

EXPRESSED SATISFACTION WITH THE NOMINAL GROUP TECHNIQUE
AMONG CHANGE AGENTS

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ABSTRACT

Expressed Satisfaction with the Nominal Group Technique

Among Change Agents. (December 1986)

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The purpose of this study was to determine whether or not policymakers and change agents with differing professional backgrounds and responsibilities, who participated in the structured process of a nominal group in the setting of diverse decision-making and problem-solving conferences, would express satisfaction with the technique used. "Satisfaction" was defined as "the adequate fulfilling of a need," as expressed by participants in nominal group activities.

Four conferences at Texas A&M University involving training and decision-making were used to examine the expressed satisfaction of participants with the Nominal Group Technique (NGT) as a tool for identifying and solving problems. They were an international food and water policy conference, a Texas Agricultural Extension Service conference, an English language curriculum conference, and a school principals' conference. The conferences were held between May 1985 and July 1986. The 206 participants were surveyed for expressed satisfaction with the nominal group activities.

Analyses of the data concerned with the independent variables were:

1. Previous use of NGT
2. Understanding of the purpose of the NGT

3. Background and profession of participants

4. Participation in other group activities.

The dependent variables were the items on the instrument reflecting levels of satisfaction with various aspects of involvement in nominal groups. These "attitude items" were grouped into three theoretical constructs to facilitate comparison of data among the conferences. The constructs were usefulness of the NGT, personal involvement in the NGT, and comparison of nominal groups with other previously used, non-NGT group activities.

Phi, Pearson, and Point Bi-Serial correlations were performed on the discrete data to test expressed satisfaction with NGT as affected by the independent variables, as well as by interactions with dependent variables.

Participants in all four conferences expressed general satisfaction with the nominal group technique with respect to their personal involvement, the usefulness of nominal groups, and with the nominal group technique as compared with other previously used, non-NGT group activities.

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CHAPTER I

INTRODUCTION

BACKGROUND OF THE STUDY

The Nominal Group Technique (NGT) has been widely used as a tool for identifying and solving problems in agriculture, business, churches, social research, education, health and medicine, and the military service (2, 3, 4, 5, 6, 7, 10, 11, 12, 14, 15, 16, 17, 18, 20, 22, 24, 25, 26, 27, 29). It has been perceived that educators, change agents, and administrators active in change need a tool like the NGT if they are effectively to foster commitment to change.

It stands to reason that no matter how effective a technique may be for identifying problems or concerns, for establishing priorities, or for solving problems, the satisfaction of the people involved in the process will affect their commitment to and support for any follow-up activities that may occur. However, it was not known if participants in nominal groups were satisfied personally as a result of such participation, and thus, were committed to act according to the consensus of the group. One study (31) did look at perceived satisfaction with NGT. However, this researcher was unable to find any studies addressing specific components of satisfaction with nominal groups, such as those components described on pages twenty and twenty-one.

PURPOSE OF THE STUDY

The purpose of this study was to determine whether or not change agents with differing professional backgrounds and responsibilities, who participated in the structured process of a nominal group in the setting of diverse decision-making and problem-solving conferences, would express personal satisfaction with the technique used.

The citations in this dissertation follow the style of the journal, Adult Education.

IMPORTANCE OF THE STUDY

Nominal groups are designed to encourage participation by all members within a group by a structure which limits interaction. A description of the process is in Chapter II. This particular study was important because the degree to which participants in the nominal group process expressed satisfaction with components of that process had not been presented in the literature. Those working with change agents and change agents themselves using groups for planning and decision-making need reassurance that participants in nominal group activities are satisfied with their nominal group experience, because satisfaction of participants is very likely to influence the commitment to carrying out the groups' decisions. The findings of this study then will be helpful in examining further the influence of satisfaction on that commitment.

THEORETICAL BASIS FOR THE STUDY

The theoretical base for this study provided the basis for the working hypotheses developed to contribute to attaining the purpose of the study. From an examination of the literature, the relevance of nominal groups to the nature of group decision-making and problem-solving activities engaged in by change agents is provided.

One way to maximize participation (and thus innovation, creativity, and commitment) in group decision-making activities is to use a structured small group process. Structure in a group activity is necessary to facilitate active participation by all group members in achieving the desired purpose of the group activity.

The nominal group is a structured group technique that fits well into a decision-making process, particularly the problem-identification and solution-generating phases of that process. Nominal grouping is described by Taylor (29) as a process by which individuals work alone, combining the results of their work later within a group setting. Van de Ven and Delbecq (4,5,31) describe nominal groups as settings where individuals work in the presence of others but without initial verbal interaction. Nominal groups elicit the contributions of individual members without the hindering dynamics of working in groups.

It may be theorized that if individuals are actively involved in the process of identifying problems, then they may express more interest in and receive greater personal satisfaction from being involved in that process. It may also be theorized that if change agents themselves are not satisfied personally with involvement in the nominal group technique, then they are unlikely to use this technique with their clientele in order to solve problems, prioritize issues, or make decisions.

Consequently, this study was designed to test four hypotheses regarding participation in nominal groups relating to the theoretical base described above.

HYPOTHESES

The following null hypotheses, derived from the theoretical base above, were tested, using data from surveys of 206 NGT participants:

1. Within a conference, there would be no difference between previous participation in an NGT and previous nonparticipation of participants as regards their expressed satisfaction with an NGT.

2. Within a conference, there would be no difference between those expressing an understanding of the purpose of the NGT and those expressing a non-understanding of the purpose of the NGT as regards their expressed satisfaction with an NGT.
3. Within a conference, there would be no difference between the professions of participants with respect to expressed satisfaction with an NGT.
4. Within a conference, there would be no difference between the previously-experienced, interactive discussion group and the nominal group as regards participants' expressed satisfaction with the group activities.

DELIMITATIONS

This study was delimited to an examination of the degree of satisfaction as expressed by 206 participants in four professional conferences held at Texas A&M University between May 1985 and July 1986. These conferences were selected partially because of convenience, but also, because they involved group training and decision-making activities, problem-solving sessions, participants who were or who could be expected to be change agents and/or decision makers, and who represented several diverse populations. Descriptions of the conferences follow in Chapter III (Research Methods and Procedures).

LIMITATIONS

Because of the nature and purpose of each of the conferences, it was not possible to conduct carefully controlled, direct comparisons of the level of satisfaction expressed with the nominal group technique and with other interactive group activities used at the same conferences.

Another limitation of the study was the lack of control over some procedural aspects of the conferences. The director of the English Language Institute conference forgot to have participants fill out the instrument at the conclusion of the conference, and it was six weeks before all participants were able to complete the survey instrument and return it.

Surveys collected from participants at the Principals' Summer Academy conference were lost before they were returned to the investigator; it was two months before another survey could be mailed to the participants. Three weeks passed before sufficient surveys were available for tabulation. Consequently, it was possible that responses received may have reflected slightly different opinions from those collected immediately after participation in the NGT.

ASSUMPTIONS

One major assumption was that the sub-scales used to derive a measure of the degree of expressed satisfaction with the nominal group activities engaged in by all four groups examined would indeed reflect an indication of the satisfaction of the participants with the nominal groups as used in the conferences.

DEFINITION OF TERMS

"Change Agent" was defined as a "process helper and knowledge linker" (11:2), within the context of the meaning given by Rogers & Shoemaker (23) of "...a professional who influences innovation-decisions in a direction deemed desirable by a change agency," and included persons such as principals, professional educators, and extension and administrative personnel in agricultural development.

"Conference," as used in this study, was defined by the researcher as "a meeting together of more than five persons for the purpose of solving a problem or making a decision."

"Consensus" was used to mean "the judgment arrived at by most of those concerned "(33).

"Delphi technique" is a problem-solving method where participants are separated for the idea-generation phase and then may or may not be brought together for combining ideas into the most-favorable solution. Typically, however, Delphi participants are not brought face-to-face, but are provided each others ideas and rationales in separate "rounds."

"Interactive Discussion Group" may be defined as "an informal gathering with all members tossing out ideas about a stated problem area and the chair acting in the capacity of moderator and sometimes adding stimulus to get things started..."(28:271).

"Satisfaction" was defined by the researcher as "the adequate fulfilling of a need," as expressed by participants in nominal group activities.

CHAPTER II

REVIEW OF SELECTED LITERATURE

This study investigated the degree of satisfaction expressed by selected change agents with the nominal group technique. To determine the present status of research related to this topic, an extensive review of the literature was made. Sources of information included dissertations, theses, and other materials located through computer-searched indexes. Indexes included Agricola, Health Planning and Administration, National Technical Information Service (NTIS), Harvard Business Review, Management Contents, Educational Resources Information Clearinghouse (ERIC), Public Affairs Information Service, Social Science Citation Index (SSCI), Sociological Abstracts, and Associations Publications in Print.

Topics searched included Nominal Group Technique, participation, conferences, decision-making and problem-solving, change agents, technical assistance, and technology transfer.

A problem-solving group activity must include "opportunities for client participation and representation in [the evolution and implementation of ... change programs "(1:469). Effective implementation of change is difficult without the support of local clientele, and "especially by the people who are going to be affected by the [change] project"(24). One way to maximize participation, (and thus innovation, creativity, and commitment), is to use a structured small group process. Delbecq (4:474) quotes Thompson and Smithburg, (30), as saying "Creation and discovery are much more likely when there is a personal commitment to searching for a solution."

Delbecq also shows that "... a number of major research studies substantiate the superiority of nominal groups (groups in which individuals work in the presence of one another but do not interact) as compared with conventional 'brainstorming' groups" (4:472). One other comparative study is the work of Burton et. al. (3), where one hundred participants at a group decision-making workshop were divided into twenty groups to solve problems. Ten of the groups used the NGT with two voting opportunities; the other ten groups used an "interacting/brainstorming technique followed by a one-time vote using the 5-4-3-2-1 ballot used by the NGT groups "(3:9). The methods were compared on the basis of performance (quality generated), conformity (number of ideas voted choices), and self-weighting (self-ranking of profession, experience, educational background, etc., comparing themselves to the other members of their group). Nominal group participants generated more ideas of higher "quality;" they voted for almost double the number of items out of the list of possible choices; and they were not affected as to performance by the self-weighting activity that promoted feelings of subordinate-superior relations.

The nominal group is a technique that fits well into a decision-making process, particularly the problem-identification and solution-generating phases of that process. Green (9) conducted a study of NGT vs. normal interactive groups to determine problems faced by students in electronic data processing. He found that there was no significance between the groups as regards the number of ideas generated, the number of unique responses, or the quality of responses. Unique characteristics of Green's work were that he used a highly structured interactive group process to compare with nominal groups.

He used only five members per group, with a group leader moderating the session and recording ideas generated on large sheets in the front of the room. In the present researcher's view, this does seem more like an NGT session than a normal interactive discussion group.

Hegarty (12:35) presents a summary of reasons for the superiority of nominal groups engaged in identifying problems, as regards three aspects of group problem-identification activities.

a. Equal Status of Members

Nominal group procedures encourage and virtually ensure equal contribution by all participants to both listing of problem dimensions and to the final decision making. (In NGT, this is done by insisting that problem lists and votes are generated in silence, and that criticism of ideas is avoided.) This helps offset the perennial difficulties caused by the fact that within curriculum deliberation groups ...there are inequalities of status, power and personality types amongst members.

b. Task Orientation

In an interactive group, members are obliged to spend time and effort on social and emotional concerns, and some limited studies have shown that the quality of contributions produced decreases as effort spent on maintaining the group function increases. The structured nature of NGT means that participants remain focused on the task in hand although the meetings are not without the stimulation and enjoyment of periods of discussion, especially towards the later stages.

c. Written Products

Records of all aspects of the workings of a nominal group are

kept in written form--in NGT this applies to the original generation of individual ...lists, to the shared group list, and to the rankings given to items after the final votes. Calling for written records places a demand on each group member to accept responsibility for working on a share of the group task and makes it difficult for any group member merely to "...go along with the majority." The use of written expression rather than spoken expression makes it difficult for members to engage in "politicking" or unproductive group dynamics and ...induces a greater feeling of commitment to the meeting itself and to its outcomes.

Furthermore, it is easier for group members to raise difficult problems, particularly personal problems, when a written format is used and no criticism is permitted.

"Discussion groups" are frequently used to promote participation in problem-solving. Discussion groups have been shown to be less than ideal for increasing participation because of unequal opportunity for less-dynamic individuals to express their views (30). Even in small "discussion" groups, some individuals may not feel free to contribute, or may feel that their opinion is not a valuable contribution and they may not feel comfortable participating in discussion groups. As a result, they may not experience a "good feeling" about their involvement in small groups or about the value of the contribution of the small group to decisions of a larger group, such as a conference. This lack of positive feeling toward a group activity may also be related to the degree of participation itself. Richardson (22:24) describes "pseudo-participation" as used to refer to "...procedures by which [group] members are induced to agree to decisions already taken." This acquiescence of less-aggressive individuals would hinder the ability of the group to benefit from all resources brought to the group by its members, especially by the minority members.

The Deputy Director General of an agricultural research and training organization said, "I have used this (Nominal Group) technique, and of course it helps you a lot better. than the voting method [of reaching a group decision]. When you vote, you will have the majority and the minority. The minority will always be unhappy because they didn't win. So it is better if you try to get the ideas together on a consensus basis, and then you have everybody pulling together in the same direction" (24).

Burton, et al, (3:8) describe the pressure to conform that inhibits group members from creative and innovative contribution as taking three forms. First is that "Groups prefer to agree. They tend to produce a majority opinion, and group discussions tend to strengthen group consensus ...whether or not the decision was correct." Second is that "...the majority, by sheer numbers, is able to coerce those members voicing dissenting views." The third inhibitor is "...the wish to retain one's membership in the group. People will agree with the others if they feel that, by doing so, they will improve their standing or popularity in the group. The fear of possible rejection from the group will usually cause the dissenting member to go along."

