scores for students grouped by the ten colleges ranged widely. When scale scores for total setting and major field perception were correlated with each individual's verbal and total aptitude scores (College Qualifying Test), the number of significant correlations was slightly better than chance. This result suggests further research into cross-validation of the relationship between academic aptitude and perception of college settings.

Reliability coefficients for individual scores on the five scales, as computed by Hoyt's analysis of variance technique, ranged from .50 to .80 on Part I, and .40 to .82 on Part II. Reliability coefficients based on group means were more favorable: total setting perception had three scales at or above .86, and one each at .67 and .71; all five major field scales were above .90. Hence, the scales were more reliable in describing groups than differentiating between individuals.

Statistical methods used to test the null and alternate hypotheses pertaining to student groups in the ten colleges and four sub-groups were:

1. Analysis of variance - To test differences between mean scale scores.
2. Scheffé method - To identify which pair of mean scores for the colleges or the sub-groups differ significantly.
3. Pearson product moment correlation - To test the relationship between total setting and major field scores.

Assumptions underlying these statistical methods were met or not seriously violated by the data of this study. The results of tests for homogeneity of variance is presented in Chapter IV.

CHAPTER IV

ANALYSIS OF RESULTS

In this chapter CUES scale scores, representing student perceptions of total setting and major field of study, are analyzed in order to test the hypotheses stated in Chapter III. In preparation for the analysis, a test of the homogeneity of variance, one of the assumptions underlying the analysis of variance, is made.

Homogeneity of Variance

The analysis of variance tested differences between mean scores of (1) the ten colleges within the University and, (2) the four selected sub-groups (i.e. groups from Arts and Letters, Business, Engineering and Natural Science). For each of these two categories, the Bartlett test was used to test the homogeneity of variance[1].

Homogeneity of Variance for the Ten College Groups

In applying the Bartlett test, the null hypothesis of equal variance for each group on each scale was tested. Thus, for each of the five scales in Part I, Total Setting, and each of the five scales in Part II, Major Field, the null hypothesis tested was:

$$Ho: \quad \sigma^2_{Ag} = \sigma^2_{A\&L} = \sigma^2_{B} = \sigma^2_{CA} = \sigma^2_{Ed} = \sigma^2_{En} = \sigma^2_{HE} = \sigma^2_{NS} = \sigma^2_{SS} = \sigma^2_{VM}$$

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[1] Walker and Lev, Statistical Inference, 1953, pp. 193-195.

Legend: Ag = College of Agriculture
A&L = College of Arts and Letters
B = College of Business
CA = College of Communication Arts
Ed = College of Education
En = College of Engineering
HE = College of Home Economics
NS = College of Natural Science
SS = College of Social Science
VM = College of Veterinary Medicine

For k-1=9 degrees of freedom, the chi-square value at the .10 level[1] is 14.7. The Bartlett test for the homogeneity of variance did not reject any of the ten hypotheses. Hence, the hypothesis of equal variance of scores of each of the ten scales for the ten colleges in this study was not rejected.

Homogeneity of Variance for the Four College Sub-Groups

Also tested was the null hypothesis of equal variance for each of the five scales in Part I, Total Setting and each of the five scales in Part II, Major Field, for the four sub-groups. Hence, for each of the ten scales the null hypothesis tested by the Bartlett test was:

Ho: $\sigma^2_{A\&L_1} = \sigma^2_{B_1} = \sigma^2_{En_1} = \sigma^2_{NS_1}$

Legend: $A\&L_1$ = College of Arts and Letters Sub-Group
B_1 = College of Business Sub-Group
En_1 = College of Engineering Group
NS_1 = College of Natural Science Sub-Group

For k-1=3 degrees of freedom, the chi-square value at the .10 level is 6.3. At this level the Bartlett test rejected one of the ten hypotheses: on the scholarship scale for Part II, Major Field. With

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[1] The ten per cent level of significance is used in order to increase the power of the test.

the number of tests being conducted on the same sample, one can conclude that the one in ten finding is due to chance. Hence, even though one test exceeded the prescribed level of significance, homogeneity of variance was not rejected for these data.

Analysis of Differences and Relationship Between Total Setting and Major Field Perception by Student Groups in the Ten Colleges

The analyses of variance tested differences in college mean scores on each CUES scale for total setting and major field perception. In addition, total setting scale scores were correlated with major field scale scores to test the relationship between these two variables.

Total Setting Perception by the Ten College Student Groups

The mean scores and the F ratio from the analysis of variance for total setting perception are presented in Table 4.1. A one per cent (.01) critical region was chosen as the basis of rejection for each hypothesis. The null hypothesis for each of the five scales, stated symbolically, was:

$$\text{Ho:}\ _{TS}:\ \mu_{Ag} = \mu_{A\&L} = \mu_{B} = \mu_{CA} = \mu_{Ed} = \mu_{En} = \mu_{HE} = \mu_{NS} = \mu_{SS} = \mu_{VM}$$

A difference was found at the .01 level of significance for two of the five scales: community (F=3.42), and scholarship (F=2.43). No difference was found in total setting perception on the practicality (F=1.52), awareness (F=1.34), or propriety (F=1.13) scales.

