The development of a needs assessment instrument for summer orientation students through the use of a modified Delphi technique

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The development of a needs assessment instrument for summer orientation students through the use of a modified Delphi technique

by

Mary Celine Moore

A Thesis Submitted to the Graduate Faculty in Partial Fulfillment of the Requirements for the Degree of MASTER OF SCIENCE

Department: Professional Studies in Education
Major: Education (Higher Education)

Iowa State University
Ames, Iowa
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INTRODUCTION

The attainment of a baccalaureate degree has been viewed by our society as an important step toward career and personal success (Snyder, 1987). However, between forty and fifty percent of students who enroll at colleges and universities fail to complete a degree program (Astin, 1975; Iffert, 1957). According to Mayes and McConatha (1982) undergraduate enrollments will decline between 5 and 15 percent during the next decade.

Although enrollments are declining, research has identified ways in which colleges and universities can take active measures to retain their student population (Tinto, 1975). Beal and Noel (1980) reported that significant improvements in retention rates have been realized by more institutions that focus on orientation as a retention strategy.

Tinto (1987) in his interactive model of student departure, indicated that departure from an institution arises from a longitudinal process between an individual and other members and social systems of the institution. The individual's experiences modify the intentions and commitments to either reinforce persistence or enhance the likelihood of leaving. Snyder (1987) stated that the introduction of a student to a college or university environment has been identified in research as an important factor in
determining a student's success or failure in higher education.

Research indicates that students increase their chances of academic success when they participate in orientation programs and activities (Upcraft, 1984). Yet, new students have little sense of being inducted into the college environment or introduced to the privileges and responsibilities of college life. Students feel separated from the environment even though the first few weeks on campus have been identified as a critical time when they begin to shape their attitudes about college (Boyer 1987). Because new students experience a significant amount of anxiety and disorientation, the need exists for colleges and universities to address student expectations and attitudes soon after they arrive. A commitment by colleges and universities to aid students in their adjustment to college life reinforces the idea that each college or university has a culture of its own and that understanding that culture contributes immensely to the quality of student learning.

To verify this commitment there is a need for institutions to develop comprehensive orientation programs that not only meet the needs of traditional entering students, but transfer, minority, disabled, and returning adult students as well (Upcraft, 1984). Successful orientation programs not only recognize but address the unique
needs and concerns of each student (Moore, Pappas, & Vinton, 1979).

While it has been recognized then that orientation is important to the academic success of new students, the diversity of students and institutions must also be recognized when planning the content of summer orientation sessions. To address this issue of diversity in a proactive way, programs and services need to be revised periodically in an effort to meet the expressed needs of a dynamic student population (Kuh, 1979).

Clearly then, periodic assessment of student needs is important in determining how to best implement student affairs programs. Accurate assessment of needs is thought to increase the likelihood that activities and programs can be more efficiently run, that student needs will be satisfied, and that student's degree of satisfaction will be evidenced (Kuh, 1982; & Scriven, 1979, in Kuh, 1979).

While needs assessment processes and techniques vary greatly in their thoroughness and depth of analysis, educational needs assessments can be carried forth in a variety of ways. Weaver (1971) indicates that an effective means through which priorities can be measured by members of an educational organization is through the use of a Delphi technique. A modified Delphi technique will be used in this study as a vehicle through which students perceptions
will be solicited.

Although the Delphi was originally intended for use as a forecasting tool, its more successful applications in education seem to be in the following areas: (1) a method for studying the process of thinking about the future, (2) a pedagogical tool or teaching tool which forces people to think about the future in a more complex way, and (3) a planning tool which may aid in probing priorities by members of an organization (Weaver, 1971).

For purposes of this study the Delphi technique will be used to construct a needs assessment instrument that can assess the perceived needs of new students entering as freshmen when they attend summer orientation at Iowa State University. Characterized as an intuitive structured group communication process, the Delphi is used to provide feedback and opinions among participants and as an information gathering and clarification tool. An element of a traditional Delphi technique whereby consensus of subject's opinions are generated to address a particular question or subject area has been eliminated in this study.

Educators will be provided with a methodology to assess the needs of orientation students on their own college or university campuses. The study may also provide Iowa State administrators direction for examining orientation program planning.
Statement of Problem

While Iowa State University's summer orientation program addresses an array of need areas pertinent to the adjustment of new students to the university, it is important to assess the needs of new Iowa State students on a regular basis due to its ever-changing population. A current instrument does not exist which is adequate in assessing the concerns and needs of new students entering Iowa State University that specifically addresses the programs, services, and information offered during summer orientation. One plausible way to assess these needs is to develop an instrument which addresses these questions and provides some information for the planning process.

Statement of Purpose

The primary purpose of this study is to develop a valid and reliable instrument capable of assessing new students' perceptions of their needs for a summer orientation session. More specifically, the purposes are:

1. to develop a needs assessment instrument capable of assessing new student's perceptions of their needs during a summer orientation program.
2. to develop a needs assessment instrument that has construct and face validity.
3. to develop a needs assessment instrument that is reliable.
4. to develop a needs assessment instrument that can provide data concerning the hierarchy of needs of a sample of orientation students.

**Research Questions**

Through the use of the Delphi process, the study will be designed to answer the following questions in addressing the perceived needs of entering students about orientation at Iowa State University:

1. What are the needs of new students when they arrive and participate in summer orientation?
2. What are the appropriate steps when designing a reliable and valid needs assessment instrument?
3. What relationships exist between the demographic characteristics of the subjects and their perceived needs?

The resulting survey instrument will be designed to assess the needs of newly enrolled students when they arrive and participate in summer orientation in relation to specific demographic variables.
Statement of Assumptions

This study assumes that the respondents will answer all questions openly and honestly, and that the people who respond are similar to those who do not respond.

Hypothesis of Study

The following hypothesis will be tested to examine the final developed survey instrument:

Hypothesis 1: There are no significant differences, as measured by a test-retest method of reliability, between seven identified orientation factors on a pretest and posttest of the final survey instrument.

Variables

The dependent and independent variables are:

Dependent variable: identified orientation factors
Independent variable: demographic characteristics of the subjects

Demographic Characteristics

Demographic characteristics chosen for this study were based on past research (Kramer & Washburn, 1983; Moore, Higginson & White, 1981; and Sagaria, Higginson & White, 1980) which indicated that selected variables may be related to
student's own perceptions of their summer orientation needs. Demographic variables were also chosen based upon studies conducted by the Research Institute for Studies in Education (RISE) Office at Iowa State University.

Subject variables selected for this study will include: age, college, sex, parent income, financial aid received, financial status, high school average grade, high school graduating class size, work status, extracurricular involvement, academic standing, and racial background.

Limitations of the Study

1. The study is limited to the responses of first year, second semester students who were enrolled in introductory psychology courses.
2. The study is limited to the responses of first year students who attended 1987 summer orientation sessions.
3. Questions generated for the survey were limited to the ability with which new students were able to self-diagnose their own summer orientation needs.
4. The study is limited to the cooperation with which respondents participate in the two-part survey development sessions and the test-retest sessions to establish reliability for the final instrument.
Definition of Terms

A number of definitions for orientation can be found in the literature. Hawkes and Johns (1929) identified orientation as the process of becoming adjusted to the environment to determine one's life work. Dannells and Kuh (1977) stated that orientation is an attempt to provide a balanced introduction to the college environment so that students can more clearly define their educational purpose, while Upcraft and Farnsworth (1984) provide a more recent definition of orientation by noting that orientation is an effort by the institution to help entering students make the transition to a collegiate environment.

For purposes of this study the investigator has defined orientation as the activities and events which are required of new students prior to enrollment (Snyder, 1987). This study will specifically refer to summer orientation programs at Iowa State University. New summer orientation students will be defined as those new freshmen students who have been admitted to Iowa State University, Ames, Iowa, and who attended summer orientation in 1987.

Numerous definitions can be found for the word need as well. A need is generally understood to indicate a state or condition (Maslow, 1954) or something required for the health or well being of an individual, like food, oxygen, or love (Gould & Kolb, 1964). The investigator will define need as
the discrepancy between some state of affairs and the actual observed or perceived condition or state of affairs (Witkin, 1977). Needs assessment will be defined for this study as a formal analysis that shows and documents gaps between current results and desired results, arranges the gaps in priority order, and selects the needs to be resolved (Kaufman, 1982).

The Delphi technique, although originally a forecasting tool, has been used in a variety of situations and has numerous applications. For this study a modified Delphi process will be used and will be referred to as a two-round, modified Delphi process. The two-round, modified Delphi process will be defined as a series of two questionnaire building sessions, with the second questionnaire being built upon responses from the first questionnaire. The final step of the process will be the development of a needs assessment instrument, which will be built upon the responses from the second questionnaire.

Organization of the Remainder of the Study

Chapter II discusses the review of the literature, including studies conducted on orientation and the impact that orientation programs make on students transition to college. In addition, it discusses needs assessments, their definitions and widespread use, and the Delphi technique, which will be used in this study in modified form. Finally, instrumentation
and survey development is discussed in the review.

The methods and procedures for the study are discussed in Chapter III. This chapter will include a discussion of the procedures used to design the instrument and collect the data, a description of the subjects, and the analysis of the data. Results of the data analysis will be discussed in Chapter IV. Chapter V will include a summary of the study. In addition, conclusions from the results will be presented as well as recommendations for future research.
REVIEW OF THE LITERATURE

The purpose of this study is to develop a needs assessment questionnaire that can be used to assess the needs of students who attend summer orientation at Iowa State University. A literature review was conducted which revealed a number of usable documents on needs assessment as it relates to orientation. Usable documents on the topics of needs assessment, the Delphi method, and questionnaire construction were discovered, yet, not as they relate to orientation. Thus, brief individual literature reviews on each of the above mentioned topics were completed.

Orientation

Orientation to college in some form takes place at a majority of college and university campuses across the United States. Since the initiation of the first orientation program in 1888 the range and scope of orientation programs and activities have been developed, with programs geared toward aiding new students in making the transition from high school to college (Chandler, 1972). For most orientation programs, the basic goal has been to narrow the gap between the needs and expectations of the institution and the student.
Rationale for orientation programs is stated in an early review by Shaffer (1962):

The major purpose of orientation to higher education is to communicate to the new student a concept of college as a self-directed, intellectually-oriented experience. Orientation should contribute to the student's understanding of the relevance of higher education to his life and problems. (p. 273)

A number of authors have identified goals and objectives for orientation in the literature. Lee and Froe (in Black, 1970) described four goals for an orientation program: helping acquaint the student with the educational facilities on campus; giving the institution the opportunity to evaluate each student; helping acquaint the student with the campus community and personality; and helping acquaint the student with him or herself and with his or her potential and aspirations.

Upcraft and Farnsworth (1984) identified four similar orientation goals. These include: helping students adjust academically; helping students adjust personally; helping families of entering students understand the college experience; and helping institutions learn more about its entering students.

More specific goals of orientation were identified by Butts (1971) as: building relationships, completing registration in a humane manner, distributing information, and making aware the educational and career resources offered at
Orientation program goals as stated in Iowa State University's philosophy of orientation document (1983) include: providing accurate and appropriate information, programs, and services to help students discover and begin to achieve their own academic and personal objectives; and encouraging parents of new students to understand and become involved in the educational concerns of their students. Specific objectives of the program include: to provide an accurate impression of the university; to begin integrating students into the university environment; to provide accurate information to students and their parents; to assist students in assessing their academic preparation and goals; to personalize the orientation program by providing interaction with university faculty, students, staff and parents; and to meet the needs of all student populations.

Student's needs have also been identified in the literature. Moore, Higginson, and White (1981) indicated the need for entering freshmen to be socialized to the academic practices and expectations of the institution. Kramer and Washburn (1983) concluded through the examination of successful orientation programs that orientation-related needs can be classified into eight categories: academic advisement and information; career advisement; help making the emotional transition to college; help with understanding rules and regulations; help in
becoming geographically oriented to the new locale, help in making the intellectual transition to college, and help in setting personal and academic goals.

