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Consciousness and Experiential Psychology Section

4th Consciousness and Experiential Psychology Section Conference, Somerville College, Oxford, 22–24 September 2000.

Images for life: The impact of contemporary art

T ADAMS, Goldsmiths College, University of London

The Tate Modern is no ordinary building, nor is it an ordinary project – contemporary art has been finally located as a pastime. For discomfort of the new, now institutionalised, requires our presence as part of the aesthetic. Walking in and out of this monumental building we have become as if players in a vast installation. But what do we do with the images that confront us? What do we search for in those stalking moments between gallery displays, pausing to scrutinise, looking for meaning and recognition? It was Ruskin who located the artist as the 'prophet of the eye' and in speaking of the 'exaltation of seeing' implied the artwork's transformative function. Does this explain why 20,000 visitors attend the Tate Modern everyday? Does this account for the Royal Academy of Art's response of offering all-night viewing to the overwhelming demand for Monet's water lilies last year? This paper explores the view that contemporary art is more than fashion and spectacle; that images serve a certain hunger that we have for those things that cannot be placed in other areas of our experience.

The externality but 'mineness' of consciousness

P ASHWORTH, Sheffield Hallam University
Symbolic interactionists and existentialists have at least this much in common, a rejection of the idea of an 'inner world', and Sartre's occasional dismissal of psychology was in order to emphasise the irreducibility of consciousness to interiority. However, the notion of immersion in the external world is not to imply behaviourism. The external world is engaged by subjectivity. In this paper I draw on Sartre and Goffman in the attempt to distinguish between the following: (a) Awareness, which is to be understood as a relatedness to the external world the features of

which in any particular instance are to be sought at the level of social interaction. (b) The 'mineness' of consciousness, which is to be understood (in a sense) as an irreducible personal ownership. Any instance of awareness is for me, though this does not imply that any personal characteristics are intrinsic to consciousness. The 'self' for whom awareness occurs is impersonal.

A method of exploring the nature of the self with student

T BACHKIROVA, Oxford Brookes University
The method was developed within a small-scale action research, which was initiated to investigate the problem of lack of confidence – one of the most commonly expressed psychological barriers to learning and career decision making by adult students. Later this method was adapted for the session on 'Self-esteem and Confidence', gradually grew into means of exploring more general nature of the self. It is still developing. The method included: an exercise to explore the discrepancy between their ideal and actual selves as an indication of the level of their self-esteem; five models of balancing self-concept to provide examples of personal strategies as a basis for critical reflection; structured discussion about two contrasting strategies in action according to the role of the self and possible consequences of that. The method allows one: to help students formulate their own concepts of the self and related phenomena; to explore and challenge some taken for granted assumptions about the self and self-development; to translate the findings into personal strategies and everyday actions. Some results of the method application are described and discussed.

Images of immortality in the Indian psyche

S BASU, Sri Aurobindo Ashram, Pondicherry
Yudhistira (in the *Mahabharata*) commented that the greatest paradox on earth was that man knew he was to die but behaved as if he were immortal. In the Indian tradition different images of immortality have become part of the collective psyche. One is that of Nachitika, who forced the Lord of Death to explain to him the mystery of the

immortality of the soul. Another is Markendeya who merged his individuality into a vast cosmic consciousness so that the messengers of death had to return empty-handed. Four ways have been described to prepare oneself for a graceful death en route to a future life. The first is a cognitive-realistic approach. The second is to identify with one's soul. The third is a complete surrender to the Divine. The fourth is a warrior-like attitude. Besides these four, there is a spiritual mystic approach – to enter the domain of death consciously and then return to earthly life. It is found in the legends of Ruru and Savitri where Divine Love triumphs over Death. The soul develops through many lives till it is free to participate or not to participate in the world-phenomenon. It is in this freedom that the quest for immortality expresses itself in the Indian tradition.

Consciousness and intentionality

T BUTT, University of Huddersfield

In this paper, I take consciousness to be the deliberating on events or possibilities through the conducting of an inner dialogue, spelling things out to ourselves in words or images. But this discursive consciousness is preceded by intentional relations. A pre-reflective engagement with the world, and with other people precedes our ability to think about it. Psychological research into consciousness has looked to brain science and cognitive psychology to explain it. I draw on the pragmatism of Mead and the phenomenology of Merleau-Ponty to elaborate consciousness as a property that emerges from interaction with others; specifically from being able to imagine one's actions from the perspective of another person.

The golden bridge: Implications of Sri Aurobindo's work for psychology

M CORNELISSEN & S BASU, Sri Aurobindo Ashram, Pondicherry

Sri Aurobindo bases his idea of an ongoing evolution of consciousness on the Vedic concept of Sachchidananda, which holds that

consciousness is inherent in all forms of existence. He sees evolution as the gradual manifestation of higher and higher forms of consciousness. Matter, life and mind are the first three terms in the series, but evolution cannot stop there. According to the Indian tradition the ordinary human mind is not the highest possible form of consciousness. In mankind Nature must already be working out her next great move: the development of a supramental or gnostic consciousness. In this workshop we will try to work out the direction psychology could take if it would adopt Sri Aurobindo's perspective and base itself on an integral and evolutionary spirituality that aims not only at liberation, but also at a radical transformation of our entire inner and outer nature. The workshop is in four parts: 1. A short overview of Sri Aurobindo's concept of consciousness as an all-pervasive, dynamic force. 2. The implications of this conceptualisation of consciousness for cognition, epistemology and methodology. 3. How the idea of an ongoing evolution of consciousness could affect our psychological understanding of individuality, motivation and development. 4. The 'technology of consciousness' appropriate for individual and collective transformation.

Exploring the use of neuro-linguistic programming as a first person methodology: Studying the use of imagery in changing the quality of experience

L HARRIS, University of Hertfordshire

After years of being dominated by 3rd person objective research methods, there are now calls within psychology for a shift in this perspective to one which embraces both objective and subjective ways of knowing as equally valid and inextricably linked in the search for the understanding of human experience and behaviour. This workshop provides an opportunity to explore methods of researching subjective experience in the context of using imagery to change the quality of experience. In particular, it draws on methods which have been developed outside academic psychology but which appear to have much to offer as an approach to exploring subjective experience, namely neuro-linguistic programming (NLP). NLP claims to be the study of the structure of experience. It makes use of questioning techniques which do not make assumptions about the content of experience, but rather seek to elicit the structure of the experience and how that structure affects the quality of an individual's experience. The workshop incorporates an experiential elicitation session based on the NLP sensory sub-modalities model. This provides an opportunity to explore experientially the effects of changing the various aspects of the imagery on the quality of the experience. The session concludes with a discussion of the applicability of such techniques for psychology research.

Culture, consciousness, and the dynamics of speech and gesture in communication

J E HAZELTON, Meharry Medical College, Nashville

Differing cultures and subcultures use different physical movements in communication that are often recognised between such cultures. Similar confusions arise between people with the same verbal language but different gestures for a communication. The conscious awareness of between not only the people, but also between other mammalian species, will be discussed with special emphasis on body movement and the conscious acquisition of cultural nonverbal communication, and the evolution of movement, speech and mouth. The contrasting development of verbal language in our own species and recognition of this language consciously among us will be elaborated. The significant recent contributions of Sheet-Johnstone on the primacy of movement, and Iverson and Thelen on gesture and the brain are compared.

The use of passive and active imaging

J HENRY, The Open University

This session examines active and passive approaches to imaging and visualisation. It describes the standard approach and rationale for guided imagery for personal development and problem solving, and the use of active imaging to address issues of concern. A contrast is made between imaging where the facilitator uses prompts to influence the participants' imagination when they are in a relaxed state, and where participants are actively involved in directing the course of the facilitators' suggestions, though the facilitators never gets to know the content of the issue addressed. The different forms of imagery people experience and common ways of tackling unwanted images are also addressed. The session includes several imaging exercises and an opportunity to discuss such experiences and their outcomes.

Creativity as a social phenomenon: A review and critique

N KING, University of Huddersfield

Creativity is a central concept in the psychology of consciousness and experience which, for the most part, psychologists have approached from essentialist and individualist positions. For example, psychodynamic writers have examined the link between creativity and mental dysfunction, humanists have considered its role in self-actualisation, while cognitivists have developed computational models of the creative process. This stresses the need to study creativity as a truly social phenomenon, arising through our interactions with the social world we inhabit. It examines attempts to develop a social psychology of creativity, such as Amabile's 'componential model', and Csikszentmihalyi's 'systems model', showing how these tend to collapse back into reductionist individualistic accounts. Finally, it argues for the value of perspectives from phenomenological and constructivist psychology for future research in the area.