Major Field Perception by the Ten College Groups

Mean scores and the F ratio from the analysis of variance for major field perception are presented in Table 4.1. A one per cent

Table 4.1

SUMMARY OF TOTAL SETTING AND MAJOR FIELD PERCEPTION AS INDICATED BY MEAN SCALE SCORES FOR EACH COLLEGE, AND RESULTS OF ANALYSIS OF VARIANCE

Legend: TS=Total Setting, MF=Major Field

College	Scale									
	Practicality		Community		Awareness		Propriety		Scholarship	
	TS	MF	TS	MF	TS	MF	TS	MF	TS	MF
Agriculture	18.6	7.7	14.7	9.0	16.9	7.5	12.2	6.4	15.3	14.6
Arts and Letters	17.1	6.2	14.9	7.3	17.4	9.8	11.9	5.5	13.2	14.0
Business	18.1	7.9	14.9	7.1	16.7	8.1	11.5	5.4	14.2	13.0
Communication Arts	17.8	7.9	13.8	9.6	15.6	8.6	10.6	6.1	13.5	13.5
Education	18.3	7.6	16.6	9.5	17.6	9.1	12.8	6.4	13.6	11.8
Engineering	17.8	6.3	15.9	7.9	17.6	7.5	11.5	6.2	16.5	18.7
Home Economics	18.1	8.2	17.2	9.5	19.5	9.3	13.2	7.8	16.1	13.9
Natural Science	17.8	6.6	14.7	6.8	16.9	7.4	11.6	6.1	15.2	16.5
Social Science	17.9	6.8	14.5	7.2	17.5	8.9	11.7	5.3	13.6	12.7
Veterinary Medicine	19.4	8.6	18.2	11.0	18.4	8.5	12.2	7.7	15.2	20.3
MSU Average (All Students Combined)	17.9	7.2	15.2	8.0	17.3	8.5	11.9	6.0	14.2	14.4
Analysis of Variance F Statistic	1.52	6.76*	3.42*	8.93*	1.34	4.45*	1.13	6.98*	2.43*	12.17*

* Significant at the .01 level.

critical region was chosen as the basis of rejection for each hypothesis. The null hypothesis for each scale, stated symbolically, was:

$$Ho_{MF}: \mu_{Ag} = \mu_{A\&L} = \mu_{B} = \mu_{CA} = \mu_{Ed} = \mu_{En} = \mu_{HE} = \mu_{NS} = \mu_{SS} = \mu_{VM}$$

A difference was found at the .01 level of significance for all five scales: practicality (F=6.76), community (F=8.93), awareness (4.45), propriety (6.98), and scholarship (F=12.17).

Relationship Between Total Setting and Major Field Perception for the Ten College Groups

The relationship between total setting and major field was investigated by correlating each student's five total scale scores for major field with the corresponding sub-scores from total setting. These total setting sub-scores consisted of only those items repeated for major field perception; and hence, correlations represented the relationship between total scores on the same items, but with either major field or the total setting as reference. Product moment correlations were obtained for all students combined (N=513), and for students grouped by the ten colleges. The level of significance was set at .01.

The null hypothesis tested for each scale, stated symbolically, was: $Ho: \rho = 0$. And the alternate hypothesis of a positive relationship, stated symbolically, was: $H_A: \rho > 0$..

The results of the analysis are presented in Table 4.2. For the ten colleges and the five scales, there are 50 correlation coefficients; forty-one of these coefficients were positive at the one per cent level of significance. For all students combined, each correlation for the five scales was positive at the .01 level of significance.

Table 4.2

CORRELATIONS BETWEEN TOTAL SETTING SUB-SCORE AND MAJOR FIELD SCORE FOR EACH SCALE, FOR INDIVIDUALS IN EACH COLLEGE AND ALL STUDENTS COMBINED[1]

College	Scale				
	Practicality	Community	Awareness	Propriety	Scholarship
Agriculture	.54*	.56*	.69*	.74*	.71*
Arts and Letters	.51*	.58*	.57*	.55*	.61*
Business	.71*	.72*	.74*	.64*	.66*
Communication Arts	.49	.72*	.87*	.60*	.75*
Education	.68*	.59*	.48*	.42*	.74*
Engineering	.12	.69*	.37	.63*	.55*
Home Economics	.12	.24	.68*	.24	.57*
Natural Science	.45*	.62*	.64*	.48*	.68*
Social Science	.53*	.58*	.63*	.50*	.52*
Veterinary Medicine	.52	.20	.64*	.59*	.15
All Students (N=513)	.51*	.60*	.63*	.48*	.62*

1. This sub-score includes only items that were repeated in Part II, Major Field.

* Significant at the .01 level of confidence.

Analysis of Differences and Relationship Between Total Setting and Major Field Perception for the Four Sub-Groups

Four homogeneous college sub-groups were also studied: Arts and Letters, Business, Engineering[1], and Natural Science. The analysis of variance tested differences in total setting and major field mean scores for the four sub-groups; and total setting scores were correlated with major field scores to test the relationship between total setting and major field perception.

Major Field Perception by the Four Sub-Groups

For the four sub-groups, a one per cent critical region was used for the analysis of variance. The mean scores and F statistic from the analysis of variance are presented in Table 4.3. For each scale where differences between mean scores for the four sub-groups were found, Scheffé's method was used to test all pairs of mean scores. The .10 level of significance was used for the Scheffe test. In Table 4.4, the results of the Scheffé test are summarized.

The symbolically stated null hypothesis for the practicality, awareness and scholarship scales was:

$$Ho:_{MF}: \quad \mu_{A\&L_1} = \mu_{B_1} = \mu_{En_1} = \mu_{NS_1}$$

A difference was found for each of the three scales tested: practicality (F=13.73), awareness (F=9.70); and, scholarship (F=16.24). An alternate hypothesis was then tested for each scale.

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[1] The College of Engineering group is not really a "sub-group" since all major fields from that college were included for this analysis.

Table 4.3

SUMMARY OF TOTAL SETTING AND MAJOR FIELD PERCEPTION ON THREE SCALES AS INDICATED BY MEAN SCALE SCORES FOR THE FOUR SUB-GROUPS STUDIED, AND RESULTS OF ANALYSIS OF VARIANCE

					Analysis of Variance
Part and Scale	A&L Sub-group N=63	Bus. Sub-group N=71	Engr. Sub-group N=42	NS Sub-group N=61	F Statistic
Part I, Total Setting					
Practicality	17.2	18.4	17.8	17.8	1.54
Awareness	17.7	16.3	17.6	16.8	1.11
Scholarship	13.2	14.1	16.5	15.1	4.02*
Part II, Major Field					
Practicality	6.2	8.2	6.4	6.6	13.73*
Awareness	9.9	7.9	7.5	7.4	9.70*
Scholarship	14.4	13.0	18.7	16.3	16.24*

* Significant at .01 level.