When people are assembled into a group for some purpose, they form a "temporary social system" (8:91). Aspects of "Group Culture" (Ibid.) are very important to administrators using groups to identify or solve problems.

Anthropologists have defined "the operating culture of a group" as that characteristic of a group that makes it more than just the sum of the individual members of that group (7:22). Yet, there still is no reported consensus in the literature about what group participation actually does, "for the participants or for anyone else"(22:4). Groups still remain a mystery with regard to their effect on individual members.

The Nominal Group Technique is a structured small group process by which each group member is allowed full participation without hindrance by other group members. The nominal group technique is claimed to "...counteract and ...minimize some of the dysfunctional features of working groups"(5:129). The NGT elicits the contributions of individual members without the hindering dynamics of group work.

Nominal groups are used with the following goals (4,5,15,19,30):

1. To increase creativity and participation in group settings involving problem-solving and/or fact finding tasks.
2. To develop or expand perception of critical issues within problem areas.
3. To identify priorities of selected issues within problems, considering the viewpoints of differently oriented groups.
4. To obtain the input of many individuals without the dysfunction of unbalanced participation which often occurs in large groups.

Several slight variations of the Nominal Group Technique have been reported in the literature, but they basically follow the same format as the technique used in this study. That format follows.

1. An outline of the NGT activity is presented to the conference as a whole. It takes about ten to twenty minutes to describe the activity and to answer questions. A "handout" can be given to the participants to present the justification and procedure for the nominal groups to follow (Appendix A).
2. The conference participants are divided into groups of seven to ten, by random distribution if possible. A final decision made by the whole conference will result from using representatives from each of the smaller groups to comprise the final conference consensus-generating group.
3. An issue, problem, or decision is described to the participants.
4. A "recorder" is selected from each group to write down the suggestions of the group and to keep the participants on track to accomplish the objective. A Nominal Group Leader may also be used to moderate the group activities, to be "a neutral receiver of group ideas, controlling the group process through the management of information flow. In this way the leader attempts to distance [the] idea from [the] person generating it"(19:131).
5. The group activity begins with a quiet time for each participant to list on paper, or notecards, all possible responses to the question posed to the group. Ten minutes or so is often enough time for the individual participants to finish listing the ideas that come to mind.
6. Each person, in turn, gives to the recorder one item from his list. No discussion is allowed at this time, and the recording goes on, round-robin fashion, until all participants' ideas are recorded on a blackboard or large sheets of paper hanging in front of the group. The items should be numbered for easy reference later on.

Participants are encouraged to "hitchhike" on the ideas presented by others, coming up with new ideas as a result of the creative thoughts arising from others. This phase may need one hour, depending upon the size of the group and the number of ideas generated by each participant. This is the first self-concept-protecting phase, where each individual has absolute equality to present ideas without fear of ridicule from others.

7. Items presented are now reviewed for clarity. Participants may discuss the meaning of an item, and may compare items to see if some items are saying the same thing. No judgment as to the worth of an item is allowed. All items are considered valuable. This period requires ten to forty minutes. Some items may be combined to enhance clarity and preciseness, but the original proponent of the idea has absolute authority to agree to combine or reword an item. This step may be modified to preserve anonymity if participants may not appreciate being linked to a specific idea. When this phase is concluded, a recess for several minutes may be beneficial.

8. Evaluation of the items is done next. Each individual chooses the five most-important and "best" ideas from the master list and ranks them from first to last in order of importance. A five-point scale may be used, where the most important item gets five points, the second-most important gets four points, the third-most important gets three points, the next-to-last item gets two points, and the least important, of the five most important items, gets one point. Point totals are then accumulated from the collection of individual assessments for each of the items on the master list, and the five items with the highest point totals, from the master list, are assumed to represent the consensus of the group.

The group moderator must ensure that participants understand that five points go to the most important item and one point to the least important.

The variety of uses to which the NGT has been put gives impetus to the relevance of this particular study. Using the NGT as a problem solving tool assumes an effectiveness based upon notions that participants are helped by the process, as compared with use of a non-NGT, such as a normal interactive discussion group.

Nominal Groups have been put to use in quite a few different settings, as has been summarized in Table 1.

Table 1.
Selected Uses of Nominal Groups by Year Reported

Year Cited	Purpose of Use
1971 (4)	Community Planning (Program Planning Model)
1973 (21)	Rural Planning
1974 (30)	Job Description Definition
1977 (12)	Curriculum Development
1978 (15)	Teacher/Administrator Conflict Resolution
1978 (26)	Energy Planning
1978 (27)	Army ROTC Program Planning
1979 (32)	Adult Learning Programs
1980 (2)	Evaluation of Clinical Psychological Training
1980 (3)	Workshop on Group Decision-Making
1980 (17)	Administration of Hearing-Impaired Programs
1981 (6)	Policy Development for e State Education Department
1981 (16)	Measuring Satisfaction of Church-Client Needs
1981 (25)	Determining Typing Standards
1982 (18)	Sociological Surveying in Iran
1983 (13)	Nursing Role Conceptions
1983 (19)	Curriculum Development
1986 (34)	Defining Agricultural Extension Program Issues

Modifications of the technique have included discussion of items at various times during the process, pre-training of group leaders, and/or written submission of items to the recorder from group members.

Some users of the NGT, like Sullivan (27), have "proved" the benefits of some version of the NGT on the basis of the number of ideas generated during the process. Van de Ven and Delbecq (31) examined the comparative benefits of the NGT vs. the Delphi process vs. the interacting group process. They gave equal weighting to the number of ideas generated and to the perceived level of satisfaction of the participants to measure the effectiveness of each of the three group activities in determining the job description of student dormitory counselors.

Perceived satisfaction was measured by the use of five, five-point scale questions:

1. To what extent did you feel free to participate and contribute your ideas?
2. To what extent did you feel your time was well spent in this meeting?
3. How satisfied are you with the quantity of ideas generated by your group?
4. How satisfied are you with the quality of ideas generated by your group?
5. To what extent do you feel the group meetings/series of delphi questionnaires, is an effective way to deal with the problem?

They claimed that both nominal groups and the delphi groups were convincingly superior to the interacting groups, but that the difference between nominal and delphi groups was not statistically significant.

Van de Ven and Delbecq, in their study, state that "...the greater the perceived level of satisfaction. the greater the probability of solution adoption" (31:609). They also claim that "...perceived satisfaction is a ubiquitous measure that includes the affective and

emotional dimensions of participation, as well as the perceived analytical quality of the group's performance"(31:609). They conclude that the nominal process "...includes a number of facilitative characteristics which act to increase decision making performance...

1. There is consistency in decision making, as low variability in member and leader behavior is observed from group to group.
2. A balanced concern for socio-emotional group maintenance roles and performance of task-instrumental roles offers both social reinforcement and task accomplishment rewards to group members.
3. The opportunity for individuals to think through and write down their ideas results in a tendency for ideas to be problem centered, specific, and of high quality.
4. The structured group norm emphasizes tolerance for nonconforming, incompatible, or conflicting ideas through independent individual expression of ideas without interruptions during the search and choice periods of decision making.
5. The structured process forces equality of participation among members in generating information on the problem. While dominant members are more expressive during the discussion period, their ideas are simply included in the sample of ideas already listed on the chart on the wall. Finally, the silent independent voting on priorities forces equality of participation in choice of the group product.
6. The NGT group meetings tend to conclude with a perceived sense of closure, accomplishment, and interest in future phases of problem solving" (31:617).

However, they did not address factors such as personal involvement in the nominal groups, structure of the groups, usefulness of the groups, or direct comparison of nominal groups with other previously-used group activities. The benefits of the nominal group process result more from the enhanced performance of individuals within the groups more than from the physical setting or procedural technique per se. It is this individual aspect that is examined in this study--the degree of

satisfaction expressed by individuals participating in the nominal group process.

Comments concerning other benefits of nominal groups, as well as problems associated with using the nominal groups, may be found in the discussion of results from each of the four conferences in Chapter IV (Results), and in Chapter V (Summary, Conclusions, and Observations/Recommendations).

CHAPTER III

RESEARCH METHODS AND PROCEDURES

Four conferences at Texas A&M University, involving training and decision-making, concerned with different clienteles, were used to examine the expressed satisfaction of participants with the Nominal Group Technique. Problem-solving sessions held during the conferences provided an opportunity to test the hypotheses presented in Chapter I.

As the research fit the conditions of "careful control and proper sampling" laid down by Guba (10) for a valid scientific study, the procedures and limitations associated with such a study were considered in conducting the research. As the conferences occurred over a period of time, it was possible to refine the instrument and procedures as the study was conducted.

IMPLEMENTATION OF THE NGT

Trained NGT facilitators conducted the NGT sessions at all conferences, using the standard NGT procedure outlined in references 3, 13, and Appendix A. That procedure included the following steps: (1) silent generation of ideas, (2) round-robin recording of ideas, (3) clarification and discussion of ideas, (4) individual voting on the importance of ideas, and (5) final voting to determine the group consensus. Further explanation of the NGT process is found in Chapter II (Review of Selected Literature).

INSTRUMENTATION

Satisfaction with group activities can be affected by the environment,

by the content of the activities, and by the process of the group interactions. Therefore, the instrument was designed to measure the satisfaction of nominal group participants by requesting responses to statements regarding the structure, the personal involvement, the usefulness of the nominal group procedure, and comparison of the nominal groups with other previously used, non-NGT group activities. Under the conditions of the conferences where the nominal groups were used, exact data on the background of participants were not required, thus helping to insure confidentiality of responses.

A twenty-two to twenty-five item "satisfaction scale" was administered to the groups. The instruments were developed with the assistance of faculty and graduate students at Texas A&M University and Dr. John Hoyle (14), who had consulted and published on the use of nominal groups in educational settings.

The instrument consisted of five biographical background questions and seventeen to twenty, five-point, Likert-scale statements on the conferees' attitudes toward the Nominal Group Technique. The number of items varied from conference to conference because of the varying purposes of the conferences, backgrounds of participants, and the nature of other conference activities.

Statement responses ranged from 1, "Strongly Agree," to 5, "Strongly Disagree." To minimize possible bias of responses resulting from the cumulative tone of the items, some of the statements were expressed positively and others negatively. Positive statements were scored 1, 2, 3, 4, and 5, starting with the alternative "Strongly Agree." Conversely, negative statements were scored 5, 4, 3, 2, and 1, as a "Strongly Disagree" response to a negative statement actually expressed a positive

attitude. On the presentation of data, all statements were shown in their positive statement form.

For analytical purposes and to allow comparison of the satisfaction of participants with NGT as used in the four conferences, items on the instruments were grouped into theoretical constructs related to three summary attitudes; "Personal Involvement in the NGT," "Usefulness of the NGT," and "Comparison of NGT with other previously used, non-NGT problem-solving Groups." These groupings were not shown on the instruments in order to prevent a possible bias on the part of the respondents.

Participants were encouraged to write comments concerning the NGT on the back (reverse side) of the instrument. The reason for encouraging this response was to allow respondents to expand on certain aspects of their nominal group experience that they believed had not been covered sufficiently or not covered at all in the structured statements. Copies of the instruments used at the four conferences are included in Appendix B.

DESCRIPTION OF CONFERENCES STUDIED

The International Conference on Food and Water (May 1985)

Conference participants included more than two hundred ranking policymakers, educators, administrators, and change agents from ground the world. Trained NGT facilitators conducted the NGT sessions, involving approximately 178 persons, to formulate a consensus regarding the priority of issues in water and food policy.

The next day, 110 conferees present who had participated in the nominal groups (627. Of the 178) were surveyed using an opinionnaire developed by faculty and graduate students of the Department of Agricultural Education at Texas A&M University (Appendix B). The measurement reflected only the conferees' perceived satisfaction with the NGT, as used at this conference, not their perceived satisfaction if they had been involved in the NGT in other settings.

Texas Agricultural Extension Service District Conference (April 1986)

This TAEX conference was planned as an in-service training conference for the 60 extension agents of TAEX District 10. As part of the training on teaching adults, there were small group activities in which participants were to identify problem areas in working with adults. Following the group activities, participants were surveyed as to their expressed satisfaction with the NGT (Appendix B).

English Language Institute Curriculum Conference (April 1986)

The English Language Institute (ELI) conducted a conference to plan an advanced grammar course. Participants included nine instructors and administrators from the grammar instruction section of the ELI. Interactive discussion group sessions were held to determine the content for the new course. Nominal groups were used by the participants to determine the competency standards for students. Participants were surveyed for expressed satisfaction with the group activities (Appendix B).

The Principals' Center Summer Academy (July 1986).

The Principals' Center Academy was held to sponsor professional development activities directed toward instructional leadership, and management skills for practicing principals. The sixty-seven principals attending participated in nominal groups and in interactive discussion groups to explore ideas and assumptions

presented in lectures and to address issues raised. Forty-two participants were not from Texas A&M University and were the specific clientele for which the conference was held. These 42 were the only participants chosen by the conference administrator to be surveyed. The participants were surveyed for expressed satisfaction with the nominal group activities at the end of the conference (Appendix B). Unfortunately, the original surveys were lost before this researcher received them. Another survey was mailed out to each of the 42 NGT participants, with a letter explaining the loss of the original surveys and asking them to complete another instrument and return it in the envelope provided. Thirty instruments were returned out of the 42 sent out (71%).

