



THE BRUNSWIK SOCIETY

Newsletter

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Spelling Study Breaks New Ground

*Ray Cooksey
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Cooksey, R. W., Freebody, P., & Bennett, A. J. (in Press). The ecology of spelling: A lens model analysis of spelling errors and student judgments of spelling difficulties. *Reading Psychology: An International Quarterly*.

This article describes our latest work in SJT and breaks new ground in the study and remedy of spelling difficulties.

Students who were identified by their teachers as poor spellers were asked to judge the difficulty they would have in spelling each of 100 words that were representative of the sorts of words they tended to misspell in their various subject areas (the spelling "ecology"). After making difficulty judgments, the students were then asked to spell each word on the list. Spelling errors were scored as either phonetic or nonphonetic. The researchers rated each of the 100 words on ten characteristics: number of letters, syllables, letters per syllable, double and silent letters; schwa, ambiguous, and unusual sounds; and two measures of familiarity to the student. This task was replicated after a four-week period to check for spelling and judgment consistency. Spelling errors and judgments of spelling difficulty were analyzed using the double system lens model using the ten word characteristics as "cues" in the analysis. Results showed only moderate agreement between difficulty judgments

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SIXTH ANNUAL INTERNATIONAL INVITATIONAL MEETING OF THE BRUNSWIK SOCIETY

*Saturday, November 17, 1990
Dauphine Room
Hyatt Regency, New Orleans*

- 8:00 - 8:30 **Continental Breakfast**
- 8:30 - 9:15 **Paramorphic Modeling**
Michael Doherty
- 9:15 - 10:00 **What Makes Research Brunswikian?**
Berndt Brehmer
- 10:00 - 10:30 **Break**
- 10:30 - 11:15 **Cognition: Lessons from Brunswikian Research and Cognitive Psychology**
*Reid Hastie
Michael Doherty (discussant)*
- 11:15 - 12:00 **Brunswikian Research in Behavioral Biology**
Lew Petrinovich
- 12:00 - 1:00 **LUNCH (on your own)**
- 1:00 - 3:00 **Research Papers**
*Kim Vicente
John Rohrbaugh
(others to be announced)*
- 3:00 - 3:30 **Break**
- 3:30 - 4:30 **Medical Decision Making**
Marilyn Rothert, Chair
- 4:30 - 5:00 **Brunswik Young Investigator Prize Talk**

MEDICAL NEWS

Physicians' Judgments of Cardiovascular Risk

*D. Mark Chaput de Saintonge, Therapeutics Section
London Hospital Medical College*

A study with the University of Göteborg is examining how doctors judge cardiovascular risk and how they choose treatments for hypertension using paper patient probes. Work already completed at the London Hospital has revealed apparent international differences in the diagnostic criteria for motor neurone disease. Since this is a noncriterial task, the establishment of an international consensus would be of real value. We are now re-examining the data comparing within and between country variation in models before attempting to establish a consensus for EEC countries. The use of Chernoff faces to express multivariate data has largely been confined to information which is not normally expressed on a real face! Many adverse drug reactions have strong subjective components which readily lend themselves to semi-quantitative expression on a Chernoff face. The cosmopolitan society of East London readily lends itself to a cross-cultural validation of such faces as glyphs for summarizing expected unwanted drug effects for patients.

Dick Joyce, a Visiting Professor at the University of Bern, Switzerland, is completing a four-year project with colleagues in Ireland, Denmark, and England on the use of SJT and other cognitive methods to enable individual patients to assess their own Quality of Life instead of being told what it is by spouses, doctors, and behavioral scientists. Some communications have been communicated and posters posted; peer-reviewed papers are in the pipe-line.

Decision Support Intervention

*Marilyn Rothert
College of Nursing
Michigan State University*

The research team at Michigan State University has continued to pursue federal funding for a proposal—building on the previous judgment study. It would be an experimental design to test a decision support intervention. A site visit is scheduled for August so we are hopeful. In the meantime, we are publishing and refining instruments. One exciting area of work by a graduate student is the development of a measure of satisfaction with the decision making process. We have not found adequate measures in the literature and this is an important area in health care as well as being relevant to other applications. We would welcome comments and leads on related constructs and issues including the relation of satisfaction and regret, and satisfaction and hindsight bias. We are also exploring decision making related to health promotion, which again incorporates multiple concepts including risk communication, framing, and policy capturing.

