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ABSTRACT

Although originally developed in terms of interpersonal systems, the coorientational strategy model can be modified and used for research on the communication of collectivities. The proposed changes to the coorientational framework would permit examination of constructs of greater verisimilitude to theoretical reasoning of the behavior and cognition of members of groups and collectivities, as well as enable more flexible analyses of constructs associated with groups larger than the dyad. To test these proposed changes, subjects, 1,233 residents of a predominantly rural area of the northeastern United States and a comparable area in Ontario, Canada, were interviewed on their perceptions and knowledge of the topical concern of acid rain. Results suggest that while the coorientational framework has been readily adapted by researchers investigating groups and collectivities, the interpersonal nature of the model's origin has not been modified to take account of the nature of the relationship of the individual to the collective. The applicability of the model to current public opinion research is also readily apparent. Results also suggest that the perceptual accuracy may not lie solely within the realm of the perceiver, but, as common sense would dictate, the communicator has a fairly large role in affecting accuracy. (One figure and six tables of data are included, and an appendix of variables of theoretical interest in the collective coorientation model and 43 references are attached.) (MS)

Rural Communication and Collective Coorientation: The Case of Acid Rain

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Abstract

Research on the communication of collectivities has often adopted the coorientational strategy, although it was originally developed in terms of interpersonal systems. This research reports a modification of the original coorientation model to develop a model of collective coorientation. Results of the analysis of Canadian and U.S. perceptions of the acid rain issue suggest support for the new model.

Rural Communication and Collective Coorientation:
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Perceptual Processes and Public Opinion

During the past two decades, researchers have begun considering perceptions of others' opinions as an important component in the public opinion process (e.g., Fields and Schuman, 1976; Glynn, 1987; Lemert, 1981; Noelle-Neumann, 1984; O'Gorman and Garry, 1976). While the idea itself did not emerge during this time frame (cf., Cooley, 1902; Lippmann, 1929; Mead, 1934), researchers have made substantial progress in explicating the processes, defining the terms, and obtaining quantitative results.

In most current approaches, researchers investigate the influence of perceptions on subsequent cognitions and behavior. Two major theses have recently emerged from these analyses: the spiral of silence and pluralistic ignorance. Incorporating theoretical devices used in person perception, conformity and consensus research, these hypotheses suggest a major role for social perception in public opinion formation.

The "spiral of silence" hypothesis, (e.g., Glynn and McLeod, 1984, 1985; Salmon and Kline, 1985; Noelle-Neumann, 1977, 1984; Taylor, 1982) suggests that perception of the distribution of public opinion motivates one's willingness to express opinions. This act of self-expression then changes the "global environment of opinion, altering the individual's perceptions of other persons and, ultimately, affecting their willingness to express their own opinions" (Taylor, 1982). Individuals who notice that their own personal opinions are spreading will voice these opinions self-confidently in public; those leaning toward that opinion will notice that they hear others expressing that opinion and be more confident about expressing their own opinion, which is similar to that being openly expressed. At the same time, those who notice their opinions are "losing ground" will be inclined to adopt a more reserved attitude and be less inclined to speak out. The process results in a "spiral

of silence" which gives greater and greater voice to the perceived prevailing opinion, regardless of actual majority opinion.

"Pluralistic ignorance" (e.g., Schanck, 1932; Fields and Schuman, 1976; O'Gorman and Garry, 1976) is seen as a situation where the minority position on issues is incorrectly perceived to be the majority position and vice versa. Schanck (1932) labeled this phenomenon "misperceived consensus" or "misperceived sharing". Pluralistic ignorance usually occurs because individuals either overestimate or underestimate the proportions of others who think, feel or act as they themselves do (Taylor, 1982). A distinction in the two areas can be seen in that both take individuals' perceptions as a given, and a base on which people operate, but pluralistic ignorance is concerned with the accuracy/inaccuracy of people's perceptions of majority opinion, and the effects of that accuracy/inaccuracy. The spiral of silence hypothesis is concerned with the effects of perceptions per se on subsequent behavior, therefore accuracy or inaccuracy of those perceptions is considered irrelevant.

Several scholars have broached this issue of collective opinion. Cooley (1902) wrote that the "imaginations which people have of one another" were the "solid facts of society." O'Gormann and Gary (1976) wrote that these "facts" may be widespread, firmly held, and provide a common understanding, but their accuracy is not to be assumed. Glynn (1983, 1984, 1987) has suggested that members' perceptions of the collective opinion may, in some cases, be a more accurate measure of "true" opinion than is the aggregation of opinion. In Glynn's terminology, true public opinion lies somewhere between aggregation of opinion and (an aggregate of) the perception of that aggregation (1983, 1984, 1987).

Public opinion researchers have noted the difficulty of establishing the veracity of actual opinion and perceptions of others' opinions (cf., Fields

and Schuman, 1976; Glynn, 1984; O'Gorman and Garry, 1976). A favored research strategy among scientists working in this area has been the coorientation framework, developed by Newcomb (1953), expanded upon by Carter (1965), and refined by McLeod and Chaffee (1968). A perspective very close to the tenets of coorientation was also developed independently by Laing, Phillipson and Lee (1966) and Scheff (1967).

The coorientation strategy emphasizes the idea that a person's behavior is not based simply upon his/her private cognitive construction of the world, but also on the perception of the orientation of others around him/her (McLeod and Chaffee, 1973). Coorientation developed in intrapersonal and interpersonal approaches to social scientific research, but the coorientation strategy has been applied to groups and collectivities in several research papers (e.g., Grunig and Stamm, 1973; Grunig, 1974; Steeves, 1981).

This paper proposes some modest changes to the coorientational framework to permit examination of constructs of greater verisimiltude to theoretical reasoning of the behavior and cognition of members of groups and collectivities, as well as to enable more flexible analyses of constructs associated with groups larger than the dyad.

We outline the theoretical roots of coorientation, describe its use as a framework for studying perceptual processes, and list the chief coorientation variables. We then discuss problems with using the coorientation model with collectivities and propose a modification of the McLeod and Chaffee (1973) measurement model to develop a revised model for collectivities, sketch the major variables of substantive interest, and investigate several research questions associated with tenets and assumptions of coorientation research.

Topical focus for the paper is the issue of acid precipitation in rural areas of the northeatern United States and rural Ontario, Canada. Coorienting collectivities are residents of those rural areas.

The Roots of Coorientation: Individual Orientations

Little theoretical work has focused on the genesis of the concept of orientation, even though the concept has begun to garner increased attention (Garramone, 1983; McLeod and McDonald, 1985; McDonald, 1988). Kim's (1986) review of coorientation provides a brief explanation of the orientation concept as defined by Newcomb (1953).