ANALYSIS

As the whole populations of the conference nominal group participants were surveyed and statistical sampling was not involved, descriptive statistics were used. The measures derived are all illustrated in tables and figures.

Analyses were concerned with the independent variables:

1. Conference in which people participated
2. Previous use of NGT
3. Understanding of the purpose of the NGT
4. Background and profession of participants
5. Participation in other group activities.

The statements making up the dependent variables were grouped into indicative constructs of "Attitude towards the NGT" and "Comparison with previous group activities," which may collectively be used as an index of expressed satisfaction. Phi, Pearson, and Point Bi-Serial correlations were performed on the discrete data to test expressed satisfaction with NGT as affected by the independent variables, as well, as by interactions with other dependent variables. Descriptive statistics, such as frequency counts, were used to present the distributions of responses to the various items and groupings of items on the opinionnaires.

From these analyses, conclusions were drawn. The .05 level of significance was used to test the null hypotheses.

CHAPTER IV

RESULTS

The purpose of this study was to determine whether or not change agents with differing professional backgrounds and responsibilities, who participated in the structured process of a nominal group, would express personal satisfaction with the nominal group technique used. To accomplish this, four hypotheses were tested, using data from surveys of NGT participants:

1. Within a conference, there would be no difference between previous participation in an NGT and previous non-participation of participants as regards their expressed satisfaction with an NGT.
2. Within a conference, there would be no difference between those expressing an understanding of the purpose of the NGT and those expressing a non-understanding of the purpose of the NGT as regards their expressed satisfaction with an NGT.
3. Within a conference, there would be no difference between the professions of participants with respect to expressed satisfaction with an NGT.
4. Within a conference, there would be no difference between the previously-experienced, interactive discussion group and the nominal group as regards participants' expressed satisfaction with the group activities.

The findings of the study related to those hypotheses, and based upon an analysis of the data contained in the responses received, are presented in this chapter. The presentation and discussion of the data are arranged into two major sections. The first section describes the data of the four conferences, and the second section presents elements shared by the four conferences which relate to the overall purpose of this study. The following discussions related to the data are based on items showing significance at the $p < .05$ or $p < .01$ level, as determined by SAS analytical procedures.

Theoretical constructs in each conference were used as indicators of expressed satisfaction with nominal groups and provided a means of comparison among the conferences with regard to the null hypotheses presented earlier. These constructs were built on responses to specific items on the different opinionnaires, copies of which are in Appendix B. For each of the conferences, the theoretical constructs used to summarize and compare the data are presented below:

International Water and Food Policy Conference: the construct "Usefulness of the NGT" was the mean response to statements 7, 9, 16; "Personal Involvement in the NGT" was from numbers 10, 11, 12, 13, 14* 19, 20, 21, and 22.

Extension Service conference: "Usefulness of the NGT" was from items 18, 19, 20, and 21, "Personal Involvement in the NGT" from 6,8, 10, 12, and 14, "Comparison with Previous, non-NGT group activities" from 7, 9, 11, and 13.

English Language Institute: "Usefulness of the NGT" was from 18, 19, 20, and 21; "Personal Involvement in the NGT" was from 6, 8, 10, 12, and 14; and "Comparison with Previous, non-NGT Group Activities" was from 7, 9, 11, 13, 15, 16, 22.

Principals' Academy: "Usefulness of the NGT" was from 19, 20, 21, and 22; "Personal Involvement in the NGT" was from 7, 9, 11, 13, and 15; and "Comparison with Previous, non-NGT group Activities" was from 8, 10, 12, 14, 16, 17, and 23.

DATA FROM THE FOUR CONFERENCES

Following are the analyses of data collected from the four conferences.

The International Conference on Food and Water
Table 2 presents the relatively equal dispersion of participants,
indicating background or professional interest.

Table 2.

Distribution of Conference Participants by Interest Groups
at an International Conference on Food and Water, TAMU, 1985. (N-110)

Section	Percentage
Water Supply	17
Water Salinity	13
Water Management	23
Integrated Ecosystems	13
Water & Energy	20
Technology	16

Note: 110 instruments were received, but not all instruments had responses for all items; thus, actual responses for most items numbered about 100.

Table 3 presents the biographical backgrounds of participants.

Table 3.

Levels of Agreement with Background Items, by Percent,
Expressed by Participants at an International Conference on Food and Water,
TAMU, 1985. (N-110)

Independent Variable	Yes		No	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
2. Had Prior NGT or Delphi Experience	31	28	78	72
3. Was NGT Participant Only, Not Reaction Panelist	77	71	31	29
4. Considered Self a Policy Maker	33	30	77	70
5. Considered Self Fluent In English	102	94	7	6

Items are numbered as they appeared on the instrument.

--Note: Most participants did not indicate prior NGT or Delphi experience, were participants in the NGT only and not in the reaction panels, did not consider themselves policy makers, and considered themselves fluent in English. As almost three quarters of the respondents had not had prior experience with either the NGT or the Delphi technique, their reactions to the use of the NGT would be expected to be skeptical.

Table 4 reflects the respondents' attitudes towards the NGT.**Table 4.**

Levels of Agreement with Attitude Items Concerning the NGT, by Percent, Expressed by Participants in an International Conference on Food and Water, TAMU, 1985. (N=110)

Attitude Item	SA	Levels of Agreement(1)			
		A	N	D	SD
6. Understand purpose of NGT	50.9	41.0	7.2	0.9	0.0
7. Agreement with purpose of NGT	6.5	27.1	27.1	31.8	7.5
8. Skeptical of NGT	36.7	50.5	11.0	0.9	0.9
9. Would use NGT in the future	25.9	44.4	16.7	8.3	4.6
10. Personal opinions made known	33.0	46.8	9.2	7.3	3.7
11. Personal opinions valued	36.1	33.3	18.5	6.5	5.6
12. Personal opinions better than consensus	7.3	19.3	39.5	28.4	5.5
13. Personal opinions same as consensus	8.3	40.7	20.4	23.2	7.4
14. Felt free to express self	42.2	38.5	7.3	5.5	6.4
15. There was enough time to discuss issues	3.7	25.7	19.3	22.0	29.4
16. NGT was not a poor use of conference time	27.1	45.8	21.5	0.0	5.6
17. Group was about the right size	25.7	54.1	7.3	11.0	1.8
18. Group was not too large	30.6	59.3	6.5	2.8	0.9
19. Group was aided by my personal contribution	8.3	44.4	35.8	8.3	3.7
20. Will try to persuade others to act according to consensus	12.8	47.7	26.6	10.1	2.8
21. Committed to work by group's consensus	20.6	57.0	18.7	0.9	2.8
22. World food situation will improve if I act according to my group consensus	11.0	46.8	29.4	8.3	4.6
23. Group consensus of action in problem-solving more effective than individual action alone	39.5	50.5	6.4	2.8	0.9
24. More attention to LDC representatives needed	24.8	29.4	31.2	9.2	5.5
25. More attention to scientists and technical experts was needed	5.8	21.1	47.1	23.1	7.7

-Notes (1) SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD-Strongly Disagree

Ninety-five participants (87%) expressed that they had been skeptical of the use of NGT. Yet, after using the NGT, most participants (73%) believed that the NGT was a good use of conference time, and most (70%) would use the NGT in the future. They agreed (90%) that group consensus is more effective than individual action alone and (90%) expressed satisfaction with the NGT group size. An indirect measure of satisfaction with the NGT can be drawn from the fact that there was no strong feeling, one way or the other, that more attention should have been paid to scientists and technical experts (Item 25 on Table 4); though it is true that respondents possibly perceived that a majority of the people in their NGT group were scientists or technicians.

Table 5 illustrates the significance of relationships among the background items and attitude sub-category constructs, indicating that there was a significant relationship between: (1) policy-maker status and reaction panel/no reaction panel participation, (policy-makers tended to participate in the reaction panels in addition to the nominal groups), (2) policy-maker status and English fluency (most of the non policy-makers were native English speakers).

Table 5.

Phi Correlation Coefficients for Background Items at an International Conference on Food and Water, TAMU, 1985. (N=110)

	B2	B3	B4
B2 Prior NGT experience			
B3 NGT participant only	.05		
B4 Policy maker	.03	-.31**	
B5 Fluent in English	.16	.17	-.24*

*p<.05 **p<.01

Figure 1 presents the range and mean of responses for each item continuum of 1-5, "Agree" to "Disagree." Three means fell below the "neutral" point into the "Agree" zone: Items 9, 10, and 17.

Participants expressed satisfaction with nominal groups, yet they did not indicate that they would use them in the future.

Figure 1.
Mean and Range of Responses to Attitude Items by Participants at an International Conference on Food and Water, TAMU, 1985. (N=110)

Attitude Item	Agree			Neutral			Disagree		
	1	2	3	4	5	6	7	8	9
6. Understand purpose of NGT	..	----	.						
7. Agreement with purpose of NGT	.	----	-----						
8. Skeptical of NGT	.	----	-----						
9. Would use NGT in the future		.	-----	-----	-----	-----			
10. Personal opinions made known		.	-----	-----	-----	-----			
11. Personal opinions valued	.	----	.						
12. Personal opinions better than group consensus	.	----	-----						
13. Personal opinions same as group consensus	.	----	.						
14. Felt free to express self	.	----	.						
15. There was enough time to discuss issues	.	----	.						
16. NGT was not a poor use of conference time	.	----	.						
17. Group was about the right size			.	-----	-----	-----			
18. Group was not too large		.	-----	-----	-----	-----			
19. Group was aided by my personal contribution	.	----	-----						
20. Will try to persuade others to act according to consensus	.	----	.						
21. Committed to work by group's consensus	.	----	.						
22. World food situation will improve if I act according to my group's consensus	.	----	.						
23. Group consensus of action in problem-solving more effective than individual action alone		.	-----	-----	-----	-----			
24. More attention to LDC representatives needed	.	----	.						
25. More attention to scientists and technical experts needed	.	----	.						
Usefulness of NGT	.	----	-----						
Personal Involvement in NGT		.	-----	-----	-----	-----			
Structure of the NGT	.	----	.						

Table 6 presents the Point Bi-Serial Correlations of the background items with the attitude items.

Table 6.

Point Bi-Serial Correlations of Background vs. Attitude Items at an International Conference on Food and Water, TAMU, 1985. (N=110)

Attitude Item(1)	Background Item(2)			
	B2	B3	B4	B5
6. Understand purpose of NGT	-.01	.27**	-.14	.05
7. Agreement with purpose of NGT	.02	.23*	-.05	.02
8. Skeptical of NGT	-.03	-.01	-.15	-.05
9. Would use NGT in the future	-.04	.10	.04	-.13
10. Personal opinions made known	.02	.09	-.08	.15
11. Personal opinions valued	.04	.01	.05	-.03
12. Personal opinions better than group consensus	-.15	.02	.03	.14
13. Personal opinions same as group consensus	-.01	-.01	.01	.15
14. Felt free to express self	-.02	-.08	.10	-.12
15. There was enough time to discuss issues	-.10	-.08	.09	-.13
16. NGT was not a poor use of conference time	-.10	.17	-.01	-.14
17. Group size was about right	-.06	.14	-.12	.10
18. Group was not too large	-.22*	.21*	-.31**	.02
19. Group was aided by my personal contribution	-.13	.10	.12	-.12
20. Will try to persuade others to act according to consensus	.10	-.16	.23*	-.08
21. Committed to work by group's consensus	.04	-.20*	.08	.09
22. World food situation will improve if I act according to my group's consensus	.09	-.02	.06	-.06
23. Group consensus of action in problem-solving more effective than individual action alone	-.01	.13	-.13	-.11
24. More attention to LDC representatives needed	-.11	-.22*	.14	.01
25. More attention to scientists and technical experts was needed	-.08	-.06	.0.	.07
Usefulness of NGT	-.05	.21*	-.01	-.11
Personal Involvement in NGT	-.01	-.07	.15	.04
Structure of NGT	-.21*	-.03	-.02	.01

*p<.05, **p<.01 Notes; (1) Items are numbered as they appeared on the instrument. (2) B2-Prior NGT experience, B3-NGT participant only, B4-Policy Maker, B5-Fluent in English

The table includes constructs developed from the attitude items.

Item 6 at this conference was used as a background item in the opinionaires at the other conferences. The relationships of this item with the other attitude items can be seen in Appendix C.

Significant relationships are that: those with no previous experience with nominal groups (1) did believe that their group was too large; and (2) they agreed with the construct reflecting the structure of the nominal group activity.

Those participating in only the nominal groups (not also participating in reaction panels) indicated that: (1) they understood the purpose of the NGT; (2) they agreed with the purpose of the NGT; (3) they did not believe their nominal group to be too large; (4) they were not committed to work by the group's consensus; (5) they did not believe that more attention to representatives from lesser-developed countries (LDCs) was needed; and (6) they were in agreement with the construct reflecting the usefulness of the NGT.

Those participants indicating that they were policy makers indicated that: (1) their groups were too large; and (2) they would not try to persuade others to act according to the consensus reached by their group.

Fluency in English had no special significance with any of the background items.

Those who understood the purpose of the NGT (Appendix C) indicated agreement with the usefulness of the NGT. Appendix C includes the Pearson Correlations among the attitude statement items for the International Food and Water Policy conference.

Several comments received from participants can serve to illustrate participants' attitudes towards the NGT:

1. "This was a good way to involve participants and was a perfect way, in my group, at least, of keeping one opinionated loud-mouth from overwhelming the others."
2. "I think it is an interesting way of making people express their ideas and work together, arriving at recommendation by consensus."
3. "The use of NGT at this conference strikes me as an interesting and valuable approach. It provides a 'product' of agreed-upon critical issues that may be acted upon."

