

Introduction

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The Roman god Janus had two faces; he could look both backward and forward. His name is the root word for January, a connection with our impulse to look back on the past and forward to the future when the new year arrives. As we begin the 1990s, it is appropriate that we look back and forward in the same way. We need to see how our views of the deaf learner's cognitive achievement and potential have changed, not over just one year but throughout history, and we need to look at where the field of cognition and deafness may be headed.

Moore (1982), in a review of deafness in history, indicated that the attitudes of persons in the ancient world toward handicapped people were ambivalent. While the ancient Jews showed charity toward deaf people, the book of Leviticus in the Old Testament admonishes against cursing the deaf, suggesting that at least some people were acting negatively toward handicapped persons. We also know that the legal rights of deaf people were limited in some of the same ways as those of helpless and mentally retarded persons.

Because of the high value placed on the spoken word throughout ancient history, little improvement is seen in attempts to educate deaf children when one looks at ancient Egypt, ancient Greece, and then ancient Rome. The Romans appear to have been more harsh and cruel towards deaf people than either the Egyptians or the Greeks (Moore 1982).

The interaction between language and thought has been and continues to be a topic of great interest and debate. In the ancient world, the Greek philosophers believed that spoken words were the necessary means by which a person conceived thought. Aristotle designated the ear as the organ of instruction and believed that

hearing was the greatest contributor to intelligence; consequently, he has been accused of keeping the deaf in ignorance for two thousand years (Deland 1931).

A number of important events occurred in Europe more than 350 years ago which, in retrospect, can be considered the start of the first revolution in deafness. Two events in this revolution stand out. First, it was established that in spite of the inability to hear, deaf persons could, depending on the nature of their hearing loss and the application of the appropriate educational technique, learn to articulate and speak with varying degrees of intelligibility. Although we know today that there is no relationship between speech articulation ability and thinking ability, the discovery of this speech articulation potential served to change the attitudes of some hearing people toward deaf persons' intellectual potential.

At the same time, a breakthrough was underway in the recognition and development of the language of signs—communication through movements of the hands and body.

These two developments, pioneered simultaneously in Spain (by Pedro Ponce de Leone and Juan Pablo Bonet), France (by Charles Michel Abbé de l'Épée), Germany (by Samuel Heinicke), Italy (by Girolamo Cardano), and later in England (by George Dalgarno), demonstrated for the first time that deaf people were not retarded and were capable of intelligent thought and communication.

The debate over thought and language was still going on in the nineteenth century. William James (1890) and both Binet and Simon (1910) took the position that thought developed before language in deaf persons; James reported abstract and metaphysical concepts in two deaf persons even when pantomime was the only language used (Moores 1982). On the other hand, Booth (1878) took the position that thought was independent of the mode of expression, and said that thought and language were separate processes, allowing a person to use one or the other alone.

In 1924–1925, the National Research Council reported that deaf subjects were between two and three years “retarded” in comparison to hearing subjects in their responses to the Pintner Non-Language Mental Test (Myklebust & Brutton 1953). Pintner and others reviewed the available information on the intelligence of deaf persons and, in spite of sometimes contradictory results, concluded that deaf children had inferior intelligence (Pintner, Eisenson & Stanton 1941).

The work of Myklebust has been generally cited as another milestone in the history of research in deafness and attitudes toward the deaf population. His studies attributed a “concrete” nature to the intelligence of deaf persons, indicating that deafness restricts the deaf learner to a world of “concrete objects and things” (Myklebust & Brutton 1953). The influence of this attribution has been far-reaching in that educators of deaf children have for many years regarded the deaf learner as less able to work with abstract ideas; fortunately, subsequent research has proven this interpretation to be false. Nonetheless, the work of Myklebust represented at least one step forward in that he regarded the deaf learner as being at least *quantitatively* equal to the hearing learner, although *qualitatively* inferior.

