Teaching and Learning

Davis, S., & Kelly, R. (in press, 2003). Comparing deaf and hearing college students' mental arithmetic calculations under two interference conditions. *American Annals for the Deaf, 148(3).* [AN 1770]

> *The mean reaction times (RT) of deaf and hearing college students were compared on a mental calculation task for verifying the accuracy of addition and multiplication problems. The deaf college students were divided into higher and lower readers. The results showed that the reaction times and accuracy of the higher deaf readers and hearing students were similar for the addition problems, and that their RT performance was greater under the voicing interference mode. This suggests that both higher deaf readers and hearing students were using an articulatory loop or inner voices to mentally process the arithmetic information. In contrast, the lower deaf readers showed no RT differences between the two interference modes and had consistently lower RT performance and score accuracy across the experimental verification tasks.*

Elliot, L., Foster, S., & Stinson, M. (2002). Student study habits using notes from a speech-to-text support service. *Exceptional Children, 69(l),25 40.* [AN 1764]

> *Thirty-six mainstream high school and college students who are deaf and hard of hearing received notes from a speech-to-text support service called C-Print. The students, 26 classroom teachers, and 10 teachers of the deaf were interviewed about their perceptions of how students use their notes to study. Consistent with research on hearing students, high school students in this study typically would read the notes only, while college students used multiple study strategies with the notes. Teachers tended not to know how their students used their notes for studying, and they were sometimes reluctant to teach students about effective note usage. This study supports the idea that both students and teachers could benefit from further instruction on note usage and study skills.*

Kelly, R. (in press, 2003). Using technology to meet the developmental needs of deaf students to improve their mathematical word problem solving skills. *Mathematics and Computer Education.* [AN 1742]

> *Project Solve addresses, in an innovative and practical way, a critical problem facing most deaf college students and other learners with special needs - inadequate preparation and practice in problem solving and analytical thinking. Supported by a grant from the Fund for the Improvement of Postsecondary Education (FIPSE), US. Department of Education, Project Solve will provide web-based problem-solving instruction and guided practice for mathematical word problems. While deaf college students are the primary audience, this project has clear implications for other college students for whom reading and comprehension of mathematical word problem solving is difficult, especially Learning Disabled (L D) students. This project also has instructional implications for high school students who are college bound, and who face similar difficulties with reading comprehension, problem-solving logic, and organization.*

Kelly, R., Lang, H., & Mousley, K. (2001). PROJECT SOLVE: Web-based guided practice to improve math word problem solving. Paper presented at the Instructional Technology and Education of the Deaf Symposium, Rochester, N.Y. [AN 1726]

Project SOLVE addresses, in an innovative and practical way, a critical problem facing most deaf college students and other learners with special needs - inadequate preparation and practice in problem solving and analytical thinking. Supported by a grant from the Fund for the Improvement of Postsecondary Education (FIPSE), US. Department of Education, Project SOLVE will provide web-based problem-solving instruction and guided practice for math word problems. This project also has instructional implications for high school students who are college bound, and who face similar difficulties with reading comprehension, problem-solving logic, and organization.

Kelly, R., Lang, H., & Pagliaro, C. (2003). Mathematics word problem solving for deaf students: A survey of practices in grades *6-12. Journal of Deaf Studies and Deaf Education, 8(2),* 104-119. [AN 1744]

One hundred and thirty-three mathematics teachers of deaf students from grades 6-12 responded to a survey on mathematics word problem-solving practices. Half the respondents were teachers from center schools and the other half from mainstream programs. The latter group represented both integrated and self-contained classes. The findings clearly show that regardless of instructional setting, deaf students are not being sufficiently engaged in cognitively challenging word problem situations. Overall, teachers were found to focus more on practice exercises than on true problem-solving situations. They also emphasize problem features, possibly related to concerns about language and reading skills of their students, rather than analytical and thinking strategies. Consistent with these emphases, teachers gave more instructional attention to concrete visualizing strategies than to analytical strategies. Based on the results of this study, it appears that in two o f the three types of educational settings, the majority of instructors teaching mathematics and word problem solving to deaf students lack adequate preparation and certification in mathematics to teach these skills. The responses of the certified mathematics teachers support the notion that preparation and certification in mathematics makes a difference in the kinds of word problem-solving challenges provided to deaf students.