Brinkeroff and Sullivan (1982) studied the effect orientation has on altering the concerns of new college students. The study showed that prior to orientation students were concerned about, in order: academics, finances, location of buildings, facilities and services, university structure, housing, identity, and social relationships. The study concluded that overall student concerns were reduced for each of the concern areas.

Studies about orientation have indicated that orientation programs can increase retention and help ease a new student's transition to college. Chandler (1972) found that students attending orientation were more likely to participate in activities, obtained better grades, and were less likely to drop out of college than those not attending orientation. Robinson (1970) similarly discovered that students attending orientation appeared to be better adjusted to the institution and were more likely to seek assistance from the institution in solving personal problems.

Other studies, however, have questioned the impact of orientation programs on entering students. Rothman and Leonard (1967) found that no differences in grade point, values, or attrition existed between students who did and did
not attend a semester-long orientation course. Donk and Hinkle (1971) concluded that participating in an orientation program makes no difference in a student's success or attitude.

Despite conflicting views in the literature regarding the impact of orientation on the new student, the research indicates that involvement in orientation programs assists students with career choices, enhances college success, and helps students establish interpersonal relationships (Snyder, 1987). Overall, orientation programs aid students in adjusting socially and academically to the college and university environment.

Needs Assessment

Definitions of needs assessment are similar in the literature; however, there is less agreement about the elements that make up needs assessment itself. As mentioned in the definition of terms, Kaufman (1982) cites the following as a comprehensive definition of needs assessment: "A needs assessment is a formal analysis that shows and documents the gaps between current results and desired results (ideally concerned with gaps in outcomes), arranges the gaps (needs) in priority, selecting needs to be resolved..." (p. 75).

Kimmel (in Witkin, 1984) states that a needs assessment should provide a measure of demand for services against which service goals and objectives should be met, assess the adequacy of existing services and resources, and identify
certain conditions within a community. Kimmel continues to explain that the term 'needs assessment' can be applied to any approach or method spanning from complicated surveys to thinking sessions. Needs assessment can be a decision-making process, an analytical procedure, a procedure for describing goals, or a process to resolve differing viewpoints.

English and Kaufman (1975) state:

Needs assessment is a process of defining the desired end (or outcome, product, or result) of a given sequence of curriculum development itself, ... it is neither a curriculum nor should it embrace any set of assumptions or specifications about the type of curriculum which ought to be developed to best reach the ends desired and defined. (p. 34)

As identified in the literature, educational needs assessment studies range in scope from national to statewide surveys to studies encompassing only a single institution or school (Moen, 1976).

Klein (1971) recognized that while the scope and amount of group or individual involvement may vary, the following activities are considered basic to all needs assessments: (1) listing the full range of possible goals (or objectives that might be involved in the needs assessment), (2) determining the relative importance of the goals (or objectives), (3) assessing the degree to which the important goals (or objectives) are being achieved by the program (i.e., identifying the discrepancies between desired and actual performance), and (4) determining which of the discrepancies
between the present and desired performances are most important to correct.

Kaufman and Southard (in Witkin, 1977) identify four components of assessing educational needs in what might be thought of as a classical method of needs assessment: (1) generate goals and rank them for importance; (2) determine the present status of each goal; (3) identify and analyze discrepancies between goals and the present state; and (4) assign priorities to the discrepancies. From the assessment then, discrepancies are identified and high-priority need areas are pinpointed for use in program planning and modification.

Rowell (in Moen, 1976) grouped educational needs assessment studies into the following five categories to provide a better understanding of the use of educational needs assessments: (1) goal setting and long range planning, (2) student characteristics and follow-up studies, (3) occupational needs assessment, (4) facilities design and educational innovation, and (5) curriculum evaluation and resource allocation.

It was also revealed in the literature that needs assessment in higher education tends to center around institutional planning, obtaining consensus on broad goals, or obtaining consensus about aspects of the curricula or university management (Witkin, 1984).

Roth (in Witkin, 1984) identifies six stages or elements
of the needs assessment process as it specifically relates to higher education: (1) educational goals or philosophy given as a point of departure, (2) need identification and need prioritization, (3) treatment selection, (4) treatment implementation, (5) evaluation, and (6) modification and recycle.

Kuh (1982) described that needs assessment can be used within an educational context to identify goals and objectives, but can most effectively be used when its purpose is viewed as a problem-focused strategy whereby unsatisfactory conditions that students must contend with are identified. The sequence of the needs assessment for a problem-focused strategy is as follows: (1) identification of the problems, purposes of the assessment, and target audiences; (2) determination of what and how data will be analyzed; and (3) recommendations to improve the situations related to the problem.

Meyers and Koenig (1979) revealed that the use of needs assessment by student affairs staff can serve a number of purposes. These purposes have been divided into five different categories with the understanding that no category is pure in nature and that several different purposes can be used in combination. These categories are: monitoring stakeholder perceptions - where the purpose is to generate ideas and document perceptions about various issues; program or policy justification - where the purpose is to collect
information to support likely alternatives; satisfaction index - where the purpose is to estimate relative acceptability of various alternatives; participative policy making - where the purpose is for students to select the most acceptable program or policy from alternatives; and measurable improvements - where the purpose is to determine whether needs have been met.

Most discrepancy models evolved from the work of Kaufman (1982) who first placed needs assessment into the educational environment through systematic educational planning known as a system approach. A system approach is a procedure for identifying, justifying, and scoping needs and then meeting needs systematically.

Kaufman (1977) through a system approach identifies a taxonomy of needs assessments, one for each of the six different functions of the system approach: (1) identify the problem based upon need; (2) determine the solution requirements and identify solution alternatives; (3) select solution strategies from alternatives; (4) implement; (5) determine performance effectiveness; and (6) revise as required. Kaufman identifies possible planning tools associated with each function of the system approach and notes that starting further into the taxonomy creates a greater likelihood of making faulty assumptions.

In its simplest form needs assessment can be thought of as a process for ranking goals and setting priorities (Witkin,
1977). However, it is recognized in the literature that the most commonly used method to determine the status of goals in an institution and to obtain perceptions about existing conditions is the survey. While the literature provides varied components and approaches to needs assessment, studies identified in the literature concerning orientation needs assessments used surveys as means of assessment.

Mayes and McConatha (1982) used the Mooney Problem Check List (MPCL), a self-report inventory consisting of items surveying students in 11 categories, to survey and assess concerns of incoming freshmen over a two-day orientation program. As previously mentioned, Kramer and Washburn (1983) examined the perceived orientation needs of new students through a survey encompassing 40 needs related topics in four different categories: personal needs, social needs, career needs, and academic needs. Student rated each need on a 5 point Likert-type scale.

Similarly, Sagaria, Higginson, and White (1980) investigated the needs and interests of entering students before initial orientation and enrollment. Entering freshmen were asked to complete the Freshman Issues and Concerns Survey (FICS). The questionnaire consisted of 9 categories with a rank-order response format, with 8 of the 9 categories representing three domains of student interests and needs: academic, personal, and orientation.

While it is recognized in the literature that the most
commonly used method to determine the status of goals and to obtain perceptions about existing conditions is the survey, needs assessments approaches vary greatly in completeness and depth of their analysis. Some assessments focus on generating and ranking goals, while others use a system approach where needs assessment is an ongoing part of planning, implementing, and evaluation (Witkin, 1977).

The Delphi Technique

The Delphi technique has been identified in the literature as one of several intuitive forecasting techniques which are based on the opinions of expert individuals or group of experts (Tiedemann, 1986). Historically, the Delphi concept was originally a spinoff of defense research in the 1950s with its initial objective being to obtain the most reliable consensus of opinion of a group of experts by a series of intensive questionnaires interspersed with controlled opinion feedback (Dalkey & Helmer, 1963).

The Delphi was first used to establish a sequence of scientific and technological events and to judge when the events would occur through speculation of experts (Weaver, 1971). The Delphi was later used by the Rand Corporation in the mid 1960s to assess the direction of long range trends in science and technology and their effects on society (Linstone & Turoff, 1975). At this same time the Delphi continued to be
utilized in the areas of defense and research and development as a forecasting tool and has been adapted for use in government, industry, and academe.

Linstone and Turoff (1975) present a more comprehensive definition of the Delphi technique by characterizing the delphi as a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem. To accomplish a structured communication process the following conditions must be present: feedback of individual contributions of information and knowledge; assessment of the group judgement or view; opportunity for individuals to revise views; and a degree of anonymity for individual responses.

Penland (1983) states that the Delphi can be used as a means of soliciting interpretations or recommendations. Regardless of the goal or objective of a Delphi, most Delphi techniques hold a number of common characteristics: the use of a panel of experts for obtaining information or data; gather data in writing using carefully designed sequential questionnaires; work systematically toward a consensus of opinion; guarantee the anonymity of experts and their statements; and employ iteration and controlled feedback.

Studies utilizing the Delphi reveal that it has successfully been used in a variety of areas aside from its original use as a forecasting tool. The other areas for which
the Delphi has been adapted include: gathering current and historical data not accurately known or available; examining the significance of historical events; examining possible budget allocations; exploring urban and regional planning options; planning university campus and curriculum development; putting together the structure of a model; delineating the pros and cons associated with potential policy options; developing causal relationships in complex economic or social phenomena; distinguishing and clarifying real and perceived human motivations; and exposing priorities of personal values and social goals (Linstone & Turoff, 1975).

Lewis (1984) studied characteristics of Delphi studies and their perceived impact of higher education. Lewis found that the use of most Delphi studies in higher education contradicted classic use and methodology. Lewis also noted that the decision making process was characterized as participatory, and that the Delphi was viewed as a public relations tool with moderate impact on higher education. Lewis concluded that Delphi studies have more impact when: (1) there is a recognized problem where a solution is actually being sought, (2) the study involves persons affected by the solutions and whose cooperation is needed to make it work, and (3) the person conducting the Delphi is in a position to act upon the results.

Weaver (1971) explains that the use of the Delphi in an educational setting assumes that one way to improve the
formulation of policies and plans is to increase the awareness of alternative future options and expectations of options among educators. The Delphi has been used in educational settings and has frequently been used in its original form to make forecasts about education (Brooks, 1979). Weaver (1971) reveals The Institute for the Future and the Educational Policy Research Center conducted a Delphi to examine developments in education that could impact education administrators; dates of occurrence, desirability of developments, and interventions were also forecasted.

Brooks (1981) used a modified Delphi to identify the perceived present and future problems that could affect the administration of continuing education in two-year and four-year colleges in Georgia. A three-round study was used to identify five problems that should receive priority for decision-making, with respondents being colleges presidents and directors.

The investigator failed to find any studies using the Delphi method as a means of assessment for orientation programming in colleges or universities. However, Delphi's used as needs assessments with educational applications were identified.

The Delphi method was used in Central Kentucky public school districts to assess in service needs (Brooks, 1979). While Glass (1977) used the Delphi method as a means of
determining a priority of continuing education and community needs to establish service goals for Virginia community colleges.

Curran (1972), developed a priority list of needs to improve the quality of life for students on the Baldwin-Wallace College campus through the use of the Delphi. Curran used administrators, faculty, and students to participate in a series of questionnaires. Statements were generated by participants who described needs that could improve the student quality of life on campus. A priority list of needs was constructed from the process.

Little has been written concerning the use of the Delphi method as a means of instrumentation development as well. Wishert (1981) surveyed the attitudes of professionals concerning the family system and developed a fault tree analysis-type instrument to use in family therapy.

In relation to needs assessment, Hassanein (1984) developed an instrument through the use of a two-stage survey modeled after the Delphi technique. The purpose was to identify faculty development needs with respect to research. An open-ended round one questionnaire identified 61 research need items in eight categories. A structured round two of the survey developed from the need research items was administered to a random sample of faculty at allied health facilities. Factor analysis and multiple regression of faculty characteristics was used to determine if various faculty
characteristics predicted research development needs.

