

Articles Section

PREVALENCE OF COMMUNICATION DISORDERS IN AN INSTITUTIONALIZED MENTALLY RETARDED POPULATION

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Five hundred twenty-five institutionalized mentally retarded individuals were screened to estimate the severity of speech and language deficits. Ninety-six percent exhibited a deficiency in one or more areas; 78% would require improvement in communication skills before they would be able to adequately function outside of the institution. Prevalence data was delineated by type of disorder and subjective priority ratings. The effects of mental age and the presence of multihandicapping conditions are also discussed.

Cinq cent vingt-cinq déficients mentaux placés en institution ont été sélectionnés pour évaluer la sévérité de leurs défauts d'élocution et de langage. Dans quatre-vingt-seize pour cent des cas, il a pu être établi une déficience dans au moins un domaine; 78% nécessiteraient une amélioration de leurs aptitudes de communication avant de pouvoir adéquatement fonctionner à l'extérieur de l'institution. Les données relatives à la fréquence ont été représentées par type de troubles et par classements prioritaires subjectifs. Les effets de l'âge mental et la présence de conditions d'handicaps multiples sont également présentés.

Over the past several years a general change has arisen in public attitude toward provision of educational, vocational and therapeutic services to the mentally retarded population. Many governmental policies now state that mentally and physically handicapped individuals are entitled to those services which may help them develop to their fullest potential.

It has been well documented that developmentally delayed individuals exhibit a broad range of speech and/or language problems associated with sound production (Bangs, 1942; Schiefelbusch, 1963; Wilson, 1966; Matthews, 1971), vocabulary development (Wolfensburger, Mein & O'Connor, 1963; Brier, Starkweather & Lambert, 1969; Lozar, Wepman & Haas, 1972), syntactic structures (Mein, 1961; Miller & Yoder, 1972; Baer & Guess, 1973; Evans, 1977) and naming and describing (Hagen & McManis, 1972). Others have shown that it is possible to improve the communication skills of severely retarded children and adults (Greene, 1977; Matthews, 1971; Snyder, Lovitt & Smith, 1975; Reckell & Beasley, 1976; Perkins, 1977; Clark, Miller, Thomas, Kucherawy & Azen, 1978).

Individuals residing in institutions for the mentally retarded may share in any or all of the above-mentioned communication defects. Many must also learn to cope with additional problems created by sensory, motor or emotional/behavioral handicaps. Remediation of these communication disorders is a time involved process, the average

case being seen for approximately 600 sessions (ISHA, 1975). Which individuals to select for therapy and how much time to devote to each are often difficult questions to answer.

Conflicting data reported in the literature as to who gains more from therapy compounds the difficulty. For example, there is some data to support Lenneberg's critical period theory that speech or language therapy with the retarded may be ineffective once they have reached puberty (Lenneberg, 1967; Perkins, 1977); but others have found little difference between the responses of retarded children and adults to given forms of therapy (Reckell & Beasley, 1976). Other factors to be considered are severity of impairment, stimulability to improved production, mental age, associated sensory and physical handicaps or behavioral problems, degree of environmental support and personal motivation.

Previous incidence estimates of communication disorders within the institutionalized population have varied from 18 to 94% (Matthews, 1971). However, with the recent trend toward deinstitutionalization the characteristics of the remaining institutionalized population have changed. Programs must now deal with individuals who are functioning at a lower level and who may exhibit a variety of multi-handicapping conditions.

This article describes one aspect of a recent study designed to aid the speech-language pathologists in selecting residents who would most benefit from therapy. The prevalence of specific types of communication disorders are examined and recommendations regarding priority for therapy discussed.

METHOD

Subjects

Five hundred twenty-five residents (340 males and 185 females) were screened to detect the presence and severity of speech and language deficits. They represented 48% of the resident population at a large provincial institution. The mean mental age of individuals for whom such data was available ($n=335$) was 4.06 years, with a standard deviation (SD) of 2.66 years. Chronologically, 4% of the population was under 12 years of age, 39% was between 12 and 18 years, 28% between 19 and 24 years, 23% between 25 and 44 years, 4% between 45 and 64 years and 1% over 65 years. The mean chronological age of the sample was 23.57 years ($SD=11.28$). Many residents displayed one or more additional handicapping conditions. Within the subject population, 200 exhibited sensory deficits, 122 exhibited motor or physical handicaps and 223 displayed behavioral problems. Only 17% ($n=90$) did not demonstrate any of these additional complicating factors.