The topographical versus temporal problem of 'preconsciousness': First-person perspectives from spiritual traditions

B L LANCASTER, Liverpool John Moores University

We owe to Freud a conception of the preconscious as a kind of reservoir of memories beyond the immediacy of current consciousness. This topographical view may be contrasted with the more process-oriented approach of cognitive neuroscience where we find the term applied to those processes which are antecedent to consciousness. A resolution of the conflict between these views is proposed through an analysis of the kinds of first-person insights deriving from spiritual traditions. Buddhist wisdom literature discusses the stages in perceptual or thought processes, and clarifies the 'conscious' status of those early stages which cognitive neuroscience would typically class as preconscious. Jewish mystical sources describe a level of mind equating to contemporary notions of the preconscious, emphasising its role in hermeneutics and other language processes. In particular, they describe the multiplicity of meaning which lies behind the unitary meaning normal to consciousness. The transformational aspect in both of these spiritual traditions focuses on the mystic's ability to engage with 'preconscious' processes and gain a greater level of control than normal over them. This raises questions about the distinction psychology generally makes between 'conscious' and 'preconscious' functions of mind, and I argue that the operational meaning of these terms needs re-examining.

Phenomenology of the dreamscape

B LEE, N FRAENKEL & M CLEAR, University of Edinburgh

Previous studies of dream content suggest a unique and distinctive intellectual faculty. The

present study focuses on the phenomenology of the dreamscape, specifically, on how the dreamscape differs from waking perception. Participants deposited their dreams to a dream bank anonymously over a period of four weeks. The dreams were content analysed for frequent items. A 40-item questionnaire was constructed grouped by the following categories: Generic; Time and Space; Sensory Perception; Emotion; Identity; Explanation; Logic. The items tested for the presence and vivacity of particular dream motifs, e.g. did people change identities during the dream? Factor analysis revealed the following factors: Emotional turmoil; Involvement; Vivacity; Association; Internal monologue; Sensuousness; Stability; Fantasy; Exhilaration. We present a sketch for a general phenomenology of the dreamscape. We speculate on possible connections between particular motifs and what the emergent factors might mean. Finally, we discuss the logical paradoxes created by the rendering of dreams as though accounts of perceptual experience.

Imagery in Tantric approaches to mental health

J LOW, Munro Clinic, Guys Hospital

The talk considers imagination and creativity as issues in the delivery of mental health care in the UK.

Transformation, identity and time

J PICKERING, University of Warwick

How can there be enduring identity if there is change? But if change is real, what is it that changes and how are we to conceive of it? In the West, reflection and writing on this conundrum stretches from pre-Socratic philosophy to contemporary developments in philosophy and in psychology. Of particular interest here is the recent upsurge of interest in Bergson and philosophers who are taking his project forward, such as Gilles Deleuze and Keith Ansell-Pearson. The dynamic balance between persistence and change is also an enduring issue in Buddhist thought. Of interest here are notions of circular causality and of the multiplicity of personal identity, the experience of a unitary self notwithstanding. After a brief historical introduction, the talk brings together some contemporary work in this area to address the following sorts of questions: How stable is our sense of identity? Is stability desirable? Is it possible to transform it actively? If it is, does imagery play a role? Is this role conscious or preconscious? Questions like these are presented as central in understanding and facilitating personal change and growth.

Transforming the experience of chronic illness through creative activity: A qualitative study

F REYNOLDS, Brunel University

Background: Chronic illness affects more than the physical body. Conscious experience may be dominated not only by pain and other symptoms, but also by worry and depressed thoughts about the future. Increasing dependence upon family care may limit valued roles and reduce self-esteem. Attitudes and beliefs seem relevant to coping with illness but there has been little research into the potentially transforming experience offered by creative activity. **Objectives:** To explore the transformative experiences attributed to creative activity during chronic illness. **Method:** A volunteer sample of 40 women offered written narratives of the ways in which creative activity had transformed their experience of coping with chronic illness. **Results:** Thematic analysis revealed that most of the women had taken up creative activity (including art, needlecrafts and music) in adulthood in response to the crisis of illness. Creative activities were commonly viewed as providing a means of escape from worry and pain, as transforming empty unstructured time into productive pleasurable experience, as restoring an 'able' or 'normal' self-image, and as enabling reciprocal social roles. The women's accounts confirm the value of creative activity for releasing positive emotion and self-esteem, thereby

increasing resources for coping with the stress of chronic illness.

Homo:Luden: The psychology of special interests

I ROTH, Open University

Special interests are frequently – though not invariably – people's spare time or leisure activities. They may play an important role in a person's definition of self, and provide fulfillment via the acquisition and transmission of knowledge, creative output or social interaction. It is therefore surprising that little research has been devoted to special interests considered as an everyday cultural phenomenon: after all, the human pursuit of activities beyond those serving immediate needs marked a significant evolutionary advance. Special interests sometimes take the form of an outstanding talent and/or an all abiding obsession. The two go together in the phenomenon of 'savant syndrome' which occurs in individuals suffering from Autism or Asperger's Syndrome. The relationship between these 'exceptionally special' interests, and the ordinary kind is, again, little understood. Finally whether or not a person has exceptional skill, frequent involvement in their special interest may lead to reorganisation of the underlying knowledge, constituting 'expertise'. Hence the study of special interests also has cognitive implications.

The phenomenology of the Centaur

J ROWAN, Private Consultant

The Centaur is the name given to one of the stages of psychospiritual development described by Ken Wilber. Although Wilber has given brief descriptions of each of these stages, it would seem worth while to explore the fine structure of each of them in a phenomenological fashion. In this way it can be seen more clearly what is entailed in each one, what is involved in entering it and progressing through it. In this paper I approach this task through a phenomenological description of my own journey into and through the Centaur stage, and make some comments about the real self and authenticity. As a result the usual Maslow list of nineteen features of the self-actualised person can be expanded to thirty. At the end the Centaur is linked with some other attempts to state the levels of psychospiritual development.

The bright side isn't that bright

G RUBINSTEIN, Netanya Academic College, Israel

It's bad enough to face the harsh reality that life is hard, but to be told by therapists, authors of self-help books, 'inspirational' speakers, well-meaning friends, and countless others that we have to act – or worse yet *be* – happy about that fact is to add insult to injury. We have to pretend life is fine when it is not. We have to appear optimistic when we are not. 'Don't worry, be happy,' the famous song goes. Cognitive psychologists argue that depression is caused by an overly pessimistic, distorted view of reality. Psychologists who write about depressive realism, however, say that depression may be caused by an all-too-accurate take on reality. In fact, depressed people are said to be too realistic, while those who are not depressed may be in a chronic state of denial about just how bad things really are, so an optimistic attitude may have some denial built into it. The term 'Defensive pessimism' refers to a cognitive strategy in which individuals set low expectations for an upcoming performance, despite having done well in similar situations in the past, thus 'cushion' the potential blow of failure. It is suggested that this strategy helps them gain a

feeling of control and 'harness' their anxiety as motivation, whereas the social, cultural, and psychological message, saying 'Smile – look on the bright side' only adds an extra burden to an already heavy load.

Mental imagery and transformation

A A SHEIKH, Marquette University, Milwaukee, USA

From a position of near disgrace, mental imagery has risen to be one of the hottest topics in cognitive and clinical psychology. During the last three decades, the significance of mental imagery in the areas of memory, learning, thinking, perception, motivation, emotion, psychophysiology, and numerous other aspects of human behaviour has been established convincingly. It is also becoming increasingly clear that fast and extensive emotional psychological and physiological changes can be effected through imagery procedures. At times, the effectiveness is truly startling in both the rapidity and the extent of changes. Also, it has become apparent that talking about issues and trying to intellectually understand them often produce no real change. Mental images are a much closer approximation of inner experience than words are, and hence it seems the images contain the seeds of personal transformation. In this presentation, special characteristics of mental imagery will be discussed that make it an excellent vehicle for bringing about changes. Examples from personal experiences and clinical case histories will clarify the process. Special attention will be devoted to death imagery as a tool for personal growth and transformation. The presentation will conclude with an imagery experiential.

Media fantasy, imagination and altered states – just what the doctor needs to order

E SHEPPARD, University of Greenwich

This paper suggests that imagination within altered states of consciousness acts as a powerful self-healing force. In particular, both imagination and altered states are well known in non-Western healing forms (Shamanism), and we may apply this to Western forms of leisure. Research is already in progress using the fantasy of Virtual Reality for phobia sufferers and brain-damaged children. Studies in Psychoneuroimmunology, Psychotherapy and Medical Anthropology show the power of imagery in healing body and mind. The general public may also benefit therapeutically from mild altered state induction and use of fantasy material via TV and the Internet. The therapeutic value of fluid identities and fantasy characters is suggested.