The literature has supported essentially the same process for the Delphi regardless of its variety of applications (Hostrop, 1973; Brooks, 1979). The steps included: (1) identify a panel of experts; (2) determine the willingness of individuals to participate; (3) gather individual input through open-ended questions to elicit initial responses; (4) analyze data; (5) enable group-input to be examined by each participant for assessment and react to other group members positions; (6) analyze new input; (7) enable participants to reassess his or her position based on group response; and (8) analyze and share final input.

The literature does disclose that the method has identifiable fundamental weaknesses (Weaver, 1971; Linstone and Turoff; 1975). When used in the social sciences these include: lack of theoretical framework to guide the inquiry, the method's lack of precision, dependence upon a social science data base which is less reliable than a technological data base, and its lack of explanation for decision-making. Weaver (1971) does, however, note that the Delphi can be used effectively in an educational context as an aid in probing priorities held by members and constituencies of an organization. He states that it is a potent device for teaching educators to think about educational issues in a more complex way by enabling educators to make better decisions.
which account for alternatives.

While the literature failed to reveal much information concerning the Delphi as an instrument development tool or as a means for assessing orientation programming, it should be noted that the literature reveals the Delphi to be a highly adaptive model and is flexible in its applications.

Survey Development

The literature states that the most widely used technique to gather data is the questionnaire. As noted in de Vaus (1986) the questionnaire is a "highly structured data collection technique whereby each respondent is asked much the same questions." In addition, Berdie and Anderson (1974) state that the questionnaire is a device for securing answers in research and is based on the underlying assumption that the respondent will give truthful answers.

Developing a measure is a long and difficult process; it must produce results that are sufficiently accurate as well as relevant. Kerlinger (1964) reveals that the need exists for a researcher to develop a new measure only if no measure of the variable exists, otherwise a measure must be constructed to fit the particular study. Kerlinger emphasizes that a poorly developed instrument can do more harm than good because its use can lead the investigator to erroneous conclusions. Subsequently, certain principles must be followed when formulating either simple or complex questionnaires.
When constructing or using any form of measurement, the literature recognizes important considerations for evaluating its usefulness (Cozby, 1985; Kerlinger, 1964; de Vaus, 1986; and Moore, 1983). The quality of the test depends on the following considerations: (1) reactivity, (2) reliability, and (3) validity.

Reactivity occurs when a subject is aware that he/she is being measured and is sometimes a problem with self-report measures. Subjects may misrepresent themselves due to social desirability or for other reasons. Reactivity can be minimized through establishing rapport and honesty between researcher and subject (Cozby, 1985).

The literature defines a reliable measure as one in which the same results are obtained on repeated occasions and because of this gives a stable measure of the same variable (Cozby, 1985; Kerlinger, 1964; de Vaus, 1986; and Moore, 1983). Poor wording of a question, error in the coding stages, or asking questions in which the subject has no opinion can result in an unreliable measure. Reliability of single questions can be assessed through a test-retest method with a two to four week interval. Other tests of reliability include alternate-form reliability, scorer reliability, overall reliability of a scale, or through factor analysis (Moore, 1983; de Vaus; 1986).
The literature defines a valid measure as one which measures what it is intended to measure (Cozby, 1985; Kerlinger, 1964; de Vaus, 1986; and Moore, 1983). Validity can be measured primarily in three ways. Face validity of a measure is determined through an examination of the instrument by a professional with expertise in the field of study; criterion validity reveals a highly correlated relationship between a new measure and external criterion such as an established measure; and construct validity evaluates how well a measure conforms with the theoretical expectations or how well it actually measures a theoretical construct.

Establishing validity in measuring or questioning procedures calls for good design principles. Belson (1986) identified necessary conditions for the formulation of usable, valid measures; however, it is important to note that validity is impossible to ensure. These principles include: (1) determining precisely what information is needed from the questionnaire, (2) determining certain fundamental design strategies for the questionnaire, and (3) determining the design of the questionnaire.

de Vaus (1986) indicates similar points to be considered for conducting social research: (1) focus research question, (2) clearly define and research topic, and (3) determine a sample that represents the population from which information is to be collected.

Cox (1976) stresses the importance of developing a useful
tool from which data can be compiled and analyzed by listing three of his six basic steps for questionnaire design as: (1) defining the problem, (2) determining the contents, and (3) identifying and categorizing the respondents. Cox continues to list his final three steps as: (4) developing questions and format, (5) writing directions, and (6) reassuring response.

Berdie and Anderson (1974) provide the following initial checklist of considerations before the questionnaire is designed: (1) decide upon goals of the study and check with people involved in the study for accuracy, (2) become thoroughly acquainted with the topic of study, (3) become familiar with the characteristics of those whom the questionnaire will be sent, and (4) estimate the time and cost involved in the study.

Belson (1986) identifies four well-established methods for constructing a new questionnaire. The are briefly defined as follows: (1) The method of item analysis - with this construction procedure a large pool of single item subtests are developed and the pool is reduced to a manageable number by means of item analysis. A correlation index is calculated for each item within the pool; items within the pool with the highest association with some criterion of truth are selected. (2) The method of scientific indicator - this method is a correlational strategy aimed at identifying the desired measurable questions or variables. Rather than
looking for a criterion score as in the method of item analysis, a composite of predictors is developed describing what is desired to be measured. This is developed through the identification of possible indicators or correlates; the individual indicators which yield a joint correlation with some criterion of truth are identified as index items.

(3) The method of public judgement - this construction strategy is based on public judgement. A large pool of public statements are gathered and experts rate these items along an 11 point line identifying the degree to which they agree or disagree with the existence of the statement. Only those items agreed upon by the bulk of the raters are considered items. (4) The method of barrier appraisal leading to progressive modification. This is a complicated exploratory study method which a preliminary identification of facilitating factors and barriers with regard to the respondent giving honest and accurate replies. The next step is a progressive modification geared toward an intensive interviewing method designed to produce more accurate questions. This is done through a modification and testing cycle.

The literature states that an integral aspect of questionnaire construction is deciding upon questionnaire layout and response format. Nixon (1954) indicates that it is generally agreed upon by authorities in
educational research that questionnaires which are attractively presented and easy to read will warrant a higher return rate. Nixon presents a series of practical suggestions in construction, development of physical form, and final construction of the questionnaire which assists the investigator in obtaining the largest percentage of replies: (1) paper quality and size and color of ink, (2) arrangement of questionnaire, (3) directions, (4) cover letter, (5) envelopes, (6) mailing, and (7) follow-up letter.

Cox (1976) reveals that the format determines the overall effect of the questionnaire. A logical, clean format helps to ensure completion of questionnaires and will aid in tabulating returned data. Suggestions for the questionnaire in final form include: attend to the length of the form and the amount of time it will to answer; group questions calling for the same method of response together; reprint scales and response alternatives on new pages if they carry over; do not crowd items; limit the number of open-ended questions for tabulation purposes; choose a type size and style that is easy to read; print directions close to the section they refer to; avoid a format that will foster a response set; check preliminary drafts with decision-makers; and plan on revisions.

When combining questions into a questionnaire de Vaus (1986) suggests attending to: the use of close-ended and open-ended questions, the use of contingency questions,
the use of general and subsection instructions, the order of the questions, and setting up the questions for coding.

The literature indicates that the most effective questionnaires are worded as simply as possible and are appropriate and familiar to the populations for whom they are intended (Payne, 1951; Cozby, 1985). Similarly, de Vaus (1986) states that wording and evaluating questions is fundamental in developing unambiguous, clear questions. To avoid problems in question writing de Vaus suggests the following: use simple language; shorten the question; avoid double-barreled questions; avoid leading questions; avoid negative questions, ask questions that the respondent is likely to have knowledge about; use words that have the same meaning to everyone; avoid questions that may elicit a prestige bias; avoid ambiguous questions; use direct and indirect questions appropriately; use a sufficiently clear frame of reference; avoid questions that artificially create opinions; use personal or impersonal wording when preferable; avoid questions that are unnecessarily detailed or objectionable.

When evaluating questions, de Vaus (1986) suggests to consider the following: check to make sure the item is of use; make sure the items form a scale; check the validity and reliability of items; check form redundancy of questions; and check for a response set.

Berdie and Anderson (1974) provide a similar checklist to
test each item against on a questionnaire. The checklist includes: does the question ask for only one bit of information; does the question presuppose a certain state of affairs; does the wording imply a desired answer; are the words emotionally loaded, vaguely defined, or overly general; does the question have a double meaning that may cause misunderstanding; does the question use abbreviations that may be unfamiliar to the respondent; are the response options mutually exclusive and sufficient to cover each conceivable answer.

Along with questionnaire layout and wording of individual items on a survey, the literature stresses that an important aspect of questionnaire design is deciding upon the response format. Often respondents are asked to rate their reactions to a question on some sort of scale which measures their opinion on a certain matter. Cozby (1985) gives several examples of scales: 7 point scales, two-category scales, graphic scales, comparative rating scales, graphic rating scales, and semantic differential scales. Moore (1983) gives similar examples: ranking scales, semantic differential scales, checklists, and nomination scales.

Kerlinger (1964) identifies two types of objective scales and scale items: those in which responses are independent (response to an item has no influence on response to another item), and those in which responses are not independent
(response to two or more items is based on some criterion and forces the respondent to choose an item that precludes the choice of another item). Scales classified as independent include: agreement/disagreement, yes/no, true/false, and Likert scales. Scales classified as dependent include: rank order and forced choice item scales.

De Vaus (1986) reveals the importance of summated scaling, or, receiving a score dependent upon the favorableness of the answer to the attitude being measured. The scale score indicates a person's position on the abstract dimension which individual questions are intended to tap. This can be accomplished by attaching a score to each person's response to individual questions, with favorable responses receiving high scores and negative responses receiving low scores.

While it is important to attend to the principles of questionnaire design, pilot testing, evaluation, and redrafts are necessary to minimize questionnaire limitations and to produce a good questionnaire.

Summary

The review of the literature provided information on the following topics: orientation, needs assessment, the Delphi technique, and instrumentation development. While an overview of orientation recognized the varying goals of orientation programs and its powerful role of introducing students to the
university environment, the literature also revealed the importance of needs assessment in assisting orientation program planning.

As indicated through literature regarding the Delphi technique, its educational applications are adaptive to conducting primary research on the subject of student needs at a college or university. Information from the Delphi has been used as a basis for instrumentation development, as it has aided in determining focus, content, and strategies for questionnaire design.
METHODS

The purpose of this study was to develop a reliable and valid needs assessment instrument capable of assessing new student's perceptions of their needs when they attend a summer orientation session at Iowa State University. The methods section includes the procedures used to design the instrument and collect the data, a description of the subjects, and procedures used to analyze the data.

Procedures Used to Design the Instrument and Collect the Data

The final survey instrument was designed to measure the perceived needs of entering freshmen when they attend summer orientation at Iowa State University. A proposal was submitted to the Iowa State University Committee on the use of Human Subjects in Research for approval. The proposal was reviewed by the committee, and it was concluded that the rights and welfare of the human subjects were properly protected.

A modified, two-round Delphi process was used as a method for instrumentation development for this study. This process is essentially a series of questionnaires, with subsequent questionnaires built upon responses to preceding questionnaires. The methodology used in this study and referred to as a modified, two-round Delphi process is based on a step by step procedure identified by Delbecq, Van de Ven, and
Gustafson (1975). A two-round modified Delphi process was used to survey students about their orientation needs, and from this information a needs assessment questionnaire was developed which could then be used to survey students about their orientation needs.

The intent of the modified, two-round Delphi process was to: (1) find out what students believed their perceived needs were for summer orientation; (2) to develop individual orientation need items which represented the perceived needs of the students; and (3) to identify orientation need factors.