In most reviews, Newcomb's (1953) article is generally cited as the genesis of the coorientation framework. In Newcomb's work, orientation was "equivalent to an 'attitude' in its more inclusive sense of referring to both cathectic and cognitive tendencies." In fact, Newcomb's first use of the term was spelled co-orientation, and he referred to it is as a special case of "'simultaneous orientation'... abbreviated to co-orientation." However, Newcomb makes it clear that simultaneous orientation is an assumption: Person A's orientation toward Person B, Person B's orientation toward Person A, and the orientation of both toward an object, X, are interdependent, and the interrelationship A-B-X constitutes a system. In other words, research following Newcomb's conceptualization should focus on knowledge about and attitudes toward objects; a simultaneous orientation of two individuals toward the same object.

McLeod and Chaffee (1973) present Newcomb's (1953) work as one of five schools of thought synthesized in their coorientation approach. The five schools presented include: the study of consensus (relatively homogeneous opinion across a population of individuals), symbolic interaction (including Cooley, 1902); interpersonal psychiatry (Laing, Phillipson and Lee, 1966), coorientation (Newcomb, 1953), person perception (Tagiuri, et al., 1958). Newcomb's intellectual debt to Talcott Parsons (cf., Parsons, 1951; Parsons, Bales and Shils, 1953; Parsons and Shils, 1951) was ignored in the McLeod and Chaffee (1973) review, although a much less direct link to Mead (1934) was presented.

Reviews of the coorientation approach published since McLeod and Chaffee have similarly ignored the debt to Parsons and Shils' (1951) conceptualization of orientation (e.g., Tan, 1985). Because of the importance of Parsons and Shils' (1951) approach to the present modification of the coorientation model, we will describe their conceptualization in some detail.

Newcomb's (1953) version of orientation is essentially a simplification and reworking of Parsons and Shils' (1951) conceptualization. In Parsons' "need disposition system," there are two dimensions: gratifications and orientations. The gratifications dimension is concerned with the "content" of an individual's interchange with the world, what she/he gets out of the interaction, and what it costs the individual. The conceptual scheme and terminology clearly foreshadow the development of the uses and gratifications approach, including such recent developments as the "expectancy value" model of gratifications sought and received (Palmgreen and Rayburn, 1985; VanLeuven, 1981).

Parsons' second dimension, that of orientation, is focused on the "how" of an individual's relation with the world; the patterns or ways in which his/her relations are organized. Newcomb's (1953) focus on individuals holds that a person may either be one of the individuals simultaneously orienting toward an object, or the object of such orientation. Parsons and Shils (1951) make specific mention of these two possibilities, but also note that their notion of orientation may include either individuals or collectivities:

> ...its [the theory of action] essential concern is with the structure and processes involved in the actor's relations to his situation, which includes other actors (alters) as persons and as members of collectivities...It is also fundamental that a collectivity may be chosen as a point of reference, in which case the relevant segments of the action of its members do not belong to the situation, but to the collectivity as actor. (pg. 61)

Parsons and Shils suggest that both gratifications and orientations are

concerned with consideration of alternatives; Gratification needs have alternative possible objects for providing a specific gratification, and orientation has alternatives of judgment or interpretation as to the meaning of objects within the lifespace. Referring to Tolman (1932), Parsons suggests that because the individual is left to a selection from among the alternatives within the cognitive map, an ordered selection or "evaluation" of the alternatives must be made.

Parsons and Shils suggest that research concern might focus on either the situation or the actor. The orientation of the actor to the situation encompasses both of these areas of research, and may be divided into either motivational or value orientation. Motivational orientation consists of those aspects of the actor's situation related to actual or potential gratification or deprivation of the actor's need-dispositions. There are three modes of motivational orientation: cognitive, cathetic and evaluative. The value orientation also involves three modes of orientation: cognitive, appreciative and moral.

Coorientation as a Framework for Studying Perceptual Processes

The coorientational framework thus integrates cognition and perception in an approach that emphasizes the systemic character of social interaction. However, the coorientation model, as an extension and amplification of Newcomb's A-B-X model of orientation toward objects, is understood and developed most easily for a dyad.

The conceptual model stresses the study of the "social reality" in which people operate by examination of individuals' cognitions and their perceptions of others' cognitions. More a research strategy than a theoretical perspective, the coorientation conceptual framework focuses attention on an object, its attributes, an individuals' attitude toward the object, and that individual's perceptions of a coorienting other's attitude. The focus of

attention for the coorienting other is a mirror image of the first individual, and the two individuals taken together form a coorienting system. The conceptual model is thus focusing on cognitive and perceptual relations which might exist, and around which particular theoretical devices may be appended.

Because coorientation is a property of the system, McLeod and Chaffee (1973) suggest that research using the coorientation framework is most properly conducted over time. Most research studies using coorientation, however, are one-shot surveys. Perhaps anticipating this occurrence, McLeod and Chaffee (1973) developed the measurement model as one that was theoretically appropriate, yet provided a sense of the dynamics of the system. For both individuals in the coorienting system, measurement is taken of orientation toward an object and perception of the other's orientation. The resulting four measurements become the foundation for the important variables of coorientation, which are the relationships between the obtained measures. The constructed coorientation variables are developed within three types of relationships: intrapersonal, interpersonal, and perceptual.

Coorientation Variables

Intrapersonal Relationships - congruency:

Congruency is based on the degree of similarity between a person's own cognitions and his or her perception of the other person's cognitions. McLeod and Chaffee (1973) note that congruency is not a very effective variable to measure the effectiveness of a communication; rather, it appears to be more of an independent variable, important in the early stages of the communication process in influencing communication attempts. Following communication there may be either an increase or decrease in congruency, depending to some extent on its initial level in the system (McLeod and Chaffee, 1973; Pearce and Stamm, 1971).

Interpersonal Relationships - Agreement and Understanding

McLeod and Chaffee (1973) distinguish between two types of interpersonal variables in the coorientation framework, agreement and understanding. In an analysis of a dyad, the relationship between one individual's opinion about the object to the coorienting other individual's opinion about that same object reflects the similarity between the orientations of the two members of the dyad.

Agreement refers to the extent to which the two people have the same summary evaluations of the object. Understanding refers to the extent to which tneir individual orientations comprise similar object-by-attribute systems (pertinences). McLeod and Chaffee (1973) note that agreement has received considerable research attention, while understanding has received very little. Tipton (1987) further notes that that situation has not changed in the intervening time period.

McLeod and Chaffee (1973) use the terms "agreement "and "understanding" only for comparison of individuals' opinions. While noting that their model leaves undefined the relationship between the two individuals' perceptions of each other, they suggest the distinct possibility for investigation and elaboration, suggesting that this variable might well contribute to communication effectiveness. At the time of their writing, there were no investigations of the relationship between perceptions, which they termed Similarity of Perceptions, subsequently labeled "understanding" by Glynn (1983) and the "metaterm" by Tipton (1987). Kim (1986) has done considerable work in conceptualizing four distinctions in agreement and understanding: value-agreement, content-understanding, form-understanding and idea-understanding. For the present work, we continue traditional usage of the "agreement" label, as a summary measure of similarity of attitude, and follow Glynn's (1983) usage of "understanding" for the perceptual relationships.