Enigmas of reflexivity

R STEVENS, Open University

This paper raises questions about the nature, origins and implications of reflexivity. The human capacity for complex symbolic thinking makes possible reflexive awareness of ourselves and our actions. The tertiary mode of Trimodal Theory (Stevens, 1998) conceptualises such reflexivity as having two aspects – not only self-awareness but also generativity (the capacity to generate novel ideas and alternatives). Thus we can think of ourselves (and our societies) as having the potential for being other than we are. But what underlies reflexivity – this core feature of the human condition? How is it possible? And how can Psychology conceptualise and integrate it in its practice as a discipline? One problem relating to the latter issue is that Psychology has typically drawn on the methodology of natural science including its assumption of determinism. While

this works well in the study of matter and some aspects of the psyche, it does not apply to our capacity for reflexivity. Reflexivity (when conceptualised in the trimodal way) has an emergent property of openness which transcends any straightforward assumption of determinism. Further more practical issues also arise – how might we best cope with the openness that reflexivity makes possible in living our lives? What is the potential role of psychology in this process?

Consciousness and ethics – parallelisms and interarticulations

S TORRANCE, Middlesex University

Theoretical wrangles over the 'explanatory gap' in consciousness recall debates through much of the last century over the gap between fact and value. There are interesting parallels between the studies of consciousness and of ethics, but also deep mutual entanglements or interarticulations. I shall criticize the idea of value-neutrality in science (particularly problematic for consciousness science); and I will discuss concepts of the lived world, empathy and interbeing in current work by Varela, Thompson *et al.* I will illustrate with a case study – science and care practice in relation to people with dementia.

How imagery affects brains

M VELMANS, Goldsmiths, University of London

There is extensive experimental and clinical evidence that imagery can be used to affect brain and body processes. However, how it does so has seemed to be inexplicable. The physical world appears to be causally closed – and conscious experiences appear to come too late to affect the processes to which they most obviously relate. In this paper, I present some of the evidence for the effects of imagery on brain/body states, the conceptual problems these present, and introduce a novel route to their solution, developed in depth in *Understanding Consciousness* (Routledge/ Psychology Press, 2000).

Mindfulness, stress and psychological well-being

J WALSH & G FERNANDES, University of East London

This study sought to assess the reliability and validity of a newly developed questionnaire measure of Mindfulness by examining its associations with stress, anxiety and depression. Seventy-three students (mean age = 26 yrs.) from a university in London completed Langer's Mindfulness/Mindlessness measure comprising four sub-scales – flexibility, novelty seeking, novelty producing, and engagement. The Perceived Stress Scale (Cohen, 1983) was used to measure stress, and the GHQ-28 (Goldberg & Hillier, 1979) was employed to assess anxiety and depression. The reliability coefficient for the Mindfulness scale was .86 overall, with sub-scale coefficients of .58, .76, .64, and .69, respectively. Correlational analyses indicated that Mindfulness (total) was significantly negatively associated with stress ($r = -.23$), anxiety ($r = -.26$) and depression ($r = -.31$), as predicted. Further analyses based on Baron & Kenny (1986) indicated that stress mediated the relationship between engagement and both anxiety and depression: mindful participants tended to report lower levels of stress, and lower levels of stress were associated with less anxiety and depression. The study provides empirical support for the reliability and validity of the Mindfulness/Mindlessness questionnaire. It also suggests a mechanism (stress dilution) through which mindfulness may be health protective.

Developmental & Education Sections

*Developmental & Education Sections
Joint Annual Conference, University College
Worcester, 6–9 September 2001*

KEYNOTE ADDRESSES

Cognitive ability test profiles: An essential component in the assessment of reading disabilities? Yes!

C D ELLIOTT, Postgraduate School of Education, University of California at Santa Barbara, USA

The development of tests of cognitive abilities, often called 'intelligence' tests, was arguably one of the major achievements of psychology in the 20th century. In recent years, controversy has surrounded their use, with psychologists sometimes being urged to 'Just say no to subtest analysis' (e.g. McDermott *et al.*, 1990). In this paper I will argue that, far from being an outmoded and technically flawed procedure, the analysis of cognitive test score profiles yields essential information on information processing in children with reading difficulties. I will support this argument with data from substantial samples of children with reading disabilities who were assessed using the British Ability Scales, Second Edition (BAS II) and the Differential Ability Scales (DAS).

The nature and development of social competence: What developmental psychology might and might not learn from social psychology

N EMLER, London School of Economics and Université de Paris V, René Descartes Sciences Humaines, Sorbonne

Social competence is widely recognised as a fundamental outcome of development; it also figures among the key skills to be developed through formal education. Despite this there remains little agreement as to exactly how such competence should be defined or how progress in its development should be assessed. Research into the development of social competence has clearly drawn upon, and to an extent benefited from, ideas developed within social psychology, notably those of social skills and attribution. Other social psychological concepts, relating for example to impression management and social influence, are also relevant. However, there may also be limits to what can be learned from social psychology about the nature of adult social competence. The insights it is able to provide are only as good as the model of human society upon which it draws. It will be argued that this model still gives too much emphasis to the individual as an autonomous actor within an impersonal social structure. The argument will be illustrated in terms of moral reasoning, reputation and citizenship as facets of social competence.

Aggression in Middle School: Forms and functions

A D PELLEGRINI, Dept of Educational Psychology, University of Minnesota, Minneapolis, USA

In this talk I address the forms and functions of aggression during the early adolescent years, when youngsters are in middle school. Bullying and victimisation is the modal form of aggression for boys during this period and I suggest that it serves a dominance function for them. Dominance, in turn, leads to increased status in heterosexual relationships. While less is known about aggression for girls during this period, I suggest that girls may use relational aggression to increase status in heterosexual relationships. I present data from a three-year longitudinal, multi-method, multi-agent perspective as youngsters made the transition from primary through middle

school. Generally, bullying and aggression increased with the transition to middle school and then declined. Bullying mediated youngsters' dominance status during the transition. Further, both affiliative and aggressive dimensions of dominance predict boys' status with girls. Boys, however, did not seem to use aggression in the observed interactions with girls. Girls' relational aggression did not predict heterosexual relationships; physical attractiveness did. Youngsters' peer affiliations decreased, initially with the transition, and then recovered. Victimization from primary to middle school was mediated by peer affiliation. It is suggested that bullying may be one way in which young adolescent boys manage peer and dominance relationships as they make the transition into new social groups.

Individual differences in reading development: Meaning and sound in learning to read

M J SNOWLING, Dept of Psychology, University of York

Contemporary models of reading development have emphasized the important role of phonological skills in learning to read. Phonological awareness is a strong predictor of reading attainment and phonological deficits are associated with reading failure in most of the world's languages. In contrast, the role of semantic skills has been relatively neglected. Using a connectionist framework, this paper will review evidence that learning to read depends upon the interaction of phonological and semantic skills, and argue that reading problems can arise because of problems at the level of phonological or semantic representation. An initial study examined the concurrent predictors of reading in a large unselected sample of readers and found that phonological processing and semantic skills contribute independent sources of variation to children's ability to decode and to read exception words. Two studies contrasted the problems experienced by dyslexic readers (who show phonological difficulties) and children with reading comprehension impairments (who show semantic deficits). Finally, a longitudinal study of children at genetic risk of dyslexia provides evidence that children with good semantic skills can use these from an early stage to bootstrap the development of otherwise impaired phonic decoding and spelling skills. Taken together, these findings are consistent with the view that phonological skills are critical for the development of decoding abilities, whereas semantic skills are important for the development of automatic word recognition. The corollary of this is that children with oral language difficulties are at risk of literacy failure for a variety of different reasons.

When gestures speak louder than words. A perceptually-based explanation of lexical comprehension at home and at school

P ZUKOW-GOLDRING, Dept of Linguistics, University of Southern California, USA

Words cannot explain unless a person already knows what words mean. Yet learning what words mean (and that they mean) is what infants and students 'mean' to learn. I have proposed a social ecological realist approach informed by Vygotsky (1978), Gibson (1979), and Garfinkel (1967). The cultural-historical view tells us that knowing emerges during social interaction in which more adept members assist those who are less practiced. The theory of direct perception disclosed how people pick up the perceptual structure that guides perceiving, acting and knowing. Ethnomethodology/linguistic anthropology pinpoints how people reduce ambiguity in everyday life by doing the interactive work of coming to see eye-to-eye. Combining these three views provides a basis for explaining how people continuously and effectively negotiate meaning. In a series of studies, we have investigated how Latinos and Euro-Americans most often achieved a practical

understanding of ongoing events when communication broke down in the classroom and at home. This research focused on observable practices, the perceivable meaning of messages in context, and child comprehension. Actions do speak louder than words. Perceptual restructuring of messages following communicative breakdowns led to achieving a common understanding significantly more often than adding specificity to verbal messages at home and at school.

