

Abstracts- summaries of recently published research findings

Auditory information is beneficial for adults with Down syndrome in a continuous bimanual task

Robertson, S.D., Van-Gemert, A.W.A. & Maraj, B.K.V. (2002)

Acta Psychologica, 110(2-3), 213-229.

Much recent research using discrete unimanual tasks has indicated that individuals with Down syndrome (DS) have more difficulty performing verbal-motor tasks as compared to visual-motor tasks (see Perceptual-Motor Behavior in Down Syndrome, Human Kinetics, Champaign, IL, 2000, p. 305 for a review). In continuous tasks, however, individuals with DS perform better when movement is guided by auditory information compared to visual information (Downs Syndr.: Res. Prac. 4 (1996) 25; J. Sport Exercise Psy. 22 (2000) S90). The aim of the present study was to investigate if there are any differences for adults with DS between visual, auditory and verbal guidance in a continuous bimanual task. Ten adults with DS, 10 adults without DS and 10 typically developing children drew lines bimanually towards the body (down) and away from the body (up) following three different guidance conditions: visual (flashing line), auditory (high tone, low tone), and verbal ("up", "down"). All participants produced mostly in-phase movements and were close to the 1000 ms target time for all guidance conditions. The adults with DS, however, displayed greater variability in their movement time, movement amplitude and bimanual coordination than adults without DS. For all groups, the left hand was slower and more variable in producing the lateral movements than the right hand. The results regarding guidance information suggest that auditory information is beneficial for repetitive bimanual tasks for adults with DS. Possible mechanisms that cause these results will be discussed.

Lexical verb diversity in children with Down syndrome

Grela, B.G. (2002)

Clinical Linguistics and Phonetics, 16(4), 251-263.

The language transcripts of seven children with Down syndrome and seven typically developing children matched for comparable MLU levels were compared for several measures of lexical diversity. These measures were percentage of utterances containing lexical verbs, number of verb tokens produced, a mean number of verbs per utterance (MVU), number of verb types used, and number of mental state verbs used. The results of this study indicated that the children with Down syndrome produced lexical verbs as frequently as their normally developing counterparts. In contrast, the children with Down syndrome were found to

produce a larger variety of lexical verbs. An examination of a subset of verbs indicated that both groups of children produced an equal number of mental state verbs. These results support previous findings that when compared to syntactic development, children with Down syndrome show a relative area of strength in expressive vocabulary.

Speech production errors in adults with and without Down syndrome following verbal, written, and pictorial cues

Bunn, L., Simon, D.A., Welsh, T.N., Watson, C. & Elliott, D. (2002)

Developmental Neuropsychology, 21(2), 157-172.

Adults with Down syndrome and adults with developmental delays not related to Down syndrome were asked to read, repeat, and formulate speech from a picture following the presentation of 2- and 4-word and picture sequences. The speech sequences were produced either immediately after stimulus presentation or following a 5-sec response delay. Overall, participants with Down syndrome produced more memory errors than persons without Down syndrome. Participants with Down syndrome also committed more speech production errors than the other participants, but only when they were required to repeat what they had heard, or to formulate speech from pictures. The speech production performance of the two groups was equivalent in the read condition. These results are discussed with reference to Elliott, Weeks, and Elliott's (1987) model of cerebral specialization, and to verbal short-term memory in persons with Down syndrome.

Utilization of medical care among children with Down's syndrome

Frid, C., Anneren, G., Rasmussen, F., Sundelin, C. & Drott, P. (2002)

Journal of Intellectual Disability Research, 46(4), 310-317.

Background: The present authors have previously found an increased mortality rate in children with Down's syndrome (DS) and a congenital heart defect (CHD). The aim of the present study was to investigate the utilization of medical care in relation to congenital malformations in DS. Method: Retrospectively, 211 children with DS born between 1973 and 1980 in the northern part of Sweden were followed up for at least 17 years (1973-1997). The duration of neonatal care was compared with that of children with DS born between 1995 and 1998 in the same region. Results Neonatal care was reduced over time. Almost 50% of the children had CHD, and before 10 years of age, these subjects were admitted for inpatient care twice as often as children with DS who did not have malformations, and had more than 12

times as many inpatient days per month. The existence of a gastrointestinal or other malformation increased inpatient days per month four and two times, respectively, compared to healthy children with DS. During the first 10 years of life, children with DS and a CHD accounted for 71% of all inpatient days caused by infections. No gender differences were observed. Conclusions: At a group level, the presence of a CHD was the most important congenital abnormality in determining utilization of medical care and the burden of infections in the population of children with DS.