Most of the comments received were very general in nature And were not included in this paper. However, a few comments did reveal some individual respondents' dissatisfactions with some aspects of NGT as used at the conference:

1. "I think this is a very damaging, bittering, and levelling process which eliminates important ideas based on detailed knowledge and imagination. The poor have been almost entirely eliminated by this process This consensus approach eliminates heresy."
2. "Many facilitators were not effective at moving the group through the process-- several people dominated the discussion by merit of their previous close association professionally and socially which tended to leave out almost all of the representatives of LDC's present when the framework of NGT was ignored and discussion and argument were allowed to wander. There was a poor understanding of the technique by the group and the facilitator was not skillful enough in changing negative trends."
3. "In the context of this conference, the NGT should have been in a morning session from 10-12, and not in the afternoon after lunch on the third day."

4. "It would be much more effective with a homogeneous group-scientists and policy makers seldom agree."
5. "There was far too little time to do a good job. We need an overnight break for quiet thought."
6. "The NGT leader of our group unfortunately had no experience or little knowledge of the technique. As a result, we had many false starts which wasted the short time available."
7. "The question posed to the group involved in the NGT was too broad, too vague for the NGT to have been most successful."
8. "There was no guidance or at least poor instructions as to whether we were striving for issues, problems, or solution strategies."
9. "The groups were too diverse so only general issues came to the top. The groups should be much more homogeneous and technically specific."
10. "The technique provided almost no opportunity to synthesize the variety of topics identified, nor an opportunity to provide more than a most general set of recommendations."
11. "The voting system totally distracted from the need to discuss the specifics of the various issues' proposed for recommendation."
12. "I think the success of any group is directly related to the ability and personality of the NGT leader; in my case, his inexperience showed and was a detriment to how the discussion was handled."
13. "NGT is much less effective, in my opinion, in groups with members who are not equally well informed."

Most of the less-positive comments reflected concern with the capability of the NGT leader, lack of sufficient time for discussion and synthesis of ideas, and lack of commonality of professional experience and expertise and language capability. The suggestions offered are synthesized into the Recommendations section of Chapter 5 (Summary, Conclusions, and Observations/Recommendations).

Texas Agricultural Extension Service

Table 7 describes the background of participants in the Texas Agricultural Extension Service District 10 training conference.

Table 7.

Levels of Agreement with Background Items, by Percent, Expressed by Participants in a Texas Agricultural Extension Service Conference, TAMU, 1986. (N=60)

Item	Response in Percent	
	Yes	No
1. Extension agent, not specialist or supervisor	96.7	3.3
2. Have participated in NGT before	50.0	50.0
3. Understand purpose of NGT	96.6	3.4
4. Previously participated in group planning and decision-making activities	98.3	1.7
5. Personally satisfied with quality of participation in non-NGT, previous extension group activities	37.9	62.1

Almost all of the participants were extension agents who had previously participated in group planning and decision-making activities, and who understood the purpose of NGT. Many (62%) of the participants expressed lack of satisfaction with the quality of participation in previous extension group activities. Exactly half of the participants had previous experience with NGT.

Table 8 shows the distribution of responses to the attitude statements. While 41 percent of Extension agents believed that their opinions were valued more in the NGT than in previous group activities, 78 percent believed that their opinions were valued in the NGT.

Table 8
Levels of Agreement with Attitude Items Concerning the NGT, by Percent, Expressed by Participants at a Texas Agricultural Extension Service Conference, TAMU, 1986. (N=60)

Attitude Item	Levels of Agreement(1)				
	SA	A	N	D	SD
6. Felt opinions were made known in NGT	51.7	40.0	6.7	0.0	1.7
7. Felt opinions were made known better in NGT than in other group activities	18.3	36.7	33.3	8.3	3.3
8. Felt opinions were valued in NGT	26.7	50.0	16.7	3.3	3.3
9. Felt opinions were valued more in NGT than in other group activities	11.9	28.8	47.5	8.5	3.4
10. Felt opinions were better than the NGT-derived consensus	1.7	18.6	35.6	37.3	6.8
11. Felt opinions were better than the decisions from other group activities	1.7	16.9	49.2	30.5	1.7
12. Felt able to freely express ideas	33.9	49.2	13.6	1.7	1.7
13. Felt more able to express self than in other group activities	10.2	28.8	47.5	11.9	1.7
14. Felt contribution helped NGT group	20.0	63.3	11.7	3.3	1.7
15. Felt contribution helped group more than in other group activities	5.0	25.0	55.0	13.3	1.7
16. Believe that NGT is more effective than normal group activities in reaching group goals	13.3	46.7	35.0	5.0	0.0
17. Believe that working in a group is more effective than working alone	48.3	35.0	13.3	3.3	0.0
18. Believe that NGT helped achieve goals in this conference	21.7	56.7	16.7	5.0	0.0
19. Feel would use NGT in future	38.3	53.3	6.7	1.7	0.0
20. Agree with purpose of NGT	37.3	50.8	8.5	1.7	1.7
21. Feel that NGT will be useful tool in extension group activities	38.3	50.0	10.0	1.7	0.0
22. Feel that NGT will be more useful than some other group activities	26.7	46.7	23.3	1.7	1.7

(1)SA=Strongly Agree,A=Agree,N=Neutral,D=Disagree,SD=Strongly Disagree

Thirty-nine percent believed that they were more able to express themselves in the NGT than in previous group activities. They (88%) agreed with the purpose of the NGT and believed (72%) that the NGT is more satisfactory and will be more useful than some other non-NGT activities. Then too, 83 percent of the agents believed that working in a group is more effective than working alone.

Two significant complementary relationships can be seen from Table 9. The first is that Extension agents understood the purpose of NGT. Second, those with previous experience in group decision-making activities understood the purpose of the NGT.

Table 9.
Phi Correlations for Background Items at a Texas Agricultural Extension Service Conference, TAMU, 1986. (N=60)

	A1	A2	A3	A4
A1 Extension agent				
A2 Prior NGT experience	-.19			
A3 Understand NGT purpose	.38**	.07		
A4 Prior group decision-making activities	-.02	.13	.57**	
A5 Satisfied with non-NGT group participation	.10	-.04	.18	.10

*p<.05, **p<.01

Figure 2 presents graphically the mean and range of responses to the attitude statements and to the attitude constructs. The three attitude constructs, "Usefulness of the NGT," "Comparison with Other Group Activities," and "Personal Involvement in the NGT," are the means of responses to the individual attitude items that made up each construct.

The construct "Usefulness of NGT" is an indicator of expressed satisfaction with the nominal group technique, consisting of the mean response to items 18, 19, 20, and 21. The construct "Comparison with Other Group Activities" indicated the expressed value of NGT as compared with other previous group activities, being the mean response to items 7, 9, 11, and 13. The construct "Personal Involvement in the NGT", was the mean response to statements numbered 6, 8, 10, 12, and 14.

Figure 2.
 Mean and Range of Responses to Attitude Items by Participants at a Texas
 Agricultural Extension Service Conference, TAMU, 1986. (N=60)

Item	Agree	Neutral	Disagree
	1-----2-----3-----4-----5		
6. Felt opinions were made known in NGT	.-----		
7. Felt opinions were made known better in NGT than in other group activities	.-----		
8. Felt opinions were valued in NGT	.-----		
9. Felt opinions were valued more in NGT than in other group activities	.-----		
10. Felt opinions were better than the NGT-derived consensus	.-----		
11. Felt opinions were better than the decisions from other group activities	.-----		
12. Felt able to freely express ideas	.-----		
13. Felt more able to express self than in other group activities	.-----		
14. Felt contribution helped NGT group	.-----		
15. Felt contribution helped group more than in other group activities	.-----		
16. Believe that NGT is more effective than normal group activities in reaching group goals	.-----		
17. Believe that working in a group is more effective than working alone	.-----		
18. Believe that NGT helped achieve goals in this conference	.-----		
19. Feel would use NGT in future	.-----		
20. Agree with purpose of NGT	.-----		
21. Feel that NGT will be useful tool in extension group activities	.-----		
22. Feel that NGT will be more useful than some other group activities	.-----		
Usefulness of the NGT	.-----		
Comparison with Other Group Activities	.-----		
Personal Involvement in the NGT	.-----		

Responses indicate mean responses of neutral-to-agreeable, showing a slight tendency to regard nominal groups as yielding more satisfaction than previous group problem-solving activities. These previous activities included discussion groups, "Phillips 66," and "Buzz groups."

Table 10 presents the relationships between the background and attitude items while Appendix C portrays the Pearson correlations for the attitude items. Significant relationships were:

1. Previous participation in the NGT did not appear to exhibit a significant relationship with any of the attitude items.
2. Those who understood the purpose of the NGT agreed with the purpose of the NGT.
3. A significant relationship between previous participation in other group planning and decision-making activities and any of the attitude items did not appear to exist.
4. A lack of satisfaction with the quality of participation in previous group activities not using the NGT correlated strongly with feeling more able to express self in the NGT setting than in previous group activities.
5. The NGT was perceived to be more effective than normal group activities in reaching group goals.
6. Extension agents believed their personal opinions were valued more in NGT than in other group activities, and they felt more able to express themselves than in other group activities; they agreed with the purpose of the NGT, and felt that NGT will be more useful than some other group activities.

The tendency to agree with the Comparison of NGT with other Group Activities construct by the extension agents indicated a favorable attitude toward NGT as compared with other group activities. Item A4, regarding previous group decision-making activities, had no apparent significant relationship with other attitude items or constructs.

Table 10.
Point B1-Serial Correlations of Background vs. Attitude Items at a Texas
Agricultural Extension Service Conference, TAMU, 1986. (N=60)

Attitude Item(1)	Background Item(2)				
	A1	A2	A3	A4	A5
6. Felt opinions were made known in NGT	-.15	-.04	-.18	-.10	.03
7. Felt opinions were made known better in NGT than in other group activities	.20	-.12	-.02	-.08	-.23
8. Felt opinions were valued in NGT	.09	-.04	.07	-.15	.07
9. Felt opinions were valued more in NGT than in other group activities	.28*	-.08	.18	.20	.05
10. Felt opinions were better than the NGT-derived consensus	.25	-.02	.18	.10	.03
11. Felt opinions were better than the decisions from other group activities	.08%	.02	.15	.14	.08
12. Felt able to freely express ideas	-.20	-.11	-.06	.18	.12
13. Felt more able to express self than in other group activities	.29*	-.06	-.08	-.10	-.33*
14. Felt contribution helped NGT group	-.13	.09	-.11	-.01	-.04
15. Felt contribution helped group more than in other group activities	.16	.15	.15	.03	-.17
16. Believe that NGT is more effective than normal group activities in reaching group goals	-.20	-.02	.01	.12	-.30*
17. Believe that working in a group is more effective than working alone	.18	-.06	.27*	.20	-.03
18. Believe that NGT helped achieve goals in this conference	-.01	-.02	-.12	-.01	-.13
19. Feel would use NGT in future	-.20	.08	.10	.25	-.20
20. Agree with purpose of NGT	.28*	-.01	.45**	.20	-.03
21. Feel that NGT will be useful tool in extension group activities	-.20	.07	.19	.23	-.20
22. Feel that NGT will be more useful than some other group activities	.43**	-.14	.26*	-.01	-.22
Usefulness of the NGT	-.03	.03	.19	.20	-.16
Comparison with Other Group Activities	.30*	-.09	.07	.11	-.17
Personal Involvement in the NGT	-.03	-.03	-.02	.01	.07

*p<.05, **p<.01

Notes:

(1) Numbering of the background and attitude items is consistent with the numbering of items of the survey instrument.

(2) A1=Extension Agent, A2=Prior NGT Experience, A3=Understand NGT purpose A4=Prior group decision-making activities, A5=Satisfied with previous, non-NGT group participation.

Useful comments were received from some participants. Negative comments about the NGT did not come from the Extension agents as occurred with the participants in the International Conference on Food and Water. Among the comments received were:

1. "It is a good way to pull ideas from the total group and cut down on dominance."
2. "I wonder how the process works with a less-educated group that is not really accustomed to coming up with written ideas and results."
3. "Someone must be made aware that they are the recorder in advance of starting, to have adequate preparation to write the opinions."
4. "I am a new agent and did not know the other group members, although they were all familiar with each other. This situation may have altered my perceptions."
5. "I believe this will be very useful as we work with our study groups in developing the Long Range Extension Program."

This group was fairly homogenous, and except for a few participants, knew each other well. The group did have a need for some type of training on working with advisory groups because each agent was developing planning groups to plan the course of that agent's activities for the future.

English Language Institute

The results of this section apply to the population of six teachers and administrators present at the English Language Institute conference on reforming the grammar curriculum of the Institute.

The small number of significant relationships among the background and attitude items is largely due to the low number of participants in the conference. Thus, while the results may be meaningful, they may not show statistical significance because of the small population.

Table 11 provides the background information for the participants, showing their perceptions of their profession, involvement with group activities, etc.

Table 11.

Levels of Agreement with Background Items, by Percent, Expressed by Participants in an English Language Institute Conference, TAMU, 1986. (N-6)

Item	Response by Percent	
	Yes	No

1. Administrator more than instructor	16.7	83.3
2. Have participated in interactive discussion groups before	100.0	0.0
3. Understand purpose of Nominal Group Technique	100.0	0.0
4. Participated in curriculum development activities before	100.0	0.0
5. Work load will be affected by outcome of group activities on the proposed curriculum change	60.0	40.0

Most of the participants were instructors, not administrators, and believed that their workload would be directly affected by the outcome of the nominal group activities. All participants claimed to have participated in discussion groups before, to have participated in curriculum development activities before, and to understand the purpose of the nominal group technique.