Prescribing Drugs

*Roy M. Poses
Division of General Medicine
Medical College of Virginia*

Bob Wigton, Paula Horvatic, and I are still working on a Brunswikian analysis of judgments relevant to prescribing benzodiazepine tranquilizing drugs. We have completed focus groups to identify a broad list of plausible variables. We are in the midst of an extensive survey of practicing physicians designed to identify the variables most related to judgments. Our goal is to incorporate these variables into Bob Wigton's FEEDBACK software, and use this program for continuing medical education.

Bob Centor and I have secured funding for a large study of judgments, decisions, and outcomes for patients seen for congestive heart failure. This will involve development of Brunswikian models of key judgments while we simultaneously develop models of related outcomes. The study is in its early stages. We are currently developing data collection instruments. We hope data collection will have begun by the time of the meeting.

Substituted Judgment

*Robert Wigton and Thomas Tape
Internal Medicine
University of Nebraska Medical Center*

Brunswikian research at the University of Nebraska has concentrated on "Substituted Judgment," a joint project with Mike Doherty and William Balzer at Bowling Green. Since seriously ill patients may be unable to express their wishes about alternative methods of therapy, family members or their physician often must make decisions for them. Studies have found that such proxy judgments sometimes do not reflect the wishes of the patient. We are exploring ways to help the proxy decision maker understand the judgment policy of the patient and become more accurate in predicting what they would have wanted to do. Using paper cases to analyze the policies of both patient and proxy, we will test how well cognitive feedback helps them match judgments.

We are continuing the project to study the policies of medical school admissions committee members and have completed the study of cognitive feedback in teaching students to predict cardiovascular risk. We are just beginning a study with Roy Poses to use SJT to study how physicians use clinical information to predict future sedative abusers.

Dynamic Decision Making Studied in Field and Laboratory

Berndt Brehmer
Department of Psychology
University of Uppsala

Research in Uppsala during the past year has continued along the same lines as last year. Thus, we have continued our studies of dynamic decision making, both in the laboratory using various computer simulated microworlds, mainly (a) the fire fighting version of DESSY, Moro, a German system that requires subjects to act as advisers to the government in a developing country and (b) Broadbent's systems (both the person interaction task and the sugar factory task) and in the field in the form of studies of operators in process plants.

Experiments with the fire fighting simulation have included studies of the effects of the location of the delay in the feedback loop (showing that "dead time" has more negative effects than report delays), and the effects of using discrete time simulations compared to continuous time simulations.

Experiments with Moro have examined the effects of different goal formulations (concrete vs. abstract) and the effects of specific domain knowledge. We also made a first attempt to develop cognitive feedback for subjects in dynamic tasks using Moro. The subjects have first gone through the ordinary sessions with Moro. They have then been asked to show what they have learned about Moro by con-

structing a personal simulation of Moro using STELLA, a system dynamics type program developed for the Macintosh. In the first study, we just tried to find out whether our subjects could use STELLA at all to communicate with us about their knowledge, and we only asked them to construct a static diagram of Moro. This they could do, and there were interesting differences among subjects. In the next step, we will try to get our subjects to construct real simulations that will actually run (or not run, as the case may be).

The experiments with Broadbent's system have been concerned with the notion of implicit and explicit knowledge, that is, the hypothesis that subjects may learn to control a dynamic task either implicitly, so that they are unable to report how they do it, or explicitly so that they are able to report. Our results, as we interpret them, suggest that Broadbent's simulations actually give little support for the distinction, and the differences found by Broadbent and his associates may have been due to the way knowledge has been measured.

Finally, we have also started some developmental work on decision making, studying the extent to which the ability to make consistent decisions changes with age.

Human Covariation Judgments

Marlys Lipe, School of Business Administration, University of Michigan

The following is a description of a paper of mine which may be of interest to my fellow Brunswikians (for distribution prior to the Brunswik Society meeting):

Lipe, M. G. (1990). A lens model analysis of covariation research. *Journal of Behavioral Decision Making*, 3, 47-59.

Research on human covariation judgments has shown that people do not make judgments that match normative statistical models of contingency. Further, some researchers have concluded that people do not appropriately consider all of the relevant data when making such judgments. However, the study of data used in covariation judgments is complicated by the nature of the task itself. In this paper the lens model methodology is used (a) to test whether people's covariation judgments are better matched with a regression-estimated model of contingency than with a statistical model, (b) to see whether the substitute model provides a good match for the complex statistical model, and (c) to test data use in covariation judgments.