Sharing humour and laughter in autism and Down's syndrome

Reddy, V., Williams, E. & Vaughan, A.

British Journal of Psychology, 93(2), 219-242.

Everyday humour and laughter can tell us about children's ability to engage with and understand others. A group of 19 pre-school children with autism and 16 pre-school children with Down's syndrome, matched on non-verbal mental age, participated in a cross-sectional study. Parental reports revealed no group differences in overall frequencies of laughter or laughter at tickling, peekaboo or slapstick. However, in the autism group, reported laughter was rare in response to events such as funny faces or socially inappropriate acts, but was common in strange or inexplicable situations. Reported responses to others' laughter also differed: children with autism rarely attempted to join in others' laughter and rarely attempted to re-elicite it through acts of clowning or teasing. Analysis of videotaped interactions also showed no group differences in frequencies of child or adult laughter. However, the children with autism showed higher frequencies of unshared laughter in interactive situations and lower frequencies of attention or smiles in response to others' laughter. Humour is an affective and cultural phenomenon involving the sharing of affect, attention and convention; children with autism show problems in some simple affective and mutual as well as joint attentional and cultural aspects of humorous engagement.

Functional status of school-aged children with Down syndrome

Leonard, S., Msall, M., Bower, C., Tremont, M. & Leonard, H. (2002)

Journal of Paediatrics and Child Health, 38(2), 160-165.

Objective: To field test, in questionnaire format, the Functional Independence Measure for Children (WeeFIM, a schedule usually administered by interview) on parents of a cohort of school-aged children with Down syndrome. Methods: The parents of 211 Western Australian children with Down syndrome participated in the present study, representing 79.9% of all children with Down syndrome in the State. Subjects were identified using two sources: (i) the Birth Defects Registry; and (ii) the Disability Services Commission. Results: The total WeeFIM score was 106.2 ± 17.0 (mean \pm SD) out of a possible 126. Girls scored higher than boys (108.6 vs 103.6; $P = 0.05$). Scores

increased across all age groups ($P < 0.0001$), even relative to normative data. Performance was strongest in the transfer and locomotion domains and weakest in social cognition. Conclusion: We found that severe functional limitations are rare in school-aged children with Down syndrome. Some support and supervision are required for complex self-care, communication and social skill tasks. This study demonstrates the feasibility of using the WeeFIM for collecting population survey data in children with developmental disability. This may be useful for the longitudinal tracking of such populations, as well as the monitoring of response to interventions.

Obsessional slowness in Down syndrome: Severe variant of OCD or separate disorder?

Charlot, L. (2002)

Mental Health Aspects of Developmental Disabilities, 5(2), 53-56.

In a recent report by Charlot, Fox and Friedlander, a series of eleven patients with Down syndrome and slowness was presented. These individuals spent several hours each day performing routine tasks such as bathing, dressing, and eating. Slowness was considered a significant problem and interfered with normal functioning. These authors reviewed the literature and found other reports of people with "obsessional slowness." Most of these case reports described individuals who were diagnosed with Obsessive Compulsive Disorder (OCD). Although checking rituals were observed, low levels of anxiety and perfectionistic tendencies were commonly described. Some investigators have suggested that obsessional slowness can be seen as a primary clinical condition, while others have argued that it represents a severe variant of OCD. Only two other reports were found about individuals with a developmental disability having slowness as a clinical problem. In both of these papers, individuals with Down syndrome were described.

Down syndrome and major depressive disorder: A review

Khan, S., Osinowo, T. & Pary, R.J. (2002)

Mental Health Aspects of Developmental Disabilities, 5(2), 46-52.

The high prevalence of psychiatric disorders in individuals with mental retardation is fairly well established. Individuals with Down syndrome had been conceived in the past as happy and cheerful people and were thought not to suffer from Major Depressive Disorder. There is relatively limited data on the issue of Major Depressive Disorder and Down syndrome in the literature. However there is a growing body of evidence that individuals with Down syndrome do indeed suffer from Major Depressive Disorder. There is no neurobiological basis to suggest that Down syndrome and Major Depressive Disorder may be mutually exclusive. In this paper, we will review the current literature on Major Depressive Disorder in Individuals with Down syndrome and present updates on treatment.