Screening Instrument

Since most of the residents to be screened would not be communicating at chronologically appropriate levels, the typical 5 to 10 minute quiz utilized for mass public screening would be of little aid in selecting a caseload. To this end, a device sensitive enough to indicate approximate level of communication skills without committing the hours required for formal assessment of this population was developed by Dunster and Dunster (1975) and revised by Brindle (1978).

Tasks requiring the following skills were included: ability to follow verbal and/or gestural commands; object and picture association skills; sign language, imitation and retention, auditory discrimination; vocabulary, receptive and expressive; receptive and imitative-expressive syntax; Rebus and Bliss symbols, scanning and retention; articulation; examination of the oral mechanism; and attending behaviors. Interscorer reliability was .97. Administration time varied from 10 minutes to 1½ hours, depending on the degree of deficit and cooperation. The average time required for a cooperative, verbal resident was 40 to 45 minutes. It was not possible to give all sub-tests to each resident, e.g. Blissymbol scanning was omitted for blind residents and for those who did not respond to pictures.

Procedure

Screenings were administered by one speech-language pathologist and four speech pathology students who had been uniformly trained in its use. They were administered on the resident's cottage if a relatively quiet location was available, otherwise the nearest speech and hearing office was used. Background information was supplied from the resident's file by the residential counsellor.

After each screening the examiners were asked to rate level of communication skills on a one to seven scale, with one indicating skills which would enable an individual to be completely functional within the general community and seven indicating no evidence of any receptive or expressive communication skills. (See Appendix for further information about the scale.) In addition the examiners subjectively prioritized each resident's current candidacy for speech or language therapy. Six basic categories were used: high, medium and low priority for therapy; no therapy due to the presence of adequate communication skills; no therapy due to presence of significant interfering behaviors; and no therapy due to other reasons, such as currently in therapy.

Data was transcribed for computer analysis. The "Statistical Package for the Social Sciences" from the University of Western Ontario was utilized.

RESULTS

Table 1 shows the numbers and percentages of the institutionalized mentally retarded residents who demonstrated language, articulation, voice and stuttering disorders. Overall, 96% of the residents seen exhibited a deficiency in one or more areas. Significant language deficits were exhibited by 81.5% of the sample. Another 14.7% displayed language skills which, though obviously not normal, were considered adequate to permit conversation with unfamiliar members of the local community. Deviant or delayed articulation skills were observed in 44% of the residents. Voice deviations were detected in 22.3% and stuttering in 4.4% of the population. One-third of the sample could not be scored with respect to articulation, voice or fluency because they were nonverbal.

The assigned communication skills rating are displayed in Table 2. Only 9.7% of the sample was considered to demonstrate speech and language skills which would enable them to be completely functional within a community placement. Mild to moderate deviations which, though readily apparent to unfamiliar listeners, would not prohibit

communication were displayed by 12.2% of the residents. The remaining 78.1% would require some type of remediation before they could reliably and accurately communicate outside of the institutional setting.

Table 1

Prevalence of speech and language disorders in institutionalized mentally retarded individuals.

| Type of Disorder | Number | Per cent |
|----------------------------|--------|----------|
| Language | | |
| - Not normal, but adequate | 77 | 14.7 |
| - Markedly deficient | 428 | 81.5 |
| Articulation | 231 | 44.0 |
| Voice | 117 | 22.3 |
| Stuttering | 23 | 4.4 |
| Nonverbal | 174 | 33.1 |

Note - Each resident may be counted in more than one category (n=525).

Table 2

Level of communication skills in institutionalized mentally retarded individuals.

| Rating | Number | Per cent |
|---|--------|----------|
| 1. Completely functional in local community. | 51 | 9.7 |
| 2. Mild-to-moderate deviation, but understandable. | 64 | 12.2 |
| 3. Good comprehension, but insufficient expressive skills to function in community. | 108 | 20.6 |
| 4. Some comprehension, with limited expressive skills. | 92 | 17.5 |
| 5. Emerging language with limited comprehension and expression. | 38 | 7.2 |
| 6. Minimal comprehension, but lacking preverbal attending and imitation skills. | 118 | 22.5 |
| 7. No discernible receptive or expressive skills. | 38 | 7.2 |

Note - Data were missing for 16 subjects (3% of sample).