Kelly, R., & Mousley, K. (1999). Deaf and hearing students' transfer and application of skill in math problem solving. In *The 25th Annual conference of the Association of College Educators for the Deaf and Hard of Hearing.* [AN 1630]

This research examined the ability of deaf and hearing college students to transfer and apply their math computation and problem-solving skills to similar problems presented under different conditions.

Kelly, R., & Mousley, K. (2001). Solving word problems: More than reading issues for deaf students. *American Annals of the Deaf, 146(3),* 253-264. [AN 1725]

In a study, deaf and hearing college students were given 30 mathematics problems to solve. The results show that the deaf college students, regardless of reading level, were comparable

in performance to the hearing college students when solving the numeric/graphic problems and the initial, least complex set of corresponding word problems.

Lang, H. (2002). Higher education for deaf students: Research priorities in the new millennium. *Journal of Deaf Studies and Deaf Education, 7(4),* 267-280. [AN 1756]

A review of research on deaf students in higher education reveals a significant body of knowledge about the barriers these students face in gaining access to information in the classroom. Much less is known about the potential solutions to these problems. In addition, there is a dearth of research on the effectiveness of such support services as interpreting, note taking, real-time captioning, and tutoring, particularly with regard to their impact on academic achievement. This article summarizes relevant research and suggests directions for educational researchers interested in enhancing academic success and the retention of deaf students in higher education programs.

Lang, H. (2002). Teaching mathematics to deaf students: A comprehensive Web-based resource. *The Mathematics Teacher,* 95, 318. [AN 1773]

The National Science Foundation's Clearinghouse on Mathematics, Engineering, Technology and Science (COMETS) is developing a new resource on the World Wide Web for math teachers who have deaf students in their classroom. Over the next two years, the COMETS Web site will make information available to math teachers.

Marschark, M., & Everhart, V .S. (1999). Problem solving by deaf and hearing children: Twenty questions. *Deafness and Education International, 1(2),* 65-82. [AN 1629]

Two experiments examined the problem-solving strategies of deaf and hearing students from seven years to college age in the context of the "Twenty questions" game. Overall deaf children were significantly less likely than hearing peers to win' the game within "Twenty Questions," and problem-solving appeared less efficient and less cognitively sophisticated among deaf than hearing students at all ages.

Marschark, M., Green, V., Hindmarsh, G., & Walker, S. (2000). Understanding theory of mind in children who are deaf. *Journal of Child Psychology and Psychiatry,* 41, 1067-1074. [AN 1727]

This study explored theory of mind by examining stories told by children who are deaf and hearing (age 9-15 years) for statements ascribing behavior-relevant states of mind to themselves and others. Both groups produced such attributions, although there were reliable differences between them. Results are discussed in terms of the cognitive abilities assumed to underlie false belief and narrative paradigms and the implications of attributing theory of mind solely on the basis of performance on the false belief task.

Marschark, M., Richtsmeier, L., Richardson, J., Crovitz, H., & Henry, J. (2000). Intellectual and emotional functioning in college students following mild traumatic

brain injury in childhood and adolescence. ***Journal of Head Trauma Rehabilitation,*** **15, 1227-1245. [AN 1780]**

College students with a history of mild TBI in childhood or adolescence are intellectually unimpaired and approach their studying in a similar manner to their uninjured classmates. Nevertheless, they report more severe distress in terms of their general personal and emotional functioning.