Perceptual Relationships - Accuracy

Accuracy is seen by McLeod and Chaffee (1973) as the ideal criterion for assessing communication effectiveness. Accuracy is indexed by the relationship between a person's perception of what another person thinks and what that person actually does think. McLeod and Chaffee suggest that accuracy should be achievable through communication alone, and is a more appealing measure of communication effectiveness than is agreement. McLeod and Chaffee note that no general principles concerning the relationship between communication and the other coorientation variables can be devised, but that communication "should always improve accuracy, even to the absolute point where each person knows precisely what the other is thinking; this would be perfect communication in a quite literal sense."

Problems with Using the Coorientation Model for Collectivities

Pseudo-Data

The primary concern in developing a coorientational study, according to some researchers, is the problem of investigation of a subject area in which the interacting persons are capable of simultaneous orientation to an object or set of objects of communication (cf., Carter, 1965; McLeod and Chaffee, 1973). McLeod and Chaffee note that it is often easier to gather data purportedly measuring coorientational variables than it is to find situations in which individuals are, in fact, coorienting. They further suggest that coorientation is probably a "rare state of affairs" that does not usually happen unless there are factors constraining individuals to coorient, such as interpersonal attraction or a common task. McLeod and Chaffee (1973) use the term "pseudo-data" to describe data collected which describe a situation in which the two actors involved are not coorienting.

In practice, most researchers using the coorientation framework pay little attention to the McLeod and Chaffee warning. A large percentage of

studies using the coorientation approach assume coorientation from the beginning, without investigating the possibility that the collected data is "pseudo-data."

Collective Opinion vs Average Opinion

The heart and beauty of the coorientation framework is that it forces a social system perspective upon the researcher. Unfortunately, the chief difficulty of using coorientation in research on collectivities is, in a sense, an outgrowth of its genesis. Having developed from intrapersonal and interpersonal perspectives of Newcomb and Carter, the ideal social system amenable to a coorientation approach is the dyad. Newcomb (1953) specifically notes that "this very simple system is designed to fit two-person communication." Despite such specific details, researchers have frequently applied the coorientation model to groups and collectivities; this is especially true for those scholars primarily interested in mass communication issues.

Research data is often collected only on the individual within the collective, and, to compute a value of the collective opinion, an average is calculated based on all sampled members' stated opinions. The averaging process necessary to simulate individuals' reification of the collective imposes at least the rudiments of a system perspective for analyses. However, in the sense that individual opinions are collected and then averaged to obtain the collective opinion, we have little knowledge of the veracity of such an aggregation, or even if that aggregation approximates what individuals within the collective itself perceive to be the collective opinion.

Non-Reification

McLeod and Chaffee (1973) note that extension of the model to larger social systems is predicated on the assumption that a person (A) is oriented to the collectivity (B) as a unified entity. They term this type of

orientation the "reification" of group B. They note that the degree to which people will reify groups and coorient with them will vary from person to person and from situation to situation.

McLeod and Chaffee expected that reification of the collectivity would break down when the person communicates directly with individual members of the collectivity; this communication should emphasize the individual qualities of group members and suggest that the reified concept is not applicable to a group of varied individuals. This assumption suggests that coorientational measures requiring a high degree of reification may be appropriate where little direct communication takes place, but inappropriate for closer interpersonal networks (McLeod and Chaffee, 1973).

Parsons and Shils' (1951) description of the use of a collectivity as either the orienting actor or the object of orientation is lucid on this point, and, rather than seeing orientation toward collectivity as a problem to be dealt with, their reasoning seems almost to demand it:

> The collectivity as an action system, whether it be subject or object in a given analysis, is not the simple sum of the actions of the individual actors involved. It is rather composed of the segments of their action; specifically, those segments of their action which are oriented to and in this collectivity. To the individual actors the collectivity is an object of orientation, that is, a social object (thus an alter), and the actions of the collectivity may themselves be more specific objects of orientation for the individual actor. (pg. 61)

They also note the possibility of the treatment of the individual as an object of his own orientation:

> The actor himself, as either an organism or personality or as both, may be treated as an object of his own orientation. It is very important to understand that the distinction between actor and situation is not that between concrete entitites distinguished in common-sense terms. It is an analytical distinction, the concrete referents of which will shift according to the analytical uses to which it is put. (pg. 61).

The above suggests the necessity of including members' perceptions of their own collective's opinion to assess the degree of reification and to reveal those instances in which perceived collective opinion differs from the simple average of opinion within the collective. In addition to the points made above about the differences between perceived collective opinion and average opinion of the collective, one might suggest that such differences should be observed in a variety of situations, such as when the collective makes a conscious attempt to provide a specific "image" which deviates from accepted practice within the collective, or when power arrangements of the collective are such that a large proportion of power is concentrated among relatively few members.

Asking About Averages

Additional criticisms of the use of coorientational procedures for collectivities rest primarily on methodological aspects. The first hinges on what question should be asked of individuals to obtain their perception of collective opinion. The usual method has been to ask about the average state of the collective. However, there has been little research investigating whether or not it is appropriate to ask people about averages. McLeod, Becker and Elliott (1972) asked respondents to judge the distribution of people's responses in the aggregate. They found that such a procedure yields different, but not necessarily better measures of accuracy (McLeod and Chaffee, 1973).

Similarity Indices

Following, and related to, this question, is the problem of what is the most appropriate statistic for indexing the similarity of cognitions and perceptions. The traditional method has been the use of a difference score, or the absolute value of a difference score, although a few studies have used a partial correlation technique (McLeod, et al., 1972; Wackman,

1969). Little research has investigated the implications of which measures are employed, and the question remains open.

A Coorientation Model for Collectivities

Parsons and Shils' (1951) notion of orientation is somewhat more suited for investigation of coorientation of collectivities than is the traditional Newcomb (1953) conceptualization. As outlined above, the Parsons and Shils conceptualization encourages examination of collectivities, and suggests the inclusion of orientation of members of the collective to their own collective as an important area for research.

We propose two basic changes to the traditional coorientation framework to accomodate coorientation of collectivities. First, given the difficulties in establishing the veracity of an aggregate opinion using traditional coorientation measures, and that much of the focus of coorientation research is on the accuracy of perceptions, it would appear that the analysis of coorientation of collectivities would benefit considerably from the simple modification of adding the additional measurement of members' perceptions of their own collective's opinion. This one additional measurement complicates the dimensionality of the situation considerably, because, in a sense, it suggests the necessity of analyzing a previously hidden coorientation system: that of the individual member of the group with the collectivity.

Second, we propose that an appropriate accomodation of theoretical reasoning in this area is the explicit inclusion of both individual and aggregate responses in the coorientation framework. Heretofore only included as an aggregate in studies of the coorientation of collectivities, the relation of an individual's own opinion to the aggregate opinion is important in its own right (cf., Glynn, 1983; Jackson, 1962; O'Gormann and Gary, 1976; Sherif, 1958), and also in its implication for the coorientation of collectivities (Glynn, 1983; McLeod and Chaffee, 1973).

The inclusion of the additional measure and the use of both individual and aggregate measures provides a much more complex picture of the coorientation of collectivities than does the outright adoption of the dyadic communication model to collectivities. Figure 1 provides a diagram of the revised collective coorientation model, with lines included for only those relationships which seem of particular theoretical interest in this paper.