Table 4.4

COMPARISON OF ALL PAIRS OF MEANS FOR EACH SCALE THAT DIFFERED SIGNIFICANTLY BETWEEN THE FOUR COLLEGE SUB-GROUPS

Legend: A&L=Arts and Letters, Bus=Business, Engr=Engineering, and NS=Natural Science

Part and Scale	Comparison Groups and Means					Sig. Diff. *
		$\bar{X}$			$\bar{X}$	
Part I, Total Setting						
Scholarship	A&L	13.2	--	Bus	14.1	
	A&L	13.2	--	Engr	16.5	*
	A&L	13.2	--	NS	15.1	
	Bus	14.1	--	Engr	16.5	
	Bus	14.1	--	NS	15.1	
	Engr	16.5	--	NS	15.1	
Part II, Major Field						
Practicality	A&L	6.2	--	Bus	8.2	*
	A&L	6.2	--	Engr	6.4	
	A&L	6.2	--	NS	6.6	
	Bus	8.2	--	Engr	6.4	*
	Bus	8.2	--	NS	6.6	*
	Engr	6.4	--	NS	6.6	
Awareness	A&L	9.9	--	Bus	7.9	*
	A&L	9.9	--	Engr	7.5	*
	A&L	9.9	--	NS	7.4	*
	Bus	7.9	--	Engr	7.5	
	Bus	7.9	--	NS	7.4	
	Engr	7.5	--	NS	7.4	
Propriety	A&L	5.3	--	Bus	5.3	
	A&L	5.3	--	Engr	5.9	
	A&L	5.3	--	NS	6.2	
	Bus	5.3	--	Engr	5.9	
	Bus	5.3	--	NS	6.2	
	Engr	5.9	--	NS	6.2	
Scholarship	A&L	14.4	--	Bus	13.0	
	A&L	14.4	--	Engr	18.7	*
	A&L	14.4	--	NS	16.3	
	Bus	13.0	--	Engr	18.7	*
	Bus	13.0	--	NS	16.3	*
	Engr	18.7	--	NS	16.3	*

* Scheffé test; differences significant at .10 level.

Practicality Scale
Alternate Hypothesis $H_A: \mu_{B_1} > \mu_{A\&L_1} = \mu_{En_1} = \mu_{NS_1}$

The alternate hypothesis for the major field practicality scale was supported, as indicated by the following[1]:

$\bar{X}$ Business$_1$	$\bar{X}$ Arts and Letters$_1$	$\bar{X}$ Engineering$_1$	$\bar{X}$ Natural Science$_1$
8.2	6.2	6.4	6.6

Awareness Scale
Alternate Hypothesis $H_A: \mu_{A\&L_1} > \mu_{B_1} = \mu_{En_1} = \mu_{NS_1}$

The alternate hypothesis for the major field awareness scale was supported as indicated below:

$\bar{X}$ Arts and Letters$_1$	$\bar{X}$ Business$_1$	$\bar{X}$ Engineering$_1$	$\bar{X}$ Natural Science$_1$
9.9	7.9	7.5	7.4

Scholarship Scale
Alternate Hypothesis $H_A: \mu_{NS_1} = \mu_{En_1} > \mu_{A\&L_1} = \mu_{B_1}$

The alternate hypothesis for the major field scholarship scale was not supported, as indicated by the following:

$\bar{X}$ Engineering$_1$	$\bar{X}$ Natural Science$_1$	$\bar{X}$ Arts and Letters$_1$	$\bar{X}$ Business$_1$
18.7	16.3	14.4	13.0

Total Setting Perception by the Four Sub-Groups

For the four college sub-groups, the total setting null hypothesis tested for each of the three scales, practicality, awareness, and scholarship was (symbolically stated):

$$H_o: {}_{TS}: \mu_{A\&L_1} = \mu_{B_1} = \mu_{En_1} = \mu_{NS_1}$$

A one per cent critical region was chosen as the basis of rejection for each hypothesis. Mean scores and the F statistic from the analysis of variance are presented in Table 4.3. No difference was found between the four sub-groups on the total setting practicality scale (F=1.54),

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[1] Mean scores connected by a continuous underline have not been found to be significantly different by the Scheffe test.

and the total setting awareness scale (F=1.11). But the four groups did differ on the scholarship scale at the .01 level of significance (F=4.02).

Because the four groups did not differ on the practicality and awareness scales, the alternate hypothesis for each was not tested. For the scholarship scale, the Scheffé method tested the alternate hypothesis, with the results summarized in Table 4.4.

Scholarship Scale
Alternate Hypothesis $\quad H:{}_A: \quad \mu_{En_1} = \mu_{NS_1} < \mu_{A\&L_1} = \mu_{B_1}$

The alternate hypothesis for the total setting scholarship scale was not supported as indicated by the following:

$\bar{X}$ Engineering$_1$	$\bar{X}$ Natural Science$_1$	$\bar{X}$ Business$_1$	$\bar{X}$ Arts and Letters$_1$
16.5	15.1	14.1	13.2

Relationship Between Total Setting and Major Field Perception on the Community and Propriety Scales for the Four College Sub-Groups

The relationship between total setting and major field perception on the community and propriety scales was tested by a product moment correlation of each student's sub-scores in Part I, (Total Setting) with his corresponding Part II (Major Field) score. Thus, the null hypothesis tested was that of no relationship between students' perception of total setting and major field on the community and propriety scales. Stated symbolically:

$Ho:\ c:\ \rho = o$ $\qquad$ and $\qquad$ $Ho:\ prop:\ \rho = o$

The alternate hypothesis of a positive relationship was also tested. Symbolically:

$H_A:\ c:\ \rho > o$ $\qquad$ and $\qquad$ $H_A:\ prop:\ \rho > o$

A one per cent (.01) critical region was chosen as the basis of rejection of each hypothesis. The results, summarized in Table 4.5 indicate that there was a positive correlation, significant at the .01 level, for all four groups on the community and propriety scales. Correlations for the practicality, awareness, and scholarship scales are also presented in Table 4.5 as an aid for future research even though these analyses did not pertain to the hypotheses of this study. On the above three scales 10 of the 12 correlations were significantly positive (.01 level).