Furth deplored the past centuries during which deaf people were considered to be lacking in normal intelligence because they could not speak; he thus addressed again the age-old question of the relationship between language and

intelligence (Furth 1966). Furth (1964) concluded that the poorer performance of deaf persons on some cognitive tests could be explained either by a lack of world experience or by the conditions of those tasks that would favor a background of spoken language. Further, he asserted that “the deaf” can comprehend and can logically apply concepts as well as hearing persons can (1964).

Rosenstein (1961), after a review of a number of studies conducted with deaf learners, found no differences between deaf and hearing persons in regard to conceptual performance when the linguistic elements presented were within the language experience of deaf children; his important conclusion was that abstract thought is *not* closed to deaf persons.

After an exhaustive analysis of many studies, Vernon concluded that deaf youth perform as well in a wide variety of tasks that measure thinking as do other children (1967).

In recent years we have also witnessed a tendency to intervene actively in the cognitive performance of deaf learners in an effort to improve their intellectual functioning. These efforts grow out of the belief that deaf learners have the same range of intellectual potential as the hearing population and can achieve that potential if the environment, instruction, and materials are appropriate.

As we look back at the history of attitudes toward the cognitive potential of deaf persons, we can identify a trend that passes from outright bias and discrimination, through the several phases of comparing deaf and hearing learners on some specific measures but still overgeneralizing or oversimplifying the results, through a period of more systematic analyses that removed the tendency to overgeneralize but still confused the issues of thinking and language. Then the performance of deaf persons began to be analyzed on its own terms and with a better understanding of the particular conditions under which a deaf learner develops, and that phase led in turn to the present, when those more specific analyses continue side by side with active efforts to improve cognitive performance of deaf learners in the firm conviction that such improvement is not only possible but essential.

At this point, it is useful to compare the contents of the First (1984) and Second (1989) International Symposia on Cognition, Education, and Deafness at Gallaudet University. Such an examination helps us to see the immediate past and compare it with the present in this field.

A numerical assessment indicates that, out of the 39 authors presenting papers at the 1989 symposium, 16 were “repeat” authors from the 1984 symposium. From this fact we may conclude that there is some consistency in the themes of research undertaken in this area and that the number of investigators working in the field has increased. Such a combination is encouraging.

An analysis of the titles and content of the 1984 symposium reveals a preponderance of papers on developmental issues, a number of papers on the reading aspects of language and cognition, some separation of education from the cognition and deafness foci, some observable beginning work on proactive classroom intervention strategies designed to enhance the thinking level of hearing-impaired learners, and several overview studies and discussions.

On the other hand, the content of the 1989 symposium is slightly different. A greater emphasis on applications in the educational environment is clear, as is

the emergence of an entirely new branch of investigation—the neuro-anatomical dimension of investigating cognition and deafness. In addition, we see a clear emphasis on the relationship between sign languages—especially American Sign Language—and the learning process and cognition. There are more specific topics rather than overviews, and a greater diversity of topics occurs among the corpus of papers, as is reflected in this book. Finally, one sees the beginning of involvement of deaf professionals as members of research teams to a greater degree than in 1984; however, this is but a beginning, and much remains to be done to increase the involvement and leadership of deaf persons in this area.

In looking both backward and forward in the fascinating area of cognition in the hearing-impaired learner, three concepts from the field of futurism are useful. Futurists make a distinction between the *probable* future, the *possible* future, and the *preferable* future. The probable future is one in which, with no specific or proactive initiative, it is possible to predict with high likelihood what the future will hold. The possible future is the scenario that could happen with some unexpected circumstances, although it is not highly likely. And the preferable future is that scenario that will happen only if specific initiatives are taken to ensure it. What, then, would be the probable, possible, and preferable futures in regard to the cognitive development of the hearing-impaired learner?

We can quickly dispose of the possible future that includes certain unlikely events—educators and researchers returning to the old conviction that deaf learners have lower potential than hearing learners, or no further serious investigation being undertaken in regard to cognition and deafness. This possible future is likely only if a complete cut-off of support for research were coupled with a reversion to outmoded attitudes.