In the figure, small boxes represent the actual measures obtained from respondents, while the larger, encompassing boxes refer to the aggregation of those measures. Lines drawn between the various boxes indicate the variables of interest in this study. Even in limited form, the number of possible relational variables quickly becomes unwieldy, and some begin to lose theoretical meaning. Several of the possible variables are also mathematically equivalent yet theoretically different. The authors of the present study are currently working to clarify the number of theoretically important and mathematically distinct variables in the revised model. To avoid ambiguity, the present research limits its concern strictly to relational measures of agreement, accuracy and congruency.

Research Questions and Model Testing

We follow previous research in developing our revision by drawing from results that indicate that congruency might best serve as an independent variable in predicting communication, while accuracy might serve, as McLeod and Chaffee (1973) suggest, as the best single indicator of communication effectiveness. We suggest that, given large social systems, such as neighboring countries, mass communication channels should serve primarily as a method of improving accuracy of the neighboring country's collective perception.

However, in the case of accuracy of perception of one's own collectivity the situation is more complex. Because the chief function of communication

should be to improve accuracy of perceptions, we could make the case that increased internal communication should be associated with more accurate perceptions. However, McLeod and Chaffee note that increased communication with members of the collective would most likely serve to break down perceptions of the collective as a group, and permit perceptions of opinion to be more individualized. The present investigation merely provides this relationship for descriptive purposes and for later theory-building rather than for current theory testing.

Topical Questions

We examine cognitions and perceptions of a controversial issue, that of acid rain, among United States and Canadian rural residents to test basic ideas about the portion of the model which deals with the accuracy of perceptions.

We chose the acid rain issue as one which is highly likely to have generated discussion and information seeking in affected rural areas, making the issue a reasonable one to test the role of communication in coorientation. It is also an issue of international importance, prompting legislative and executive action in both countries. Such a controversial issue ensures that individuals will have formed opinions and perceptions of the public of their own country as well as of the neighboring country, one of the requirements of the coorientation approach.

The following topical research questions are examined in the present paper:

1) How do Canadian and U.S. citizens perceive the acid rain issue in regard to extent of the problem, responsibility for the problem, control of the problem and knowledge about the problem?

2) How accurate are citizens' perceptions of beliefs about the extent, responsibility, control and knowledge about acid rain for citizens

of the opposite country?

3) How accurate are citizens' perceptions of collective opinion about the extent, control of and knowledge about acid rain for citizens of their own country? Does inclusion of perception of citizens' own collectivity alter the interpretation of results?

4) Are there systematic differences in the congruency relations for citizens of the two different countries?

5) To what extent is the accuracy of perception of one's own collectivity associated with interpersonal communication and accuracy of perception of a coorienting collectivity associated with mass communication?

Model Testing

These data permit us to test certain hypothesized relationships between coorientation variables as well, providing information on the theoretical worth of the coorientation approach in general and the revised model in particular. We conducted a preliminary test of the following 3 hypotheses derived from McLeod and Chaffee (1973) and Newcomb (1953):

1) Higher congruency is associated with more communication, which, in turn, positively affects accuracy (McLeod and Chaffee, 1973).

2) Higher levels of communication are associated with homogeneity of orientation (Newcomb, 1953).

3) Greater issue stress is associated with greater interaction (Newcomb, 1953).

Method

Data Collection Procedures

In June of 1987, 1233 personal interviews were conducted with residents of a predominantly rural area of the northeastern United States and a

comparable area in Ontario, Canada. Respondents were selected from two towns in each country through a process in which every home within the town borders was mapped, and a random sample selected from the mapped houses. Completed interviews in the U.S. numbered 328 and 292 for the two towns, for a total of 620 (50.3% of the total sample); completed interviews for the two Canadian towns totaled 324 and 289, for a total of 613 completed Canadian interviews (49.7% of the total sample). Response rates for the two countries were comparable, with an average response rate of 92 percent. Interviewers were trained, paid personnel. Most of the interviewers had considerable prior interviewing experience.

Sample Characteristics

Canadian residents were slightly older the U.S. residents (49.2 vs. 47.3), while U.S. residents had lived in their communities for for a considerably longer period of time (30.1 vs. 22.2 average years in the community). The average educational level of respondents was slightly higher in the U.S., (13.3 vs. 12.1 years). More than 97% of respondents had heard about acid rain as a problem in their area. In addition, 93.5% of U.S. respondents and 96.6% of Canadian residents expressed some worry about the acid rain problem.

Evidence for the Validity of the Topic

In addition to the knowledge level and concern about acid rain reported above there are several other pieces of evidence that suggest that we have avoided the problem of pseudo-data in the current investigation:

(1) Persons in both areas appear to be oriented toward acid rain as a problem in the area. The questions asked in our study obtained their opinions about their own area and a similar area in the other country. Nonresponse percentages for the questions tapping the coorientation of collectivities ranged from 3.4% to 8.9%, with an average across the 12 questions of 4.7% of

respondents unable or not wanting to answer.

(2) We control for differing perceptions of the dimensions of the acid rain problem to some extent by asking a series of 4 very specific questions about aspects of the acid rain issue, rather than asking for a simple statement of opinion on a broad topic.

(3) News reports from both countries were often available in the local press, on radio and on national television, making the orientations of the other country available primarily through mass communication. In addition, during the past few years some interpersonal discussion of the issue occured in informational and scientific workshops and cooperative extension activities in the study areas.

Questionnaire Construction

The questionnaire consisted of a variety of open-ended and close-ended questions pertaining to respondents' perceptions of the acid rain problem, use of mass and interpersonal communication channels, and information about their demographic position and community life. A matrix question addressing the coorientation issues was constructed as follows:

> Some people say that Canadians and U.S. citizens have different attitudes about acid rain issues. I am going to read you some statements, and I'd like you to tell me first whether you would STRONGLY AGREE, AGREE, FEEL NEUTRAL, DISAGREE, or STRONGLY DISAGREE with the statement. Then I'd like you to tell me what you think most residents of the northeast U.S. would say, and then what you think most residents of eastern Canada would say.

Following the introduction, four statements were read to the respondent. For each statement, the respondent was asked his/her own opinion, perception of U.S. residents' opinions, and perception of Canadian residents' opinions The four statements were: (1) The U.S. is primarily responsible for the acid rain problem in Canada, (2) Acid rain is not really a major problem, (3) The

U.S. has done more to control acid rain than has Canada, (4) Canadians are more knowledgeable about acid rain than are U.S. citizens.

Analysis of responses to these questions revealed no practical or statistically significant difference between communities within the same country. Therefore, results are collapsed across communities within a country for simplicity of analysis and ease of explanation.

Close-ended questions ascertained demographic and lifestyle positions of respondents, their awareness and perception of acid rain as an issue, recall of sources of information about acid rain and interpersonal discussion with others about acid rain, and their use of the mass media for news, information and entertainment. A copy of the questionnaire or more specific information about these questions is available from the authors.