Interpretation of Results

Student groups within the ten colleges differed in total institution perception on two scales: community and scholarship. In the remaining three scales, practicality, awareness and propriety, student groups in the ten colleges did not differ in their reactions to the total setting. Differences on the community scale indicate that student groups in the ten colleges rated the university differently on such features as friendliness, cohesiveness and group-orientation; differences on the scholarship scale indicate that student groups in the ten colleges perceived differing total setting emphases on such features as intellectual discipline, competitive achievement, and the pursuit of scientific or philosophical knowledge and theories.

For major field perception, the ten colleges differed on all five scales. These differences in major field perception are not surprising in view of the differing objectives and curricula for major fields of study.

Table 4.5

CORRELATIONS BETWEEN TOTAL SETTING SUB-SCORE AND MAJOR FIELD SCORE FOR EACH SCALE, FOR INDIVIDUALS IN EACH OF THE FOUR SUB-GROUPS STUDIED[1]

Group	Scale				
	Practicality	Community	Awareness	Propriety	Scholarship
Arts and Letters	.54*	.50*	.51*	.58*	.54*
Business	.70*	.74*	.70*	.64*	.68*
Engineering	.12	.69*	.37	.63*	.55*
Natural Science	.52*	.64*	.66*	.53*	.72*

1. This sub-score includes only items that were repeated in Part II, Major Field.

* Significant at the .01 level of confidence.

Predicted Directional Differences

The four college sub-groups from Arts and Letters, Business, Engineering and Natural Science were selected to test directional predictions. The four sub-groups differed in major field perceptions mainly as predicted; but they did not differ in the predicted way for total setting perception. Specifically, the Business sub-group, compared to Arts and Letters, Engineering and Natural Science, perceived a stronger major field practicality press, but not a weaker total setting press. The Arts and Letters sub-group, compared to sub-groups in Business, Engineering, and Natural Science, perceived a stronger major field awareness press, but not a weaker total setting awareness press. The Natural Science and Engineering sub-groups, compared to Arts and Letters and Business did not differ in either major field or total setting scholarship perception exactly as predicted. More exactly, on the major field scholarship scale, although both the Engineering and Natural Science groups exceeded Arts and Letters and Business as predicted, Engineering also exceeded Natural Science; and on the total setting scholarship scale, the Engineering and Natural Science groups, compared to Arts and Letters and Business, did not perceive a weaker press as predicted. In summary, the four sub-groups did not have contrasting perceptions of total setting and major field.

Correlational Predictions

The prediction that student perceptions of total setting would correlate positively with student perception of major field was generally supported. For each of the five scales and for all students combined, correlations were significant at the .01 level, ranging from r=.48 on the propriety scale to r=.63 on the awareness scale. It can be concluded that student perception of total setting tended to vary with, or agree with, student perception of major field.

Another possible interpretation of the positive relationship between total setting and major field perception is provided by the correlation squared (r^2), which represents the proprotion of variance shared by two variables. On the propriety scale, for example, a correlation of .48 indicates that 23 per cent of the variance in total setting propriety scores and 23 per cent of the variance in major field propriety scores are common variance. This is not to say that variations in one set of scores causes variations in the other, for the scope of this thesis does not allow that conclusion.

Correlations for Each College Group. For the ten colleges and five scales, forty-one of the fifty correlations were positive at the .01 level of confidence (Table 4.2, supra, page 50). The nine remaining correlations were not significant and indicate that a few college groups did not perceive some features of the total setting and major field similarly. For example, the Home Economics and Engineering groups did not perceive the practicality press for total setting and major field similarly; and the Home Economics and Veterinary Medicine groups did not perceive the community press for total setting and major field similarly.

Correlations for the Four College Sub-Groups. For the four sub-groups, Arts and Letters, Business, Engineering and Natural Science, positive correlations between total setting and major field were predicted on the community and propriety scales. All eight correlations were significantly positive, indicating similarity (assimilation) between perception of major field and total setting for these four groups on the community and propriety scales.

Summary

Tests for the homogeneity of variance were not rejected, thereby supporting the assumption of equal variance for the groups studied (an assumption for the test of analysis of variance).

A summary of the hypotheses tested is presented in Table 4.6. In general, two sets of hypotheses were tested: those concerned with the ten colleges within the university, and those pertaining to the four more homogeneous student groups from the ten colleges.

An analysis of variance of the mean scale scores for student groups in each of the ten colleges indicated that, (1) the ten colleges differed (.01 level) in total setting perception on two of the five scales: community and propriety, and (2) the ten colleges differed (.01 level) in major field perception on all five scales: practicality, community, awareness, propriety, and scholarship.

Product moment correlations between major field and total setting scale scores for all students supported the prediction of a positive correlation at the .01 level of significance. The correlation values for each of the five scales were: practicality .51; community .60; awareness .63; propriety .48; and, scholarship .62. For students grouped within each of the ten colleges, 41 of the 50 correlations were significant (.01 level).

Each of the four sub-groups, Arts and Letters, Business, Engineering, and Natural Science, was predicted to have a high major field press on a selected scale, and a low total setting press on the same scale. Although major field predictions were largely supported, total setting predictions were not; indicating that the four above groups did not contrast total

Table 4.6

SUMMARY OF RESULTS OF MAJOR HYPOTHESES TESTED

Hypotheses	Test Used	Results
I. Hypotheses Pertaining to the Ten Colleges		
A. Differences in total setting mean scores will be found between the ten colleges for*:		
1. practicality scale	Analysis of Variance	No difference
2. community scale	" " "	Difference found
3. awareness scale	" " "	No difference
4. propriety scale	" " "	No difference
5. scholarship scale	" " "	Difference found
B. Differences in major field mean scores will be found between the ten colleges for*:		
1. practicality scale	Analysis of Variance	Difference found
2. community scale	" " "	" "
3. awareness scale	" " "	" "
4. propriety scale	" " "	" "
5. scholarship scale	" " "	" "
C. A positive relationship will be found between major field and total setting scores for each scale.*		
1. For all students combined (N=513)		
a. practicality scales	Product Moment Correlation	r=.51; significant
b. community scales	" " "	r=.60; significant

* Differences significant at the .01 level;
*** Differences significant at the .10 level.