Marschark, M. (2003). Cognitive functioning in deaf adults and children. In M. Marschark & P E. Spencer (Eds.), ***Oxford handbook of deaf studies, language, and education*** **(pp. 464-477). New York: Oxford University Press. [AN 1775]**

Research on cognitive functioning in deaf individuals, like more specific topics such as intelligence or social functioning, could seem like a slippery slope within the field of deaf studies. That is, such research might be seen by some as having an outmoded or even sinister agenda. Recent studies, however, have obtained findings of significant theoretical and practical importance for parents and educators of deaf children and others who seek to discover how hearing loss and the use of a visual-spatial language might influence social, language, and cognitive functioning.

Mousley, K., & Kelly, R. (1998). Problem-solving strategies for teaching mathematics to deaf students. ***American Annals of the Deaf, 143(4),*** **325-336. [AN 1647]**

Three teaching and learning strategies for problem solving were implemented with first and second year deaf college students enrolled in mathematic courses.

Parasnis, I. (1998). Cognitive diversity in deaf people: Implications for communication and education. ***Scandinavian Journal of Audiology, 27*** **(Suppl. 49), 109-115. [AN 1661]**

Research and issues related to cognitive diversity in deaf people are reviewed, and indicate how the visual perceptual skills and cognitive processes of deaf people may be different from those in hearing people.

Parasnis, I., Samar, V., & Berent, G. (in press). Deaf adults without attention deficit hyperactivity disorder display reduced perceptual sensitivity and elevated impulsivity on the Test of Variables of Attention (T O. V A.). ***Journal of Speech, Language, and Hearing Research.*** **[AN 1762]**

The Test of Variables of Attention (T.O.V.A.) is a continuous performance test used widely to help diagnose Attention Deficit Hyperactivity Disorder (ADHD) in both hearing and deaf people but has been normed only on the hearing population. We studied the T.O.V.A. performance of 38 prelingually and severely-to profound deaf young adults and 34 hearing young adults who did not have ADHD, as confirmed by an American Sign Language (ASL)-English bilingual version of the Attention Deficit Scales for Adults (ADSA).

Parasnis, I., Samar, V., & Berent, G. (2001). Evaluating ADHD in the deaf population: Challenges to validity. ***NTID Research Bulletin, 6 (1).*** **[AN 1763]**

Attention Deficit Hyperactivity Disorder (ADHD) is a highly heritable, neurobiological based disorder of attention and self-control that can seriously impair an individual's ability to learn and succeed in school. Our work underscores the need to carefully evaluate the validity of existing assessment instruments and test norms when developing a protocol to evaluate deaf individuals for ADHD.

Parasnis, I., Samar, V., & Berent, G. (2000). Test of Variables of Attentions (T.O.V.A.): Deaf adults' performance confirms need for deaf norms. Paper presented at the 12th Annual Meeting of the American Psychological Society, Miami, J. 8-11. [AN 1714]

Previous research suggests that continuous performance tests (CPTs) such as the Test of Variables of Attention (T.O.V.A.) may help to diagnose Attention Deficit Disorder AD/HD) in deaf individuals. However, there is evidence that deaf people in general would benefit from a culturally and linguistically appropriate AD/HD self-rating scale for deaf adults by translating the Attention Deficit Scales for Adults into American Sign Language. We provide factor analytic evidence that the T.O.V.A. and the ADSA each asses similar attentional constructs in deaf and hearing adults. T.O.V.A. and ADSA inattention measures were correlated for deaf adults. Furthermore, our research extends to deaf adults the results of earlier work showing that deaf children without known AD/HD respond with greater impulsivity and reduced perceptual sensitivity on CPTs compared with hearing peers. Along with earlier work, our results help to validate the use of CPTs for deaf people, but simultaneously indicate that separate norms for deaf people and further validity studies are needed to avoid misdiagnosis by tests such as the T.O.V.A.