Results

Observational Measures - The Aggregate Model

The first research question was centered on gaining an understanding of how Canadian and U.S. citizens perceive the acid rain issue in regard to the four areas of extent of the problem, responsibility for the problem, control of the problem, and knowledge about the problem. Results related to this question are presented in table 1.

Significant differences between countries were found for all of the respondents' own opinion questions and for 6 of the 8 comparisons between countries in their perceptions of collective opinion (Table 1). For respondents' own opinions, Canadians more strongly agreed that acid rain was a serious problem and that the U.S. was primarily responsible for the problem. The U.S. agreed more strongly than did Canadians that the U.S. was doing more to control acid rain. Canadians agreed more strongly that Canadians are more knowledgeable about the acid rain problem than are U.S. citizens.

In regard to the perceptual questions, a phenomenon similar to that

reported by Pearce and Stamm (1972) is quite evident. Respondents perceive differences to be in the appropriate direction, but somewhat greater than they actually are. This "exagerration of differences" is most notable in perceptions of the coorienting collectivity.

In the present study, the greatest exaggeration effect is seen for the first question, centering on whether or not the U.S. is primarily responsible for the acid rain problem in Canada. United States respondents, with an average response of 3.245 on the 5-point scale, saw Canadians as agreeing more strongly than they actually agreed ($\bar{x}$ = 4.038), and U.S. respondents as less strongly than they actually agreed ($\bar{x}$ = 3.081). Canadian respondents did agree more strongly than U.S. respondents ($\bar{x}$ = 3.37), but that difference was exaggerated in the perceptual responses. Canadians placed their fellow Canadians at 3.846 (stronger agreement than they had), and U.S. residents at 2.444 (less agreement than they had). A similar pattern is found throughout the four issue questions.

Both of the nonsignificant perceptual differences asked whether others would perceive Canadians as more knowledgeable about acid rain than U.S. citizens. Respondents in both countries came very close in their perceptions of how both their own and the opposing country would answer.

Agreement, Accuracy and Congruency: Collective Coorientation

The second and third research question centered on the coorientational accuracy of perceptions of the respondents of the two countries. The collective coorientation framework is based on the model outlined above and is computed through the absolute value of the difference between the answers to the above questions. In the table, larger values indicate decreased agreement, accuracy or congruency because the scores are absolute values of difference scores. The four coorientation questions provide the opportunity for a more general analysis than would a single question, and use of the

absolute value makes possible some interesting developments, such as differences between the two countries in the extent to which one agrees with the other (Table 2).

As is evident from the table, several regular patterns emerge. The first is that Canadians agree more with the aggregate U.S. opinion than do U.S. respondents agree with aggregate Canadian opinion (on all four issues). The use of the absolute value of differences makes such an event possible, because it focuses the computational emphasis on the dispersion from the opposite country's aggregate value. This suggests, then, that Canadians tend to group closer around the mean value of U.S. respondents than U.S. respondents group around the Canadian average.

All but one of the pairwise accuracy comparisons indicate a significant difference in accuracy of U.S. and Canadian respondents. The second research question is concerned with what is close to the traditional measure of coorientational accuracy accuracy in perceiving the other collective's opinion (accuracy Ab or Ba in the table). For all four issue statements, U.S. residents were more accurate than were Canadians, suggesting a systematic difference in the perceptual mechanics of the two countries. This difference is further supported in regard to the third research question, investigating the measure of accuracy in perceiving one's own collective (Accuracy aA or bB). Canadians are significantly more accurate than were U.S. respondents in three of the four cases, although even in that question, the nonsignificant difference was in the appropriate direction (the exceptional statement was placing blame on the U.S. for the problem).

The fourth research question centered on the congruency relationships. Results here are not as clear as for the accuracy measures, and do not follow a discernible pattern, although all comparisons showed the two countries as statistically differenct. With the traditional congruency measure, congruency of own opinion with perception of the coorienting collective's opinion,

Congruency AB and BA, U.S. respondents are more congruent for three of the four issue statements (Canadians were more congruent for the statement assigning blame for the problem to the U.S.). The added measure of congruency (Congruency aa or bb) showed the opposite trend, with Canadians more congruent for three of the four issue statements (the exception was perception of acid rain as a major problem).

The final topical research question attempted to ascertain the extent to which interpersonal communication plays a part in affecting perception of the opinion within one's own collectivity, and the extent to which mass communication affects perception of the coorienting collectivity. Multiple regression analyses were performed in a hierarchical fashion to ascertain the answer to this question. With a dependent variable of accuracy, both measures of congruency are entered first, followed by the block of variables (either interpersonal or mass communication) which is not of primary interest, and followed lastly by the block of interest (i.e., either interpersonal or mass). This provides a conservative test of the importance of the relevant communication activity, because it requires the tested relationship (i.e., the communication variables) to hold above the other communication activity.

Results of the regression analyses are presented in Table 3, where very little support is found for the supposition that mass communication affects the accuracy of perception of opinion of the coorienting collectivity or that interpersonal affects the accuracy of perception of opinion of one's own collectivity. Those accuracy scores that are predicted well by the communication measures tend to be predicted well by both interpersonal and mass communication.

Model Testing

Additional characteristics of the data provide some preliminary

information about the appropriateness of several assumptions and working hypotheses about coorientation variables (see above). We present correlations and percentages to obtain some clue as to the importance and validity of these assumptions.

The first of these questions is that higher congruency should be associated with greater communication (congruency as an independent variable), which, in turn, positively affects accuracy. Table 4 provides an indication of the veracity of these assumptions. As evident from the table, neither interpersonal discussion nor media use is significantly associated with either the congruency or accuracy of coorientation with respondents' own collective or with the opposing collective. The similarity of values of the significant intercorrelations suggest that the coorientation and communication mechanisms at work within the two countries are very similar, but these are unrelated to each other in either country.

The second hypothesis related to testing the coorientation model is that higher levels of communication are associated with homogeneity of orientation. We measured homogeneity of orientation through the standard deviation of each of the coorientation measures - the two accuracy measures and the two congruency measures - and present these with communication levels of the four communities as table 5. As is evident from this table also, little is here to support the contention. A rank-ordering of communities across the levels of the variables provides no consistent pattern.

The third and final coorientation model hypothesis is that greater issue stress is associated with greater interaction (Newcomb, 1953). These data are presented in table 6. As is evident from the table, every measure of issue stress was significantly related to interpersonal discussion and use of mass media. An exploratory examination of the correlation matrix showed that none of those stress measures was significantly related to either accuracy or

congruency, however.

Discussion

This paper suggests that while the coorientational framework has been readily adapted by researchers investigating groups and collectivities, the interpersonal nature of the model's origin has not been modified to take account of the nature of the relationship of the individual to the collective. We make a start in that direction by offering the coorientation model with an additional measurement, perception of one's own collectivity, and a resulting complexity and flexibility in investigation. We examine only a few of the possible relationships in this paper.