Table 4.6 (continued)

Hypotheses	Test Used	Results
c. awareness scales	Product Moment Correlation	r=.63; significant
d. propriety scales	" " "	r=.48; significant
e. scholarship scales	" " "	r=.62; significant
2. For students within each of the colleges*	" " "	41 out of the 50 correlations were significant
II. Hypotheses Pertaining to the Four College Sub-Groups		
A. Differences in major field press scores will be found as follows* :		
1. practicality	Analysis of Variance	Difference found
a. alternate: the Business sub-groups will perceive stronger (higher) press ***	Scheffé	Supported
2. awareness scale	Analysis of Variance	Difference found
a. alternate: the College of Arts and Letters sub-group will perceive a stronger (higher) press***.	Scheffe	Supported
3. scholarship scale	Analysis of Variance	Difference found
a. alternate: the College of Engineering group and the College of Natural Science sub-group will perceive a stronger (higher) press***.	Scheffé	Not supported

* Differences significant at the .01 level;
*** Differences significant at the .10 level.

Table 4.6 (continued)

Hypotheses	Test Used	Results
B. Differences in total setting CUES scores will be found as follows*		
1. practicality scale	Analysis of Variance	No difference
a. alternate not tested		
2. awareness scale	" " "	" "
a. alternate not tested		
3. scholarship scale	" " "	Difference found
a. alternate: the Engineering and Natural Science groups will perceive a weaker total setting press ***.	Scheffé	Not supported
C. A positive relationship will be found between major field and total setting scores for the community and propriety scales*.	Product Moment Correlation	All correlations were significant for each of the four groups on each of the two scales

* Differences significant at the .01 level;
*** Differences significant at the .10 level.

setting and major field perception. However, a product moment correlation of major field and total setting perception for the four above sub-groups supported the prediction of a positive correlation (.01 level) on the community and propriety scales: the eight correlations for the two scales and four sub-groups ranged from .50 to .74.

CHAPTER V

SUMMARY AND CONCLUSION

In the last chapter, the study is summarized, conclusions are discussed, and implications for future research are presented.

Summary

Differences in student perceptions of the value climate of a complex university were investigated. Students reported on characteristics of both (1) the total university, and (2) their major field of study. Of primary interest was the relationship between perception of major field and total setting perception. Applying reference group theory, the study interpreted major field as a "comparison reference group" or "situational perspective" for student perception of the total university. More exactly, the faculty, students, ideas, and actions within a major field became specific standards or perspectives for student views of the total setting. To describe how total setting and major field perceptions related to each other, a second theory from social psychology was employed: contrast-assimilation theory as delineated by Berkowitz[1]. Contrast describes the perceptual relationship between major field and total setting when, for example, a major field group perceives itself relatively "high" (in comparison to major field perception by other groups) on a selected press dimension, and the total setting as

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[1] Berkowitz, "The Judgmental Process in Personality," Psychological Review, 1960, p. 130.

relatively "low" on this same dimension. When students perceive their major field and the total setting in a consistent way, assimilation has contributed to similarity.

Past studies identified specific major fields and environmental characteristics in which contrast and assimilation effects tended to be present. But in these past studies, predictions of contrast-assimilation effects were not made, and sampling procedures were often questionable.

Past research further indicated that: (1) major fields differed in both their students' perception of environmental press within the field, and in value and personality characteristics of students in each field; (2) no simple and direct relationship existed between student perception of total institutional environment and individual need, personality, academic ability, sex, grade point average, or parental background; and, (3) larger and more complex institutions had greater variation in total setting perception.

Sample and Instrument

From each of the ten upper division colleges at Michigan State University, a ten per cent sample of upper-class males and females was randomly selected; 513 or 80 per cent completed the instrument devised for this study. The instrument consisted of (1) Part I, the College and University Environment Scales (CUES), developed by C. Robert Pace[1], which consisted of 150 items that measured student perceptions of the total university environment, and (2) Part II, 80 items selected from CUES and approved by a panel of four judges, which students answered in

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[1] Pace, College and University Environment Scales, 1963.

relation to their major field of study. Items in the total instrument were similar or identical to items used in previous studies, the results of which were summarized above.

By responding TRUE or FALSE to each statement, students indicated the general characteristics of their major field and the total institution. Each part of the instrument contained five scales, or dimensions along which students described the institution or their major field. The dimensions were: (1) practicality, the degree to which practical benefits and supervision were emphasized; (2) community, the degree to which a friendly, group-oriented environment existed; (3) awareness, the degree to which personal, political, and esthetic understanding were evidenced; (4) propriety, the degree to which politeness and conventionality were evidenced; and, (5) scholarship, the degree to which competitive academic achievement and intellectuality were emphasized.

Part I of the instrument (CUES) had been validated by Pace at several institutions. Validity of Part II, major field perception, was established by content alone. Reliability coefficients for individual scores on the five scales for each of Part I and Part II ranged from .40 to .82. But reliability coefficients based on group means were more favorable: all five major field scales were above .90; and three total setting scales were at or above .86, with the remaining two at .67 and .71. Because group means were of particular interest in this study, the higher reliabilities for group scores are especially important.

Hypotheses, Statistical Methods, and Results

Two categories of hypotheses were developed for this study: (1) those relating to student groups in the ten colleges, and (2) those

hypotheses relating to four groups selected from four of the ten colleges: an Arts and Letters sub-group, a Business sub-group, a Natural Science sub-group, and the entire Engineering sample.