The first round of the modified, two-round Delphi process consisted of the development and distribution of the first questionnaire. The first questionnaire in a Delphi allows participants to write responses to a broad question. For this study, the content of the first questionnaire contained one two-part question. (See Appendix A.)

The questionnaire allowed for students to make 10 statements on the left side of the page concerning programs, services, or information new students would benefit from and need the most. This column was labeled "most needed." The right side of the page allowed for students to make 10 statements about programs, services, or information new students would benefit from and need the least. This column was labeled "least needed." On the bottom, right hand corner of the questionnaire students were asked to state their name,
college, and approximate date of attendance at orientation.

A letter was developed and attached to the first questionnaire which assured students that their responses would be kept confidential. (See Appendix B.) The letter also informed students about their participation in a two-part study and were asked to return on March 7, 1988 or March 9, 1988 to Lagomarcino Hall to complete the second questionnaire.

The survey was evaluated by the investigator's graduate committee members and three graduate students experienced in orientation programming. Adjustments were made to the questionnaire and it was concluded that the questionnaire would take 20 to 30 minutes to complete.

The first questionnaire was distributed to a total of 50 students at four different sessions held in Lagomarcino Hall. Two one-hour sessions were held on February 29, 1988 with 24 students completing the first questionnaire. Two one-hour sessions were also held on March 2, 1988 with 26 students completing the first questionnaire.

At the beginning of each session students were instructed by the investigator to read the letter attached to the front of the survey. Students were verbally asked to return to take the second questionnaire as mentioned in the attached letter. The investigator also read through the instructions for questionnaire 1 and answered questions about the questionnaire.
Of the 50 questionnaires completed in the first round of the modified Delphi process, four of the returned surveys were not included in the final sample because all four students were classified as sophomores. As a result, statements from 46 of the 50 surveys were used to develop the second questionnaire.

A summary list of items was identified by the investigator using information from the "most needed" column from questionnaire one. The generated list of summary items reflected the initial opinions of the respondents. Identical item statements and summarized opinion statements were grouped together into perceived need categories. Each category was labeled to reflect a particular group of perceived needs identified by the respondents. Items in each category were transformed into easily understood sentences to be used as the content for questionnaire 2.

The investigator identified the following set of categories (factors) from the list of "most needed" statements from questionnaire one: (1) academic - 114 statements, (2) orientation - 43 statements, (3) social adjustment and integration - 89 statements, (4) housing - 73 statements, (5) faculty and student interaction - 28, (6) finances - 47, (7) geographics - 59 statements. A total of 453 "most needed" statements were made by respondents participating in the first round of the modified Delphi process.

The second round of the modified, two-round Delphi
process consisted of the development and distribution of the second questionnaire. Questionnaire 2 presented the opportunity for respondents to review and priority rank items (transformed sentences) from questionnaire 1, to label items as important or not important, to clarify the item if it was presented unclearly, to add additional items if necessary, and to establish preliminary priorities among items. (See Appendix C.) This round of the process primarily served as a clarification step to check the clarity of sentences and accuracy of ideas presented in questionnaire 1.

Sixty-one sentences derived from statements identified on the questionnaire 1 served as the content for the questionnaire 2 and represented each previously identified perceived needs category. Space was provided on the left side of the second questionnaire for respondents to rank by priority vote the 25 most important items as would be perceived by an incoming freshman at Iowa State University, with 25 being the most important item and 1 being the least important item. The right side of the questionnaire allowed students to comment on the importance or unimportance of an item. Respondents were given the opportunity to add additional items on the back of the second questionnaire.

A letter was attached to the second questionnaire which assured that students responses would be kept confidential. The content of the letter thanked respondents for returning to
participate in the second part of the modified, two-round Delphi process. (See Appendix D.)

The questionnaire was piloted by a panel of orientation experts. Slight modifications were made to the questionnaire upon suggestions of the experts. It was concluded that the questionnaire could be accomplished in 20 to 30 minutes.

Forty-two of the original 46 respondents returned to complete the second questionnaire for a 91% return rate. Two one-hour sessions were held on March 7, 1988 with 20 students completing questionnaire two. Two one-hour sessions were also held on March 9, 1988, with 24 students completing questionnaire two. Of the 44 surveys completed, 42 surveys were usable. Two students completed the second round questionnaire who did not participate in the first round of the modified Delphi process; therefore, the surveys were not usable. Four respondents did not return to take the questionnaire 2.

A tally vote sheet was developed from the priority rankings showing the the total votes received by each item and how respondents differed in their voting. The tally vote sheet enabled the investigator to see: (1) the total vote for an item, or the sum of the individual ranks assigned to an item, (2) the number of respondents voting for an item, and (3) and the diversity of rankings assigned by respondents for a particular item.

In addition to the tally vote sheet, a running list
of comments pertaining to specific questionnaire items was recorded which indicated changes or clarification made to particular items. The list also indicated if the item was important or unimportant according to student responses. This gave students the opportunity to express the importance of an item without ranking it as one of the top 25 important items. Students on the average limited their comments to stating whether they felt the item was important or unimportant.

Additional comments made by students were limited. Of the 42 usable questionnaires returned from round two, 27 comments referred to making a change about a particular questionnaire item.

The third phase of this study was to develop a final needs assessment questionnaire that was valid and reliable. Items developed through the two-round, modified Delphi process served as the basis for the development of the final questionnaire and reflected comments and clarifications made to items on questionnaire 2. A combination of student comments and the priority ranking of questionnaire items were used to determine final questionnaire content.

A total of six items appearing on questionnaire 2 were excluded from the final questionnaire. These questions were excluded based on their low priority ranking and on comments made about the individual items. While some items included on the final questionnaire were ranked lower than some which
were included, student's comments failed to be as negative and therefore were left on the questionnaire. The six items excluded from the final questionnaire which were included on questionnaire 2 were:

1. "I am given an explanation of how the phone system works in the residence halls."
2. "The topic of test anxiety is addressed at orientation."
3. "I am provided with information about studying abroad."
4. "I am informed about the positive and negative points of attending ISU."
5. "I am provided with a history of ISU."
6. "The speakers do an adequate job of presenting information."

Items from questionnaire 2 which were modified for the final questionnaire considering feedback made by students were:

1. "I have the opportunity to stay in the residence halls during orientation." was changed to "Summer orientation at ISU should provide me with the opportunity to stay overnight in the residence halls to experience what residence hall living is like."
2. "I like knowing my housing room assignment in advance." was changed to "Summer orientation at ISU should provide me with the opportunity to obtain my
housing assignment while attending orientation."
3. "The possibility of experiencing a roommate conflict is discussed." was changed to "Summer orientation at ISU should provide me with a discussion about the possibility of experiencing a roommate conflict and how to deal with it."
4. "I can tour a fraternity or sorority." was changed to "Summer orientation at ISU should provide me with a tour of the greek system."
5. "I have information about the location of certain offices and building on campus." was changed to "Summer orientation at ISU should provide me with information about the location of offices and buildings on campus."
6. "A campus map helps me find my way around campus." was changed to "Summer orientation at ISU should provide me with a map to help me find my way around campus."
7. "Professors speak one-on-one with me about coursework." was changed to "Summer orientation at ISU should provide me with the opportunity to speak one-on-one with a professor."
8. "ISU students talk with me about what a typical day is like in college." was changed to "Summer orientation at ISU should provide me with the opportunity to talk with ISU students."
9. "I am provided with information about where to buy my books." was changed to "Summer orientation at ISU
should provide me with information about buying and selling books."

10. "I am given an adequate explanation of the placement exams." was changed to "Summer orientation at ISU should provide me with information about placement exams."

11. "Study habits are discussed." was changed to "Summer orientation at ISU should provide me with information about how to get good grades."

12. "Scheduling, adding, and dropping classes are explained to me through a session on touchtone registration." was changed to "Summer orientation at ISU should provide me with an explanation of scheduling, adding and dropping courses."

13. "I like to know my actual schedule before I leave orientation." was changed to "Summer orientation at ISU should provide me with an actual schedule of my classes before I leave orientation."

14. "I am informed about campus activities, organizations, and clubs." was changed to "Summer orientation at ISU should provide me with information about campus activities and clubs."

15. "The social life of a college student is discussed." was changed to "Summer orientation at ISU should provide me with information about social activities."

16. "The financial aid office provides assistance for me
with loans, scholarships, grants, and work-study jobs."
was changed to "Summer orientation at ISU should provide
me with information about scholarships."; "Summer
orientation at ISU should provide me with information
about government student loans"; "Summer orientation at
ISU should provide me with information about grants.";
and "Summer orientation at ISU should provide me with a
discussion about finding a job while attending ISU."
17. "I am informed about the health center and its
functions." was changed to "Summer orientation at ISU
should provide me with information about the health
center."
18. "I am informed about the need to budget my time
in college." was changed to "Summer orientation at ISU
should provide me with information about how to manage my
time in college."
19. "A slide show is presented to me about campus life." 
was changed to "Summer orientation at ISU should provide
me with information about campus life."
20. "A meal is provided for me while attending
orientation." was changed to "Summer orientation at ISU
should provide me with pre-arranged meals during
orientation for convenience."
21. "I am informed about where I can park during
orientation." was changed to "Summer orientation at ISU
should provide me with information about where to park
while attending the orientation program."

Four questions were added to the final questionnaire after considering written feedback by students on questionnaire 2. The four additional questions were:

The four additional questions were:
1. "Summer orientation at ISU should provide me with information about university policies and procedures."
2. "Summer orientation at ISU should provide me with information about career counseling."
3. "Summer orientation at ISU should provide me with an explanation of the important offices on campus."
4. "Summer orientation at ISU should provide me with information about how to make good decisions in college."

Two questions were changed upon the suggestion of the investigator's committee member who was asked to give feedback on the draft of the final questionnaire. The two questions were:

1. "I am provided with information about about the tutoring service." was changed to "Summer orientation at ISU should provide me with information about tutoring services."
2. "Cyclone Aides provide me with assistance and answer my questions." to "Summer orientation at ISU should provide me with student staff (Cyclone Aides) to provide assistance and answer questions."
One question intended for the final questionnaire was overlooked by the investigator. The question was, "Summer orientation at Iowa State University should provide me with a list of what to bring and what not to bring to college."

The final questionnaire constructed for this study consisted of 63 items designed to assess entering freshmen student's perceived needs concerning the summer orientation program at Iowa State University. Thirteen additional items concerning demographic information were added and concluded the survey for a total of 76 items.

Items from questionnaire 2 were rewritten so that each item completed a sentence starting with the words "Summer orientation at ISU should provide me with....." Students responded to the first 63 items using a 5 point Likert-type scale ranging from "Strongly Agree" to "Strongly Disagree." All items were stated positively so that highly perceived needs would result in an answer of "Strongly Agree"; for example, "Summer orientation at ISU should provide me with information about government student loans." As a result, a "Strongly Agree" response to any item indicated a strongly perceived need. "Strongly Agree" was assigned a value of 5, while "Strongly Disagree" was assigned a value of 1.

Thirteen demographic questions encouraged respondents to answer questions about themselves. Three of the questions were based on questions from the survey given to entering
freshmen by the Cooperative Institutional Research Program. Advisors in the Research Institute for Studies in Education office at Iowa State University were consulted and aided in the writing of the remaining demographic questions.

As mentioned earlier, the investigator's committee examined the draft for face and content validity. Committee members also commented on the layout and wording of the final questionnaire.

A letter was developed and attached for the first distribution for the final questionnaire. The letter again assured students that their responses were confidential and also informed students about the importance of returning to take another questionnaire on May 2 or May 3, 1988 in Lagomarcino Hall. (See Appendix E.)

The final questionnaire was examined by a committee of experts to evaluate the face and content validity of the instrument. The committee of experts consisted of the investigator's committee members. The members agreed that the content of the instrument measured orientation needs of students entering Iowa State University. The questionnaire was piloted by two graduate students and it was concluded that the questionnaire could be completed in 20 to 30 minutes. (See Appendix F.)