The percentage of residents assigned to each therapy priority category, delineated by age groups, is shown in Table 3. The 36.2% of the population recommended for therapy was roughly proportional to the age distribution in the sample, with slightly more recommendations noted in the 19 to 24 and 25 to 44 year age groups than would be expected on the basis of an even distribution. Of the 30.4% not recommended for therapy due to severe interfering behaviors, 19.0% fell into the under 12 and 12 to 18 year age groups.

Table 3

Assignment to therapy priority ratings, delineated by age therapy priority rating.

| Age (in years) | High | | Medium | | Low | | Adequate Skills | | Behavior Problem | | Other | | Total | |
|----------------|------|-----|--------|------|-----|------|-----------------|------|------------------|------|-------|-----|-------|------|
| | N | % | N | % | N | % | N | % | N | % | N | % | N | % |
| under 12 | 1 | .2 | 2 | .4 | 1 | .2 | 1 | .2 | 15 | 2.8 | 2 | .4 | 22 | 4.2 |
| 12 to 18 | 21 | 4.0 | 23 | 4.4 | 28 | 5.3 | 19 | 3.6 | 85 | 16.2 | 15 | 2.9 | 191 | 36.4 |
| 19 to 24 | 21 | 4.0 | 23 | 4.4 | 16 | 3.0 | 37 | 7.0 | 30 | 5.7 | 11 | 2.1 | 138 | 26.2 |
| 25 to 44 | 8 | 1.5 | 24 | 4.6 | 19 | 3.6 | 25 | 4.8 | 27 | 5.1 | 12 | 2.3 | 115 | 21.9 |
| 45 to 64 | - | - | 1 | .2 | 2 | .4 | 13 | 2.5 | 2 | .4 | 3 | .6 | 21 | 4.1 |
| over 65 | - | - | - | - | - | - | 4 | .8 | 1 | .2 | 1 | .2 | 6 | 1.2 |
| Total | 51 | 9.7 | 73 | 14.0 | 66 | 12.5 | 99 | 18.9 | 160 | 30.4 | 44 | 8.5 | 493 | 94.0 |

Note - Data were missing for 32 subjects (6% of sample).

Analysis of variance of mental age broken down by type of communication deficit ($n=335$) revealed that the mean mental age of residents with adequate language skills was 6.07 years ($SD=3.42$), compared to the mean 3.74 years ($SD=2.45$) demonstrated by those with a significant language deficiency ($F=15.94$, $2/332$ df, $p < .0001$). Variance of mental age and articulation skills ($F=25.77$, $2/332$ df, $p < .0001$) yielded a mean mental age of 4.77 years ($SD=2.66$) for those residents with no articulation problem, 4.70 years ($SD=2.39$) for those with a specified articulation deficit, and 2.63 years ($SD=2.58$) for those with no speech. The mean mental age of residents who stuttered was 6.01 years ($SD=2.99$) compared with 3.96 years ($SD=2.62$) for those who did not ($F=8.68$, $1/333$ df, $p < .0034$). Those individuals who displayed voice deviations exhibited a mean mental age of 4.54 years ($SD=2.42$) compared with 3.88 years ($SD=2.73$) for those with normal voice ($F=4.15$, $1/333$ df, $p < .0425$).

A chi-square analysis was performed on the interaction between area of communication deficit and presence of complicating factors ($n=522$). Presence of interfering behaviors was highly significant for both articulation ($\chi^2=74.21$, 2 df, $p < .0001$) and language ($\chi^2=26.05$, 2 df, $p < .0001$) but not for voice or stuttering. Absence of additional problems was also significant for articulation ($\chi^2=30.81$, 2 df, $p < .0001$) and language ($\chi^2=13.11$, 2 df, $p < .0014$), but not for voice or stuttering. Presence of sensory or motor disorders was not found to be significant in this analysis.

DISCUSSION

The prevalence of communication disorders observed in this institutionalized mentally retarded population tended to be higher than that published in earlier studies. Some type of speech and/or language deficit was exhibited by 96% of the residents surveyed, 78% of whom would require improvement in communication skills before they would be able to function outside of the structured institutional setting. This may be due in part to the trend toward deinstitutionalization, which has already placed many of the more highly functioning residents into smaller community facilities.