The following statistical methods were used to test the hypotheses:

1. Analysis of variance - To test differences between mean scale scores for the groups.
2. Scheffé method - To test predicted differences between pairs of mean scores after finding a significant overall difference by analysis of variance.
3. Pearson product moment correlation - To test the relationship between total setting and major field scores.

Assumptions underlying these statistical methods were met or not seriously violated by the data (e.g. the assumption of homogeneity of variance for the groups was tested and supported).

Hypotheses pertaining to the ten colleges were tested at the .01 level of significance. The research hypotheses and results follow:

Hypothesis I. Student groups in the ten colleges will differ in total setting perception.

Differences were found on the community and scholarship scales, but not on the practicality, awareness, and propriety scales.

Hypothesis II. Student groups in the ten colleges will differ in major field perceptions.

Differences were found for all five scales.

Hypothesis III. A positive relationship will be found between major field and total setting scores for each scale.

For all students combined, the two variables correlated positively on all five scales. For student groups within each of the ten colleges, 41 of the 50 correlations were significant.

The research hypotheses and results pertaining to the four sub-groups within the University (tested at the .01 level of significance) were:

Hypothesis I. The four sub-groups will differ in major field press on the practicality, awareness, and scholarship scales as follows:

<u>Practicality scale</u> - The Business sub-group will perceive a stronger press than perceived by the Arts and Letters, Natural Science, and Engineering sub-groups.

This alternate hypothesis was supported.

<u>Awareness scale</u> - The College of Arts and Letters sub-group will perceive a stronger press than perceived by the Business, Natural Science, and Engineering sub-groups.

This alternate hypothesis was supported.

<u>Scholarship scale</u> - The student group from the College of Engineering and Natural Science sub-group will perceive a stronger press than that by Arts and Letters and Business sub-groups.

This alternate hypothesis was not supported, with the Engineering group exceeding all three of the others.

Hypothesis II. The four sub-groups will differ in total setting perception as measured by the practicality, awareness, and scholarship scales.

The four sub-groups did not differ on the practicality and awareness scales, but did differ on the scholarship scale.

For the scholarship scale the Engineering and Natural Science sub-groups were predicted to perceive a weaker total setting press than perceived by the Arts and Letters and Business sub-groups.

This alternate hypothesis was not supported.

Hypothesis III. For the four sub-groups, perception of major field will correlate positively with perception of total setting on the community and propriety scales.

All correlations were significant for the four groups on the two scales.

Conclusions

Conclusions relate to the ten upper division colleges at Michigan State University and the four sub-groups from these colleges.

1. Differences found on the total setting community and scholarship scales indicated that student groups in the ten colleges perceived the total institution as having different degrees of friendliness and group-orientation, as well as intellectualism and academic competitiveness. On the remaining three scales, student groups from the ten colleges perceived the total setting similarly in: (1) the degree of practical benefits and supervision (practicality); (2) the degree of personal, esthetic and political understanding (awareness); and, (3) the degree of politeness and conventionality evidenced (propriety).

2. In major field perception, student groups in the ten colleges differed on all five scales, a finding that is not surprising in view of differing objectives and curricula in the various major areas of study.
3. Student groups in the four college sub-groups (Arts and Letters, Business, Engineering, and Natural Science) did not have contrasting perceptions of major field and total setting as predicted.

   For each of the above four groups, a high major field press was predicted on a selected scale (either practicality, awareness, or scholarship), along with a low total setting press on the same scale. Although major field predictions were largely supported, total setting perceptions were not supported. In fact, for total setting perception, the four student groups differed only on the scholarship scale.
4. Product moment correlations between major field and total setting scale scores were signficantly positive (1) on all five scales for students in the ten colleges, and (2) on the propriety and community scales for students grouped by each of the four sub-groups. Hence, it can be concluded that student perception of total setting tended to vary with, or agree with, student perception of major field. This is not to say that variations in one set of scores caused variations in the other, for the scope of this thesis does not allow that conclusion. Furthermore, there were some exceptions. For example, the Home Economics and Engineering groups did

not perceive the practicality press for total setting and major field similarly; and the Home Economics and Veterinary Medicine groups did not perceive the community press for total setting and major field similarly.

Secondary Conclusions

Two secondary conclusions can be made from the analyses in the study, although neither conclusion is based on a hypothesis.

1. There would seem to be a small relationship between individual academic ability, as measured by verbal and total College Qualifying Test scores, and student perception of major field and total setting (as measured by the instrument in this study). The number of significant correlations, however, were only slightly better than chance.
2. Because of the generally lower reliabilities for individual scores, as compared to group score reliabilities, CUES can be used for obtaining group descriptions, but should not be used to describe individuals.

Discussion

One of the major findings of the study reinforces results found in some of the past research: that students enrolled in different fields of study within a complex university perceived some dimensions of the total environment differently. In this study, and in the Stern[1] study at Syracuse, students perceived the all-important intellectual press

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[1] Stern, Research on College Students, 1960, pp. 67-104.

of the total setting (the scholarship scale in this study) differently. Furthermore, student groups from the ten colleges at Michigan State University also differed in total setting community perception. The differences found in the total setting scholarship and community scales do not exactly refute Pace's[1] tentative conclusion that "in most instances and on most of the dimensions of CUES, the institution as a whole is described in pretty much the same way..." Because no differences were found on three of the scales, students in the three colleges did agree on <u>most</u> of the dimensions of CUES. But the differences found, particularly on the scholarship scale, indicate that no one college within the university should be chosen to represent student perception of the university as a whole. In addition, the differences indicate that variations of perception within a large university may be as great as variations between separate institutions; and that the variations within could provide important information about the internal major field or college influences of the university.

The results of this study also indicate that student perceptions of total setting are generally related to major field student perceptions. This latter finding is discussed within the framework of reference group theory, presented below.

<u>Theory Used</u>

The theory of contrast-assimilation effects in student groups' perceptions of major field and the total university was not validated Note

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[1] Pace, <u>College and University Environment Scales</u>, 1963, p. 58.

by the findings. Specifically, four selected major field student groups did not have contrasting perceptions of major field and total setting as had been predicted. Thus, the tendency for students to contrast perceptions of some features of the total setting and their major field of study, as suggested in past studies, was not substantiated.