Table 12 presents the dispersion of responses received for each of the attitude items concerning the NGT, as expressed by participants. It was noted that all respondents agreed or agreed strongly with items 6,8,12,17,18, and 20. These items reflected satisfaction with the NGT as used in that particular conference, even though only one-half of the participants felt that they would use the NGT in the future (Item 19).

Table 12. Levels of Agreement with Attitude Items Concerning the NGT, by Percent, Expressed by Participants in an English Language Institute Conference, TAMU, 1986. (N=6)

Attitude Item	Levels of Agreement(1) by Percent				
	SA	A	N	D	SD
6. Felt opinions were made known in NGT	50.0	50.0	0.0	0.0	0.0
7. Felt opinions were made known better in NGT than in other group activities	0.0	33.3	50.0	0.0	16.7
8. Felt opinions were valued in NGT	0.0	100.0	0.0	0.0	0.0
9. Felt opinions were valued more in NGT than in other group activities	0.0	33.3	50.0	16.7	0.0
10. Felt opinions were better than the NGT-derived consensus	0.0	83.3	16.7	0.0	0.0
11. Felt opinions were better than the other group activity-derived consensus	0.0	66.7	33.3	0.0	0.0
12. Felt able to freely express ideas	50.0	50.0	0.0	0.0	0.0
13. Felt more able to freely express ideas in NGT than in other group activities	0.0	33.3	50.0	0.0	16.7
14. Felt contribution helped group	16.7	50.0	33.3	0.0	0.0
15. Felt contribution helped group more than in other group activities	0.0	16.7	66.7	0.0	16.7
16. Believe that the NGT is more effective than normal group activities in reaching group goals	16.7	50.0	16.7	0.0	16.7
17. Believe that working in a group is more effective than working alone	33.3	66.6	0.0	0.0	0.0
18. Believe that NGT helped achieve goals in this activity	25.0	75.0	0.0	0.0	0.0
19. Feel would use NGT in future	0.0	50.0	50.0	0.0	0.0
20. Agree with purpose of NGT activity	0.0	100.0	0.0	0.0	0.0
21. Feel NGT useful in curriculum development activities	16.7	16.7	50.0	0.0	16.7
22. Feel that NGT was more useful than some other group activities in this curriculum development	16.7	16.7	50.0	0.0	16.7

(1)SA=Strongly Agree,A=Agree,N=Neutral,D=Disagree,SD=Strongly Disagree

Table 13 provides the Phi correlations for background items. These are all zero, except for one, because all responses for each of the items A2-A4 were the same.

Table 13.

Phi Correlations for Background Items at the English Language Institute, TAMU, 1986. (N=6)

	A1	A2	A3	A4
A1 Administrator vs. Instructor				
A2 Previous discussion group experience	00			
A3 Understand purpose of NGT	00	00		
A4 Previous participation in curriculum development activities	00	00	00	00
A5 Work load affected by NGT activities	-.61**	00	00	00

**p<.01

Because of uniformity of response to the background items, only one relationship has significant meaning; that is that instructors believe that their work load is likely to be affected by the outcome of the curriculum development activities.

Figure 3 presents the mean and range of responses to attitude items by participants. Most responses indicated a neutral to positive agreement with the statements. Items 8 and 20 were a single point because they each had uniformity of response so that the minimum, maximum, and mean responses were the same. Most of the means indicate neutral-to-agreement with the attitude statements, even though the full range of possible responses was expressed.

Strong agreement was expressed with items numbered 6, 12, 17, 18, and the construct for Personal Involvement in the NGT. Items 13, 15, 19, 21, and 22, along with the construct Comparison with Other Group Activities, were the only items with a mean response expressing disagreement with the statement or construct of statements.

Figure 3.

Mean and Range of Responses to Attitude Items by Participants at the English Language Institute Conference, TAMU, 1986. (N=6)

Item	Agree		Neutral	Disagree	
	1	2	3	4	5
6. Felt opinions were made known in NGT	.	---	.		
7. Felt opinions were made known better in NGT than in other group activities	---	---	.	---	.
8. Felt opinions were valued in NGT		.			
9. Felt opinions were valued more in NGT than in other group activities		.	---	---	.
10. Felt opinions were better than the NGT-derived consensus		.	---	---	.
11. Felt opinions were better than the other group activity-derived consensus		.	---	---	.
12. Felt able to freely express ideas	.	---	.		
13. Felt more able to freely express ideas in NGT than in other group activities	.	---	.	---	.
14. Felt contribution helped group	.	---	.		
15. Felt contribution helped group more than in other group activities		.	---	---	.
16. Believe that the NGT is more effective than normal group activities in reaching group goals	.	---	.	---	.
17. Believe that working in a group is more effective than working alone	.	---	.		
18. Believe that NGT helped achieve goals in this activity	.	---	.		
19. Feel would use NGT in future		.	---	---	.
20. Agree with purpose of NGT activity		.			
21. Feel NGT useful in curriculum development activities	.	---	.		
22. Feel that NGT was more useful than some other group activities in this curriculum development	.	---	.	---	.
Usefulness of NGT		.	---	---	.
Personal Involvement in NGT	.	---	.		
Comparison with Other Group Activities	.	---	.	---	.

Table 14 presents the correlations among the background and attitude items. None of the relationships appear significant. Thus, the background of the participants in this conference did not appear to influence the expressed attitudes of participants towards the NGT. Appendix C presents the correlations among the attitude items.

Appendix C presents the correlations among the attitude items.

Table 14.
Point Bi-Serial Correlations of Background vs. Attitude Items at the
English Language Institute, TAMU, 1986. (N=6)

Attitude Item(1)	Background Item(2)				
	A1	A2	A3	A4	A5
6. Felt opinions were made known in NGT	-.45	.00	.00	.00	-.17
7. Felt opinions were made known better in NGT than in other group activities	.00	.00	.00	.00	-.17
8. Felt opinions were valued in NGT	.00	.00	.00	.00	.00
9. Felt opinions were valued more in NGT than in other group activities	.00	.00	.00	.00	.67
10. Felt opinions were better than the NGT-derived consensus	.20	.00	.00	.00	.00
11. Felt opinions were better than the other group activity-derived consensus	.32	.00	.00	.00	-.41
12. Felt able to freely express ideas	-.45	.00	.00	.00	.67
13. Felt more able to freely express ideas in NGT than in other activities	.45	.00	.00	.00	-.17
14. Felt contribution helped group	-.54	.00	.00	.00	.17
15. Felt contribution helped group more than in other group activities	.08	.00	.00	.00	.41
16. Believe that the NGT is more effective than normal group activities	.18	.00	.00	.00	.00
17. Believe that working in a group is more effective than working alone	-.32	.00	.00	.00	.41
18. Believe that NGT helped achieve goals in this activity	.00	.00	.00	.00	.00
19. Feel would use NGT in future	.45	.00	.00	.00	.17
20. Agree with purpose of NGT activity	.00	.00	.00	.00	.00
21. Feel NGT useful in this activity	.00	.00	.00	.00	.41
22. Feel that NGT was more useful than some other group activities	-.06	.00	.00	.00	.61
Usefulness of NGT	-.00	.00	.00	.00	.00
Personal Involvement in the NGT	-.53	.00	.00	.00	.00
Comparison with Other Group Activities	.13	.00	.00	.00	.00

Notes: (1) Items are numbered as they appeared on the instrument.

(2) A1=Administrator vs. Instructor, A2=Previous discussion group experience, A3=Understand the purpose of NGT, A4=Previous participation in curriculum development activities, A5=Work load will be affected by NGT activities.

Comments were received from two participants:

1. "I think this type of group activity technique is quite helpful in drawing out each group member and thus in getting many useful ideas quickly and smoothly."
2. "I feel that the primary value of the NGT is the confidence a member feels in being heard. I found myself more patient in waiting to be heard because I knew I would have my time to speak, so I didn't feel goaded into asserting myself just to get my ideas stated."

Principals' Center Summer Academy Conference

The results of this portion apply to the population of 42 Texas principals attending a summer conference for professional development.

Table 15 presents the background of the 30 participants who returned the mailed-out opinionnaire.

Table 15.

Levels of Agreement with Background Items, by Percent, Expressed by Participants at the Principals' Academy Conference, TAMU, 1986. (N=30)

Item	Response by Percent	
	Yes	No
1. Besides administration, teach classes	4.2	95.8
2. Understand purpose of NGT	95.8	4.2
3. Previous participation in NGT	62.5	37.5
4. Previous participation in non-NGT activities	100.0	0.0
5. Personnel administrator more than curricula manager	62.5	37.5
6. Satisfied with participation in non-NGT activities	47.8	52.2

When examining the table, it should be noted that while all had previously participated in non-NGT activities, slightly more than one-half (52.2%) of them were not satisfied with participation in those previous activities.

Table 16 shows that there were no significant ($p < .05$) relationships among the background items and the attitude sub-category constructs.

Table 16.

Phi Correlation Coefficients for Background Items at the Principals' Academy Conference, TAMU, 1986. (N=30)

	A1	A2	A3	A4	A5
A1. Besides administration, teach classes					
A2. Understand purpose of NGT	.05				
A3. Previous NGT participation	.18	.28			
A4. Previous participation in non-NGT activities	.00	-.05	-.18		
AS. Personnel administrator more than curricula manager	.16	.05	.17	-.16	
A6. Satisfied with participation in non-NGT activities	-.21	-.18	-.01	.21	-.23

* $P < .05$

Table 17 gives the level of agreement with the individual items. Most items elicited a generally agreeable response. Strong agreement was found with those statements that opinions were made known in the nominal groups, opinions were valued in the nominal groups, and the participants felt able to express themselves freely in the nominal group settings.

A relatively neutral response was received in response to item 12, indicating that participants did not have a strong feeling, one way or the other, concerning the statement that they felt the decisions reached in previous group activities were better than their personal opinions. Strong disagreement was expressed only for items eight and ten, indicating that a few participants did not feel that their opinions were made known better and valued more in nominal groups, compared with their other previously used, non-NGT group activities for problem-solving and decision-making.

Table 17.

Levels of Agreement with Attitude Items Concerning the NGT, by Percent, Expressed by Participants in the Principals' Academy Conference, TAMU, 1986. (N=30)

Attitude Item	Levels of Agreement(1) by Percent				
	SA	A	N	D	SD
7. Felt opinions were made known in NGT	75.0	25.0	00	00	00
8. Felt opinions were made known better in NGT than in previous non-NGT groups	29.2	45.8	16.7	00	8.3
9. Felt opinions were valued in NGT	66.7	33.3	00	00	00
10. Felt opinions were more valued in NGT than in other group activities	33.3	41.7	20.8	00	4.2
11. Felt consensus reached by NGT was better than personal opinions	25.0	58.3	8.3	8.3	00
12. Felt decisions reached in previous group activities were better than personal opinions	8.7	34.8	34.8	21.7	00
13. Felt able to freely express self in the NGT	66.7	20.8	12.5	00	00
14. Felt more able to express self in NGT than in other group activities	29.2	54.2	12.5	4.2	00
15. Felt contribution helped NGT group	30.4	47.8	17.4	4.4	00
16. Felt contribution helped NGT more than it helped other group activities	13.0	43.5	43.5	00	00
17. Believed NGT more effective in goal achievement than other group activities	29.2	54.2	16.7	00	00
18. Believed group work to reach consensus is more effective than working alone	37.5	58.3	4.2	00	00
19. Felt would use NGT in future	29.2	62.5	8.3	00	00
20. Agreed with purpose of NGT activity	37.5	58.3	4.2	00	00
21. Believed NGT helped prepare to be effective as leader	37.5	54.2	8.3	00	00
22. Felt NGT to be useful group activity for use with faculty and staff	25.0	70.8	4.2	00	00
23. Felt NGT to be more useful than other group activities for use with faculty and staff	20.8	62.5	12.5	4.2	00

Note: (1) SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree

Figure 4 presents the range of responses on a continuum received for each of the twenty-three attitude statements and the mean of the responses received for each. It can be seen that the mean for every attitude item was on the "Agree" end of the continuum with no mean being above 2.3. The three constructs thus also indicate a generally favorable attitude toward each of the attitude items represented by the constructs, both with respect to the mean and to the overall range.

Figure 4.

Mean and Range of Responses to Attitude Items by Participants at the Principals' Academy Conference, TAMU, 1986. (N=30)

Item	Agree	Neutral	Disagree
	1-----2-----3-----4-----5		
7. Felt opinions were made known in NGT	.-----.		
8. Felt opinions were made known better in NGT than in previous non-NGT groups	-----.		
9. Felt opinions were valued in NGT	-----.		
10. Felt opinions were more valued in NGT than in other group activities	-----.		
11. Felt consensus reached by NGT was better than personal opinions	-----.		
12. Felt decisions reached in previous group activities were better than personal opinions	-----.		
13. Felt able to freely express self in the NGT	-----.		
14. Felt more able to express self in NGT than in other group activities	-----.		
15. Felt contribution helped NGT group	-----.		
16. Felt contribution helped NGT more than it helped other group activities	-----.		
17. Believed NGT more effective in goal achievement than other group activities	-----.		
18. Believed group work to reach consensus is more effective than working alone	-----.		
19. Felt would use NGT in future	-----.		
20. Agreed with purpose of NGT activity	-----.		
21. Believed NGT helped prepare to be effective as leader	-----.		
22. Felt NGT to be useful group activity for use with faculty and staff	-----.		
23. Felt NGT to be more useful than other group activities for use with faculty and staff	-----.		
Usefulness of NGT	-----.		
Personal Involvement in NGT	-----.		
Comparison with Other Group Activities	-----.		