The topical setting of this paper, U.S. and Canadian citizens' attitudes toward acid rain issues and their perceptions of the public opinion of both countries provided some interesting glimpses at the possibilities of the model of collective coorientation. Our analyses suggest that the perceptual mechanisms are somewhat different within each country, with Canadians more accurate in their perceptions of Canadian opinion; U.S. residents also more accurate in their perceptions of aggregate Canadian opinion. We are something at a loss to explain this, and can only suggest that Canadian opinion might be less diverse (the standard deviations associated with the opinion questions do tend to be smaller), and thus easier to estimate accurately, or Canadians may be more vocal in the expression of their opinion. In any event, the results cast some new light on the coorientation framework, as they suggest that the perceptual accuracy may not lie solely within the realm of the perceiver, but, as common sense would dictate, the communicator has a fairly large role in affecting accuracy.

The results also hint at systematic differences in the flow of information within and between individuals, as specific measures of accuracy and congruency reveal consistencies in the data for the differing countries, and each measure

showing similar results across all four issue statements.

The regression equations were somewhat disappointing in that they did not show those same kinds of systematic associations. However, they make an important point about the significance of the added relational variables of accuracy and congruency. The new variables are apparently not redundant, as some fairly strong relationships occur between the agreement measures and the new congruency measure, even after the traditional measure of congruency has been entered. We also find somewhat different patterns of prediction for the two measures of accuracy. This suggests that the new measures are providing us with some information unobtained in the original measure. It will be up to further research to delineate the boundaries of that information.

Our brief exploration of certain principles and assumptions of coorientation research put forth my McLeod and Chaffee (1973) and Newcomb (1953), showed somewhat mixed results. Support was again obtained for the new measures, as they were shown to relate to a variety of measures in different ways than the traditional congruency and accuracy measures. However, the McLeod and Chaffee (1973) suggestion that congruency leads to communication and communication leads to accuracy was not supported in our direct analysis of the question. Instead, strong links between the accuracy and congruency measures were show, as well as a strong tie between interpersonal and mediated communication.

The suggestion tha higher levels of communication are associated with homogeneity of orientation was not supported in the aggregate analysis of communities. One of the difficulties here, however, may have been communication levels too similar across communities; the variance in communication may have been too small to detect differences in orientation.

Very strong support was found for Newcomb's (1953) contention that issue stress is associated with greater interaction. In fact, we found that every measure of issue stress was significantly related to both interpersonal

interaction and use of the mass media.

An overall e aluation of the model presented here might suggest that the framework works quite well in the analysis of collectivities, but that it might also be applied to dyads, or, in some cases, individuals. That is, the analyses presented here support the ideas developed by Parsons and Shils (1951) on the possibility (or need) for inclusion of perception of oneself or one's collectivity in an analysis of orientations. The measures we developed appear appropriate for that use as well as for the more general use of analyzing collectivities.

The applicability of the model to current public opinion research is also readily apparent. Newcomb (1953) already wrote of the direct applicability of the orientation concept to research on pluralistic ignorance. Newcomb suggested that most communication presupposes a considerable degree of perceived as well as objective homogeneity of orientation and perceived consensus. Setting the stage for further refinement, Newcomb suggests that an interesting question is the degree of accuracy in judgments of homogeneity. He cites Schank's (1932) study of dissenters from village norms, each of whom believed himself to be the only dissenter, as evidence of the impact of communication processes on pluralistic ignorance, and set forth the proposition that any degree of accuracy is an outcome of previous communicative acts and a determinant of future ones.

This opens the question of measurement of pluralistic ignorance phenomena, and suggests the appropriateness of the model presented here as impacting on the communicative practices of individuals leading up to pluralistic ignorance.

We suggest that further research expand on the variables presented here, and investigate the additional variables of theoretical significance which were beyond the scope of the present paper, clarifying their role in the

coorientation process. Of considerable theoretical interest might be the use of the model in investigating Westley's (1971) contention that communication has the same functions at all system levels - individual, interpersonal, group and society. Grunig refined the notion to investigate individual information seeking and has suggested several hypotheses related to the collective system (1972). Westley's suggestion that norms and values of a social system serve the same functions as attitudes at the individual level might be investigated using the "norm conformation" variables presented in the model. Similarly, Glynn's notion of "normative opinion" might be amenable to research using the model, and may be more approptiate than models of behavioral norms (e.g., Jackson, 1969).

The entire notion of perceptual similarity, only lightly investigated within the original coorientation framework, takes on an added dimension in the present model. The investigation of the inter-relationships of the six perceptual similarity variables described above might do much to clarify some of the ambiguity in the literature on meta-terms and understanding.

The present authors are currently working to expand this paper to provide information about how these new variables are inter-related. For example, computational procedures make some of the variables (which are theoretically different) mathematically identical. Other computational conventions, such as use of absolute values, provide information which is distinct from what the theoretical origins of coorientation suggest. Current work is examining these and other methodological issues as we attempt to clarify the theoretical impact of the modification of the model.

Variables of Theoretical Interest in the Collective Coorientation Model
Appendix A

The additional measurement of respondents' perceptions of their own collectivity and explicit inclusion of aggregation of responses into the model greatly increases the number of relational variables capable of being constructed. These fall into five types: Congruency, Agreement, Accuracy, Perceptual Similarity, and Norm Conformation, thus precipitating additional naming conventions. In the diagram and discussion, the name of the relational variable is preceeded by two letters, either of which my be upper or lower case. The first letter appearing after the name of the variable refers to the origin of the original responses, either from a or from b, while the letter's case describes whether the measure is individual level (lower case) or an aggregated (upper case) statistic. Certain variables are non-directional. In these cases, we depart from the above conventions by using a general name, if the variable is not paired (e.g., aggregate agreement), or by numbering the variables if more than one could be given the same number (e.g., perceptual similarity 1 to perceptual similarity 6).

Congruency Relationships

Eight relationships are readily apparent under the general label of congruency in the collective coorientation measurement model:

Congruency ab and Congruency ba - the two original relational variables which might be included in the revised model. They are intra-individual. Their importance and function has been described above.

Congruency aa, Congruency bb - These two relational variables provide an indication of the similarity of an individual's own opinion and his/her perception of the aggregate opinion of either the collective to which he/she belongs (e.g., aa or bb), or the opposite collective (ab or ba). The inclusion of perception of the aggregate opinion of the individual's own

collective is based on theoretical work by Parsons and Shils (1951) and more recent work research, such as the Spiral of Silence and Pluralistic Ignorance research areas, which suggest that people can and do monitor the groups and collectivities to which they belong.

Congruency AB, Congruency BA, Congruency AA and Congruency BB - These congruency measures refer to the relationship between the aggregation of responses expressing an individual's own opinion (a or b) and the aggregation of the perception of the other collective's opinion (b or a). They are properties of the system rather than individuals, and have no meaning in the dyadic model of coorientation. Their purpose in the collective model is essentially descriptive, although there may be instances in which these variables may play an important part in theory and analysis (e.g., the comparison of several communities or organizations).