Medical issues in patients with Down syndrome

Chase, C.D., Osinowo, T. & Pary, R.J. (2002)

Mental Health Aspects of Developmental Disabilities, 5(2), 34-45.

In 1866, when Down syndrome was first described by John Langdon Down, most of the individuals affected would die early, usually in their teens or twenties. As recently as the 1970's, individuals who lived longer than 45 were rare. However, today a patient with Down syndrome does not necessarily die young. A report by Baird and Sadovnick in 1989 indicated that over half the individuals born with Down syndrome live into their 50's, 40% into their 60's and 13% to the age of 68. Today's physician will find the care of individuals with Down syndrome extending into their 60's and 70's. What may be unique about caring for these patients, however, is the kind of care they require. The medical management of Down syndrome spans the lifetime, from childhood to geriatrics. Patients with Down syndrome require the same preventative care as any other patient: vaccinations, dental care and medical care. They also require a few specialized screenings and appropriate follow up care. Not only are there issues specific to age of the patient, but also specific to systems of the body. This article will describe some of the standard and specialized care that may be required for a patient with Down syndrome.

Parents' perceptions of motor interventions for infants and toddlers with Down syndrome

Sayers, L., Cowden, J.E. & Sherrill, C. (2002)

Adapted Physical Activity Quarterly, 19(2), 199-219.

The purpose of the study was to analyze parents' perceptions of their participation in a university-directed, parent-implemented, home-based pediatric strength intervention program as (a) one approach to evaluating the effectiveness of a program conducted over a 4-year period with families of infants and toddlers with Down syndrome and (b) a means of deriving guidelines for future early intervention programs. Participants were 22 parents from 11 families of children with Down syndrome; the children ranged in age from 6 to 42 months. Participatory evaluation research, semistructured audio recorded home interviews, and qualitative content analysis were used. The results indicated that the parents (a) perceived themselves as being empowered to implement the program, (b) perceived their expectations about improved motor development of their children had been met, and (c) perceived the program was worthwhile. The parents' perceptions provided meaningful evaluation data that enabled the development of guidelines for future pediatric strength intervention programs.

Working memory in children and adolescents with Down syndrome: Evidence from a colour memory experiment

Laws, G. (2002)

Journal of Child Psychology and Psychiatry and Allied Disciplines, 43(3), 353-364.

Background: This paper reports information on the visual and verbal short-term memory of individuals with Down syndrome. Methods: Colour memory in 16 children and adolescents with Down syndrome was compared with that of 16 typically developing children matched for receptive vocabulary. It was suggested that focal colours should be remembered more successfully than non-focal colours on the basis that the former could be remembered using a verbal recoding strategy. However, children with Down syndrome, for whom a deficit in verbal short-term memory makes the use of such a strategy unlikely, should remember focal and non-focal colours equally well. More importantly, if individuals with Down syndrome have more developed visual memory abilities than control children, they should outperform them in recognising non-focal colours. Results: Although the group with Down syndrome demonstrated significantly better Corsi blocks performance than controls, and displayed similar levels of colour knowledge, no advantage for colour memory was found. Non-focal colours were remembered by individuals with Down syndrome as successfully as focal colours but there was no indication of a visual memory advantage over controls. Focal colours were remembered significantly more successfully than non-focal colours by the typically developing children. Conclusion: Their focal colour memory was significantly related to digit span, but only Corsi span was related to focal colour memory in the group with Down syndrome.

Psychosocial adjustment in siblings of children with autism

Kaminsky, L. & Dewey, D. (2002)

Journal of Child Psychology and Psychiatry and Allied Disciplines, 43(2), 225-232.

Background: This study investigated psychosocial adjustment in siblings of children with autism compared to siblings of children with Down syndrome and siblings of normally developing children. In addition, the relationships between feelings of loneliness, social support and psychosocial adjustment, and the influence of gender and family size on psychological adjustment were examined. Methods: Ninety siblings (30 per group) between the ages of 8 and 18 and one parent of each child participated in this study. Results: Results indicated that siblings of children with autism, as well as comparison siblings, were well adjusted and reported low levels of loneliness. Siblings of children with autism also reported that they received high levels of social support in their lives. Conclusions: Large family size appears to facilitate healthy adjustment in siblings of children with autism.