Table 18 provides the correlation coefficients for the six background items vs. the attitude items and theoretical constructs. Relationships showing significance ($p < .05$) were:

1. Those understanding the purpose of NGT felt NGT to be more useful than other group activities for faculty and staff.
2. Those without previous NGT participation experience felt that their opinions were made known better in NGT than in previous non-NGT groups.
3. Those participants who considered themselves to be more of a personnel administrator than a curricula manager felt that the consensus reached by NGT was better than their personal opinions and that the decisions reached in previous group activities were also better than their personal opinions.
4. Those participants who were not satisfied with previous participation in non-NGT group activities felt that their opinions were made known better in NGT than in previous non-NGT groups.
5. They felt that their contributions helped the NGT group. 6. They agreed with the purpose of the NGT activity.
7. They agreed with the "Comparison with Other Groups Activities" which is a mean/composite of items on the instrument relating to the advantage of NGT over other group activities.
8. Those participants who were satisfied with previous participation in non-NGT group activities indicated that they did not feel that their contributions helped the NGT group; also, they did not agree with the purpose of the NGT.

Table 18.

Point Bi-Serial Correlations of Background vs. Attitude Items. The Principals' Academy Supervisor Conference, TAMU, 1986. (N-30)

Attitude Item(1)	Background Item(2)					
	A1	A2	A3	A4	A5	A6
7. Felt opinions were made known in NGT	-.26	.09	.03	.26	.13	-.10
8. Felt opinions were made known better in NGT than in previous non-NGT groups	.02	-.03	-.43*	-.02	-.02	-.41*
9. Felt opinions were valued in NGT	-.24	.07	-.04	.24	.07	-.02
10. Felt opinions were more valued in NGT than in other group activities	.01	-.01	-.04	-.01	.04	-.30
11. Felt consensus reached by NGT was better than personal opinions	.23	-.16	-.08	-.23	.51**	-.21
12. Felt decisions reached in previous group activities were better than personal opinions	-.05	-.23	-.27	.05	.48*	-.31
13. Felt able to freely express self in the NGT	-.16	-.18	.07	.16	.17	-.01
14. Felt more able to express self in NGT than in other group activities	-.28	.04	-.23	.28	-.07	-.10
15. Felt contribution helped NGT group	-.01	.19	-.05	.01	.04	-.42*
16. Felt contribution helped NGT more than it helped other group activities	.35	.10	.05	-.35	.00	-.11
17. Believed NGT more effective in goal achievement than other group activities	.22	.26	-.26	-.22	.10	-.37
18. Believed group work to reach consensus is more effective than working alone	.25	.16	.05	-.25	.23	-.24
19. Felt would use NGT in future	.30	.35	.05	-.30	.14	-.32
20. Agreed with purpose of NGT activity	-.10	.15	-.15	.10	.31	-.44*
21. Believed NGT helped prepare to be effective as leader	-.07	.32	-.29	.07	.10	-.20
22. Felt NGT to be useful group activity for use with faculty and staff	.00	.35	.00	.00	.10	-.17
23. Felt NGT to be more useful than other group activities for use with faculty and staff	.00	.39*	-.30	.00	.20	-.17
Use of NGT Construct	.00	.35	-.12	.00	.22	-.35
Involvement in NGT Construct	-.06	-.03	-.06	.06	.26	-.28
Comparison with other groups Construct	.00	.10	-.36	.00	.21	-.45*

*p<.05

Notes: (1) Items are numbered as they appeared on the instrument.

(2) A1-Besides administration, teach classes, A2-Understand purpose of NGT, A3-Previous NGT participation, A4=Previous participation in non-NGT activities, A5-Personnel administrator more than curricula manager. A6-Satisfied with participation In non-NGT activities.

ELEMENTS SHARED AMONG THE CONFERENCES

Organizers of the conferences conducted their nominal groups in different ways for different purposes. Therefore, each required a different survey instrument to measure participants' expressed satisfaction with the nominal group process used in that particular conference. The different opinionnaires used are found in Appendix B.

Following is a description of each of the elements common to each of the measurements, along with a presentation of the relevant data.

Each instrument attempted to categorize participants according to profession: Policy Maker vs. Non-Policy Maker (Water and Food Policy Conference), Extension Agent vs. Extension Specialist or Supervisor (Extension Service Conference), Administrator vs. Instructor (English Language Institute Conference), and Administrator and Teacher vs. Administrator Only (Principals' Academy). Profession of participant had no significant relationship to any of the attitude constructs in the International Water and Food Policy Conference.

Extension agents did not show significantly more satisfaction with the NGT use than did the non-agents, but the agents did express significantly ($p < .05$) more satisfaction with the NGT as compared with previous, non-NGT group activities than did the non-agents. English Language Institute teachers expressed more belief that their opinions were made known in the NGT, that they were freer to express their opinions, and that they would not use the NGT themselves in the future more than did the ELI administrators, but none of the values were significant. The ELI Conference yielded very little significant information because of the small population.

In the Principals' Academy Conference, those participants considered themselves administrators more than curricula managers believed that group decisions, whether by nominal group or by other non-NGT group activity, were better than their own personal opinions.

The survey instruments used in the four conferences were very similar, and a merging of the significant data pertaining to attitudes and constructs resulting from the four conferences yielded useful information with respect to the hypotheses tested.

The three theoretical constructs for comparing mean attitudes of Usefulness of the NGT, Comparison with Previous, non-NGT Group Activities, and Personal Involvement in the NGT among the conferences are presented in the Table 19 matrix. The number value represents the mean expressed attitude of the constructs on a Likert scale of one to five, with "one" being in "strong agreement."

It should be noted that all of the means of responses to constructs except one, were on the "agree" side of the scale. The exception was the personal involvement construct in the case of the International Food and Water Policy Conference, and it was "neutral" at 3.0. This mean is in line with comments volunteered by those participants and reported earlier.

The Extension Service participants expressed much agreement with the relative usefulness of the NGT. The ELI participants indicated greater agreement concerning their satisfaction with their personal involvement in the NGT. The Principals' Academy participants indicated more satisfaction with personal involvement in the NGT than the participants in other conferences. Those participants at the Principals' Academy also were in strongest agreement with all three constructs among the four conferences.

Table 19.

Comparison of Mean of Responses to Constructs of Attitude Items Among Four Conferences Using Nominal Groups on a Scale of 1-5, TAMU, 1985 and 1986.

<u>Conference</u>	<u>Construct</u>		
	Usefulness of the NGT	Comparison with other Group Activities	Personal Involvement in the NGT
International Conference	2.6	NA	3.0
TAXEY Conference	1.8	2.7	2.2
ELI Conference	2.2	2.8	1.9
Principals' Academy Conference	2.2	2.1	1.6

Note: 1=In Strong Agreement, 3=Neutral in Agreement, 5-In Strong Disagreement

The International Conference on Food and Water participants were not asked to compare nominal groups with previous non-NGT activities, so there were no applicable data for that construct. However, those participants had the greatest tendency to move to the "neutral" part of the scale with respect to usefulness of NGT and personal involvement in NGT activities than did any other group.

Figure 5 presents the above comparisons in graphic form. All mean values were less than 3.0, indicating that there was agreement, if not strong agreement, regarding satisfaction with each of the theoretical constructs of the "Usefulness of the NGT," "Comparison of the NGT with other, previously used, non-NGT group activities," and "Personal Involvement in the NGT." Participants expressed satisfaction with the nominal group technique, as indicated by positive agreement with statements regarding their nominal group experiences.

Figure 5. Display of Direction and Intensity of Agreement from Neutrality Among Means of Responses to Theoretical Constructs of Attitude Items Among Four Conferences Using Nominal Groups, TAMU, 1985 and 1986.

Construct	Mean	Agreement			Disagreement	
		SA	A	N	D	SD
		1-----	2-----	3-----	4-----	5-----
Usefulness of NGT Construct	2.6 1.8			+++++		
	2.2 2.2		*****			
			&&&&&&&&&			
			<<<<<<<<<			
Involvement in NGT Construct	3.0 2.2			+		
	1.9 1.6			****		
			&&&			
			<<<<<<<<<			
Comparison with Other Group Activities Construct	NA 2.7 2.8 2.1			(+=NA)		

			&&&&&&&&&&&&			
			<<<<<<<<<<<<<<<			
		1-----	2-----	3-----	4-----	5-----

Note: + = International Conference on Food and Water Conference
 * = Texas Agricultural Extension Service Conference
 & = English Language Institute Conference
 < = Principals' Academy Summer Conference

CHAPTER V

SUMMARY, CONCLUSIONS, AND OBSERVATIONS/RECOMMENDATIONS

Presented is a summary of the study conducted, the conclusions drawn based upon the findings, and related observations or recommendations.

SUMMARY

The purpose of this study was to determine whether or not policy-makers and change agents with differing professional backgrounds and responsibilities, who participated in the structured process of a nominal group in the setting of diverse decision-making and problem solving conferences, would express satisfaction with the technique used. For the purpose of this study, "satisfaction" was defined as "the adequate fulfilling of a need," as expressed by participants in nominal group activities. This study was timely because those working with change agents and using groups for planning and decision-making need the reassurance that participants in nominal group activities are satisfied with their nominal group experience. Such satisfaction by participants is very likely to influence their commitment to carrying out the groups' decisions.

Four conferences at Texas A&M University, involving training and decision-making among different clienteles, were used to examine the expressed satisfaction of participants with the Nominal Group Technique (NGT) as a tool for identifying and solving problems. The conferences were: The International Conference on Food and Water, in May, 1985; The Texas Agricultural Extension Service District Conference, in April, 1986; The English Language Institute Curriculum Conference, in March, 1986; and The Principals' Center Summer Academy, in July, 1986.

Two hundred six participants at the conferences were involved in nominal group activities for decision-making, problem-solving, and prioritizing of issues. To gather the data pertaining to the purpose of the study, an opinionnaire was developed and adapted for use at each of the four conferences.

The survey instrument, an opinionnaire, had two sections. The first section, with five items, dealt with the background of participants, such as profession and prior experience with nominal groups. The response was of a YES/NO type. The second part of the instrument explored the satisfaction of participants with the NGT in which they participated. This section consisted of 17 to 20 statements covering the relevant aspects of the nominal group sessions. Participants responded to a five-alternative Likert scale (i.e., Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree) for each statement. Respondents were also encouraged to write additional comments on the reverse side of the instrument. Because entire populations were surveyed and sampling was not involved, only descriptive statistics were used. Measures of central tendency (means), percentages, and Pearson, Phi, and Point Bi-Serial correlations were used to make comparisons.

Background Elements

The primary analyses of the data were concerned with the independent variables:

1. Conference in which people participated
2. Previous use of NGT
3. Understanding of the purpose of the NGT
4. Background and profession of participants
5. Participation in other group activities.

Following are the descriptions of these variables' relationships.

At the International Conference: 78% had no prior experience with nominal groups; 70% did not consider themselves as policy makers; 77% were participants only in the NGT, not also in reaction panels; and 94% considered themselves fluent in English.

At the Extension Service conference: 97% considered themselves as extension agents, not specialists or supervisors; 50% had participated in nominal groups before; 96% stated that they understood the purpose of the NGT; 98% had previously participated in group decision-making activities; and 62% expressed a lack of satisfaction with the quality of participation in previous non-NGT, extension group activities.

At the English Language Institute conference: 83% Indicated that they worked more as instructors than as administrators; 100% had participated in interactive discussion groups before; 83% had no prior experience with nominal groups; 100%, indicated that they understood the purpose of nominal groups; 100% indicated previous participation in curriculum development activities; and 60% indicated that their work load would be affected by the outcome of the conference's group activities.

At the Principals' Academy Conference: 96% indicated that they were administrators only and did not teach classes; 96% indicated that they understood the purpose of the NGT; 63% indicated that they had previously participated in an NGT; 100% had previously participated in non-NGT activities; 63% were personnel administrators more than they were curricula managers; 52% were satisfied with levels of participation in previous non-NGT activities.

Attitude Elements Pertaining to Satisfaction with NGT

To determine the degree of expressed satisfaction with the nominal groups, four factors (theoretical constructs) were analyzed. The lower the score, the greater the satisfaction. When considering the level of expressed satisfaction level as a whole, there was a positive attitude shown by participants at each conference. Satisfaction was assumed to be indicated by level of agreement of 2.5 or lower expressed on the 5-alternate Likert scale.

"Structure of the NGT" was a construct used only in the International conference, showing agreement with five items related to group size, procedure, and implementation. The mean response was 2.5 on the scale of 1-5. Also at the International Conference, "Usefulness of the NGT" had a mean response of 2.1 for three items, and "Personal Involvement in the NGT" had a mean of 2.8 for its nine items.

The Extension Service conference gave mean responses of 1.8 for the "Usefulness of the NGT," 2.2 for the "Personal Involvement in the NGT," and 2.7 for the "Comparison of NGT with Other Group Activities."

The English Language Institute yielded mean responses of 2.2 for the "Usefulness of the NGT," 1.1 for the "Personal Involvement in the NGT," and 2.8 for the "Comparison of NGT with Other Group Activities."

The Principals' Academy yielded mean responses of 2.2 for the "Usefulness of the NGT," 1.6 for "Personal Involvement in the NGT," and 2.1 for "Comparison of NGT with Other Group Activities."

Respondents expressed agreement with the usefulness of NGT, with a positive comparison of NGT with other group activities, and with a positive view of their personal involvement in the NGT at the conference that they attended.

CONCLUSIONS

Based on the findings, with respect to the purposes and hypotheses of this study, the following conclusions were drawn, applicable to the groups researched in this study. The discussion will focus on the differences found among respondents at the four conferences.