A probable future—one in which, with little intervention, certain events will very likely happen—would include the continuation of definite trends that have already begun. For example, it seems highly likely that the new interest in neuro-anatomy as applied to cognition and deafness will expand steadily. In addition, there probably will continue to be a focus on the interaction between language and thought. We can expect that the debate will persist about the primacy of one over the other as well as about their interdependence. It is also probable that the gradual development of improved tools for assessment of the deaf learner's cognition will continue, with an emphasis on broader and fairer approaches to that assessment. And it would appear that the continuing issue of American Sign Language vs. other manually coded systems of communication will be a source of debate, including the roles of these systems in the teaching of language itself and their relationships to the development of higher cognitive processes in the deaf learner.

The preferable future is, of course, less likely without specific planning, initiative, and support (both human and financial). However, the preferable future is one toward which we should all strive. The preferable future would include at least the following in regard to cognition and deafness:

1. Active support for all the elements that were mentioned above under the probable future. In particular, serious investigations into modes

- of communication and cognition, neuro-anatomy and cognition, and assessment tools of a broader nature.
2. Incorporation of training in cognitive education within teacher education programs in deaf education.
 3. Development and empirical testing of additional varieties of planned interventions in the classroom, and longitudinal studies to accompany them.
 4. Greater emphasis and support for early intervention in cognitive development, including the preschool years.
 5. Focus on the education of parents (both hearing and deaf) not only in appropriate expectations of their deaf children but also in appropriate interventions that they can use during the preschool years to promote higher-level thinking in their children.
 6. Legitimization of other-than-quantitative research methods in deafness research, including even single-subject designs if carefully controlled, as sources of knowledge about deafness and cognition.
 7. Production by educational publishers of materials that will provide a greater cognitive challenge to deaf learners than those now available.
 8. Systematic education of employers and hearing colleagues of deaf workers in the workplace in maintaining high cognitive expectations (as well as adaptations) that are appropriate for the deaf person.
 9. Still wider involvement of deaf researchers in research on deafness.

Although funding is a necessary condition, it is not a sufficient one; the sufficient condition is the continuing conviction, based now on clear evidence, that the deaf learner can indeed achieve the highest levels of cognitive performance, given the appropriate conditions and dedication by professionals. That challenge is the one to which educators and other professionals working with and on behalf of deaf persons must rise now.

The Second International Symposium on Cognition, Education, and Deafness took place at Gallaudet University, July 5–8, 1989. This gathering brought together more than 230 professionals—teachers, researchers, theoreticians, and others interested in the confluence of cognition, education, and deafness. The participants represented 14 different countries (including every continent except Antarctica), and the deliberations focused on the six themes represented in this volume. The purpose of the symposium was to examine the state of the art and its progress since the first symposium in 1984, as well as to establish a research and implementation agenda for the coming years in the field.

The papers in this volume are divided into six thematic sections, and the group of papers in each is followed by a careful analysis of that thematic grouping, including common threads, issues raised, and research questions from that theme which need to be investigated in the near future. The book opens with an important chapter by Ursula Bellugi about the current work on sign languages in the deaf learner and their cognitive implications. A special feature of this volume is a collection of presentations of programs designed to facilitate the learning of deaf subjects in the cognitive realm. This section is intended particularly for practitioners, although the practitioner will also find important implications for

practice in most, if not all, of the research papers as well as in chapters 2 through 7. Many challenging and puzzling methodological problems face the researcher interested in deafness, and as a guide to these questions and possible avenues toward their resolution, a special brief chapter (chapter 11) is included after the theme groupings. The closing chapter provides a synthesis of the numerous papers and presentations in this volume, particularly from the viewpoint of a cognitive psychologist from outside the field of deafness; Howard Pollio makes comments that draw together all the individual studies and provides a charge to the field of deafness research in regard to cognition and education.

This book offers the reader the opportunity to assess progress in the field of cognition, education, and deafness since 1984 and to determine avenues of needed investigation. This work is expected to inform serious study in the field in the years to come.

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