Characteristics and qualities of the play dates of children with Down syndrome: Emerging or true friendships

Freeman, S.F.N. & Kasari, C. (2002)

American Journal on Mental Retardation, 107(1), 16-31.

Although research on typical development suggests that friendship is a social relationship based on interactions with certain criteria, the qualities, definitions, and characteristics of friendship are not well-understood among children with atypical development. In this study, the interactions of 27 dyads of children in a play-date situation were examined; one dyad member had Down syndrome. The peers brought were more often the same gender, age, and ethnicity. Dyads who were similar in gender, CA, and classroom experiences had better quality interactions. Twenty dyads met strict friendship criteria and, thus, could be classified as friends. These friend dyads were more positive in affect, more often involved in turn-taking, and played at higher levels than did children categorized as simply playmates.

Face-to-face emotion interaction studies in Down syndrome infants

Carvajal, F. & Iglesias, J. (2002)

International Journal of Behavioral Development, 26(2), 104-112.

Infants with Down syndrome constitute an ideal population for analysing the development of emotional expression from the first months of life, due basically to the fact that this chromosomal alteration is identifiable from birth and results in well-known difficulties of cognitive development and in basic learning processes. Taking into account the functional aspects of facial expression during initial social interaction, in this review we present a series of studies which, although based on different theoretical approaches and different methodologies, have the common objective of analysing the emotional behaviour of young infants with and without Down syndrome during face-to-face interaction with their mothers. The main conclusions emerging from these studies are: (a) that, as in the case of typically developing infants, Down syndrome infants and their mothers present a series of coordinated and interdependent expressive interchanges; (b) that, despite the differences found between infants with and without Down syndrome in quantitative parameters of expressive behaviour, such as frequency, duration and intensity of the different emotional expressions or their point of initiation in development, what seems to be most significant is the clear functional similarity observed in the two groups of subjects during initial mother-infant interaction; and (c) that these differences may be understood by considering different psychobiological explanations as well as the known cognitive deficits.

Stability of the Bayley Mental Scale of Infant Development with high risk infants

Niccols, A. & Latchman, A. (2002)

British Journal of Developmental Disabilities, 48(94,Pt1), 3-13.

This study examines stability of scores on the Bayley Mental Scale of Infant Development Second Edition (BSID-II) across the first two years of life for high risk infants. BSID-II scores in the first and second year of life for 16 infants with Down syndrome and 17 medically fragile infants were compared to Bayley Mental Scale of Infant Development (BSID) scores for 33 matched infants. A three-way interaction of Group, Time, and Bayley Version on developmental quotient (DQ) scores revealed that, for infants with Down syndrome, scores decreased from the first to second year for both test versions, but for medically fragile infants, BSID scores decreased from the first to second year and BSID-II scores increased from the first to second year. These results indicate that the BSID-II is sensitive to patterns of developmental changes in the first two years of life that are specific to infants with Down syndrome and to medically fragile infants. Together with other findings regarding mental development in specific groups of high risk infants, they invite cautious interpretation of assessments conducted in the first two years of life. Specifically, results from BSID-II assessments of high risk infants in the first year of life should not be used for predictive purposes, and must be interpreted differently for infants with Down syndrome than for infants with multiple medical conditions.

Effects of maintaining and redirecting infant attention on the production of referential communication in infants with and without Down syndrome

Legerstee, M., Varghese, J. & van-Beek, Y. (2002)

Journal of Child Language, 29(1), 23-48.