However, four selected major field groups, as well as student groups from the ten colleges, did perceive the total setting and their major field similarly in most instances. The similarities are interpreted from the standpoint of reference group theory as follows: (1) becuase of the size and complexity of the University, students were more familiar with many features of their major area of study than they were with the University as a whole; this is particularly true of such features as classroom activities, and student and faculty achievement; (2) in perceiving the total setting, students tended to respond to some features as if they were responding to their major field (because this is the part of the University they knew best); and, (3) these same features then, were perceived in a like manner when students responded to the climate of their major field. Thus, major field became a reference (or perspective) for students' responses to the University as a whole, and as the results of the study indicate, total setting perception scores tended to vary or agree with major field perception scores.

A Further Theoretical Consideration. In Appendix B, mean total setting sub-scores and mean major field scores for each scale are presented for the ten colleges. The total setting sub-scores includes only items that were repeated to measure major field perception. For both

the propriety and scholarship scales, each of the major field mean scores for the ten colleges was higher than each of the corresponding total setting sub-scores. Although the differences have not been tested for significance (because they were not essential to the purpose of this investigation), they suggest a tendency for students within each college to perceive their major field as having a greater degree of scholarship and propriety than has the University as a whole. If the characteristics described by both of these scales can be assumed to be desirable to students, the phenomenon known as the "aggrandizement effect" may be contributing. Caplow and McGee[1] have defined the aggrandizement effect as a tendency for group members to assign unrealistically high ratings to their own group in comparison with other groups. For example, in a study of academic departments in the major universities of the nation, 51 per cent of the departments sampled believed their department to be among the top five in the country. Caplow also reported similar findings in studies of varied types of organizations, such as churches, public high schools, private colleges, and banks[2].

Undoubtedly this phenomenon would require further study before being accepted as characterizing the comparison between student perception of major field and total setting on some dimensions. Further research might also investigate why the aggrandizement effect is found in the above situation.

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1. Theodore Caplow and Reece J. McGee, The Academic Marketplace, New York: Basic Books, 1958, p. 45.

2. Ibid., p. 105.

Implications For Future Research

In addition to the above suggestion (the aggrandizement effect), the following are offered as possibilities for further study:

1. Student academic ability, as measured by College Qualifying Test scores, correlated significantly with student perception of total setting and major field for a *few* of the colleges in this study. If other variables, such as student grade point average and/or value characteristics, are used, would additional significant relationships be found?
2. To what extent does student satisfaction with major field and/or the total university influence student perceptions of these two enironments?
3. Several statements in CUES require students to report on how students generally behave at their institution. Thus, each student does *not* report on his values or value-relevant behavior. Perhaps, in so doing, students are reporting stereotypes that no longer really exist. How would responses differ if students reported only their own actions and interests?
4. How do faculty members in the various fields of study compare with students in the same fields, in (1) total setting perception, and (2) major field perception?
5. Do students in the various types of residences (e.g. living-learning units, traditional types of dormitories, fraternities and sororities, cooperative housing), differ in (1) their perceptions of the total university, and (2) their perceptions of the particular environment in their residence situation? Like

major field of study, each student's college residence may prove to be another situational perspective for his view of the total university.

6. In analyzing differences among the four sub-groups in this study, the Arts and Letters sub-group differed from the Business sub-group in major field perception on two dimensions: practicality and awareness (Table 4.4, supra p. 53). In addition, for students in the Arts and Letters and Business sub-groups, academic aptitude, as measured by the College Qualifying Test, correlated significantly (and negatively) with (1) major field practicality perception for the Arts and Letters students, and (2) major field awareness perception for the Business students (Table 3.5, supra p. 34). Future research might consider to what extent academic aptitude contributed to the differences found in major field and total setting perception. If, for example, academic aptitude was partialed out, would differences still be found between major fields?

✓ Note

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APPENDIX A

Part II of the Instrument
Major Field of Study[1]

Individual raw scores for scales for Part I and Part II, and Verbal and Total scores for the College Qualifying Test have been deposited as Document number 8774 with the American Documentation Institute Auxiliary Publications Project, Photoduplication Service, Library of Congress, Washington, D.C. 20540. A copy may be secured by citing the Document number and by remitting $1.25 for photoprints, or $1.25 for 35 mm. microfilm. Advance payment is required. Make checks or money orders payable to: Chief, Photoduplication Service, Library of Congress.

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[1] Part I, the *College and University Environment Scales*, by C. Robert Pace, is available through Educational Testing Service, Princeton, New Jersey (copyright 1963)

DIRECTIONS:

There are 80 statements in Part II.

These statements ask for your reactions to various aspects of <u>your major field of study at M.S.U.</u> The statements are largely identical to those you have just completed. However, <u>now</u> you should think of courses, classroom activities, students, professors, and in general, of conditions as you would find them in your <u>major field of study or areas closely related.</u> Read each of the numbered statements and decide whether it is true (usually true) or false (usually not true) as applied to your major field.

Use the next answer sheet and in addition to your name and student number, write "Major field" in the blank marked "Name of Test."