SYMPOSIA

Symposium 1: Baseline assessment

Convener: G LINDSAY, Centre for Educational Development, Appraisal and Research, University of Warwick

Baseline assessment (BA) is a statutory requirement on all schools with children starting compulsory education. There are 91 accredited schemes, developed around a common core, but with variations in detail. There are at least nine purposes for BA, either pedagogic and child-focused or managerial and school-focused. These reflect the roots of BA including the identification of children with special educational needs, and the analysis of school effectiveness by value added analyses. Variations in the content and implementation of BA schemes pose challenges for its use as a national initiative, particularly for comparing children or schools. Schemes have been accredited by the Qualifications and Curriculum Authority independent of any requirement to demonstrate adequate psychometric qualities. On the other hand, some BA developers have undertaken research which contributes to debates on continuity and discontinuity, and the relative influence of child and contextual factors in influencing educational development. This symposium addresses several of these issues. The evaluation of the national arrangements for BA highlights the variation in schemes' content and in practice. A second paper presents evidence on a new scheme which develops BA into the preschool age range. A third examines the evidence on differential progress of children with respect to gender, ethnicity, social disadvantage and school factors, and the influence of factors such as pupil mobility on both educational progress and the use of BA for evaluating school effectiveness. A discussion session will examine the implications of the current research evidence for the proposed revisions to BA due in 2002/2003.

Paper 1: The development of an assessment to measure the skills of pre-school children

C MERRELL, Curriculum Evaluation and Management Centre, University of Durham

Objectives:

- look at issues involved in collecting useful, reliable and valid data from young children;
- describe the development of a new baseline assessment for the foundation stage for use by teachers; and
- discuss the outcomes from the pilot and subsequent use of the assessment.

Design: ASPECTS (Assessment Profile on Entry of Children and Toddlers) was developed to assess the skills of young children in the areas of personal and social, physical, language and mathematics development. It was piloted in 327 nurseries during the 1999/2000 academic year and used in 660 pre-school settings in 2000/2001. **Methods:** ASPECTS was administered on entry to nursery, establishing a baseline on entry to the foundation stage. Some sections were assessed using objective activities on a one to one basis, others by observation. Pupils were re-assessed just before they left nursery to measure progress. **Results:** The test/retest reliability of the language and mathematics development section was 0.81 (pilot year) and the correlation between language and mathematics at the start of nursery and the start of reception, one year later, was 0.68 (pilot

year). The scores were reported graphically against age for use in pre-school allowing levels and progress to be viewed critically. **Conclusions:** A quick reliable assessment is now available for monitoring attainment and progress in pre-school. The method of presenting feedback was found to be useful and easily understood by teachers.

Paper 2: Differential pupil progress during the early years at school: evidence and policy

A LEWIS & G LINDSAY, Institute of Education, University of Warwick

Objectives:

- to identify factors associated with pupils' educational progress from age 4 to age 7; and
- to consider any associations of progress with sex, race and social class, whilst controlling for a range of other variables.

Design: The study collected the Baseline assessment results of pupils on entry to reception class and tracked pupils in order to collect their subsequent results in national tests at the end of Key Stage 1 (KS 1). In addition a wide range of contextual data was collected on the pupils and their schools. **Methods:** Results were collected for over 5,000 pupils drawn from 55 primary schools in an inner London Local Education Authority. Multi-level regression analyses were used to evaluate associations between the contextual factors and progress between Baseline assessment and end of KS 1 tests. **Results:** A wide range of factors was associated with pupil progress, including sex, age, amount of pre-school education, ethnic group, free school meal entitlement, English as an additional language, stage of SEN and the particular primary school pupils attended. In general differences between groups of pupils increased rather than decreased over time. There were significant and notable interactions between several of these factors. **Conclusions:** It is misleading to consider ethnicity in isolation, interactions between ethnic group, sex and economic disadvantage must be analysed. The implications for policy makers at both local and national level are considered.

Paper 3: Evaluation of the national baseline assessment scheme in England

S STRAND, National Foundation for Educational Research

Objectives:

- to review the operation of the national scheme for a statutory baseline assessment (BA) in England; and
- to identify the usefulness of current arrangements for the use of BA in the identification of special educational needs (SEN).

Design: Survey of stratified sample of schools with reception children, including special schools; examination of practice in 16 LEAs using different methods of BA and with a range of socio-economic and demographic characteristics. **Methods:** Three surveys: a stratified sample of 2000 schools; all LEA and other providers of baseline assessment schemes; and all LEAs which used schemes provided by other LEAs, or others. Interviews were conducted with headteachers, reception teachers and parents from 46 schools, and with BA officers and principal educational psychologists from the LEAs. **Results:** Data were collected from 982 schools (89.1 per cent mainstream, 10.9 per cent special) and 102 LEAs, using 90 of the 91 available schemes. The paper will present data on: use of BA, content of different schemes, training in BA, moderation procedures, variations in implementation, including timing of assessment, users of information, satisfaction with the BA schemes used, and parental involvement. **Conclusions:** The study revealed substantial variation in baseline assessment and concerns about its use for competing purposes. The implications for a national scheme, and in particular for identifying children with special educational needs, will be explored.

Symposium 2: The effects of music on studying and behaviour

Convenor: S HALLAM, Institute of Education, University of London

Research on the effects of background music on studying has a long history. Much early work was not embedded within a theoretical framework and was often poorly conceptualised. Overall, findings were equivocal. This symposium attempts to address some of the issues raised in earlier research. The papers presented consider:

- the development of metacognition in relation to listening to music while studying;
- age differences in listening to music in everyday life and while studying; and
- the effects of background music on the co-ordination of pupils with special educational needs and emotional and behavioural difficulties.

The findings from the papers will be discussed in relation to a model which attempts to provide a framework for research in this field which can account for previously equivocal findings by taking account of the many factors which may influence the effects of music on task performance.

Paper 1: The development of metacognition in listening to music while studying

S HALLAM, Institute of Education, University of London

Objectives: This paper explores the development of metacognition in relation to listening to music while studying. **Design:** Two independent group experiments were undertaken. **Method:** In study 1, children aged 10–11 carried out a creative writing task. In study 2, adults performed a logical reasoning task and a realistic reading task. All tasks were undertaken while listening to calming, arousing or no background music. Both groups completed a questionnaire to establish their awareness of the music and its effects. **Findings:** Results were analysed using analysis of variance and chi-squared tests. For the children, the music appeared to have little effect on basic literacy skills but had a significant effect on the quality of the creative writing. Writing an 'exciting' story was accomplished better when 'calming' music was playing. The children demonstrated poor metacognitive skills in relation to assessing the effects of the music on their performance. For the adults, no significant differences were found in performance on the logical reasoning task, the time taken to complete it or in performance on the reading task. Those students in the 'arousing' music group reported difficulty in concentration and the need to adopt coping strategies. **Conclusions:** The findings suggest that children have little conception of the effects of music on their studying while adults have well developed metacognitive skills in relation to the effects of background music. This has implications for children undertaking homework while listening to background music.

Paper 2: Age differences in listening to music in everyday life and while studying

A KOTSOPLOU, Institute of Education, University of London

Objectives: Research suggests that music affects people's behaviour and performance. A range of factors may mediate these effects (e.g. nationality, age, gender, musical involvement). The present study attempts to explore students' perceptions of the use, and the effects, of music on their studying taking account of age (secondary, advanced secondary and university students). **Design:** A survey was undertaken. **Method:** 600 students from three age groups, secondary, advanced secondary and university, completed a questionnaire which included a series of statements relating to listening to music. Responses to the statements were made by ticking a rating scale. **Findings:** The results showed that:

- older students listened to a wider range of music;
- the youngest students tended to listen to music the least; and

- age influenced beliefs about the effects of music on studying and the action taken when music was perceived to be interfering. Younger students were less likely to turn the music off if they perceived it was interfering but more likely to turn it off when they were told to do so. The older students were least likely to agree that music helped them concentrate or learn faster while the youngest believed that music kept them company, alleviated boredom and relaxed them while they were studying.