1. There was no significant ($p < .05$) difference between those who had previously participated in an NGT and those who had not, as regards their expressed satisfaction with an NGT; therefore null hypothesis 1 was not rejected.

2. Those who understood the purpose of the NGT expressed significantly greater satisfaction with the NGT than those who indicated that they did not understand the purpose of the NGT; thus, null hypothesis 2 was rejected.

3. There was no significant ($p < .05$) difference between the profession of Extension Service participants with respect to expressed satisfaction with NGT; null hypothesis 3 was not rejected for that group. There was a significant difference between the profession of International Conference participants with respect to expressed satisfaction with NGT; therefore, null hypothesis 3 was rejected for that group.

The two conferences did reflect different populations. Participants in the Extension Service conference were fairly homogeneous in education, experience, and professional ethos. On the other hand, participants in the International Conference were diverse in nationality, culture, education, experience, and profession.

Professions of the participants at the English Language Institute and at the Principals' Center Summer Academy did not appear to have any significant relationships with satisfaction with the nominal groups.

Background does appear to affect satisfaction with NGT. Those who had previously been exposed to NGT were less skeptical about its use in the conference.

4. It was concluded that there was no significant difference between those who had previously participated in other group activities and those who had not participated in other group activities. Null hypothesis four was not rejected.

Secondary Conclusions

Despite the findings and related conclusions pertaining to overall satisfaction with the NGT drawn above, the fact that a consistent thread of dissatisfaction with the use of the NGT existed among some participants when group consensus was sought caused this researcher to draw secondary conclusions for people using the NGT.

One of these secondary conclusions is that caution should be used in forcing a consensus-generating technique upon participants who may not place a high value on group unanimity.

The principals and the Extension agents had the lowest scores, indicating greatest satisfaction with the nominal groups. As their work is "people" oriented, while the participants in the International Conference on Food and Water had the highest scores and their work is "thing" oriented, profession appears to be related to the degree of satisfaction with a consensus-generating approach to problem-solving.

OBSERVATIONS/RECOMMENDATIONS

The researcher presents observations and recommendations relating to the actual implementation of the nominal group technique and for further research.

Recommendations for Implementation

These recommendations come, in part, from the experiences of the researcher and from comments received from participants in the nominal group activities at the four conferences at Texas A&M University during the two years of this study.

This researcher recommends that change agents consider nominal groups as a technique to enhance group problem-solving and decision-making activities and to obtain greater commitment to follow-through based on the decision of the group. Nominal group leaders must be trained to lead and control adequately the nominal group activities. The group moderator should maintain control of the group and keep it on track toward the desired final product.

Recording of ideas must be done swiftly, legibly, and in view of all participants. This can be difficult in larger groups, or where many ideas are presented. Large blackboards or sheets of paper taped across meeting-room walls can be useful, but a skillful, swift recorder is necessary in any case. Choosing a recorder for a group and giving instructions as to how to record the ideas generated should be done before the activities begin.

To benefit most from the group setting, interpersonal relationships must be established before the formal NGT session. When a group is quickly thrown together, feelings of insecurity and mistrust are likely to keep individuals from building an atmosphere of mutual trust and acceptance, an atmosphere useful for consensus-generation as well as the resulting commitment to implement the decision reached.

Observations

The NGT is used to facilitate arriving at a group decision, that is, "a choice between two or more alternatives made by group members, or by a group's leader in consultations with the membership" (28:17).

As consensus is reached through a preference ranking of alternatives, following are details which should be considered before employing this nominal group decision-making technique.

The composition of the group may affect whether the individuals are willing and able to support the group over and against their personal inclinations.

Some individuals may be too retiring to express themselves under normal one-on-one or free-wheeling group settings, yet, if properly conducted, a nominal group may elicit quite a strong response from these shy individuals, while minimizing the force of opinion from the more domineering individuals in the group.

The situation calling for a group decision may be too urgent to allow sufficient time to gather together an effective group and to conduct the meeting and the correlated activities, especially if the group is just to advise a strong leader.

During the idea clarification/discussion/deliberation phase, group members may exhibit diverse abilities to communicate effectively the purpose and intent of their suggestions, and consequently may not give adequate explanation for other members to understand fully the value of the idea.

Groups may benefit from a short recess during the session, especially between the initial idea clarification stage and the first voting round. This would allow emotions to cool, participants to relax, and for ideas to settle before individuals come together for further discussion and then the voting round.

If individuals wish to preserve the anonymity of their ideas during the idea generation and voting phases, notecards or slips of paper could be collected instead of the normal, verbal interchange.

The nature of the decision to be made may indicate that an autocratic decision may be as efficient as a group decision. In other words, not all decisions need to be made using a consensus approach.

Questions to Consider for Further Research

Regarding areas where further research is needed, the investigator recommends the following questions as points of departure for additional investigation into the satisfaction of participants with group problem-solving activities.

1. Is the relative satisfaction with the nominal group technique expressed by participants a true reflection of satisfaction with nominal groups alone, or is it satisfaction relative to the comparison with previous group activities?
2. Does cultural background override language fluency and directly affect a participant's satisfaction with nominal groups?

The paradox presented in the findings from the International Conference on Food and Water Policy, page 29, raises the question as to why participants claiming to be fluent in English indicated that they did not understand the purpose of the NGT, they would not use it in the future, they would not try to persuade others to act according to the consensus of the group, and they did not believe that working in a group to arrive at a consensus in problem-solving was more effective than working alone. Yet, those same participants tended to express satisfaction with the nominal groups as used in the conference.

The cultural diversity of the backgrounds of participants might, upon examination, reveal that in face-saving cultures, such as commonly found in Thailand, an expression of satisfaction might be given regardless of the true feelings of the individual.

3. Would the use of true control groups in the problem-solving process provide a different evaluation of nominal groups, as compared to this study's findings that nominal groups were more satisfactory than other previously-used, non-NGT problem-solving groups?

4. Can a survey instrument be developed that would accurately measure the satisfaction of participants with all types of group problem-solving activities?

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APPENDIX A

DESCRIPTION OF THE NOMINAL GROUP TECHNIQUE

APPENDIX A

NOMINAL GROUP TECHNIQUE

Jon Gresham

NGT has six steps:

1. Presentation of 'the task to be accomplished.
2. Silent generation of ideas for ten minutes. Each participant is charged to silently write down the short phrases or statements which answer the question. The intent is to get as many answers as possible from all group members.
3. Round-robin recording of ideas. The participants are asked to read their ideas, one idea per person at a time. Each will be recorded, and numbered, on the master list. No discussion takes place. One-by-one, each participant either gives an idea or passes until all of the ideas generated by the group have been recorded. No editing of material and no evaluative comments are desired at this time. All participants are encouraged to "hitch-hike" on the ideas of others and add new ideas to the list. The point is to allow all members equal opportunity to contribute to the group.
4. Ideas clarified and discussed. This step is designed to promote a clear understanding of each idea. Over-lapping or similar ideas may be merged.
5. Valuation of relative importance of ideas. Each participant ranks the top five items out of all of those recorded. Five points are given to the relatively most important idea; four points given to the second most important idea; three points go to the third most important; two points go to the fourth most important; one point is given to the fifth most important.
The votes, on note cards, are counted and tallied for each item.
6. The process yields a list of answers, in order of ranking.
This final vote summarizes the NGT process: it provides a measure of the relative group consensus as to the value of the many ideas generated, it provides a sense of closure and accomplishment, and it documents the group judgment.

APPENDIX B
SURVEY INSTRUMENTS

SURVEY INSTRUMENT FOR THE INTERNATIONAL CONFERENCE ON FOOD AND WATER

PLEASE HELP US! WE NEED YOUR PERCEPTIONS
CONCERNING THE NOMINAL GROUP TECHNIQUE (NGT) USED IN THIS CONFERENCE

A. Please circle the NGT section of the conference in which you participated.

Water Supply	Water Salinity	Water Management	Integrated Ecosystems	Water & Energy	Technology
-----------------	-------------------	---------------------	--------------------------	-------------------	------------

B. Please circle either "Yes" or "No" after each of the next four questions.

2. I had participated in a nominal group technique (NGT) or a Delphi process before coming to this conference. . . . Yes No
3. I participated only in the NGT, not in the Reaction Panel. Yes No
4. My position back "home" is that of policy maker. Yes No
5. I am completely fluent in English. Yes No

C. Please circle the number to the right of each statement that most nearly expresses your opinion about each statement.

	Strongly disagree
	Disagree
	Neutral
	Agree
	Strongly Agree

- | | |
|--|-----------|
| 6. I understand the purpose of this NGT activity. | 1 2 3 4 5 |
| 7. I agree with the purpose of this NGT activity. | 1 2 3 4 5 |
| 8. I was skeptical of this NGT approach to identifying issues of concern. | 1 2 3 4 5 |
| 9. I would NOT use the NGT myself in the future. | 1 2 3 4 5 |
| 10. I felt that my opinions were made known. | 1 2 3 4 5 |
| 11. I felt that my opinions were NOT valued. | 1 2 3 4 5 |
| 12. I felt that, overall, my opinions were better than what emerged as the group consensus. | 1 2 3 4 5 |
| 13. I felt that my opinions differed from the group's consensus. | 1 2 3 4 5 |
| 14. I felt able to express myself freely. | 1 2 3 4 5 |
| 15. I felt that there was NOT enough time to discuss issues. | 1 2 3 4 5 |
| 16. I believe that the NGT was a poor use of conference time. | 1 2 3 4 5 |
| 17. I believe that my group was about the right size. | 1 2 3 4 5 |
| 18. I believe that my group was too large. | 1 2 3 4 5 |
| 19. I felt that my contribution helped the group. | 1 2 3 4 5 |
| 20. I am committed to work according to my group's consensus. | 1 2 3 4 5 |
| 21. I will try to persuade others to act according to my group's consensus. | 1 2 3 4 5 |
| 22. I believe that the world food situation will improve if I act in accordance with my group's consensus. | 1 2 3 4 5 |
| 23. I believe that working in a group to arrive at consensus in problem-solving is more effective than my working alone. | 1 2 3 4 5 |
| 24. I believe that more attention should have been given to representatives from lesser-developed countries. | 1 2 3 4 5 |
| 25. I believe that more attention should have been given to scientists and technical experts. | 1 2 3 4 5 |

D. Please write other comments about our use of the NGT on the reverse side.

THANK YOU VERY MUCH

SURVEY INSTRUMENT FOR THE TEXAS AGRICULTURAL EXTENSION SERVICE CONFERENCE

PLEASE HELP US EVALUATE THIS GROUP ACTIVITY

TERMS: NGT = Nominal Group Technique

A. Please circle either "Yes" or "No" after each following question:

- | | | |
|--|-----|----|
| 1. I am an extension agent, not an extension specialist or supervisor. | Yes | No |
| 2. I have participated in the Nominal Group Technique before. | Yes | No |
| 3. I understand the purpose of the Nominal Group Technique. | Yes | No |
| 4. I have previously participated in group planning and decision-making activities of different types. | Yes | No |
| 5. I am personally satisfied with the quality of participation in previous extension committee activities not using the nominal group technique. | Yes | No |

B. Please circle the number to the right of each statement that most nearly expresses your opinion about each statement regarding this morning's activities and previous extension group activities.

STATEMENT	SA	A	N	D	SD
* SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree					
6. I feel that my opinions were made known in the NGT.	1	2	3	4	5
7. I feel that my opinions were made known better in the NGT than in my previous group activities.	1	2	3	4	5
8. I feel that my opinions were valued in the NGT.	1	2	3	4	5
9. I feel that my opinions were valued more in the NGT than in my previous group activities.	1	2	3	4	5
10. I feel that my opinions were better than the consensus arrived at in the NGT.	1	2	3	4	5
11. I feel that my opinions were better than the decisions reached in previous group activities.	1	2	3	4	5
12. I felt able to express myself freely in the NGT.	1	2	3	4	5
13. I felt more able to express myself freely in the NGT than in my previous group activities.	1	2	3	4	5
14. I feel that my contribution helped the NGT group.	1	2	3	4	5
15. I feel that my contribution helped the NGT group more than in my previous group activities.	1	2	3	4	5
16. I believe that the NGT is more effective than my normal group activities in reaching group goals.	1	2	3	4	5
17. I believe that working in a group to arrive at a consensus is more effective than my working alone.	1	2	3	4	5
18. I believe that the NGT helped to achieve our goals for this conference in working with adults.	1	2	3	4	5
19. I feel that I would use the NGT myself in the future.	1	2	3	4	5
20. I agree with the purpose of this NGT activity.	1	2	3	4	5
21. I feel that the NGT will be a useful tool in my extension group activities.	1	2	3	4	5
22. I feel that the NGT will be more useful than some other extension group decision-making activities.	1	2	3	4	5

C. Please feel free to write on the reverse side any comments that you may have concerning your degree of satisfaction with this particular group activity.