1. Frequent tests are given in most courses.
2. In many classes students have an assigned seat.
3. Many courses stress the speculative or abstract rather than the concrete and tangible.
4. There is a lot of apple-polishing around here.
5. Students must have a written excuse for absence from class.
6. Education here tends to make students more practical and realistic.
7. The important people here expect others to show proper respect for them.
8. Some of the professors react to questions in class as if the students were criticizing them personally.
9. The professors regularly check up on the students to make sure that assignments are being carried out properly and on time.
10. The values most stressed here are openmindedness and objectivity.
11. Anyone who knows the right people in the faculty or administration can get a better break here.
12. Everyone has a lot of fun here.
13. Students are encouraged to criticize administrative policies and teaching practices.
14. Students take a great deal of pride in their personal appearance.
15. New jokes and gags get around here in a hurry.
16. The training of people for service to the community is one of the major responsibilities here.
17. Most students respond to ideas and events in a pretty cool and detached way.
18. Most people here seem to be especially considerate of others.
19. Most of the faculty are not interested in students' personal problems.
20. Students are expected to work out the details of their own programs in their own way.
21. Students often run errands or do other personal services for the faculty.
22. Faculty members rarely or never call students by their first name.
23. The professors go out of their way to help you.
24. Students have many opportunities to develop skill in organizing and directing the work of others.
25. Very few things here arouse much excitement or feeling.
26. Students spend a lot of time together at the snack bars, taverns and in one another's rooms.
27. Students commonly share their problems.
28. There is a great deal of borrowing and sharing among the students.
29. There is a lot of group spirit.
30. Proper social forms and manners are important here.
31. Students are encouraged to take an active part in social reforms or political programs.
32. Most of the professors are dedicated scholars in their fields.
33. An open display of emotion would embarrass most professors.
34. There are a good many colorful and controversial figures on the faculty.
35. There are many facilities and opportunities for individual creative activity.
36. Students are actively concerned about national and international affairs.
37. Tutorial or honors programs are available for qualified students.
38. Quite a few faculty members have had varied and unusual careers.
39. A controversial speaker always stirs up a lot of student discussion.
40. There is considerable interest in the analysis of value systems, and the relativity of societies and ethics.
41. There is a lot of interest here in poetry, music, painting, sculpture, architecture, etc.
42. Many students here develop a strong sense of responsibility about their role in contemporary social and political life.
43. There would be a capacity audience for a lecture by an outstanding philosopher or theologian.
44. A lecture by an outstanding literary critic would be poorly attended.
45. The expression of strong personal belief or conviction is pretty rare here.
46. Students ask permission before deviating from common policies or practices.

(concluded on next page)

47. Many students seem to expect other people to adapt to them rather than trying to adapt themselves to others.

48. It is easy to take clear notes in most courses.

49. Instructors clearly explain the goals and purposes of their courses.

50. Students often start projects without trying to decide in advance how they will develop or where they may end.

51. Nearly all students expect to achieve future fame or wealth.

52. There are a number of prominent faculty members who play a significant role in national or local politics.

53. Students here learn that they are not only expected to develop ideals but also to express them in action.

54. People here are always trying to win an argument.

55. Most students show a great deal of caution and self-control in their behavior.

56. My major field is outstanding for the emphasis and support it gives to pure scholarship and basic research.

57. Examinations here provide a genuine measure of a student's achievement and understanding.

58. Professors usually take attendance in class.

59. Courses, examinations, and readings are frequently revised.

60. Most courses are a real intellectual challenge.

61. Most courses require intensive study and preparation out of class.

62. It is fairly easy to pass most courses without working very hard.

63. Students who work hard for high grades are likely to be regarded as odd.

64. Everyone knows the "snap" courses to take and the tough ones to avoid.

65. Class discussions are typically vigorous and intense.

66. The professors really push the students' capacities to the limit.

67. Learning what is in the text book is enough to pass most courses.

68. Students almost always wait to be called on before speaking in class.

69. Most of the professors are very thorough teachers and really probe into the fundamentals of their subjects.

70. Personality, pull, and bluff get students through many courses.

71. Standards set by the professors are not particularly hard to achieve.

72. People around here seem to thrive on difficulty --the tougher things get, the harder they work.

73. There are so many things to do here that students are busy all the time.

74. Students are very serious and purposeful about their work.

75. Careful reasoning and clear logic are valued most highly in grading student papers, reports, or discussions.

76. A lecture by an outstanding scientist would be poorly attended.

77. Students set high standards of achievement for themselves.

78. There is a lot of interest in the philosophy and methods of science.

79. Long, serious intellectual discussions are common among the students.

80. Few students here would ever work or play to the point of exhaustion.

THANK YOU FOR YOUR
TIME AND COOPERATION

APPENDIX B

Mean Total Setting Sub-Scores and Mean Major Field Scores For Each Scale, By College

Note: Individual raw scores for scales for Part I and Part II, and Verbal and Total scores for the College Qualifying Test, have been deposited with the American Documentation Institute.

MEAN TOTAL SETTING SUB-SCORES AND MEAN MAJOR FIELD SCORES FOR EACH SCALE, BY COLLEGE[1]

Legend: TS=Total Setting (sub-score), MF=Major Field (all items)

College	Scale									
	Practicality		Community		Awareness		Propriety		Scholarship	
	TS	MF	TS	MF	TS	MF	TS	MF	TS	MF
Agriculture	8.4	7.7	7.8	9.0	9.2	7.5	4.8	6.4	13.2	14.6
Arts and Letters	7.7	6.2	7.6	7.3	8.8	9.8	4.6	5.5	11.0	14.0
Business	7.8	7.9	7.5	7.1	9.0	8.1	4.5	5.4	11.8	13.0
Communication Arts	7.8	7.9	7.6	9.6	7.9	8.6	4.0	6.1	11.0	13.5
Education	8.2	7.6	8.3	9.5	9.0	9.1	4.5	6.4	11.4	11.8
Engineering	7.3	6.3	8.4	7.9	9.3	7.5	4.5	6.2	14.0	18.7
Home Economics	7.4	8.2	8.1	9.5	9.7	9.3	5.1	7.8	12.2	13.9
Natural Science	7.4	6.6	7.8	6.8	8.8	7.4	4.2	6.1	12.5	16.5
Social Science	7.8	6.8	7.3	7.2	8.7	8.9	4.5	5.3	11.3	12.7
Veterinary Medicine	8.2	8.6	9.3	11.0	9.3	8.5	4.5	7.7	11.9	20.3
All Colleges Combined	7.8	7.2	7.8	8.0	8.9	8.5	4.5	6.0	11.9	14.4

1. The total setting sub-score for each scale includes only those items that were repeated in Part II, Major Field.