Conclusions: Age is an important mediating factor in relation to students' decisions about listening to music, the type of music that they listen to and the effects that they perceive the music will have on their studying.

Paper 3: The effect of background music on the co-ordination of pupils with special educational needs and emotional and behavioural difficulties

A SAVAN, School of Education, University of Reading

Purpose: This paper provides a framework for considering empirical findings relating to the effect of background music on the co-ordination of pupils with special educational needs and emotional and behavioural difficulties. **Background:** Previous research has shown that background music has an effect on certain physiological and biochemical pathways in pupils with special educational needs and emotional and behavioural difficulties. When background music is played during practical lessons pupils become better coordinated and their behaviour improves. A key issue is why this phenomenon does not occur in pupils in mainstream education. **Key points:** The paper proposes that sound stimulation of the limbic system is 'age specific'. As the limbic system of the brain is not fully developed until around two years of age, stimulation up to this point will help the development of coordination. If a child has not received adequate stimulation of the limbic system during this crucial time, co-ordination remains underdeveloped. Case studies of pupils has shown that over 80 per cent had not received high frequency auditory stimulation during the first two years of life for a variety of reasons. Bombarding these pupils with high frequency auditory stimulation at age 11 years, alters the body chemistry during stimulation enabling the underdeveloped coordination system to function more effectively for short periods of time. **Conclusions:** While these effects have an immediate effect it is not known at present whether the stimulation will have a cumulative effect, or a permanent corrective effect.

Paper 4: Personality approaches to learning and the use of background music in studying

P CHRISTODOULIDES, Institute of Education, University of London

Experimental studies investigating the effect of music on performance have produced rather inconsistent findings. Music has been found to facilitate, reduce or have no effect on performance. Responses to background music appear to vary according to the characteristics of the individual, musical characteristics of the background music, and type and difficulty of performance tasks. The present research studied the relationship between 308 university students' personality types, their approaches to studying and the use of music while they were studying. The students, aged 18–30, attended different academic departments (social science, science, and arts) and were asked to complete the NEG Five-Factor Inventory (NEO-FFI), the Approaches to Studying Inventory (ASI) and a self-completion questionnaire, which explored their music listening habits, their musical preferences, and the ways that they used music to support studying. Data were analysed by means of analysis of variance (ANOVA). Results revealed that students who adopted a deep approach not only listened to music while they were studying but were better concentrated on their readings. Statistically significant differences were also found among the

nature of the task (memorising, reading, writing) and the different personality characteristics. Additionally, students attracted to different fields of study varied significantly in their preference of listening to music while they were studying. Methodological issues arising from the research, areas for further exploration and the educational implications are discussed.

Symposium 3: Psychological readiness for school.

Convenor: C DAVIES, Dept of Psychology, University of Manchester

In the UK children begin their formal schooling sometime during the year in which they reach their fifth birthday. At this age it is assumed that they are emotionally mature enough to spend a day at school away from their home and family, and socially mature enough to work and play alongside other children. It is further assumed that these reception-class children possess the cognitive maturity and language skills to be able to benefit from formal pedagogy. In this symposium we propose to put some of these assumptions to the test. To benefit from instruction a child must be able to listen attentively and accurately, but Lloyd and Foster will show that, in many children, these skills are not securely in place until well into the junior-school years. Furthermore, the infant-school years will see most children developing, in Piagetian terms, from pre-operational to concrete operational thought; Wan will report on the effects of this transition on the educational performance of a cohort of Infant School children. Finally, Parker and Davies will show that, while most reception infants succeed on simple False Belief tests, this doesn't necessarily mean that those same children can tell 'Who Knows What' in the classroom.

Paper 1: Are young children able to handle the verbal demands of the classroom?

P LLOYD & C FOSTER, Dept of Psychology, University of Manchester

It will be argued that most children are poorly equipped to deal with the volume and content of verbal information to which they are exposed when starting school. This view is supported by evidence from conventional measures of language development (semantic and grammatical) and also pragmatic studies which focus on the ability to make decisions about the adequacy of what is heard and said. Preliminary work has also looked at the verbal demands made by teachers in the classroom by examining the information content of a teacher's utterances (over eight lessons) to a class of six-year-olds. Despite being a core component of the National Curriculum, Speaking and Listening are not properly assessed either in school or at base line assessments. A new standardised instrument for gaining a measure of young children's ability to evaluate verbal information (The Listening Skills Test, LIST) will be described. It consists of four parts: referent identification, message appraisal, comprehension of directions and verbal message evaluation. It has been standardised on a representative sample of 350 children between the ages of three and seven years. The significance of LIST for language in the classroom will be discussed.

Paper 2: Memory and sociocognitive development in infant school children

M WAI WAN, Dept of Psychology, University of Manchester

Recent unpublished data by Davies and students demonstrated a tendency for infant schoolers to suffer operational and figurative event memory loss as they progress from pre-operational to concrete operational thought. This coincides with evidence for memory regressions during other periods of Piagetian operational transition, leading to implications for educational practice and testing. The aim was to investigate whether memory deterioration occurred for educational material learned (EdM) as well as event

information exposed to (EvM) in a previous operational stage. A longitudinal design was adopted to test 78 children on a series of memory and cognitive tasks within a play context in Year 1 (mean=6.12 years) and Year 2 (mean=6.59 years). Although this period was found to be one of rapid cognitive development within which 32 children advanced an operational stage, the results found no 'trans-operative amnesia' and no relationship between EvM and EdM. Rather, the earlier the operational transition, the better the EdM regardless of whether any qualitative operational change had been experienced between encoding and retrieval. EdM correlated with teachers' ability ratings and Year 0 reading and mathematics abilities but not with age or socially-related measures. Performance on four prefrontally-related tasks was not linked to EdM in Year 1 but was significantly associated in Year 2, suggesting that the application of 'prefrontal' abilities plays an increasingly important role for success in school tests. However, reading and mathematics scores at four years and teachers' estimates could predict EdM, indicating how academic ability interacts with a working memory or 'prefrontal' component.

Paper 3: The 'Who Knows What' Test (WKWT): Do schoolchildren need a theory of mind?

A PARKER & C DAVIES, Dept of Psychology, University of Manchester

This study's objective is to investigate 'Theory of Mind' in a school context, using a new test – the 'Who Knows What' Test. The WKWT comprises 24 questions, directly asking children if they themselves, their mothers and their teachers hold certain knowledge. There are eight different combinations of knowledge distribution (i.e. which of the three individuals hold a particular piece of knowledge), and, for each of these, the children are asked who has this knowledge. In phase one, 22 children of reception age were tested, and asked to justify their answers. The results show that children find it easier to make judgements about presence of knowledge than absence, and making judgements about others' knowledge is easier if they know the answer themselves. The easiest questions, then, were those that involved the children having knowledge which they shared with their mothers or teacher. More difficult questions involved ignorance that the child shared with their mothers or teacher. The most difficult questions were those where the mother or teacher knows something the child does not, or are ignorant of something the child knows. This final category requires reasoning that somebody else can hold different knowledge about the world than oneself – a well developed 'Theory of Mind'. Preliminary conclusions indicate that reception age children do not all understand fully that the teacher knows things they do not and therefore has something to teach them.

Discussant: C LEWIS, University of Lancaster

Symposium 4: Teaching number to primary school children

Convenor: C RIDLER, Dept of Primary Education, University of Strathclyde

Models of how adults teach children number range from:

- developmental/social model – children learn number along with language;
- subject model – teachers who have a good grasp of mathematics can communicate number clearly to children of four, five and six years of age; and
- pedagogic model – teachers are taught specialist pedagogical skills that enable them to help young children to learn number.

This symposium will discuss these models, which are implicit in the education system and culture. We aim to make these models explicit so that they can be debated and subsequently tested.

Paper 1: Research into early number understanding and the early years maths curriculum: A British/European perspective

P MUNN, Dept of Primary Education, University of Strathclyde

Early Years Maths is very much a conversational speciality and access to mathematical conversations gives young children their most important maths learning tool. Today there is a great emphasis on number aspects of maths. There is also a very large research literature in number learning. However, the research literature has had a minimal impact either on classroom practice or the curriculum for teacher education. Across Europe, Initial Teacher Education models all have combinations of subject-knowledge and craft-knowledge. Recent demands for increased professionalisation have resulted in the reimposition of this (essentially secondary) model of teacher education on Primary ITE and Continuing Professional Development. One consequence of this is that Early Years Maths ITE attends too much to students' own knowledge of maths and too little to their knowledge of developmental sequences. Primary Maths teachers have to develop communicative skills independently of their training, and use localised teacher discourses (from school and CPD training courses) to update their information about teaching maths. Since these localised discourses are craft-based, we see an increase in the distance between current research knowledge and current practice. I argue here that we need to counter this trend by developing an academic discourse in Early Years Maths that includes Primary teachers at both ITE and CPD level.