Language deficiencies were the most frequently observed type of communication disorder, occurring in 96.2% of the population. Of these, 14.7% demonstrated language skills which, though limited in scope and complexity, would be adequate for basic communicative purposes. Articulation deviations were the second most frequently observed disorder, affecting 44.0% of the sample. Voice disorders were detected in 22.3%, the majority of whom were cited for resonance or vocal quality deviations. Stuttering was exhibited by 4.4% of the residents seen. It is important to note that an additional 33.1% were nonverbal, though some did utilize sign language or symbol boards.

Although the relatively large standard deviations limited the significance of mental age comparisons, trends can be noted. As would be expected, those individuals who demonstrated a marked language deficiency and/or were nonverbal had a lower mental age than did the sample as a whole. Since established mental ages were not available for many residents who were difficult to formally test due to behavioral problems or other complicating factors, it is possible that the variations could be wider. Those who exhibited vocal deviations or stuttered tended to have higher mental ages, suggesting that a given level of verbal skills is necessary before such deficiencies become apparent.

Due to the high resident-to-therapist ratio in most institutions and the amount of time required to affect change in this population, it is frequently necessary to estimate which individuals can most effectively benefit from the services offered. For this reason the screeners were asked to subjectively rate each resident's need and ability to respond to speech and language therapy. Upon analysis it was found that the presence of good attending skills and, conversely, the presence of severe interfering behaviors such as self-abuse, aggressiveness or lack of responsiveness, were the primary factors influencing the assignment of a therapy priority rating. Chronological age was not a major consideration.

One-third of the residents sampled were judged to require modifications in behavior before they would be able to benefit from speech or language therapy. Further examination revealed that the presence of these interfering behaviors significantly interacted articulation and language disorders in that those individuals exhibiting deficient language or articulation more frequently displayed a behavior disturbance as well. Given such, it is not surprising that those who exhibited no additional complicating factors less frequently demonstrated language or articulation problems.

The characteristics of the institutionalized population are changing with the trend toward deinstitutionalization. Those

individuals remaining are more likely to be functioning at a lower level and/or display a variety of multihandicapping conditions, as indicated within this study sample. With a third of these residents being nonverbal it is evident that we, as communication specialists, must be familiar with the different nonverbal communication systems available. We must be able to deal with the multifarious behavior problems affecting these potential clients. Now that the most capable have been skimmed from the institutionalized population, therapists, teachers, vocational instructors, counsellors or others employed in this setting require further specific training to enable them to deal with these multiple sensory-motor-behavioral-cognitive disabilities.

References:

- Anderson, M., Culatta, R., & Helmick, J. Screening of communication skills in retarded adults. Paper presented at the Annual Convention of the American Speech and Hearing Association, San Francisco, November, 1978.
- Baer, D. & Guess, D. Teaching productive noun suffixes to severely retarded children. American Journal of Mental Deficiency, 77, 498-505, 1973.
- Bangs, J. A clinical analysis of the articulatory defects of the feeble-minded. Journal of Speech Disorders, 7, 343-356, 1942.
- Beier, E., Starkweather, J. & Lambert, M. Vocabulary usage of mentally retarded children. American Journal of Mental Deficiency, 73, 927-934, 1969.
- Bensberg, G. & Sigelman, C. Definitions and prevalence. In L.L. Lloyd (Ed.), Communication Assessment and Intervention Strategies. Baltimore: University Park Press, 1976.
- Clark, F., Miller, L., Thomas, J., Kucherawy, D., & Azen, S. A comparison of operant and sensory integrative methods on developmental parameters in profoundly retarded adults. American Journal of Occupational Therapy, 32(2), 86-92, 1978.
- Evans, D. The development of language abilities in mongols: A correlational study. Journal of Mental Deficiency Research, 21, 103-112, 1977.
- Greene, M. Speech therapy in subnormality: Are the skills of a speech therapist really needed in a hospital for the severely subnormal? Apex, 4(4), 4-6, 1977.
- Hagen, D. & McManis, D. Training and transfer of word definitions by retarded children. American Journal of Mental Deficiency, 76, 594-601, 1972.
- Hedrick, D. & Prather, E. A behavioral system for assessing language development. In R. Schiefelbusch (Ed.), Language of the Mentally Retarded. Baltimore: University Park Press, 1972.
- Iowa Speech and Hearing Association (ISHA), Peer Review Board. Standards of care for speech pathology and audiology. The ISHA Peer Review Manual, Des Moines: Dept. of Public Instruction, 1975.