SURVEY INSTRUMENT FOR THE ENGLISH LANGUAGE INSTITUTE CONFERENCE

PLEASE HELP US EVALUATE THESE GROUP ACTIVITIES

TERMS: NGT = Nominal Group Technique

Interactive Group = Regular discussion group

A. Please circle either "Yes" or "No" after each following question:

- | | | |
|---|-----|----|
| 1. I am an administrator more than I am an instructor. | Yes | No |
| 2. I have participated in the Nominal Group Technique before. | Yes | No |
| 3. I understand the purpose of the Nominal Group Technique. | Yes | No |
| 4. I have participated in curriculum development activities before. | Yes | No |
| 5. My work load will be directly affected by the outcome of the group activities on the proposed curriculum change. | Yes | No |

B. Please circle the number to the right of each statement that most nearly expresses your opinion about each statement.

STATEMENT	SA	A	N	D	SD *
6. I feel that my opinions were made known in the NGT.	1	2	3	4	5
7. I feel that my opinions were made known better in the NGT than in the interactive group.	1	2	3	4	5
8. I feel that my opinions were valued in the NGT.	1	2	3	4	5
9. I feel that my opinions were valued more in the NGT than in the interactive group.	1	2	3	4	5
10. I feel that my opinions were better than the consensus arrived at in the NCT.	1	2	3	4	5
11. I feel that my opinions were better than the decision reached in the interactive group.	1	2	3	4	5
12. I felt able to express myself freely in the NGT.	1	2	3	4	5
13. I felt more able to express myself freely in the NGT than in the interactive group.	1	2	3	4	5
14. I feel that my contribution helped the NGT group.	1	2	3	4	5
15. I feel that my contribution helped the NGT group more than the interactive group.	1	2	3	4	5
16. I believe that the NGT is more effective than the normal interactive group in reaching our goals.	1	2	3	4	5
17. I believe that working in a group to arrive at a consensus is more effective than my working alone.	1	2	3	4	5
18. I believe that the NGT helped to achieve our goals for this curriculum development activity.	1	2	3	4	5
19. I feel that I would use the NGT myself in the future.	1	2	3	4	5
20. I agree with the purpose of this NGT activity.	1	2	3	4	5
21. I feel that the NGT is useful in curriculum development activities.	1	2	3	4	5
22. I feel that the NGT is more useful than the interactive group in this curriculum development.	1	2	3	4	5

* SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree

C. Please feel free to write on the reverse side any comments that you may have concerning your degree of satisfaction with the group activities on curriculum development.

SURVEY INSTRUMENT FOR THE PRINCIPALS' ACADEMY CONFERENCE

PLEASE HELP US EVALUATE THESE GROUP ACTIVITIES

TERMS: NGT = Nominal Group Technique

A. Please circle either "Yes" or "No" after each following questions:

- | | | |
|--|-----|----|
| 1. In addition to administrative duties I also teach some classes. | Yes | No |
| 2. I understand the purpose of the Nominal Group Technique. | Yes | No |
| 3. I have participated in the Nominal Group Technique before. | Yes | No |
| 4. I have participated in other group problem-solving activities. | Yes | No |
| 5. I am more of an administrator of personnel than a manager of curricula. | Yes | No |
| 6. I am personally satisfied with the quality of participation in other group problem-solving activities at my school that do not use the Nominal Group Technique. | Yes | No |

B. Please circle the number to the right of each statement that most nearly expresses your opinion about each statement.

STATEMENT	SA	A	N	D	SD*
7. I feel that my opinions were made known in the NGT.	1	2	3	4	5
8. I feel that my opinions were made known better in the NGT than in previous group activities.	1	2	3	4	5
9. I feel that my opinions were valued in the NGT.	1	2	3	4	5
10. I feel that my opinions were valued more in the NGT than in other group activities.	1	2	3	4	5
11. I feel that the consensus arrived at through the NGT was better than my personal opinions.	1	2	3	4	5
12. I feel that the decisions reached in previous group activities were better than my personal opinions.	1	2	3	4	5
13. I felt able to express myself freely in the NGT.	1	2	3	4	5
14. I feel more able to express myself freely in the NGT than in other group activities.	1	2	3	4	5
15. I feel that my contribution helped the NGT group.	1	2	3	4	5
16. I feel that my contribution helped the NGT group more than it helped other group activities.	1	2	3	4	5
17. I believe that the NGT was more effective than other interactive group activities in reaching our goals.	1	2	3	4	5
18. I believe that working in a group to arrive at a consensus is more effective than my working alone.	1	2	3	4	5
19. I feel that I would use the NGT myself in the future.	1	2	3	4	5
20. I agree with the purpose of this NGT activity.	1	2	3	4	5
21. I believe that the NGT as used in this conference helped to prepare me to be effective as a leader responsible for coping with change.	1	2	3	4	5
22. I feel that the NGT will be a useful tool in group activities with faculty and staff in my school.	1	2	3	4	5
23. I feel that the NGT will be more useful than other group decision making activities involving faculty and staff in my school.	1	2	3	4	5

*SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree

C. Please feel free to write on the reverse side any comments that you may have concerning your degree of satisfaction with the group activities on curriculum development.

APPENDIX C

PEARSON CORRELATIONS FOR ATTITUDE ITEMS

Appendix C.
 Pearson Correlation Coefficients Among Attitude Items Regarding the NGT
 At an International Conference on Food and Water, TAMU, 1986. (N=110)

	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	
C7																					
C8	.57**																				
C9	-.16	-.23*																			
C10	.23*	.43**	-.38**																		
C11	.19*	.24*	-.10	.27**																	
C12	-.05	.19*	-.17	.31**	.46**																
C13	-.03	-.17	.07	-.28**	-.15	-.36**															
C14	.12	.23*	.04	.31**	.37**	.42**	-.45														
C15	.13	.19	-.15	.41**	.51**	.47**	.29**	.38**	*****												
C16	.09	.11	-.22*	.29**	.27**	.36**	-.16	.25**	-.37**	*****											
C17	.16	.45**	-.32**	.63**	.39**	.38**	-.36**	.35**	.48**	.41**											
C18	.27**	.21*	-.11	.18	.19*	.10	-.06	.13*	.21*	.06	.22*										
C19	.21*	.04	-.08	.18	.31**	.15	-.17	.10	.36**	.06	.31**	.41**									
C20	.18**	.32**	-.09	.24*	.46**	.38**	-.22**	.35	.45**	.35**	.41**	.23*	.40**								
C21	.09	.25**	-.11	.18	.21*	.22*	-.23*	.34**	.21*	.18	.29**	.20*	.05	.27**							
C22	.01	.13	-.11	.23*	.22*	.18	-.26**	.37**	.20*	.14	.22*	.23*	.04	.10	.61**						
C23	.11	.22*	-.06	.25**	.38**	.38**	-.33**	.54**	.32**	.24*	.40**	.19*	.18	.37**	.54**	.48**					
C24	.19*	.11	-.07	.40**	.25**	.26	-.20*	.29**	.23*	.25*	.40**	.25**	.26**	.21*	.09	.09	.48**				
C25	-.28**	-.28**	.06	-.07	.01	-.05	.13	-.01	.03	.03	-.13	-.07	-.20*	.01	-.01	.21*	.00	-.05			
D1	-.06	-.06	.29	-.15	.05	-.09	.25**	.02	.07	-.01	-.16	.01	-.06	-.11	-.07	-.07	-.05	-.03	.23*		
D2	.36**	.72**	-.38**	.87**	.37**	.39**	-.35**	.38	.45**	.34**	.86**	.24*	.23*	.38**	.29**	.24*	.38**	.39**	-.18	-.16	
D3	.14	.33**	-.14	.40**	.70**	.65**	-.27**	.68**	.67**	.39**	.53**	.28**	.28**	.29**	.63**	.58**	.75**	.36**	.05	.01	
D4	.07	.02	-.05	.19	.33**	.21*	.06	.21*	.41**	.56**	.28**	.52**	.38**	.35**	.16	.23*	.22*	.27**	.47**	.47**	

*p<.05, **p<.01

Note: D1=Usefulness of NGT Construct, D2=Personal Involvement in the NGT Construct, D3=Structure of the NGT Construct

Appendix C.
Pearson Correlation Coefficients Among Attitude Items Regarding the NGT
at a Texas Agricultural Extension Service Conference, TAMU, 1986. (N=60)

	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22
B7	.09																
B8	.56**	.12															
B9	.05	.60**	.09														
B10	-.11	.09	-.07	.09													
B11	-.04	.33**	.08	.41**	.30*												
B12	.52**	-.08	.35**	-.03	.01	-.11											
B13	.02	.34**	.05	.36**	.15	.13	.07										
B14	.48**	-.24	.53**	-.18	.07	-.01	.54**	.14									
B15	.07	.38**	.22	.42**	.01	.24	.11	.66**	.20								
B16	.28*	.01	.18	-.01	-.23	-.02	.39**	.27*	.26*	.29*							
B17	.36**	-.04	.49**	.10	-.01	-.09	.45**	.14	.41**	.02	.28*						
B18	.38**	-.05	.40**	.04	-.14	-.04	.58**	.20	.45**	.16	.49**	.58**					
B19	.54**	.26*	.44**	.02	-.18	.05	.41**	.09	.41**	.16	.48**	.44**	.46**				
B20	.37**	.19	.54**	.06	.05	.02	.23	.17	.31*	.26*	.30*	.60**	.40**	.69**			
B21	.54**	.25	.46**	.08	-.13	.07	.33**	.02	.36**	.16	.40**	.46**	.46**	.86**	.63**		
B22	.21	.25*	.44**	.19	.09	.07	.11	.27*	.18	.11	.39**	.50**	.41**	.44**	.67**	.47**	
C1	.54**	.19	.56**	.06	-.12	.02	.47**	.15	.46**	.22	.50**	.64**	.71**	.90**	.83**	.88**	.61**
C2	.05	.81**	.13	.83**	.21	.62**	-.05	.64**	-.11	.59**	.08	.04	.05	.15	.16	.16	.28*
C3	.74**	-.01	.75	.00	.32*	.07	.73**	.12	.80**	.18	.25	.52**	.50**	.49**	.47**	.48**	.33*

*p<.05, **p<.01

Note: C1=Usefulness of the NGT Construct, C2=Comparison with Other Groups Construct,
C3=Personal Involvement in the NGT Construct

Appendix C.
 Pearson Correlation Coefficients Among Attitude Items Regarding the NGT
 At an English Language Institute Conference, TAMU, 1986. (N=6)

	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22
B7	-.33																
B8	.00	.00															
B9	-.67	.83	.00														
B10	-.45	.89*	.00	.89*													
B11	-.71	.71	.00	.71	.63												
B12	.33	-.33	.00	-.33	-.45	-.71											
B13	-.67	.83	.00	.83*	.89*	.71	-.33										
B14	.73	-.49	.00	-.73	-.76	-.69	.73	-.73									
B15	-.56	.93**	.00	.93**	.91*	.66	-.19	.93**	-.59								
B16	-.13	.79	.00	.67	.88*	.28	-.13	.79	-.48	.81							
B17	.00	-.35	.00	-.35	-.63	-.25	.71	-.35	.69	-.26	-.56						
B18	.33	-.93	.00	-.93	.00	-.58	.58	.00	.82	.00	-.88	.00					
B19	-.33	.33	.00	.33	.45	.00	.33	.67	-.24	.56	.66	.00	-.33				
B20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00			
B21	-.58	.87*	.00	.87*	.77	.61	.00	.87*	-.42	.97**	.69	.00	.00	.58	.00		
B22	-.41	.82*	.00	.82*	.80	.39	.14	.82	-.37	.94**	.82	-.10	-.93	.69	.00	.95**	
C1	.50	-.50	.00	-.50	.00	.00	.00	.00	.50	.00	.87	.00	.00	.00	.00	.00	.00
C2	.75	.41	.00	-.27	.00	-.67	.75	-.27	.95*	.25	.79	.25	.00	.27	.00	.25	.58
C3	-.51	.94**	.00	.92*	.95**	.66	-.24	.94**	-.62	.99**	.87*	-.36	-.99**	.56	.00	.93**	.93**

*p<.05, **p<.01

Note: C1=Usefulness of the NGT Construct, C2=Personal Involvement in the NGT Construct,
 C3=Comparison with other Groups Construct

Appendix C.
Pearson Correlation Coefficients Among Attitude Items at the
Principals' Academy Conference, TAMU, 1986. (N=30)

	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23
B8	.00																
B9	.63**	.20															
B10	.13	.50**	.35*														
B11	.35*	.12	.34	.13													
B12	.21	.44*	.14	.06	.39*												
B13	.59**	.03	.53**	.09	.56**	.19											
B14	.19	.32	.29	.35*	.11	-.04	.36*										
B15	.23	.47*	.69**	.45*	.17	.09	.37*	.35									
B16	-.05	.13	.27	.39*	.12	-.08	.21	.52**	.52**								
B17	.07	.31	.30	.28	.30	.17	.24	.42*	.59**	.50**							
B18	.15	.12	.19	.23	.39*	.07	.20	.18	.41*	.16	.41						
B19	.24	-.03	.12	.15	.47**	.00	.31	.12	.25	.31	.48**	.54**					
B20	.53**	-.01	.42*	.09	.56**	.17	.55**	.28	.43*	.20	.54**	.31	.58**				
B21	.28	.20	.30	.43*	.13	-.10	.09	.46*	.43*	.26	.54**	.40*	.50**	.43*			
B22	.19	.09	.35	.52**	.26	-.06	.07	.51**	.36	.56**	.44*	.25	.60**	.38*	.66**		
B23	.32	.14	.21	.27	.31	.02	.08	.34	.27	.11	.51**	.48**	.59**	.48**	.72**	.59**	
C1	.40*	.10	.40*	.39*	.46*	.03	.34	.45*	.53**	.38*	.64**	.66**	.85**	.73**	.82**	.75**	.75**
C2	.68**	.37	.82**	.29	.69**	.29	.82**	.36	.68**	.29	.41*	.36	.37*	.66**	.30	.29	.28
C3	.25	.85**	.41*	.70**	.36*	.45*	.31	.71**	.59**	.58**	.72**	.33	.35	.38	.55**	.60**	.51**

*p<.05, **p<.01

Note: C1=Usefulness of NCT Construct, C2=Involvement in NGT Construct, C3=Comparison with other Groups Construct