The effects of maternal interactive styles on the production of referential communication were assessed in four groups of infants whose chronological ages ranged between 0;6 and 1;8. Two groups of infants with Down syndrome (DS), one ($n = 11$) with a mean mental age (MA) of 0;8.6, and the other ($n = 11$) of 1;4.5, were matched on MA with two groups ($n = 10$ each) of typically developing infants. Infants were seen bi-monthly, for 8 months, with mothers, same-aged peers, and mothers of the peers. Results showed that High MA non-Down syndrome (ND) infants produced more words, and High MA DS infants produced more gestures when playing with mothers than peers. Mothers exhibited more attentional maintaining behaviours than peers, in particular to High MA infants, but they redirected the attentional focus of Low MA infants more. Sequential loglinear analyses revealed interesting contingencies between the interactive strategies of mothers and the referential communicative behaviours of their infants. Whereas maintaining attention increased, redirecting attention decreased the likelihood of the production of gestures and words in children. However, redirecting atten-

tion was followed by maintaining attention. Thus, mothers redirect the attentional focus in order to promote joint attention and referential communication. Furthermore, words and gestures of the children also promote joint attention in mothers. This highlights the reciprocal nature of these dynamic communicative interactions.

Grandparent support for families of children with Down's syndrome

Hastings, R.P., Thomas, H. & Delwiche, N. (2002)

Journal of Applied Research in Intellectual Disabilities, 15(1), 97-104

Background: Although grandparents are recognized as an important source of support for families of children with intellectual and other disabilities, there has been very little research in this area. The aim of the present paper is to present a brief overview of the literature, and to present data from a preliminary study of relationships between parental stress and grandparent support and conflict. Methods: Sixty-one parents of children with Down's syndrome (34 mothers and 27 fathers) completed questionnaires on grandparent support and conflict. Parents also completed the Friedrich Short Form of the Questionnaire on Resources and Stress (QRS) with scoring amended to include a depression sub-scale. Results: The main findings were: (1) grandparent support and conflict were associated with mothers' but not fathers' ratings of stress on the QRS, and (2) both grandparent support and conflict made independent contributions to the prediction of mothers' stress on at least one dimension of the QRS. Conclusions: Practical implications of the results for interventions designed to encourage grandparent support for families are discussed. Issues for further research and methodological problems with the study are also identified.

Temperament in children with Down syndrome and in prematurely born children

Nygaard, E., Smith, L. & Torgersen, A.-M. (2002)

Scandinavian Journal of Psychology, 43(1), 61-71.

Parents of three groups of children completed the Children's Behavior Questionnaire (CBQ). Participants were children with Down syndrome aged 4-11 years ($n = 55$), prematurely born children aged 5 years ($n = 97$), and a group of normally developing kindergarten children 5-7 years of age ($n = 91$). Mean levels and factor structures on the CBQ were compared between the three groups. The children with Down syndrome had less attentional focusing and expressed less inhibitory control and less sadness than the normally developing children. There were also group differences in temperament structures, especially a clearer emotional factor of "surgency" among the children with Down syndrome. The only significant difference in mean temperament scores between the premature children and the control group was that the former evinced less attentional focusing. The temperament structures in the Norwegian samples were very similar to those reported in earlier studies, conducted in China and the US.

Narrative content as described by individuals with Down syndrome and typically developing children

Miles, S. & Chapman, R.S. (2002)

Journal of Speech, Language, and Hearing Research, 45(1), 175-189.

Narratives of the wordless picture story, Frog, Where Are You?, by 33 individuals with Down syndrome and typically developing children (33 matched for mental age, 33 for syntax comprehension, 33 for mean length of utterance) were analyzed for expression of plot line, story theme, and the protagonists' misadventures in the story. Despite their restricted expressive syntax and vocabulary, the group with Down syndrome expressed more plot line and thematic content and more of one of the protagonists' misadventures than the MLU controls; they most resembled the syntax comprehension control participants. We conclude that the group with Down syndrome had a conceptual understanding of the picture story similar to that of the TACL-R group and a strategy for expressing that understanding despite expressive lexical and syntactic limitations; this resulted in the expression of more narrative content than formal measures of expressive language would predict. We propose that the higher syntactic comprehension skills of the group with Down syndrome, combined with their experience with story content (listening to stories), may have contributed to their developing higher-level story schemas than would be expected given their MLUs.

The assessment of behavioural decline in adults with Down's syndrome

McKenzie, K., Harte, C., Patrick, S., Matheson, E. & Murray, G.C. (2002)

Journal of Learning Disabilities, 6(2), 175-184.