The final questionnaire was distributed to a total of 68 freshmen students at five different sessions. Two one-hour sessions were held on April 7, 1988 with 33 students completing
the first distribution of the final questionnaire. One one-hour session was held on April 8, 1988 with 21 students completing the first distribution of the final questionnaire. Two additional one-hour sessions were held on April 11, 1988 with 12 students completing the first distribution of the final questionnaire.

At the beginning of each session students were instructed by the investigator to read the letter attached to the front of the questionnaire and were verbally asked to return to take another questionnaire as mentioned in the attached letter. To insure a high return rate, students were instructed that they would be given a follow-up phone call to remind them to return and take another questionnaire. The investigator also read through the instructions for the final questionnaire and answered questions. Student responses were recorded on bubble sheets so that initial statistical analysis could be done through the computation center.

The identical final questionnaire was redistributed approximately one month later. Sixty-three students returned to retake the final questionnaire for a return rate of 93%. Three one-hour sessions were held on May 2, 1988 in Lagomarcino Hall with 58 students returning to retake the survey. One one-hour session was held on May 3, 1988 in Lagomarcino Hall with 5 students returning to retake the survey.

Again students were instructed to read the attached
letter (see Appendix G); the investigator read through the instructions as well. Bubble sheets were used to record student responses. I D numbers were used to match responses from the first and second distributions of the final questionnaire.

Subjects

A cluster random sample of students was used for all aspects of this study. The sample of subjects were second semester freshmen who attended summer orientation in 1987 and who were enrolled in introductory psychology courses at Iowa State University during the spring semester of 1988. Students were informed about the study through the psychology experiment bulletin board in Lagomarcino Hall. The subjects received one extra credit point toward their final class point total for each questionnaire they completed. Participation by subjects for this study was voluntary.

Of the 46 usable surveys completed in the first round of the modified Delphi process, 28% were completed by males and 72% were completed by females.

The colleges the students were currently enrolled in were distributed in the following manner: 3 students in the college of Agriculture, 11 students in the college of Education, 3 students in the college of Engineering, 3 students in the college of Family and Consumer Sciences, and 26 students in the college of Science and Humanities.
Forty-two usable surveys were completed in the second round of the modified Delphi process. Of the 42 subjects who returned to complete the second questionnaire, 28% were males and 72% were females.

The colleges the returning students were currently enrolled in were distributed in the following manner: 3 students in the college of Agriculture, 11 in the college of Education, 2 in the college of Engineering, 3 in the college of Family and Consumer Sciences, and 23 were in the college of Science and Humanities.

A total of 63 students participated in the pretest-posttest testing of the final questionnaire. Table 1 describes frequencies and percentages of the following demographic characteristics of the subjects: sex, racial background, age, college, and high school size. The majority of students who participated in the final pretest-posttest phase of the study were white females. Most students were either 19 or 20 years of age. While a majority of the students where enrolled in the college of Science and Humanities, the remaining students were distributed among the other six colleges. High school size of the students were fairly similar in number as well. For remaining demographic information, see Appendix H.
Table 1. Frequencies and percentages of selected demographic characteristics of the subjects

<table>
<thead>
<tr>
<th>Demographic subject variables</th>
<th>#</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>20</td>
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</tr>
<tr>
<td>Female</td>
<td>43</td>
<td>68.3</td>
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<tr>
<td><strong>Racial background</strong></td>
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<tr>
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<tr>
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<td>9.5</td>
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<tr>
<td><strong>Age</strong></td>
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</tr>
<tr>
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<tr>
<td>Family &amp; Consumer Sciences</td>
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<td>9</td>
<td>14.3</td>
</tr>
<tr>
<td>101 - 200</td>
<td>10</td>
<td>15.9</td>
</tr>
<tr>
<td>201 - 300</td>
<td>10</td>
<td>15.9</td>
</tr>
<tr>
<td>301 - 400</td>
<td>7</td>
<td>11.1</td>
</tr>
<tr>
<td>401 - 500</td>
<td>8</td>
<td>12.7</td>
</tr>
<tr>
<td>over 500</td>
<td>4</td>
<td>6.3</td>
</tr>
<tr>
<td>no response</td>
<td>6</td>
<td>9.5</td>
</tr>
</tbody>
</table>
Data Analyses

The data were recorded on bubble sheets by the respondents and were entered into the computer at Iowa State University testing service. Using SPSS-X (1987) procedures, evidence to support the hypothesis was based on a test-retest of the final survey instrument at approximately a three to four week interval using Pearson's product-moment correlation and computation of T values using a two-tailed t-test.

Evidence to support a discussion on the significance of the relationship between identified orientation factors and the demographic characteristics studied was based on a stepwise regression and the computation of T values through the use of a two-tailed t-test. An alpha level of .05 was selected for all analyses.
FINDINGS AND DISCUSSION

In this chapter the results of the statistical analysis are presented in order to examine the developed survey instrument designed to assess the perceived needs of students for summer orientation at Iowa State University. The results are organized to address the hypothesis presented earlier in the study, followed by a discussion of the demographic characteristics.

Analysis of the Hypothesis

An analysis of the correlation coefficients of pretest and posttest mean scores was used to determine the reliability of the final survey instrument. Pretest and posttest mean scores for the seven identified orientation factors are shown in Table 2. The correlation coefficients of the pretest and posttest mean scores are shown in Table 3. According to these results, six of the seven orientation factors yielded a sufficient factor to factor correlation and were thus found to be reliable. One factor, 'social adjustment and integration', yielded a significantly lower correlation than the other six factors, r(63)=.5863, and was only moderately sufficient in assessing the factor.
Table 2. Pretest and posttest mean scores for the seven identified orientation factors

<table>
<thead>
<tr>
<th>Orientation Factors</th>
<th>Mean Scores</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest</td>
<td>Posttest</td>
</tr>
<tr>
<td>academics</td>
<td>3.9577</td>
<td>3.8753</td>
</tr>
<tr>
<td>social adjustment and integration</td>
<td>3.9216</td>
<td>3.7865</td>
</tr>
<tr>
<td>faculty and student interaction</td>
<td>3.7143</td>
<td>3.5952</td>
</tr>
<tr>
<td>orientation</td>
<td>3.9048</td>
<td>3.9751</td>
</tr>
<tr>
<td>finances</td>
<td>4.0249</td>
<td>3.9751</td>
</tr>
<tr>
<td>geographics</td>
<td>3.9357</td>
<td>3.8667</td>
</tr>
<tr>
<td>housing</td>
<td>3.9433</td>
<td>3.8753</td>
</tr>
</tbody>
</table>

Table 3. Pearson correlation coefficients of pretest and posttest mean scores for the seven identified orientation factors

<table>
<thead>
<tr>
<th>Orientation Factors</th>
<th>Correlation Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>academics</td>
<td>.7663</td>
</tr>
<tr>
<td>social adjustment and integration</td>
<td>.5863</td>
</tr>
<tr>
<td>faculty and student interaction</td>
<td>.7039</td>
</tr>
<tr>
<td>orientation</td>
<td>.7209</td>
</tr>
<tr>
<td>finances</td>
<td>.7719</td>
</tr>
<tr>
<td>geographics</td>
<td>.7051</td>
</tr>
<tr>
<td>housing</td>
<td>.7256</td>
</tr>
</tbody>
</table>
T values from a two-tailed test were used to determine if there were any significant differences between pretest and posttest mean scores of the seven orientation factors. Results of the analysis are shown in Table 4.

No significant differences existed between pretest and posttest mean scores on six of the orientation factors. While the T value for the orientation factor 'faculty and student interaction' was not found to be significantly different, the results of the t-test indicated that the factor was nearly significant \((M=3.7134, \ pM=3.5952, \ t(63)=1.96, \ p=0.055)\). However for one orientation factor, 'social adjustment and integration', the T value was found to be significantly different \((t(63)=2.37, \ p=0.02)\), with the pretest mean \((M=3.9216)\) exceeding that of the posttest mean \((M=3.7865)\).

Table 4. Pretest/posttest T values for seven identified orientation factors

<table>
<thead>
<tr>
<th>Orientation Factors</th>
<th>T Value</th>
<th>2-Tail Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>academics</td>
<td>(t(63)=1.77)</td>
<td>.082</td>
</tr>
<tr>
<td>social adjustment and integration</td>
<td>(t(63)=2.37)</td>
<td>.021*</td>
</tr>
<tr>
<td>faculty and student interaction</td>
<td>(t(63)=1.96)</td>
<td>.055</td>
</tr>
<tr>
<td>orientation</td>
<td>(t(63)=.721)</td>
<td>.749</td>
</tr>
<tr>
<td>finances</td>
<td>(t(63)=.772)</td>
<td>.275</td>
</tr>
<tr>
<td>geographics</td>
<td>(t(63)=.705)</td>
<td>.151</td>
</tr>
<tr>
<td>housing</td>
<td>(t(63)=.726)</td>
<td>.229</td>
</tr>
</tbody>
</table>

* Denotes significance when alpha = .05.
The following findings did not support the hypothesis which stated that no significant differences would exist, as measured by a test-retest method of reliability, between the seven identified orientation factors on a pretest and posttest of the final survey instrument. While six of the seven factors revealed no significant differences in regard to yielding a sufficient factor to factor correlation, one factor did not, 'social interaction and adjustment'. Similarly, computed T values revealed a significant difference in only one factor, again, 'social interaction and adjustment'. Thus, the findings do not support the hypothesis.

Analysis of the Demographic Characteristics

A stepwise regression with replacement was used to determine the relationship between the continuous demographic characteristics and the orientation factors. The continuous demographic characteristics included: college in which the student is currently enrolled, high school average grade, average number of hours worked per week, high school graduating class size, extracurricular involvement, parent income, and racial background. Results from the analysis are shown in Table 5. The type of step model used in describing the best predictors of the orientation factors differed in accordance with each dependent variable. This was because the decrease in change in R square values between continuous demographic characteristics differed among the orientation
factors. Thus, R square values reported account for the greatest percentage of the variance by subject variables.

Table 5. R square values of the relationship between continuous demographic characteristics and the seven identified orientation factors

<table>
<thead>
<tr>
<th>Orientation Factors</th>
<th>R square values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>academics</strong></td>
<td></td>
</tr>
<tr>
<td>subject variables</td>
<td></td>
</tr>
<tr>
<td>parent income</td>
<td>.07600</td>
</tr>
<tr>
<td>age</td>
<td>.12994</td>
</tr>
<tr>
<td>high school graduating class size</td>
<td>.14740</td>
</tr>
<tr>
<td>college</td>
<td>.16137</td>
</tr>
<tr>
<td><strong>adjustment and social integration</strong></td>
<td></td>
</tr>
<tr>
<td>subject variables</td>
<td></td>
</tr>
<tr>
<td>age</td>
<td>.12304</td>
</tr>
<tr>
<td>college</td>
<td>.14217</td>
</tr>
<tr>
<td>parent income</td>
<td>.16133</td>
</tr>
<tr>
<td>high school graduating class size</td>
<td>.19141</td>
</tr>
<tr>
<td>racial background</td>
<td>.22148</td>
</tr>
<tr>
<td><strong>faculty and student interaction</strong></td>
<td></td>
</tr>
<tr>
<td>subject variables</td>
<td></td>
</tr>
<tr>
<td>age</td>
<td>.05193</td>
</tr>
<tr>
<td>parent income</td>
<td>.06718</td>
</tr>
<tr>
<td>high school graduating class size</td>
<td>.08951</td>
</tr>
<tr>
<td>hours worked per week</td>
<td>.10801</td>
</tr>
<tr>
<td><strong>orientation</strong></td>
<td></td>
</tr>
<tr>
<td>subject variables</td>
<td></td>
</tr>
<tr>
<td>racial background</td>
<td>.04005</td>
</tr>
<tr>
<td>parent income</td>
<td>.08629</td>
</tr>
<tr>
<td>high school graduating class size</td>
<td>.15404</td>
</tr>
<tr>
<td>college</td>
<td>.17867</td>
</tr>
<tr>
<td>extracurricular involvement</td>
<td>.18876</td>
</tr>
</tbody>
</table>
Table 5. continued