Agreement Relationships

The original measure of agreement is not readily applicable to the coorientation of collectivities. Because it is an individual-level relational variable, and the collectivity ceases to be a collectivity with individual interaction (McLeod and Chaffee, 1973), what makes more sense is the replacement of agreement with three measures applicable to collectivities:

Agreement aB and Agreement bA - These constructs are analogous to those of the dyadic coorientation model, as applied to an individual coorienting with a collectivity. As such, they reflect the similarity of an individual's opinion to the aggregate opinion of the coorienting collectivity.

Aggregate Agreement - A nondirectional system-level variable, aggregate agreement is directly analogous to Agreement in the dyadic model, except that the agreement expressed in the former is an index of the similarity of the aggregate values within the collectivity.

Accuracy Relationships

Accuracy aB, Accuracy bA, Accuracy aA, and Accuracy bB - Accuracy in the dyadic coorientation model refers to the similarity of perceptions of what another thinks to what that person actually thinks. When questions are worded so that they tap individuals' perceptions of what "most people" think in the coorienting collectivity, the measure is easily transferable to the collectivity model, with an aggregate measure of the collective opinion replacing the coorienting other's opinion. The addition of a question tapping perception of the collective opinion of an individual's own collective provides impetus for the additional variables tapping the accuracy of those perceptions.

Accuracy AA and Accuracy BB - Following aggregation of the perceptual and opinion responses, accuracy can also be tapped in the aggregate form, resulting in these measures, a property of the collective system only, and not applicable to the dyad.

Perceptual Similarity

The two perceptual questions - one about the individual's perception of his/her own collectivity and the other about that individual's perception of the opinion of the coorienting collectivity, can be examined at the individual and aggregate levels, all of which should be thought of as nondirectional. The relations between these perceptual questions reveal six interesting comparisons.

Perceptual Similarity 1 and Perceptual Similarity 2 - While the original formulation of perceptual similarity was undefined (McLeod and Chaffee, 1973) it was discussed as an indicator of similarity between persons. The collective model includes perceptual similarity 1 and 2 as intraindividual variables, denoting the similarity in an individual's perception of his/her own group and his/her perception of the coorienting collective.

Perceptual Similarity 3, 4, 5, and 6 are four measures of the similarity

between aggregations of perceptions of the individual's own group or perception of the collectivity. Perceptual Similarity 3 refers to a measure directly analogous to the dyadic model of coorientation, with the exception of use of aggregations of others' response rather than individual responses. Perceptual Similarity 4 and Perceptual Similarity 5 refer to measures of the similarity between the aggregation of the individual opinion and the aggregation of the coorienting collective's perception of those opinions. Perceptual similarity 6 is the measure of similarity between both coorienting collectives' aggregate perception of collective opinion.

Norm Conformation

The inclusion of aggregate statistics provides another relational perspective, in keeping with research on norms and norm formation. These relational variables describe an individual's opinion location in regard to the distribution of the opinion of other members of his/her collective. These measures are applicable only to the collective model of coorientation.

Norm Conformation 1 through Norm Conformation 6 - All six of these measures are indicators of the similarity of an opinion to the average opinion of the collective. Norm Conformation 1 through Norm Conformation 3 refer to members of the "A" collective's own opinion, perception of its own opinion, and perception of the coorienting collective's opinion. Similarly, Norm Conformation 4 through 6 refer to analogous measures for the "B" collective.

Figure 1. A model for Coorientation of Collectivities

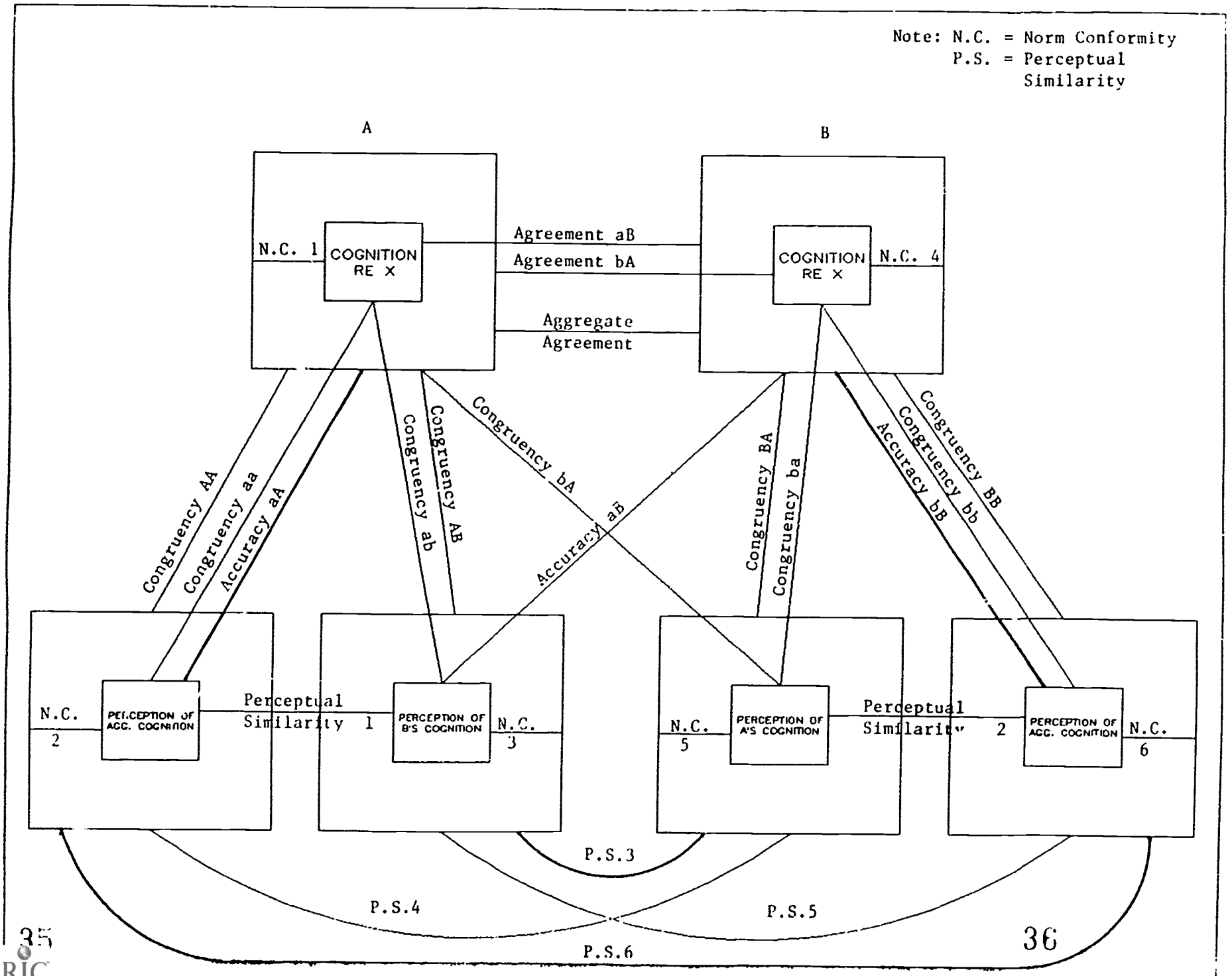

Table 1

Mean Responses to Opinion and Perception Questions.