The present study examines two methods of using the Vineland Adaptive Behaviour Scales as a measure of behavioural change in people with Down's syndrome who are at risk of developing Alzheimer's disease. The first method uses the Vineland scales as the basis of a semi-structured interview and notes all areas of behavioural change identified by staff; the second method scores the Vineland scales using the basal rule outlined in the manual. The comparison of these two methods illustrated that using the second method highlighted a significant decline in scores for the group meeting the criteria for 'probable Alzheimer's disease' on a number of domains between baseline and 12-24 months. However, this scoring method also appeared to miss more subtle changes in behaviour, which may be important early indicators of Alzheimer's disease, which were picked up by the first method. The implications of the study are discussed.

Verbal short-term memory in Down syndrome: A problem of memory, audition, or speech?

Jarrold, C., Baddeley, A.D. & Phillips, C.E. (2002)

Journal of Speech, Language, and Hearing Research, 45(3), 531-544.

The current study explored three possible explanations of poor verbal short-term memory performance among individuals with Down syndrome in an attempt to determine whether the condition is associated with a fundamental verbal short-term memory deficit. The short-term memory performance of a group of 19 children and young adults with Down syndrome was contrasted with that of two control groups matched for level of receptive vocabulary. The specificity of a deficit was assessed by comparing memory for verbal and visuo-spatial information. The effect of auditory problems on performance was examined by contrasting memory for auditorily presented material with that for material presented both auditorily and visually. The influence of speech-motor difficulties was investigated by employing both a traditional recall procedure and a serial recognition procedure that reduced spoken response demands. Results confirmed that individuals with Down syndrome do show impaired verbal short-term memory performance for their level of receptive vocabulary. The findings also indicated that this deficit is specific to memory for verbal information and is not primarily caused by auditory or speech-production difficulties.

Promoting balance and jumping skills in children with Down syndrome

Wang, W.Y. & Ju, Y.H. (2002)

Perceptual and Motor Skills, 94(2), 443-448.

The purpose of this study was to investigate the changes in balance and qualitative and quantitative jumping performances by 20 children with Down syndrome (3 to 6 years) on jumping lessons. 30 typical children ages 3 to 6 years were recruited as a comparison group. Before the jumping lesson, a pretest was given subjects for balance and jumping skill measures based on the Motor Proficiency and Motor Skill Inventory, respectively. Subjects with Down syndrome received 3 sessions on jumping per week for 6 weeks but not the typical children. Then, a posttest was administered to all subjects. Analysis of covariance showed the pre- and posttest differences on scores for floor walk, beam walk, and horizontal and vertical jumping by subjects with Down syndrome were significantly greater than those for the typical children.

Differences in cardiovascular disease risk between nondiabetic adults with mental retardation with and without Down syndrome

Draheim, C.C., McCubbin, J.A. & Williams, D.P. (2002)

American Journal on Mental Retardation, 107(3), 201-211.

A reduced expression of the insulin resistance syndrome, a common neuroendocrine disorder underlying atherosclerosis, may play a role in reduced atherosclerosis in adults with Down syndrome. We compared selected components of the insulin resistance syndrome between 75 adults with Down syndrome and 70 with mental retardation due to other causes. After adjusting for age differences, residence, cigarette smoking, and medication use, women with Down syndrome had lower fasting plasma glucose and lower systolic blood pressure than comparison women. Men with Down syndrome had lower systolic and diastolic blood pressure than comparison men. Results suggest that women with Down syndrome may be less likely to express the insulin resistance syndrome, and men and women with Down syndrome may possess fewer atherosclerotic risk factors than the comparison groups.

Incidence and temporal patterns of adaptive behavior change in adults with mental retardation

Zigman, W.B., Schupf, N., Urv, T., Zigman, A. & Silverman, W. (2002)

American Journal on Mental Retardation, 107(3), 161-174.

The age-associated incidence of significant decline in adaptive behavior and the temporal pattern of decline in specific functional skill domains were examined in 646 adults with mental retardation through 88 years of age. Cumulative incidence of significant decline for adults with Down syndrome increased from less than .04 at age 50 to .67 by age 72, whereas cumulative incidence of significant decline for adults with mental retardation without Down syndrome increased from less than .02 at age 50 to .52 at age 88. Among adults experiencing overall decline, four clusters of behaviors were identified based upon the sequence and magnitude of changes, suggesting a pattern of loss not unlike that noted in the population without mental retardation with dementia.