Paper 2: Teachers, children and number understanding

C RIDLER, Dept of Primary Education, University of Strathclyde

Success in teaching maths to children in their first year of Primary School may not depend on ability and knowledge in the subject area of maths itself. The skill of being able to communicate with young children may be a more important attribute for a teacher to have. This paper presents case studies of teachers and children talking about maths in the classroom. Instances of shared reference and its opposite, non-shared reference, will be used in exploring the mathematical talk of teachers and children. I define shared reference as teacher and pupil establishing that they are talking about the same thing. Non-shared reference occurs where teacher and pupil are not referring to the same thing. These come to light in conversation. Non-shared references are not a problem in themselves. They allow the participants in the conversation to realise that they are not referring to the same thing. Communication is, therefore, important as this realisation may not occur if a conversation did not take place. If the teacher discusses the problem and clarifies any areas where there are non-shared reference then progress is made. If the discussion does not take place, the non shared reference may well remain. The skill lies in probing for, identifying and responding to non-shared references. This skill may not be stressed enough in initial teacher education, since there the emphasis is on mathematical skills.

Paper 3: Research into pre-service teachers' understanding of multiplicative structures

V QUINN, Dept of Primary Education, University of Strathclyde

In recent years much has been written about the extent to which children and adolescents are influenced by the primitive models of multiplication and division as defined by Fischbein, Den, Nello and Manino (1985). It is argued that these primitive models may be viewed as the source of misconceptions such as 'multiplication always makes bigger and division always makes smaller' and 'the divisor must be a whole number'. Research from Israel, Ireland, England and the United States of America has reported that these

misconceptions are also prevalent among the preservice teacher population. There is some concern that if this is the case, they will contribute to the development of similar misconceptions amongst those they teach.

This paper will consider:

- the extent to which Scottish preservice teachers are influenced by the primitive models of multiplication and division;
- models that are held explicitly, and, whether they are masked by procedural competence; and
- the sources and supports for the primitive models and the implications for teacher educators.

Symposium 5: Mathematical development and education

Conveners: L SMITH, Dept of Educational Research, Lancaster University

There is something of a paradox besetting current accounts of mathematical development and education. On the one hand, there is abundant evidence in developmental psychology attesting the numerical expertise of preschool children (Hartnett & Gelman, 1998). On the other hand and in education, international tests of mathematics learning have regularly led to pessimistic conclusions about the quality of learning, notably in British schools (Reynolds & Farrell, 1996). In the literature, there are 1001 ways in which this paradox is interpreted, and one of these concerns the contribution made by reasoning to mathematical development. A remark due to Frege is illuminating here: 'if you drop equality from arithmetic, there's almost nothing left'. This remark can be interpreted in this way. The affirmation $7+5=12$ counts for next to nothing just in case it is combined with a denial $7+5=12=5=7$. Reasoning (understanding 'as many') is required for mathematical progress which is constrained by undue reliance on basic operations (understanding 'how many'). In this symposium, comprising four parts, reasoning is central to three papers which cover recent studies of mathematical learning and teaching from the pre-school years to late childhood. These studies include contributions to developmental psychology and education. The final part of the symposium is an open discussion of these papers and beyond.

Paper 1: When counting leads to cardinality?: one route or two?

K MULDOWN & C LEWIS, Dept of Psychology, Lancaster University

Pre-school children frequently fail to use counting to solve numerical problems involving two or more sets of items. Young children are often unaware that the sizes of two sets can be compared using cardinal numbers (cardinal extension). Whilst theories of number development often place an emphasis on the role of counting in grasping cardinality, some tests of cardinal understanding demand counting proficiency while others do not. Distinguishing use of counting to make relative number judgements from use of cardinals to make similar judgements is important in establishing children's conception of counting and number. In three experiments children were tested on their ability to use cardinal extension to establish numerical equivalence in one of two contexts; counting and inference. In the counting context the task was to manipulate items to create equivalent sets. In the inference context the task was to infer a hidden, equivalent, set from a visible set. Regression analysis compared performance on the two tasks with standard counting and numerical inference tests and found differences between them. The two tasks were dissociated in terms of the skills required for success. Children who used counting to make equivalent sets were more likely to identify errors in a doll's counting. Success on the inference task was predicted by counting up to 10 items accurately. These results suggest that there are two routes into cardinal extension.

Paper 2: Children's reasoning by mathematical induction: causal facts and normative facts

L SMITH, Dept of Educational Research, Lancaster University

In an (almost) universally neglected study, Inhelder and Piaget (1963) presented evidence for two hypotheses: (i) children can reason successfully by mathematical induction and (ii) such reasoning is modal, i.e. acknowledged to be necessary. Both hypotheses along with a third about (iii) children's knowing when-to-count and when-to-reason were investigated in a recent adaptation based on children ($n=100$) aged 5–7 years in school Years 1 and 2. Evidence confirming (i) and (iii), and compatible with (ii), is presented. This psychological evidence is interpreted through a reconciling position which combines the causal context of action and the normative control of reasoning in an epistemological framework. Its educational relevance to reasoning in the early years mathematics curriculum is evident through a constructivist perspective about the individualisation of intersubjective knowledge. In short, the argument contributes to filling an important gap in current research on mathematical development during childhood. As such, this is psychologically, epistemologically and educationally important.

Paper 3: Children's understanding of intensive quantities: an epistemological shift?

T NUNES, Dept of Psychology, Oxford Brookes University

Measurement theory investigates the connection between a number and the magnitude that the number refers to: for example, in the expression '5 kilos', what is the meaning of '5'? One of the characteristics of extensive quantities, such as weight, is that the '5' in this expression has an additive meaning: something that weighs 5 kilos can be balanced in a scale with 5 units of one kilo. Not all magnitudes can be measured in ways that are defined by additive relations. Intensive quantities are measurable magnitudes but their measurement does not proceed by such additive concatenations – such as speed, density, and concentration. Intensive quantities are measured by relation between other quantities. This presentation will explore the properties of intensive and extensive quantities and review studies on children's difficulties with the concept of intensive quantities. The origin of children's understanding of intensive quantities will be analysed and hypotheses about the characteristics of successful teaching will be considered.

Paper 4: Intervening in Years 5 and 6, in the context of mathematics learning, with the aim of promoting cognitive development

M SHAYER, King's College, London

This paper reports on the work of Focus 5 of the Leverhulme Numeracy Programme: Is it possible to work with primary teachers so that their mathematics work with their pupils serves the more abstract aim of increasing the learning ability of their pupils, as well as promoting their numeracy? A research team of experienced primary teachers (also Numeracy Advisers in their LEA) and college staff, shared a methodology derived from Piaget and Vygotsky so that a series of some 24 exemplary activities (Thinking Maths Lessons™) were constructed. A PD programme was then run by the combined team for the teachers in eight schools in the LEA, and the TM lessons were taught by the class teachers at a rate of about one a fortnight, during Years 5 and 6. The cognitive development of the children was assessed by a Piagetian test set in the context of spatial abilities as a pre- and post-test in four control schools and the eight main study schools. KS2 results for maths, science and English were used to test the generality of any effects. Not all classes produced gains over and above those for the control school classes. But those classes

where the children showed cognitive gains also had enhanced results in maths, science and English equally. Perhaps the most interesting aspect of the research lies in the process of sharing with teachers, in various ways, the theory-based insights into teaching skills which lead to their engaging their pupils in collaborative learning.

Discussant: P BRYANT, Dept of Experimental Psychology, University of Oxford

Symposium 6: Early global deprivation: developmental outcomes

Conveners: M BROPHY & E COLVERT, Institute of Psychiatry, London

The current symposium presents four papers addressing some of the main findings of the English and Romanian adoptees (ERA) project. The ERA project is a longitudinal investigation into the development of children adopted into the UK from Romania in the early 1990s. The vast majority of the adoptees experienced extreme early global deprivation as a consequence of early placement in Romanian institutions. In all, the ERA project has followed up the development of 165 adoptees from Romania in an attempt to investigate the effects of such early deprivation on later development. The project has also followed up 52 non-deprived English children adopted within the UK before six months of age, who act as a comparison group for the study. The children from Romania included in the project vary in terms of the length of institutionalised deprivation experienced with a range of 0-42 months. The ERA project has assessed the children at four and six years of age, and an 11- and 12-year-old follow-up is currently underway. At each time point a combination of measures have been used to assess the cognitive, social and behavioural development of the children and to gain an understanding of the adoptive parents' experiences and views. The papers included in the proposed symposium provide details of the main findings of the ERA project to date (with the first paper also providing a general overview of the project sample and methodologies). The aim of this symposium is to cover the findings concerning autistic-like features, general cognitive development, peer and social relations and inattention/hyperactivity within the sample of Romanian adoptees.