In judging the covariation of two dichotomous variables, four cells of relevant data exist representing combinations of the presence or absence of the two variables. Statistical models of contingency use complex, nonlinear functions of these cells to compute contingency. However, regression models of statistical contingency can be estimated using the four cells as independent variables, or cues. In this paper, data from five published studies, as well as an original study, are used in lens model estimations showing that covariation assessors do appear to use all four data cells and to use them with appropriate signs (positive or negative). Sensitivity analysis explores data use patterns under various experimental conditions.

Technical Resources Committee

All Brunswikians, on some occasions have run into research problems with which they would like to have help. They can turn to previous articles and book chapters (e.g., Brehmer & Joyce, 1988) for help, but sometimes difficulties remain. So a Technical Resources Committee has been established, the members of which will do their best to help with specific Brunswikian research issues. The coordinator and committee members will be announced at the New Orleans meeting.

Research Conducted on Design of Computer Interfaces

Kim Vicente
Department of Engineering
University of Illinois

I am conducting research on the design of computer interfaces for complex technological systems, such as power plants and air traffic control centers. An important characteristic of these systems is that their goal-relevant properties are not directly visible to the unaided eye (e.g., the state of the heat engine cycle in a power plant, or the relative position of various airplanes in air traffic control). Traditional interfaces have not been very effective in revealing these goal-relevant properties in a way that is easy for operators to determine the state of the system they are controlling. The goal of our framework, ecological interface design, is to make visible the otherwise unobservable domain properties. This involves a two-phase process. First, one

must analyze the ecology (i.e., work domain) in order to determine what information is needed by operators. Second, one must reveal that information in the interface in such a way as to exploit the power of perception. In Brunswikian terms, the goal is to map distal variables onto proximal variables so that the interface is completely transparent to the semantics of the work environment. Designing an isomorphic mapping between surface features and depth features

should thereby provide operators with diagnostic information about system state.

These theoretical ideas have been used to create an ecological interface for a thermal-hydraulic process simulation. This simulation will serve as the test-bed for evaluating our framework. A first experiment is currently being conducted as part of my doctoral dissertation. By the time of the meeting I should have some (hopefully interesting) results.

Microburst Forecasting Articles Prepared

Kenneth Hammond, Center for Research on Judgment and Policy
University of Colorado

Cynthia Lusk and I have recently completed three manuscripts:

Lusk, C. M., Stewart, T. R., Hammond, K. R., & Potts, R. J. (in press). Judgment and decision making in dynamic tasks: The case of forecasting the microburst. *Weather and Forecasting*.

Lusk, C. M., & Hammond, K. R. (1990). Judgment in a dynamic task: Microburst forecasting. (under review, *Journal of Behavioral Decision Making*)

Hammond, K. R., Harvey, L. O., Jr., Lusk, C. M., & Mross, E. F. (1990). Aviation weather forecasting, stress, and public policy: The utility of signal detection theory. (under review, *Psychological Science*)

The first two articles are concerned with experts forecasting the microburst under working conditions. The innovation in the first concerns the explicit use of a hierarchical model with "secondary cues"; the second contains several new steps,

the most important of which is the analysis of expert judgment over time (but see also Brehmer on dynamic tasks). The third article analyzes expert forecasts of convection under low and high stress working conditions. The innovation here is the use of Signal Detection Theory to separate expert (fact) judgments from policy makers' (value) judgments. Cynthia and I are now trying to test some of the major concepts of Cognitive Continuum Theory (extended) in the context of convection forecasting in which experts make use of state-of-the-art computer displays. Our work will focus on the question of whether (and how and why) forecasters *alternate* (as the theory predicts) between seeking patterns and seeking functional relations.

I have just completed a chapter entitled, "Naturalistic Decision Making from a Brunswikian Viewpoint: Past, Present and Future" and am now preparing a glossary and a book manuscript, "The Effects of Stress on Judgment and Decision Making," (an excuse for laying out in full detail my current theory of judgment and decision making).