Richardson, J., MacLeod-Gallinger, J., McKee, B., & Long, G. (2000). Approaches to studying in deaf and hearing students in higher education. ***Journal of Deaf Studies and Deaf Education,*** **5(2),158-173. [AN 1692]**

A study was conducted to compare the responses of 149 deaf students and 121 hearing students taking the same courses to a shortened and adapted version of the Approaches to Studying Inventory. In general, the impact of deafness on approaches to studying are relatively slight, and deaf students appeared to be at least as capable as hearing students of engaging with underlying meaning of the materials to be learned. This article discusses recent trends and advances in audiologic rehabilitation using computer-assisted instruction, computer based audiologic rehabilitation (AR), computer-aided speech reading training (CAST), and other computer based technologies.

Samar, V. (1999). Identifying learning disabilities in the deaf population: The leap from Gibralter. ***NTID Research Bulletin, 4(1).*** **[AN 1741]**

The study of learning disabilities (LD) in the deaf population is the Gibraltar of the modern world of LD research. Despite meteoric progress in mainstream LD research since the early 1980s, research on LD in the deaf population remains a quaint backwater.

Samar, V. (Ed.). *(1999).* Introduction: Wavelet analysis of neuroelectric waveforms. *Brain and Language, 66,1-6.* [AN 1694]

This introduction describes this special issue, which contains articles that illustrate a new analysis tool for resolving the entire range of scales of time and space variation evident in neuroelectric waveforms, namely, wavelet analysis.

Samar, V., Bopardikar, A., Raghuveer, M., & Swartz, K. *(1999).* Wavelet analysis of neuroelectric waveforms: A conceptual tutorial. *Brain and Language. 66, 7-60.* [AN 1693]

This paper presents a non-technical, conceptually-oriented introduction to wavelet analysis and its application to neuroelectric waveforms such as the EEG and event related potentials (ERP).

Samar, V., & De Filippo, C. *(1998).* Round-off error, blind faith, and the powers that be: A caution on numerical error in coefficients for polynomial curves fit to psychophysical data. *Journal of Outcome Measurement, 2, 158-166.* [AN 1702]

Graphing and statistics software often permits users to fit polynomial curves, like parabola or sigmoid, to scatter plots of psychophysical data points. The programs typically calculate the curve using double or extended precision numerical algorithms and display the resulting curve overlaid graphically on the scatter plot. If this equation is used for experimental or clinical applications, the round-off error can produce anomalous findings due to systematic and extreme distortions of the fitted curve.

Samar, V. , Parasnis, I., & Berent, G. *(2002).* Web site: Learning disabilities, attention deficit disorders, and deafness: A resource page for parents, teachers, researchers, counselors, and deaf individuals with ADD. URL: *http.//www.rit.edu/~468www/LD*

This web site shares information about relevant issues, existing resources, contemporary research, and useful publications on LD and ADHD in deaf children and adults.

Samar, V., Parasnis, I. , & Berent, G. *(1998).* Learning disabilities, attention deficit disorders, and deafness. In M. Marschark & M. D. Clark (Eds.), *Psychological perspectives on deafness, (pp. 199-242).* Hillsdale, NJ: Lawrence Erlbaum. [AN 1623]

This chapter attempts to contextualize and synthesize the small literature on LD and ADD in the deaf population. The educational relevance of studying LD and ADD in the deaf population is addressed first. This is followed by a description of the history of LD and ADD definitions and the role of definitional issues in relegating LD and ADD among the deaf population to the backwater of academic and professional interest.

Stinson, M., Long, G., Kelly, R., & Liu, Y. *(1999)*. The relationship between teacher sign skills and student evaluations of teacher capability. *American Annals of the Deaf, 144(5), 354-364.* [AN 1667]

This study examines the extent to which deaf students' perceptions of their teachers' effectiveness and ease of communication in the classroom are related to the teachers' sign skills. Thirty-three faculty, teaching a variety of courses at the National Technical Institute for the Deaf, were rated on "teaching effectiveness" and "communication ease" by their students over a 2 year period.

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