<table>
<thead>
<tr>
<th>Orientation Factors</th>
<th>R square values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>finances</strong></td>
<td></td>
</tr>
<tr>
<td>subject variables</td>
<td></td>
</tr>
<tr>
<td>parent income</td>
<td>.06379</td>
</tr>
<tr>
<td>racial background</td>
<td>.15349</td>
</tr>
<tr>
<td>high school graduating class size</td>
<td>.17675</td>
</tr>
<tr>
<td>college</td>
<td>.19259</td>
</tr>
<tr>
<td>average high school grade</td>
<td>.20787</td>
</tr>
<tr>
<td><strong>geographics</strong></td>
<td></td>
</tr>
<tr>
<td>subject variables</td>
<td></td>
</tr>
<tr>
<td>age</td>
<td>.06250</td>
</tr>
<tr>
<td>college</td>
<td>.08345</td>
</tr>
<tr>
<td>parent income</td>
<td>.09224</td>
</tr>
<tr>
<td>average high school grade</td>
<td>.10739</td>
</tr>
<tr>
<td><strong>housing</strong></td>
<td></td>
</tr>
<tr>
<td>subject variables</td>
<td></td>
</tr>
<tr>
<td>age</td>
<td>.12695</td>
</tr>
<tr>
<td>college</td>
<td>.22813</td>
</tr>
<tr>
<td>parent income</td>
<td>.25138</td>
</tr>
<tr>
<td>high school graduating class size</td>
<td>.28258</td>
</tr>
</tbody>
</table>

**Academics**

The type of model that best accounts for the dependent variable 'academics' is a 4-step model. The subject variables 'parent income', 'age', 'high school size', and 'college in which the student is currently enrolled' accounted for 16% of the variance in the above listed order. Looking at the variable 'parent income' separately, it accounted for 8% of the variance. The other identified predictors accounted for the remaining 8% of the variance in conjunction with 'parent income'.
Adjustment and Social Integration

A 5-step model was used for the dependent variable 'social adjustment and integration' with the subject variables 'age', 'college in which the student is currently enrolled', 'parent income', 'high school graduating class size', and 'racial background' accounting for 22% of the variance in the order listed above. While the above mentioned subject variables serve as the best predictors of adjustment and social interaction, 'age' was the best predictor and accounted for 12% of the variance, with the remaining subject variables accounting for 10% of the variance in conjunction with the demographic characteristic 'age'.

Faculty and Student Interaction

The regression model used to best account for the dependent variable 'faculty and student interaction' was a 4-step model. 'Age', 'parent income', 'high school graduating class size', and 'hours worked per week' in the order listed above accounted for the greatest amount of the variance among the subject variables which was 11%. 'Age' served as the best predictor of the dependent variable, accounting for five percent of the variance. The remaining subject variables accounted for six percent of the variance in conjunction with 'age'.
A 5-step model was used to indicate the subject variables accounting for the greatest percentage of the variance for the dependent variable 'orientation'. The variables accounting for the greatest percentage of the variance for the dependent variable in the order listed include: 'racial background', 'parent income', 'high school graduating class size', 'college the student is currently enrolled in', and 'extracurricular involvement'. 'Racial background' accounted for a leading percentage of the variance at four percent, while the remaining characteristics, in conjunction with 'racial background', accounted for 15% of the variance.

Finances

A 5-step model was used to indicate the subject variables accounting for the greatest amount of the variance for the dependent variable 'finances'. The subject variables 'parent income', 'racial background', 'high school graduating class size', 'college', and 'average high school grade' were found to be the best predictors of the dependent variable in the order listed. 'Parent income' was identified as the leading predictor of the dependent variable accounting for six percent of the variance. The remaining predictors accounted for 14% of the variance in conjunction with 'parent income'.
Geographics

The regression model used to best account for the orientation factor 'geographics' was a 4-step model. 'Age', 'college in which the student is currently enrolled', 'parent income', and 'average high school grade' accounted for the greatest amount of the variance in the order listed. 'Age' was found to be the leading predictor, accounting for six percent of the variance. Four percent of the variance was accounted for by the remaining predictors in conjunction with 'age'.

Housing

A 4-step model was used to indicate the subject variables accounting for the greatest amount of the variance for the dependent variable 'housing'. The subject variable 'age' accounted for the greatest amount of the variance at 13%. The remaining variables, 'college in which the student is currently enrolled', 'parent income,' and 'high school graduating class size' accounted for the remaining 16% of the variance in the order listed in conjunction with 'age'.

T values from a two-tailed t-test were calculated to examine the significance of the relationship between mean scores of the noncontinuous demographic characteristics in relationship to the identified orientation factors. The characteristics included: sex, car ownership, receiving
financial support from parents, applying for scholarships or grants, applying for loans, and having a job while attending college. Response choices for the question asking about the sex of the respondent were male or female. The remaining questions were answered with either a yes or a no.

No significant relationships existed between mean scores for two of the six noncontinuous demographic characteristics in relationship to the orientation factors. The two characteristics were 'car ownership' and 'receiving financial support from parents'. At least one significant relationship existed between the mean scores for the noncontinuous demographic variables in relation to an orientation factor. Mean scores of the four noncontinuous demographic variables revealing a significance are listed in Table 6.

Sex

A significant difference existed between a student's sex in relation to the orientation factor 'faculty and student interaction' \((t(61)=-2.24, p=.029)\). A significant difference as well was reported between a student's sex in relation to the orientation factor 'orientation' \((t(61)=-2.11, p=.039)\), and between a student's sex in relation to the orientation factor 'geographics' \((t(61)=-2.66, p=.010)\).
Table 6. Mean scores of the four noncontinuous demographic characteristics demonstrating a significant relationship in relation to the seven identified orientation factors

<table>
<thead>
<tr>
<th>Demographic Subject Variables</th>
<th>Mean Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>male</td>
</tr>
<tr>
<td>sex</td>
<td></td>
</tr>
<tr>
<td>orientation factors</td>
<td></td>
</tr>
<tr>
<td>faculty and student interaction</td>
<td>3.4625</td>
</tr>
<tr>
<td>orientation</td>
<td>3.6812</td>
</tr>
<tr>
<td>geographics</td>
<td>3.7075</td>
</tr>
<tr>
<td>apply for scholarships and grants</td>
<td></td>
</tr>
<tr>
<td>orientation factor</td>
<td></td>
</tr>
<tr>
<td>finances</td>
<td>4.1607</td>
</tr>
<tr>
<td>apply for loans</td>
<td></td>
</tr>
<tr>
<td>orientation factors</td>
<td></td>
</tr>
<tr>
<td>academics</td>
<td>4.1818</td>
</tr>
<tr>
<td>faculty and student interaction</td>
<td>3.9318</td>
</tr>
<tr>
<td>finances</td>
<td>4.2403</td>
</tr>
<tr>
<td>having a job while attending college</td>
<td></td>
</tr>
<tr>
<td>orientation factor</td>
<td></td>
</tr>
<tr>
<td>faculty and student interaction</td>
<td>3.5682</td>
</tr>
</tbody>
</table>

Applying for Scholarships or Grants

A significant difference was reported between a student's interest in applying for scholarships or grants in relation to the orientation factor 'finances' \( (t(55)=2.50, p=.015) \).
Applying for Loans

A student's interest in applying for loans differed significantly in relation to the orientation factor 'academics' \((t(55)=2.40, \ p=.020)\). Significant differences were also observed between a student's interest in applying for loans in relation to the orientation factors 'faculty and student interaction' \((t(55)=1.97, \ p=.054)\) and 'finances' \((t(55)=2.17, \ .034)\).

Having a Job While in College

A significant difference was revealed between a student's interest in having a job while in college in relation to the orientation factor 'faculty and student interaction' \((t(55)=-2.44, \ p=.018)\).

The following findings provide information about the demographics of the subjects studied and the seven identified orientation factors. While the results of the regression provided information about the orientation factors accounting for the greatest amount of the variance for the continuous demographic characteristics, results of the t-test values indicated that mean scores for four of the noncontinuous demographic characteristics differed significantly in relation to over half of the dependent variables.
The orientation factor 'faculty and student interaction' consistently demonstrated a relationship with the subject variables revealing a significant relationship between mean scores. These subject variables were: 'sex', 'applying for loans', and 'having a job while in college'. While 'faculty and student interaction' demonstrated a relationship with three of the subject variables, the orientation factor 'finances' as well showed a relationship with the subject variables revealing a significant relationship between mean scores. These subject variables were: 'applying for scholarships or grants' and 'applying for loans'.
SUMMARY, DISCUSSION, AND RECOMMENDATIONS

The purpose of this chapter is to provide a brief summary of the study, a discussion of the results and conclusions based upon the results, and recommendations for future research.

Summary of the Study

The intent of the study was to develop a reliable and valid needs assessment instrument capable of assessing new student's perceptions of their needs when they attend a summer orientation session at Iowa State University. A two-round modified Delphi process, a questionnaire building process whereby subsequent questionnaires were built upon responses of the preceding questionnaires, was used for the study.

The first questionnaire contained one two-part question and allowed students to make statements concerning programs, services, or information they felt new students would benefit from and need the most, as well as the least. A summary list of items from the statements made by students about the programs, services, or information students would benefit from and need the most was generated and served as the content for the second questionnaire. After reviewing the summary list of items, seven orientation factors were identified which encompassed the opinions of the respondents.

The second questionnaire allowed students to: (1) rank
by priority vote the 25 most important items as they would be perceived by an incoming freshman at Iowa State University, (2) comment on the importance or unimportance of an item, (3) clarify the question, and (4) write additional questions if they felt any specific orientation need had been excluded.

Information from questionnaire 2 served as the content for the final survey instrument. Items were rewritten so that each item completed a sentence starting with the words "Summer orientation at Iowa State University should provide me with...." Students responded to the first 63 items using a 5 point likert-type scale ranging from "Strongly agree" to "Strongly disagree". Thirteen demographic questions were also included on the final survey which were based upon questions from the Cooperative Institutional Research Program developed by the American Council on Education and from suggestions made by associates at the Research Institute for Studies in Higher Education at Iowa State University.

The sample of respondents who participated in the study were freshmen students from introductory psychology courses at Iowa State University and received extra credit for their participation. Round one of the two-round modified Delphi was administered in early March and 46 usable surveys were completed. Round two of the two-round modified Delphi was administered the second week in March, and 42 of the 46 original subjects returned to complete the second questionnaire.
A final questionnaire was developed and the pretest was later distributed to 68 subjects the first week April. Sixty-three subjects returned and completed the posttest approximately one month later for a return rate of 93%. A panel of experts served to establish the validity of the instrument, while reliability was established through the calculation of factor to factor correlation coefficients using pretest and posttest mean scores.

The following hypothesis was tested:

There are no significant differences, as measured by a test-retest method of reliability, between seven identified orientation factors on a pretest and posttest of the final survey instrument.

Evidence to examine the hypothesis was obtained from an analysis of orientation factors identified in the developed survey instrument based on a test-retest method of reliability. An analysis of the demographic information as well as the identified orientation factors was used to examine the data. Based on the analysis of the collected data, the following conclusions concerning the identified orientation factors and the demographic characteristics of the subjects were made:

1. Students participating in the pretest and posttest of the final survey instrument designed to measure
the perceived needs of students when they attend orientation answered the questions consistently on all identified orientation factors except for 'social integration and adjustment'. Pearson's product-moment correlations were calculated as a means of examining factor to factor reliability. Therefore, the developed survey instrument was found to be a reliable measure of students perceived orientation needs.