Reprint Resource

Many Brunswikians are probably unaware that the Bibliographic Information System (BIS) reprint library at CRJP in Boulder contains many reprints related to Brunswikian research. BIS also comprises 7000 reprints of research articles in judgment and decision making—Brunswikian or otherwise. Unless and until the requests for assistance become so burdensome that the CRJP staff cannot respond, the Center will be happy to help with your reference needs. Call Mary Luhning (303) 492-8122 or send e-mail messages to "mluhning@clipr.colorado.edu."

Melbourne Research Examines Variety of J/DM Environments

Alex Wearing
Department of Psychology
University of Melbourne

Dynamic Decision Making

We are presently looking at the relation of mood, affect, and selected personality variables to performance on dynamic decision tasks. One is simple, the second is a simulated firefighting task, that takes as its starting point Berndt Brehmer's forest fire research.

Complex Problem Solving

We are also investigating the strategies used by professionals in problem solving and decision making in the field, where not only do they have to deal with a technical task, but also with other problematic aspects of their environment. For example, nurses who have medical responsibilities must handle these problems and decisions in a context in which other people (doctors, nursing superiors, paramedics, etc.) are also engaged in more or less collaboratively dealing with the same problem situation.

Economic Decision Making

This research is concerned with how mental representations of the economy affect judgments about national budget and taxation packages. This work is being carried out in part, within a lens model framework.

Spelling Study

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and spelling errors, and fairly consistent differences between those word characteristics that were predictive of perceived spelling difficulty and those predictive of phonetic and nonphonetic errors. Several different patterns of cue weights were noted for spelling errors whereas spelling difficulty judgments were primarily based upon word familiarity. Implications are drawn for the further investigation of spelling errors and of how students decide what constitutes a "hard" word to spell and for the potential improvement of the spelling judgment process using cognitive feedback from the lens model.

We are currently planning a larger investigation of the spelling judgment

process which will examine the efficacy of cognitive feedback as a method for improving student perceptions of what it is about words that is associated with their own spelling errors. Such feedback should facilitate the improvement of spelling over and above simple outcome feedback. An important facet of all these investigations is the use of representative design principles to establish the word list. Another goal is to establish whether there are reliable differences between the judgment processes of students identified as having "good" academic ability but are poor at spelling and students who are both poor at general academic tasks as well as at spelling. We would hypothesize that "good" spellers would be far more accurate in their judgments of difficulty relative to either of the above types of students.

Noted Psychologist Endorses Representative Design

By Kenneth Hammond

Meehl, P. (1990). *Corroboration and verisimilitude: Against Lakatos's "sheer leap of faith."* University of Minnesota, Minnesota Center for Philosophy of Science, Minneapolis.

So far as I know no person of stature in psychology has ever endorsed Brunswik's concept of representative design—until now! In his recent monograph, *Corroboration and Verisimilitude: Against Lakatos's "Sheer Leap of Faith,"* Paul Meehl does just that. This is an event of such significance that his remarks are inserted here:

One badly neglected sampling problem, probably more important than the sampling of organisms to which such meticulous attention is conventionally paid, is the sampling of situations, which should be in some sense "representative" of the statistical ecology of the species studies. (pp. 41-42)

Compare that statement with Brunswik's observation:

Proper sampling of situations and problems may in the end be more important than proper sampling of subjects, considering the fact that individuals are probably on the whole much more alike than are situations among one another. (1956, p. 39)

You should also know that Meehl followed these remarks with a mathematical justification of them.

Self-Insight Projects Underway at Clemson University

Barbara Reilly
Department of Psychology
Clemson University

I have been busy this year conducting, writing, and formulating several research studies, the three most recent of which are discussed below.

The first, entitled, "Self-Insight in Judgment: A Process Tracing Approach," is a study designed to explore how subjects recognize their unique judgment policy from the policies of their peers. Twenty subjects were individually asked to describe in detail the process they used to choose their individual policy. Unique to this study, was that subjects viewed the

policies individually rather than in a grouped format. Each of the twenty sessions was tape recorded and transcripts revealed some valuable information on the types of processes involved in self-insight.

The second project, "Verbal Reports of Mental Processes: More on Knowing and Telling," is a study designed to uncover the differences between expressible and inexpressible self-insight. In this study, twenty subjects participated in a policy capturing study of job choice. Later, the subjects were asked to write down in detail how they would identify their own policy from a collection of twenty policies. After the subjects had each written for fifteen minutes, they were told, "An-

other person is going to read your description and they will be asked to choose your policy out of a set of twenty policies. With that information in mind, what additional information or help can you give that person to ensure that he/she chooses you?". Recognition results from twenty additional subjects using these detailed descriptions indicated that there is a component to self-insight that is inexpressible.