- Larsen, L. & Jacson, L. Implications for research in mental retardation. In J. Button, T. Lovitt & T. Rowland (Eds.), Communications Research in Learning Disabilities and Mental Retardation. Baltimore: University Park Press, 1979.
- Lenneberg, E. Biological Foundations of Language. New York: John Wiley & Sons, 1967.
- Lozar, R., Wepman, J. & Hass, W. Lexical usage of mentally retarded and non-mentally retarded children. American Journal of Mental Deficiency, 76, 534-539, 1972.
- Matthews, J. Communication disorders in the mentally retarded. In L. Travis (Ed.), Handbook of Speech Pathology and Audiology. New York: Appleton-Century-Crofts, 1971.
- Mein, R. A study of the oral vocabularies of severely subnormal patients, II: Grammatical analysis of speech samples. Journal of Mental Deficiency Research, 5, 534-539, 1961.
- Milisen, R. Incidence of speech disorders. In L. Travis (Ed.), Handbook of Speech Pathology and Audiology. New York: Appleton-Century-Crofts, 1971.
- Miller, J. & Yoder, D. What we may know and what we can do: Input toward a system. In J. McLean, D. Yoder & R. Schielebusch (Eds.), Language Intervention with the Retarded. Baltimore: University Park Press, 1972.
- Perkins, W. Speech Pathology: An Applied Behavioral Science. (2nd ed.) St. Louis: C.V. Mosby, 1977.
- Reckell, B. & Beasley, D. Language acquisition by mentally retarded individuals as a function of their chronological age. Journal of Childhood Communication Disorders, 1, 39-48, 1976.
- Reynolds, W. & Reynolds, S. Prevalence of speech and hearing impairment of noninstitutionalized mentally retarded adults. American Journal of Mental Deficiency, 84, 62-66, 1979.
- Schielebusch, R. (Ed.) Language studies of mentally retarded children. Journal of Speech and Hearing Disorders, 10, 1963.
- Snyder, L., Lovitt, T., & Smith, J. Language training for the severely retarded: Five years of behavior analysis research. Exceptional Children, 42(9), 7-15, 1975.
- Special Education Curriculum Development Center. Speech Improvement for the Mentally Retarded. Iowa City: University of Iowa Press, 1968.
- Spedding, T. & Samuels, S.J. Components of attention and their role in perceptual learning: Implications for the learned disabled. In J. Button, T. Lovitt, & T. Rowland (Eds.), Communications Research in Learning Disabilities and Mental Retardation. Baltimore: University Park Press, 1979.
- Wilson, F. Efficacy of speech therapy with educable mentally retarded children. Journal of Speech and Hearing Research, 9, 423-433, 1966.

Wolfensberger, W., Mein, R., & O'Connor, N. A study of the oral vocabularies of severely subnormal patients, III: Core vocabulary, verbosity and repetitiousness. Journal of Mental Deficiency Research, 7, 38-45, 1963.

Acknowledgements

The authors wish to express their appreciation to Nancy Brown, Catherine Keane, Janice O'Hara and Thais Skelly for their assistance in conducting the screenings. We also thank Dr. Herbert Leeper and Dr. Robert Gardner of the University of Western Ontario for their suggestions regarding data analysis.

This research was conducted under the auspices of the Huronia Regional Centre, Ministry of Community and Social Services of Ontario. The centre's administration is thanked for its support.

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APPENDIX

Communication Skills Scale

1. Completely functional within the local community. This describes the individual who is using language structures at at least the 5 year level. Minimal articulation or voice deviations which would not be noticed by non-speech pathologists, such as an f/th substitution within conversation, may be included.
 2. Mild deviation, but would be understood in the local community. Obvious articulation errors, immature use of language and mild voice or stuttering disorders which do not seriously impair communication are included.
 3. Good comprehension and sufficient expression to communicate needs to immediate family or counselling staff, but inadequate for local community. This level describes those with mild to moderate articulation, language, voice and/or stuttering disorders.
 4. Some comprehension, but has difficulty communicating with family or staff. Moderate to severe articulation, voice and stuttering disorders and/or language at the 2 to 3 word combination stage.
 5. Emerging language, with limited receptive and expressive skills. At this level beginning use of single words and/or severe articulation, or voice deviations could be noted.
 6. Limited comprehension skills only. These individuals usually lack the basic preverbal basic attending and imitation skills.
 7. No functional communication skills. No evidence of any receptive or expressive skills are observed.
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