2. No significant differences existed between the pretest and posttest mean scores for six of the seven orientation factors. One factor, 'social adjustment and integration', revealed a significant difference between the pretest and posttest groups, with the posttest mean scores significantly decreasing over a one month time interval.

3. The continuous demographic characteristics 'college', 'high school grade average', 'average number of hours worked per week', 'high school graduating class size,' 'extracurricular involvement', 'parent income,' and 'racial background' all accounted for a percentage of the variance as predictors of the identified orientation factors.
4. While the mean scores of the noncontinuous demographic characteristics 'car ownership' and 'receiving financial support from parents' did not differ significantly in relation to the orientation factors, the mean scores for the noncontinuous demographic characteristics 'sex', 'applying for scholarships or grants', 'applying for loans', and 'having a job while attending college' did differ significantly in relation to specific orientation factors.

Discussion

In previous studies about orientation, perceived need categories have been identified which are similar to those factors identified in this study. Kramer and Washburn (1983) determined the perceived orientation needs of students to be: (1) personal needs, (2) social needs, (3) career needs, and (4) academic needs. Factors identified by Moore, Higginson, and White (1981) are: (1) course availability/registration and course requirements, (2) affiliated opportunities, (3) study skills, (4) living on campus/campus food services, (5) costs/financial aid, (6) athletics, (7) buying books/using library, (8) banking/checking/what to bring to campus, (9) bicycle registration and storage, (10) selecting and changing courses and major/career opportunities, (11) medical services and alcohol beverage regulations, (12) drug and alcohol abuse,
(13) automobile registration and parking, and (14) religious organizations and places of worship. Similar identified factors in the literature help to support the validity of the instrument.

It was concluded that while the survey instrument designed to measure the perceived needs of summer orientation students at Iowa State University was reliable and valid, results of the analysis revealed that one of the seven identified orientation factors, 'social adjustment and integration', was not as strongly correlated between pretest and posttest mean scores as the other factors. Regardless, the investigator feels the instrument is a useful tool for assessing the perceived needs of orientation students.

Failure to be as strongly correlated as the other six factors could be due to the possible extraneous variables affecting posttest mean scores. Because the factor 'social adjustment and interaction' contained survey items relating to information about the health and counseling centers, extracurricular activities and clubs, and information about campus life, etc., increased knowledge about social adjustment and integration at Iowa State University as second semester freshmen subjects could be a reason why students mean scores decreased significantly on the posttest of the final survey.

A decrease in posttest means for the orientation factor 'social adjustment and integration' could also be attributed
to the date at which students completed the posttest. Posttests were completed one week before finals; it could be concluded that social concerns were not a strong priority for students at that time. The heterogeneity of the questions within the factor 'social adjustment and integration' as well could be a reason for a decline in posttest scores.

Results of the analysis also revealed the best predictors of the seven identified orientation factors; predictors accounting for the greatest percentage of the variance differed for each factor. A 4-step or 5-step regression model with replacement was used for a factor depending on the change in R square values. Findings indicated that 'parent income' was consistently revealed as a subject variable accounting for a percentage of the variance for all of the orientation factors. This finding implies that when planning an orientation program for new students, lower income students may have different needs than higher income students; thus, the focus of the summer orientation program would need to differ for the two groups.

'Age', 'high school graduating class size' and 'college' were revealed as subject variables accounting for five of the seven identified orientation factors. This implies that these specific continuous demographic variables are important in assessing the perceived needs of orientation students. For example, 'age' was identified as accounting for a percentage of the variance with the orientation factors 'academics',
'adjustment and social integration', 'faculty and student interaction', 'geographics', and 'housing'. This may suggest that a traditional age student would desire different types of information from the summer orientation program than would a re-entering student or an adult student. However, it is important to note that the amount of variance these subject variables account for is fairly low, indicating that demographic variables may not be important in predicting orientation students perceived needs.

The combination of R square values for each orientation factor revealed the weight, or the importance, of the characteristic of the population in relation to the orientation factor as well. These results imply that when professionals plan orientation, issues or subjects should not necessarily be attended to equally. Rather, issues or subjects should be addressed according to the needs of the student population, perhaps by considering their demographic background.

Significant relationships were found between mean scores for four noncontinuous demographic characteristics in relation to specific orientation factors, indicating again that the subject variables affect the specific orientation factors. These findings suggest that the different types of information disseminated during orientation sessions will be impacted by a student's demographic profile. For example, a significant
relationship was found between male and female mean scores, with female mean scores being higher, in relation to the orientation factors 'faculty and student interaction', 'orientation', and 'geographics'. These findings suggest that females are more likely than males to experience anxiety with respect to the three identified need areas. This issue needs to be realized and addressed by orientation programmers to help eliminate barriers for females when they attend and orientation program.

Recommendations

The following recommendations are offered for the future concerning the study as a result of this investigation:

1. A similar instrumentation development process using a modified delphi technique including input from faculty and administrators as well as students would further substantiate the validity of the study. Input from faculty and administrators would allow for different expert opinions and would bring institutional perspectives about student's needs for orientation programming.

2. The response format of the final survey could be adapted to include a section asking students to indicate if information, programs, or services are provided for when attending orientation in addition
to asking how important they are. This would allow current administrators in orientation programming to assess whether or not current summer orientation sessions are meeting student's needs.

3. A replication of this study using a larger sample size would serve to further support the findings of the study and increase its reliability.

4. Administering the final survey to a group of transfer students as well as a group of freshmen students would determine whether perceived needs of freshmen students and transfer students differed. If no significant differences were revealed, it may be concluded that previous collegiate experience would not impact a transfer students transition into a new environment. If significant differences did exist, this may suggest that orientation programs for transfer students would need to developed which would address their particular needs.

5. A similar study at a small, private, liberal arts school would serve to examine if differences existed between students attending various types of institutions. If no significant differences were revealed, it could be concluded that students at small institutions have similar perceived needs.
for orientation as students at large institutions. Yet, if differences did exist, orientation program planning would need to encompass revealed needs.

6. A replication of this study at another large, public research institution would possibly serve to support the findings of this study. Similar results would increase the validity of and reliability of this study and would support the conclusions of this study generalized to students attending schools similar to Iowa State.

7. Further statistical analysis of the data more specifically addressing the relationships between the subject variables and the factors would more directly aid in program planning.

8. Results of the study suggest that one central orientation planning committee used as a clearinghouse for information would be helpful for colleges and universities with orientation programs addressing the needs of special student populations. A central committee could help to decrease repetition among orientation programs and could help facilitate a cohesive, directive goal for orientation.
BIBLIOGRAPHY


ACKNOWLEDGEMENTS

I would like to express my sincere thanks and appreciation to the members of my committee, Dr. Larry Ebbers and Dr. Daniel Robinson, for their encouragement and support throughout my graduate program; and a very special thanks to Dr. Gary Phye for his time, guidance, and commitment to the study.

I would also like to thank Beth Ruiz for her help with the analyses of my statistics; her expertise and patience were vital to the completion of this study. A special thanks as well is extended to Dr. Barbara Snyder for offering her knowledge in orientation programming; to Mary Sandage for sharing with me the frustrations and joys of the past year; to Cheryl Wiles and Rhonda Kirts for their support, motivation, and friendship; and to Michelle Moore for her editing skills and good humor.

I am especially grateful to Andy Hartwig for his friendship and love, and of course to Joe Jennison for always believing in me and my accomplishments.
APPENDIX A

QUESTIONNAIRE 1
QUESTIONNAIRE #1

Please list 10 statements concerning programs, services or information new students would benefit from and need the most and the least during summer orientation.

MOST NEEDED

LEAST NEEDED

(optional)

Name ______________________

College____________________

Approximate date of attendance at orientation ____________________
APPENDIX B

LETTER 1
Dear Student:

Thank you for agreeing to participate in this two-part study designed to examine your perceptions about summer orientation for new students at Iowa State University. Your insights will be most helpful, as you have been a part of the orientation process at Iowa State University.

Specifically, I would like your help in identifying the programs, services, and information you feel are important to a new student during the summer orientation program. The final results of this questionnaire will be used to develop a needs assessment for summer orientation.

All comments and responses will be kept confidential. The number in the right hand corner of the questionnaire will be used for coding purposes.

Attached to this letter is the first questionnaire designed to find out your opinions about orientation. From your statements a second questionnaire will be developed. It is important that you return on March 7, or 9, 1988 at 3:00 p.m. or 4:00 p.m. in room Lagomarcino W282 to participate in the second part of this questionnaire development study. Your participation is needed for the study to be successful.

Again, thank you for your assistance. If you have any questions at a later date, please feel free to contact me at 294-6767.

Sincerely,

Celine Moore
Graduate Assistant
Professional Studies
APPENDIX C

QUESTIONNAIRE 2
QUESTIONNAIRE #2

Instructions: (1) Please review each of the following items identified in Questionnaire #1 as the programs, services, and information new students would benefit from and need the most during summer orientation. (2) If you wish to add comments expressing the importance, unimportance, or clarification concerning an item, please do so in the space provided. (3) If you feel important orientation needs have been excluded, please add them to the list of statements. (4) Finally, please rank order the 25 most important items as you would perceive them as an incoming student at Iowa State University, with 25 being the most important item and 1 being the least important item.

<table>
<thead>
<tr>
<th>Priority</th>
<th>Items from Questionnaire #1</th>
<th>Comments on Items</th>
<th>Important</th>
<th>not Important</th>
<th>clarify</th>
</tr>
</thead>
<tbody>
<tr>
<td>1)</td>
<td>I am provided with information about living in the residence halls.</td>
<td></td>
<td></td>
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<tr>
<td>2)</td>
<td>I have the opportunity to stay overnight in the residence halls during orientation.</td>
<td></td>
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<tr>
<td>3)</td>
<td>I like knowing my housing room assignment in advance.</td>
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<tr>
<td>4)</td>
<td>The possibility of experiencing a roommate conflict is discussed.</td>
<td></td>
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<tr>
<td>5)</td>
<td>I have the opportunity to see different residence halls and residence hall rooms.</td>
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<td></td>
<td></td>
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<tr>
<td>6)</td>
<td>I can tour a fraternity or sorority.</td>
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<tr>
<td>7)</td>
<td>I am provided with information about the greek system.</td>
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<tr>
<td>8)</td>
<td>I am presented with alternatives to living in the residence halls.</td>
<td></td>
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<tr>
<td>9)</td>
<td>I am given an explanation of how the phone system works in the residence halls.</td>
<td></td>
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<tr>
<td>10)</td>
<td>A tour of campus is available to me.</td>
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<td>11)</td>
<td>I have information about the location of certain offices and buildings on campus.</td>
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<td>12)</td>
<td>A tour of the library is available to me.</td>
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<td>13)</td>
<td>I can take a tour of Ames.</td>
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<tr>
<td>14)</td>
<td>A campus map helps me find my way around campus.</td>
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<tr>
<td>15)</td>
<td>ISU students talk with me about adjusting to college.</td>
<td></td>
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<tr>
<td>16)</td>
<td>Professors speak one-on-one with me about coursework.</td>
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<tr>
<td>17)</td>
<td>Cyclone Aides provide me with assistance and answer my questions.</td>
<td></td>
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<tr>
<td>18)</td>
<td>I can interact with someone interested in my same major.</td>
<td></td>
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<tr>
<td>19)</td>
<td>Question and answer sessions make me aware of what to expect in college.</td>
<td></td>
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<tr>
<td>20)</td>
<td>I can attend a social hour with other incoming freshmen.</td>
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<tr>
<td>21)</td>
<td>ISU students talk with me about what a typical day is like in college.</td>
<td></td>
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<tr>
<td>22)</td>
<td>My parents can attend special orientation sessions for parents.</td>
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<tr>
<td>23)</td>
<td>Curriculum requirements for graduation are discussed.</td>
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<tr>
<td>24)</td>
<td>I am given the opportunity to attend a class during orientation.</td>
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<tr>
<td>25)</td>
<td>I am provided with information about specific majors.</td>
<td></td>
<td></td>
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<tr>
<td>26)</td>
<td>I am provided with information about where to buy my books.</td>
<td></td>
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<tr>
<td>27)</td>
<td>I am given an adequate explanation of the placement exams.</td>
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<tr>
<td>28)</td>
<td>I am informed about opportunities to test-out of coursework.</td>
<td></td>
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</table>
Study habits are discussed.