Question Wording	Respondent's Country: U.S. x	U.S. s.d.	Canada x	Canada s.d.	t
1. Acid Rain is not really a major problem....					
a. your opinion	2.108	.990	1.883	.908	4.10***
b. perception of U.S.	2.299	.890	2.747	.978	-8.15***
c. perception of Canadians	1.915	.857	2.072	.875	-3.11**
2. The U.S. is primarily responsible for the acid rain problem in Canada.					
a. your opinion	3.245	1.059	3.372	1.001	-2.10*
b. perception of U.S.	3.081	.992	2.444	.897	11.43***
c. perception of Canadians	4.038	.878	3.846	.801	3.89***
3. The U.S. has done more to control acid rain than has Canada....					
a. your opinion	2.813	.960	2.078	.822	13.79***
b. perception of U.S.	3.125	.912	3.273	.934	-2.64**
c. perception of Canadians	2.152	.800	2.036	.718	2.56**
4. Canadians are more knowledgeable about acid rain than are U.S. citizens....					
a. your opinion	2.957	.929	3.645	.934	-12.47***
b. perception of U.S.	2.632	.815	2.588	.846	.88
c. perception of Canadians	3.675	.845	3.724	.802	-1.00

Note: Measurement scale runs from 1 (strongly disagree) to 5 (strongly agree). Differences are pairwise comparisons using t-tests. n=1233.
*p<.05
**p<.01
***p<.001

Table 2

Agreement, Accuracy and Understanding of the Collective Coorientation Model.

Issue Statement	Resp.	Ab or Ba Agreement	Ab or Ba Accuracy	AB or BA Accuracy	aA or bB Congruency	aA or bB Congruency
Acid Rain as a major problem	U.S.	.945***	.981**	.897**	.930*	.585**
	Canada	.881	1.073	.823	1.073	.694
The U.S. is responsible	U.S.	1.231***	.580***	.605	1.420***	1.238***
	Canada	.654	.885	.573	1.166	.962
U.S. has done more to control	U.S.	1.991***	.535***	.827***	2.044***	1.163***
	Canada	1.191	.899	.478	.905	1.899
Canadians are more knowledge-able	U.S.	1.663***	.697**	.725*	1.762***	1.024**
	Canada	1.295	.822	.651	1.080	1.993

Note: Statistical significance reported is for pairwise t-tests. n=1233. The first letter following the variable name denotes the respondent origin (A or B). Upper case represents individual-level data; lower case represents aggregate-level.

*p<.05
**p<.01
***p<.001

Table 3

Results of multiple regression predicting accuracy in perception of the coorienting country (Ab or Ba) and of respondent's own country (aA or bB).

	Issue Statements							
	Acid Rain is Major Problem		U.S. is Responsible		U.S. Has Done More Control		Canadians Knowledgeable	
Dependent:	Ab(Ba)	aA(bB)	Ab(Ba)	aA(bB)	Ab(Ba)	aA(bB)	Ab(Ba)	aA(bB)
Independent:								
Congruency AB(BA)	.262***	.163***	.537***	-.186	-.275	.296***	-.069**	.112***
Congruency aa(bb)	.159***	.030	-.371***	.378	.314	-.181	.132	.159***
Interpersonal Communication Learn from:								
Personal Obs.	.036	.070*	.059*	.040	.086**	.000	.094	.087**
Friends/Family	-.030	-.037	-.012	.013	.058**	-.028	-.010	-.058
People in Area	.029	.043	-.060*	-.079**	-.031	.040	.029	-.001
Talk in Area	-.018	-.043	.081**	.030	-.017	-.042	.018	-.048
Talk Out of Area	-.017	.020	.000	-.095**	-.014	.023	.034	.048
Mass Communication Learn from:								
Television	.000	.012	-.026	-.013	.055**	-.015	.062**	.091***
Magazines	.018	-.049	-.108***	-.025	-.070**	-.013	-.036	-.023
Newspapers	.043	-.017	.045	.021	.020	.037	.047	.000
Read Science	.018	-.068*	.010	.018	-.022	-.080***	-.052	-.084
Watch Science	.014	.000	-.065**	-.011	.067**	.015	.066*	.004
Equation R^2	.092	.039	.216***	.111***	.177***	.108***	.047***	.050***

Note: Table entries are beta weights, unless otherwise noted.
*p<.05
**p<.01
***p<.001

Table 4

Correlations between Average Congruency, Talking with Others Within the Community, Using the Mass Media for Science Information, and the Coorientational Accuracy of Perceptions.

U.S.

	(1)	(2)	(3)	(4)	(5)	(6)
(1) Congruency AA(BB)	1.00					
(2) Congruency ab(ba)	.44**	1.00				
(3) Discussion	-.02	.11	1.00			
(4) Media Use	.03	.04	.44**	1.00		
(5) Accuracy aB(bA)	.10	.37**	-.00	-.01	1.00	
(6) Accuracy Aa(Bb)	.21**	.17**	-.01	-.06	.29**	1.00

Canada

	(1)	(2)	(3)	(4)	(5)	(6)
(1) Congruency AA(BB)	1.00					
(2) Congruency ab(ba)	.34**	1.00				
(3) Discussion	.02	.06	1.00			
(4) Media Use	-.05	-.02	.42**	1.00		
(5) Accuracy aB(bA)	.29**	.21**	-.09	-.09	1.00	
(6) Accuracy Aa(Bb)	.38**	.15**	-.05	-.07	.31**	1.00

*p<.05
**p<.01

Table 5

Mean levels of congruency, accuracy, interpersonal discussion and use of media content about acid rain for the four study communities.

Community	Discussion	Media Use	Congruency aa(bb)	Congruency ab(ba)	Accuracy aB(bA)	Accuracy aA(bB)
U.S.:						
1	11.74 (3.64)	14.77 (2.88)	1.44 (1.40)	1.32 (1.32)	1.28 (1.18)	1.41 (1.20)
2	12.95 (3.65)	15.06 (2.47)	1.51 (1.43)	1.21 (1.28)	1.14 (1.01)	1.27 (1.01)
Canada:						
3	11.64 (3.67)	14.46 (3.00)	1.19 (1.15)	1.49 (1.35)	1.38 (1.08)	1.36 (1.03)
4	11.37 (3.63)	14.97 (2.87)	1.02 (1.18)	1.40 (1.20)	1.26 (1.09)	1.32 (1.20)

Note: Standard deviations are in parentheses.

Table 6

Apparent Stressfulness of Acid Rain and its intercorrelation with interpersonal discussion and use of the mass media.

	U.S.		Canada	
Stress Measure	Discussion	Media Use	Discussion	Media Use
Issue Seriousness	.42**	.33**	.41**	.29**
Worrries About it	.39**	.36**	.49**	.33**
Affects Respondent	.29**	.23**	.27**	.14*
Has Gotten Worse	.27**	.17**	.22**	.14**

*p<.05
**p<.01

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