Paper 1: Early global institutionalised deprivation and autistic-like features

E COLVERT, Institute of Psychiatry, London

The current paper provides a general introduction to the English and Romanian adoptees (ERA) project. This paper outlines the background to the project, including details of the sample characteristics. The paper will describe the multi-method, multi-informant approach used at each time point of the project. Finally, an overview of the main findings of the study, when the children were aged four and six, is discussed. The assessments carried out at each time point have yielded a number of interesting findings. The accompanying papers in the proposed symposium address three of the key findings in terms of the effects of early deprivation on general cognitive development, peer and social relationships and inattention and hyperactivity. The current paper provides an overview of one further area of the findings of the ERA project, namely, that of autistic-like features in a small minority of the children adopted from Romania. The autistic-like features occurred in approximately one in 16 of the children from Romania at age four, while approximately another one in 16 showed similar features but to a lesser degree of severity. The autistic-like features included problems in social and communicative behaviour and also evidence of quasi-obsessive and repetitive stereotyped behaviours. Despite the similarity to 'classic' autistic symptoms the children showed key differences in their behaviour and also displayed marked improvement between ages four and six. These differences in behaviour and the implications of the findings are discussed.

Paper 2: The effects of global severe deprivation on cognitive abilities: further follow-up at age 11 years

C BECKETT, Institute of Psychiatry, London

The children adopted from Romania and a comparison group of UK adoptees are now being followed up at 11 years. The earlier studies demonstrated considerable cognitive catch up in the initial two years of adoption, but the older groups of children adopted over six months exhibited lower cognitive scores than those adopted under six months, both at age four and at age six. Longitudinal data were available at age four and six years for the children adopted under two years of age, but the eldest group of children, aged between two and three-and-a-half years at placement had only been seen at six years of age. It was not known whether they would make further catch up. The data now available on the eldest group of children at age 11 confirms the earlier findings that there is no evidence of further cognitive catch up at 11 years for these older children. The children who experienced the greatest length of deprivation continue to have lower cognitive scores when aged 11 years. There continues to be a wide variation in GCI scores, but a consistency in individual scores between age six and 11. The cognitive difficulties of the children are also evident in their achievement scores in reading, comprehension and mathematical reasoning and in the teacher's reports of their achievement levels. The links between levels of cognitive ability and the children's self-esteem and links between the children's weight on arrival and the cognitive outcomes will be examined.

Paper 3: Peer competencies of children at age 11 years who suffered severe prolonged deprivation

J M KREPPNER, Institute of Psychiatry, London

Research suggests that early adverse experiences place children at risk of experiencing difficulties in social relationships with their peers. In particular, children who were brought up in institutions appear to show difficulties in social relationships. The present study is the first to investigate systematically the peer competencies of children who were adopted after experiencing prolonged global (i.e. nutritional, psychological and social) deprivation throughout their first years of life. The peer competencies at age 11 are assessed in a group of children who were adopted from Romania into UK families between the ages of 24 to 42 months. Their peer competencies are compared with children who were adopted from Romania into UK families at a younger age and with children who were adopted as infants from within the UK and who had not suffered early global deprivation. Data on children's peer relationships are collected through parent, teacher and child questionnaire measures and through an interview with the child about his or her best friendship. Data analyses examined whether the children who suffered prolonged deprivation experienced more difficulties in peer relationships compared to the group of Romanian children adopted at a younger age and the non-deprived within UK-adopted children. Assessments of whether individual differences in social competence are related to theory of mind ability and whether early signs of social difficulties at age four and six years (i.e. attachment disturbance and deficits in pretend and social role play) predict social difficulties at age 11 were also carried out. The findings will be discussed in the context of the relevance of early experiences in close relationships for subsequent social development.

Paper 4: Inattention/hyperactivity following early deprivation

M BROPHY, T O'CONNOR & E TAYLOR, Institute of Psychiatry, London

Previous results from the English and Romanian Adoptees Study (ERA), obtained when the

children were aged four and six years, indicated that inattention/hyperactivity was the most frequently reported behavioural/emotional problem for the group of children adopted from Romanian into UK homes. This finding from the ERA study is not alone in finding that those with a history of severe care-giving neglect are at increased risk for behavioural problems, in particular inattention/hyperactivity. Several other UK studies of children being reared in institutional settings and/or without a consistent caregiver report similar disturbances in inattention/hyperactivity. In fact, reports suggesting a link between institutional rearing or severe early deprivation and inattention/hyperactivity date back half a century. Thus, this paper focuses on the methodological and theoretical importance of focusing on this sub-sample of children who experienced early global deprivation and are exhibiting inattentive/hyperactive behavioural problems, particularly as these types of behavioural problems were occurring at a rate far higher than would be expected in even normal high-risk settings. This paper will discuss the combination of interview and standardised neuropsychological assessments we are using to investigate the long-term effects of deprivation on inattention/hyperactivity in early adolescence. Additionally, this paper will discuss theoretically how inattention/hyperactivity associated with deprivation differs, if at all, from that found in more typical clinic populations by assessing a non-deprived community sample of children with inattention/hyperactivity.

Discussant: J STEVENSON, Dept of Psychology, University of Southampton

Symposium 7: Inclusion I: Psychological and psychologists' contributions to practice

Convenor: B NORWICH, School of Education, University of Exeter

This symposium considers what psychologists have to contribute to the movement towards greater inclusion in education. The various papers illustrate a range of contributions from professional psychology and research and theory informed by psychology. The papers illustrate what empirically-based approaches have to offer in thinking about and developing practice in this field.

Paper 1: The role of teaching assistants in supporting inclusive practice in schools – tensions and dilemmas

P FARRELL, Faculty of Education, University of Manchester

Over the past 10 years there has been a rapid rise in the numbers of teaching assistants who work in mainstream schools to support pupils with special needs. The success of inclusion, therefore, depends in part on TAs developing working partnerships with teachers and other professionals so that the needs of individual and groups of students can be met. This raises a number of tensions and dilemmas that will form the focus of this paper. For example:

- what are the ethical issues involved when TAs, who typically are poorly paid and have limited training and experience, are given responsibility to educate some of our most vulnerable and challenging students?
- how can TAs help pupils with SEN to participate fully in the life of the school and become independent learners when many of these students have major difficulties in basic academic skills that may require individualized instruction, possibly on a withdrawal basis?
- how can teachers and assistants find sufficient time to plan and review programmes of work?
- how can senior staff in schools develop management strategies such that TAs themselves feel included in the social and academic processes of the school?

Paper 2: Using action research to promote inclusive practice in schools.

N BOZIC, Worcestershire Educational Psychological Services (EPS)

This paper describes how professional educational psychologists can use action research to promote the development of inclusive approaches in schools. Real examples are used to show how initiating and participating in collaborative action research with teachers can lead to fresh understandings and new directions for practice. These include the evaluation of in-school behaviour support for pupils with challenging behaviour and the enhancement of peer social support for children with autism. The paper looks at the particular role that educational psychologists can play in this process. It examines some of the skills which they can bring to this kind of work and the nature of the psychology which is deployed.

Paper 3: Inclusion, contact and non-disabled children's attitudes toward disabled peers

P MARAS, School of Social Sciences, University of Greenwich

Moves toward the inclusion of disabled children in schools have implications for non-disabled children's attitudes toward disability. It has been suggested that contact arising out of inclusion will 'automatically' improve non-disabled children's attitudes to disabled children with whom they have contact and to disability generally. This assumption although obviously desirable is seemingly not based on empirical evidence. Evidence on the effects of contact on attitudes is in fact equivocal. Data from two studies are introduced to illustrate some of the tensions. In the first, data from a longitudinal study of a structured programme of inclusion demonstrate that where inclusion is planned organised and involves structured co-operative tasks, non disabled children's attitudes toward peers with severe learning disabilities did improve over time compared to a matched control group (Maras & Brown, 1996). However, findings from a second study illustrate, that where inclusion is not optimal outcomes are not so positive (Maras & Brown, 2000). Indeed in this second study, non-disabled children's attitudes became more negative following inclusive contact and also resulted in the attribution of non-relevant attributes to children with disabilities with whom the non-disabled children had contact. It is suggested that such findings may be due to a previous lack of consideration of the complexity of social interactions and the way individuals perceive each other as group members. Implications for planning inclusion are discussed.