30) I am provided with information about career opportunities in my major.

31) I am provided with information about the tutoring service.

32) A discussion provides me with information about what lectures and exams are like.

33) Scheduling, adding, and dropping classes are explained to me through a session on touchtone registration.

34) I have the opportunity to meet with my advisor.

35) I like to know my actual schedule before I leave orientation.

36) The topic of test anxiety is addressed at orientation.

37) I am provided with information about studying abroad.

38) I am informed about campus activities, organizations, and clubs.

39) The social life of a college student is discussed.

40) The Financial Aid Office provides assistance for me with loans, scholarships, grants and work-study jobs.

41) Assistance is provided to me on how to budget my money in college.

42) The estimated costs of a college education are outlined.

43) I have the ability to find out the status of my financial aid.

44) Information about the Counseling Center is provided.

45) I am informed about the Health Center and its functions.

46) I am informed about the need to budget my time in college.

47) I am informed about where to go if I need help.

48) A slide show is presented about campus life.

49) I am informed about the positive and negative points of attending ISU.

50) Orientation should be two days so that information is not condensed.

51) Small group sessions allow me to ask questions during orientation.

52) A meal is provided while attending orientation.

53) I am provided with free time during orientation to explore campus on my own.

54) I am provided with a student handbook and ISU catalog.

55) The speakers at orientation do an adequate job of presenting information.

56) The orientation staff goes out of their way to be friendly and helpful.

57) I am provided with a history of ISU.

58) A list of what to bring and what not to bring to college is provided for me.

59) I am informed about where I can park during orientation.

60) I am informed about the Cy-ride bus system.

61) Information about registering my vehicle is provided.

*(Please add additional items on the back of this page that you feel might have been excluded.)*
APPENDIX D

LETTER 2
Dear Student:

Thank you for agreeing to participate in the second part of this two-part study designed to examine your perceptions about summer orientation for new students at Iowa State University. Your input concerning the summer orientation process will be helpful, as you have been a part of summer orientation at Iowa State University.

Once again I would like your help in identifying the programs, services, and information you feel are important to new students during the summer orientation program. The final results of this questionnaire will be used to develop a needs assessment for summer orientation.

All comments and responses will be kept confidential. The number in the right hand corner of the questionnaire will be used for coding purposes.

Attached is the second questionnaire that has been designed from the statements you made on the first questionnaire. Please follow the directions on the next page and fill out the entire questionnaire. Your participation is needed for this study to be successful.

Again, thank you for your assistance. If you have any questions at a later date, please feel free to contact me at 294-6767.

Sincerely,

Celine Hoore
Graduate Assistant
Professional Studies
APPENDIX E

FINAL QUESTIONNAIRE
Please indicate ON THE PROVIDED ANSWER SHEET the degree with which you agree or disagree with the following statements about summer orientation at Iowa State University by completing the sentence: "Summer orientation at ISU should provide me with..." Complete the sentence as you feel it would have applied to you as a freshman entering Iowa State University. Use a #2 pencil only, and make heavy black marks on the answer sheet that fill the circle completely.

Use the following response categories:

Strongly Agree (SA) •••••••••••••••• 5
Agree (A) ••••••••••••••••••••••• 4
Neutral (N) ••••••••••••••••••••••• 3
Disagree (D) ••••••••••••••••••••••• 2
Strongly Disagree (SD) ••••••••••••••• 1

SUMMER ORIENTATION AT ISU SHOULD PROVIDE ME WITH...

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</table>

- Information about specific majors offered at ISU.
- Information about scholarships.
- Information about the health center.
- Information about living in the residence halls.
- A tour of campus.
- Assistance with how to budget my money in college.
- Information about career opportunities in my major.
- The opportunity to meet with an advisor.
- An actual schedule of my classes before I leave orientation.
- An orientation staff that goes out of their way to be friendly and helpful.
- The opportunity to talk with ISU students.
- Information about the counseling center.
- Information about campus activities and clubs.
- The opportunity to obtain my housing assignment while attending orientation.
- Information about the location of offices and buildings on campus.
- Estimated costs of a college education at ISU.
- Information about tutoring services.
- A discussion about what exams and lectures are like.
SUMMER ORIENTATION AT ISU SHOULD PROVIDE ME WITH...

19. 5 4 3 2 1 an explanation of scheduling, adding and dropping courses.
20. 5 4 3 2 1 the opportunity to attend a class.
21. 5 4 3 2 1 free time to explore campus on my own.
22. 5 4 3 2 1 the opportunity to attend a social hour with other incoming freshmen.
23. 5 4 3 2 1 information about social activities.
24. 5 4 3 2 1 information about buying and selling books.
25. 5 4 3 2 1 information about how to manage my time in college.
26. 5 4 3 2 1 information about where to go if I need help.
27. 5 4 3 2 1 information about campus life.
28. 5 4 3 2 1 a discussion about the possibility of experiencing a roommate conflict and how to deal with it.
29. 5 4 3 2 1 a tour of Ames.
30. 5 4 3 2 1 information about government student loans.
31. 5 4 3 2 1 a two day orientation program so that information is not so condensed.
32. 5 4 3 2 1 a tour of the greek system.
33. 5 4 3 2 1 information about the possibility of testing out of coursework.
34. 5 4 3 2 1 an explanation of curriculum requirements for graduation.
35. 5 4 3 2 1 information about placement exams.
36. 5 4 3 2 1 information about the job outlook in certain fields.
37. 5 4 3 2 1 small group sessions so that I can ask questions.
38. 5 4 3 2 1 pre-arranged meals during orientation for convenience.
39. 5 4 3 2 1 student staff (Cyclone Aides) to provide assistance and answer questions.
40. 5 4 3 2 1 information about where to park while attending the orientation program.
41. 5 4 3 2 1 the opportunity to interact with people interested in my same major.
42. 5 4 3 2 1 information about the Cy-ride bus system.
43. 5 4 3 2 1 information about registering my vehicle.
44. 5 4 3 2 1 advice on adjusting to the college environment.
45. 5 4 3 2 1 information about what a typical day is like in college.
SUMMER ORIENTATION AT ISU SHOULD PROVIDE ME WITH...

46. Information on university rules and policies.

47. A student handbook and ISU catalog.

48. A discussion on alternatives to living in the residence halls.

49. A tour of the library.

50. A discussion about finding a job while I attend ISU.

51. Information about career counseling.

52. An explanation of academic expectations.

53. The opportunity to speak one-on-one with a professor.

54. The opportunity to stay overnight in the residence halls to experience what residence hall living is like.

55. Special orientation sessions for my parents.

56. An explanation of the functions of important offices on campus.

57. Information about the Greek system.

58. A map to help me find my way around campus.

59. The ability to find out the status of my financial aid.

60. A tour of the residence halls.

61. Information about how to get good grades.

62. Information about grants.

63. Information about how to make good decisions in college.

Please answer the following questions as you feel they would have applied to you as a freshman entering ISU.

64. Sex: 1. male 2. female

65. College you are currently enrolled in:
   1. Agriculture 4. Education 7. Engineering
   2. Business 5. Family and Consumer Sciences
   3. Design 6. Sciences and Humanities

66. High school average grade:
   1. A or A+ 5. B- 9. D
   2. A 6. C+
   3. B+ 7. C
   4. B 8. C
67. On the average, how many hours a week would you say you worked while attending high school?
   1. I did not work while attending high school.  
   2. I worked 1-5 hours a week.  
   3. I worked 6-10 hours a week.  
   4. I worked 11-15 hours a week.  
   5. I worked 16-20 hours a week.  
   6. I worked 21-25 hours a week.  
   7. I worked 26-30 hours a week.  
   8. I worked 31-35 hours a week.  
   9. I worked 36-40 hours a week.  
10. I worked over 40 hours a week.

68. Do you currently own your own car?
   1. yes  
   2. no

69. Will you receive any form of financial support from your parent(s) while attending college?
   1. yes  
   2. no

70. Did you apply for scholarships or grants as a means of financing your education?
   1. yes  
   2. no

71. Did you apply for a loan as a means of financing your education?
   1. yes  
   2. no

72. Do you plan on having a job while in college?
   1. yes  
   2. no

73. How many students were in your graduating high school class?
   1. less than 50  
   2. 50 - 100  
   3. 101 - 200  
   4. 201 - 300  
   5. 301 - 400  
   6. 401 - 500  
   7. over 500

4. In high school I was:
   1. highly active in extracurricular activities  
   2. active in extracurricular activities  
   3. somewhat active in extracurricular activities  
   4. not active in extracurricular activities

5. Parents estimated income:
   1. less than $10,000  
   2. $10,000 to $19,999  
   3. $20,000 to $29,999  
   4. $30,000 to $39,999  
   5. $40,000 to $49,999  
   6. $50,000 to $59,999  
   7. $60,000 to $69,999  
   8. $70,000 to $99,999  
   9. over $100,000

5. Racial background:
   1. white/caucasian  
   2. black/negro/ afro-american  
   3. american indian  
   4. asian-american/oriental  
   5. mexican-american/chicano  
   6. puerto rican  
   7. other

Please complete the sections on your answer sheet marked BIRTH DATE and IDENTIFICATION NUMBER.

Thank you for your assistance.
APPENDIX F

PRETEST LETTER
Dear Student:

Thank you for agreeing to participate in this study designed to examine your perceptions about summer orientation for entering freshmen students at Iowa State University. Your input concerning the summer orientation process will be helpful, as you have been a part of summer orientation at Iowa State University.

All comments and responses will be kept confidential. Please complete the sections on your answer sheet marked BIRTH DATE and IDENTIFICATION NUMBER. Your identification number will be used for coding purposes.

Attached to this letter is a questionnaire that has been designed from statements made from students like yourself about summer orientation. Please follow the directions on the next page and complete the entire questionnaire.

It is important that you return on Monday, May 2, 1988 at 1:10 or 2:10 in room Lagomarcino W272, or at 3:10 in room Lagomarcino W282 at 3:10 to complete another questionnaire. Returning to complete another questionnaire will take approximately 30-40 minutes. Your participation is needed for this study to be successful.

Again, thank you for your assistance. If you have any questions at a later date, please feel free to contact me at 294-6767.

Sincerely,
Celine Moore / Graduate Assistant
Professional Studies
APPENDIX G

POSTTEST LETTER
Dear Student:

Thank you for returning to participate in this study designed to examine your perceptions about summer orientation for entering freshmen students at Iowa State University. Your input concerning the summer orientation process will be helpful, as your have been a part of summer orientation at Iowa State University.

All comments and responses will be kept confidential. Please complete the sections on your answer sheet marked BIRTH DATE and IDENTIFICATION NUMBER. Your identification number will be used for coding purposes.

Attached to this letter is a questionnaire that has been designed from statements made from students like yourself about summer orientation. Please follow the directions on the next page and complete the entire questionnaire.

Again, thank you for your assistance. If you have any questions at a later date, please feel free to contact me at 294-6767.

Sincerely,

Signature redacted for privacy

Celine Moore
Graduate Assistant
Professional Studies
APPENDIX H

REMAINING DEMOGRAPHIC CHARACTERISTICS
Table 7. Frequencies and percentages of remaining demographic characteristics of the subjects

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<th>Demographic subject variables</th>
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<td>9</td>
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<td><strong>Apply for scholarships or grants</strong></td>
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<tr>
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<tr>
<td><strong>Apply for loans</strong></td>
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Table 7. continued

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