The third study is in the initial stages and should be completed by May 1991. I recently received a mini-grant from Clemson University to conduct a longitudinal self-insight study, "Judgment and Decision Making: An Investigation into the Benefits of Self-Insight. The study is elaborate so I will not go into the details here, but the major research questions are:

1. Under what situations can subjects identify their policies?
2. Is the ability to identify one's own policy related to other important behaviors, for example, a better ability to articulate?
3. Is self-insight related to better insight in general, for example, insight into how other people feel or make decisions?
4. Do individuals that possess high levels of insight (self and other) have less conflict in a relationship that depends on shared knowledge?

I have thoroughly enjoyed reading Brunswick's copy of Woodworth's *Experimental Psychology* this past year. I have been especially intrigued by Brunswick's use of "ha!" as a margin note. I have noticed that this expression usually indicates an error in the text found and corrected by Brunswick or an indication of an absurd statement or quote (in Brunswick's opinion). Both types of "ha!" make interesting reading.

Bowling Green Cognitive Feedback Research Group Alive and Well

William K. Balzer, Department of Psychology
Bowling Green University

The Cognitive Feedback Research Group at Bowling Green State University is alive and well. The paper which I discussed at the last Brunswick Society meeting, "Task Information, Cognitive Information, or Functional Validity Information: Which Components of Cognitive Feedback Affect Performance?" has been tentatively accepted by *Organizational Behavior and Human Decision Processes*. In this paper, we found that information about the task system (i.e., environment) was the only component of CFB that was needed to improve performance on an MCPL task. Recently, we completed another laboratory study which examined whether the format of CFB (i.e., presented CFB pictorially or statistically as well as including analogies or heuristics for under-

standing and integrating CFB) interacted with different CFB components (task information, cognitive information, or all CFB components) to improve performance. Based on data from over 300 subjects, preliminary analyses indicate that presentation format had a trivial impact on MCPL task performance. Our results did replicate our previous study, indicating that task information is the CFB component necessary to improve performance. Several additional CFB studies are underway: (a) the joint influence of CFB and task complexity on performance, (b) the frequency of presentation of CFB, and (c) a field study investigating the role of CFB in the evaluation of employee performance.

WISOR Pursues Brunswik-Related Research

Timothy Earle, Department of Psychology
Western Washington University

At the Western Institute for Social and Organizational Research (WISOR) in Bellingham, Washington, Tim Earle and George Cvetkovich have pursued several lines of Brunswik-related research during the past year. Most notable perhaps (and certainly the most exhausting) was an experiment in community problem solving. This consisted of a day-long conference, half devoted to lectures and half to small discussion groups. The lectures were based on our Brunswik-inspired risk communication concepts, the small group sessions on (a nontechnical form of) cognitive conflict theory. Our evaluation measures and informal participant feedback have convinced us that the experiment was a great success. The focus of the conference was the management of growth in the local community. We hope to further develop and apply our techniques to other problems in the future.

Other WISOR research focused on aspects of risk communication. George orchestrated a longitudinal survey study of the effectiveness of alcohol warning labels. He also managed a series of experimental studies exploring how variations in label content affect alcohol and tobacco labeling effects. Tim has continued development of the IRA model of risk communication effectiveness, with recent work focusing on priming effects and other methods to increase message impact. Intriguing sex differences have been found with regard to messages dealing with such hazards as sexually transmitted diseases and passive smoke.

In sum, the WISOR group has continued to study risk communication problems in the large and the small. And the IRA

model thus far has proved a helpful guide to understanding and mitigating these problems.

Study Examines Effect of Information Order on Expert Judgment

Leonard Adelman
Information Systems
George Mason University

There have been two major projects this year. The first project (with Decision Sciences Consortium, Inc.) has examined the effect of information order on expert judgment. Specifically, we found that, if information was presented sequentially and a probability estimate was obtained after each piece of information, that information order affected Army air defense operators' probability estimates for whether an unknown aircraft was friend or foe. On the other hand, if the information was presented all at once and the probability estimate was obtained at that time, information order had no effect. These results are consistent with the hypotheses of Robin Hogarth and Hilly Einhorn's anchoring-and-adjustment, belief updating model. The study used a paper-and-pencil format; we are currently preparing a second experiment using actual Army air defense simulators.

The second project (at George Mason University) is a process tracing experiment examining the effect of formulation on option generation. We are still in the midst of data encoding and analysis. Hopefully, I'll have some results to report in New Orleans.

California Project Studies Accuracy of Personality Judgments

David C. Funder
Department of Psychology
University of California, Riverside

My current research continues to concern the accuracy of the judgments of personality that people make of each other in daily life. Among the more Brunswikian aspects of my recent work is a study, in collaboration with Randy Colvin, which examined the boundary conditions of the "acquaintanceship effect," the tendency for better-acquainted judges to provide personality judgments that agree better with self judgments and to predict behavior with greater precision. We have found that relative strangers who have viewed you in only one situation will be able to predict your behavior in another, similar situation *about as well* as can someone who knows you well, but has *not* viewed your behavior in a similar situation. However, when predicting behavior in a situation that neither the stranger nor the close acquaintance has ever seen you in, close acquaintances' predictions do much better. This research is, of course, framed by the lens model, as it examines the predictive validity of judgments made under different informational conditions. A draft of an article reporting this research is available on request.

Also, a graduate student at Riverside, Carl Sneed, is beginning a project with me to explore the behavioral cues used by naïve judges when judging personality traits from observing a videotape of two individuals conversing. He hopes to distinguish between those cues that allow trait judgments to be made with greater and lesser accuracy.

ROCKEFELLER COLLEGE OF PUBLIC AFFAIRS & POLICY

Negotiations

Jeryl Mumpower

My recent research program remains focused on negotiations. I have become interested in recent months in *resource allocation negotiations*, where negotiators must decide how to allocate fixed, limited resources. In such negotiations, disputants' utility curves are typically same-signed. Negotiators share basic objectives but disagree concerning priorities. Such negotiations can be contrasted with *contract negotiations*, in which utility curves are typically opposite-signed.

Tom Darling and I just completed a study in which we used a simulation-based approach to analyze the structure of resource allocation negotiations. Structure refers to the opportunities that the situation affords and the constraints it imposes. More formally, the structure of the problem is defined by the characteristics of feasible settlement spaces and efficient frontiers, which are a function of the joint distribution of negotiators' utilities across all possible settlements. The analysis demonstrated that the structure of resource allocation negotiations is a joint function of (a) negotiators' utility functions and (b) the level of available resources. The structure is often complex and rarely intuitively obvious.

Three potential behavioral strategies for resolving resource allocation conflicts

were examined. It was found that they sometimes lead to the same settlement and sometimes do not. Moreover, a strategy might favor one negotiator under one set of conditions, but another negotiator under a different set.

*Weather Forecasting,
Global Warming*

Thomas R. Stewart

Data are being analyzed from a study of expert judgment in weather forecasting. Forecasts of thunderstorm activity made using "full information" provided by a weather forecasting workstation were compared with forecasts made using "limited information," that is, "paper storms." Limited information included only storm location and information about a few specified cues to storm intensity. Preliminary results indicate that forecasts made in the full information condition were better than limited information forecasts, but agreement among forecasters was greater in the limited information condition. There were substantial individual differences among expert forecasters, and some forecasters performed as well with limited information as others did with full information.

Jeryl Mumpower and I have begun work on an NSF-sponsored project on scientists' uncertainty and disagreement about global warming.

Publication

Harmon, J., & Rohrbaugh, J. (1990). Social judgment analysis and small group decision making: Cognitive feedback effects on individual and collective performance. *Organizational Behavior and Human Decision Processes*, 46, 34-54.

The study was designed to determine what aspects of cognitive feedback to small groups account for their level of performance on cognitive conflict tasks. Study participants included 275 undergraduate students, 158 females, and 117 males. One set of groups was given task-related instruction and cognitive feedback fully exchanged among all group members; two other sets of groups differed in the extent to which cognitive feedback was made available to their members. All groups were assessed on the degree of accuracy of their final judgment policies, the amount of reduction in members' disagreement, and the subjective ratings of members concerning their group's performance. Findings suggested that significantly greater individual learning and group consensus occurred as a result of the full exchange of cognitive feedback, although all conditions produced a marked reduction in disagreement among members. Overall task performance by all three sets of groups was at a level of achievement equivalent to the work of the second most proficient group member.

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—Mary Luhring, Editor