Paper 4: The perspectives of pupils with moderate learning difficulties of their special education provision and themselves

B NORWICH & N KELLY, School of Education, University of Exeter.

In this paper we present interim findings from a large scale project, funded by the Nuffield Foundation, in which we interviewed 100 children in one LEA in the south-west to explore their perceptions and feelings about their special provision and themselves. The aims of the project were: (1) to examine how pupils with MLD perceive their special provision and to find out whether their perspectives include contrary positive and negative aspects; (2) to examine how pupils with MLD perceive themselves and to identify the balance between positive and negative aspects in their self-perceptions; and (3) to examine whether these perspectives vary according to the kind of special education placement and the age and gender of the pupils. The findings are presented in the context of policy moves to involving children and young people more in decisions about their education, on the one hand, and in relation to the debate about the extent and nature of inclusion, on the other.

Symposium 8: Individual differences in writing development: Key Stage 2 and beyond

Convenor: R STAINTHORP, Institute of Education, University of London

Evidence from national assessments of literacy in England and Wales suggests that, whilst the National Literacy Strategy is having a positive effect on reading standards, but performance in writing is still problematic. As pupils move from primary to secondary school the 'writing demands' of the curriculum increase and children who have not achieved the expected level of performance (Level 4) are likely to experience difficulties. It is, therefore, surprising that there has been considerably less research into writing development than reading development. This symposium seeks to redress this balance. Information processing models of writing identify a number of different skills that have to be mastered and orchestrated in the production of texts. The four papers in this symposium present evidence about the development of writing from transcription through the technicalities of punctuation and syntax to the interaction between oral and written language when composing. The papers present evidence of level of performance of children in primary school and the early years of KS3. Aspects of individual differences relating to children with language difficulties and children with precocious reading ability are explored.

Paper 1: The influence of handwriting fluency on writing quality in later primary and early secondary education

V CONNOLLY, Dept of Psychology, South Bank University

Objectives: There is substantial evidence that handwriting fluency contributes significantly to general writing quality in school (Berninger *et al.*, 1992; Graham *et al.*, 1997). However, it is not known whether this influence continues beyond the middle primary school years. Previous research has also failed to specify what aspects of writing are more influenced by handwriting fluency than others. **Design:** The TOWL-3 gives a detailed profile of writing skills using eight writing sub-scales. It was used to test writing and compare it with handwriting fluency rates in a sample of children spanning both late primary and early secondary school. **Methods:** A sample of 9, 11 and 13-year-old children completed the TOWL-3 and the Berninger *et al.* (1991) handwriting fluency measure in school. **Results:** It was found that handwriting fluency did not account significantly for variance in the overall score for the TOWL 3 at ages 9,11 or 13. However, when the children were split into good and poor writers, handwriting fluency was a significant predictor of overall writing performance for poor but not good writers even when controlling for the influence of reading. The influence of handwriting on sub skills of writing is also described by good and poor writer categories. **Conclusions:** Poor writers showed significant effects of handwriting speed on their writing performance even at the late primary and early secondary level. This confirms Jones and Christensen (1999) ideas about the costs of lack of automaticity in handwriting on writing performance.

Paper 2: Use of apostrophes by 6- to 9-year-olds

M STUART, Institute of Education, University of London, J MASTERSON, Dept of Psychology, University of Essex & M DIXON, Dept of Psychology, University of Greenwich

Objectives: This study set out to examine the influence of (i) teaching, (ii) type of apostrophe (contractive versus possessive) required and (iii) type and token frequencies of occurrence in reading materials on young children's use of apostrophes in spelling. **Design:** Under the teaching framework of the National Literacy Strategy, apostrophes indicating contraction are first taught in Year 3 term 1; those indicating possession are first taught in Year 4 term 2. Thus,

the NLS appears to consider that contractions are easier to acquire than possessives. We know of no existing data that speak to this issue. However, in a database of children's early reading materials (Stuart *et al.*, submitted), apostrophes indicating contraction have significantly higher token frequencies but significantly lower type frequencies than apostrophes indicating possession. Thus an examination of children's use of apostrophes might shed light on both the effects of teaching and on the theoretically interesting question of whether type or token frequencies underlie frequency effects. **Method:** 90 children from each of three school years (years 2, 3 and 4) were given a spelling test in which they were required to fill in dictated words omitted from prepared sentence frames. Words omitted either required insertion of a contractive or possessive apostrophe, or were filler items taken from the Schonell spelling test. Thus data on children's spelling ages was also collected during the experiment. **Results:** Results are not yet available and analysed. **Conclusions:** Conclusions will be drawn once data analysis is complete.

Paper 3: Positive 'Matthew effects' in reading do not necessarily transfer to writing

R STAINTHORP, Institute of Education, University of London & D HUGHES, Dept of Psychology, Royal Holloway and Bedford New College

Objectives: A common belief is that children who read more and who have greater exposure to print are likely to have more advanced writing skills than children who have lesser engagement with print. This study was designed, in part, to investigate whether precocious readers show equally advanced skills in writing as they do in reading. **Design:** A writing task requiring a written response to a set of pictures was developed. This untimed task required the children to write a story. Word sentence and text level characteristics of the text were analysed using a between groups design. **Methods:** Two groups of 11-year-olds (14 per group) who had taken part in a longitudinal study of precocious reading ability since the age of four years wrote stories in response to the pictures. One group had been precocious readers before they started school. One group acted as the normal comparison group. **Results:** Detailed analysis of word, sentence and text level characteristics of the texts showed that the only significant difference between the two groups was in spelling accuracy. In all other respects the two sets of narratives did not differ. **Conclusions:** Though the group composed of precocious readers had retained their advantage in reading over a period of six years this was not matched by writing skill. It would appear that extensive exposure to print and engagement with texts through reading does not necessarily lead to technically better writing.

Paper 4: Exploring the relationships between oral and written language in a cohort of children with primary language difficulties.

J DOCKRELL, Institute of Education, University of London, G LINDSAY, Institute of Education, University of Warwick, C MACKIE, Institute of Education, University of Warwick & B LETCHFORD, Institute of Education, University of London

Objectives: It is often claimed there is an intimate link between oral and written language. The present study examines this relationship by focussing on a group of children who have primary language difficulties at a point in development where basic writing skills should be fluent. **Design:** Longitudinal and cross-sectional. **Methods:** 67 children identified as having language problems were assessed at age 8:3 on a range of measures – cognitive, linguistic and academic attainments. The children were assessed again at 10:8, when a standardised written language measure (WOLD) and a novel writing task were used in the assessment battery. **Results:** The majority of children continued to have residual speech and language difficulties

with significant difference between verbal and non-verbal performance. The mean WOLD standard writing score was 82 (SD=9.86). Children's performance was related to a range of phonological and semantic language measures but not receptive grammar and to reading accuracy, rate and comprehension. The novel written language test provided profiles of strengths and weaknesses in written language skills. **Conclusions:** The results of the study are considered in the light of current models of children's written language skills and the ways in which oral language can support or hinder the development of written language.

Symposium 9: The (limited) benefits of high self esteem

Convenor: N EMLER, London School of Economics and Université de Paris V, René Descartes Sciences Humaines, Sorbonne

Paper 1: The causes and consequences of low self esteem: myths and realities

N EMLER, London School of Economics & A ST. JAMES, Dept of Psychology, University College Worcester

All manner of social and personal ills have been attributed to low self-esteem, including delinquency, racism, poverty, educational failure, child abuse and drug addiction. Such consequences have been used to legitimise a veritable crusade against the perceived causes of low self-esteem to justify a wide range of interventions intended to raise self-esteem among children, teenagers and adults. This paper reviews evidence linking self-esteem to a range of potential causes and outcomes, and concludes that in most cases a causal link is not proven. If low self esteem does have negative effects the scale of its impact is very modest while the range of effects is much more limited than has popularly been supposed. Thus efforts to raise self esteem are largely misplaced; it is unlikely these efforts will have the benefits anticipated.

Paper 2: The relative economic importance of academic, psychological and behavioural attributes developed in childhood.

L FEINSTEIN, Dept of Economic Performance, London School of Economics
This paper uses information about the psychological and behavioural development of children by age ten in the 1970 Cohort to predict qualifications, employment and earnings. This individual heterogeneity has very substantial implications for the labour market that has not previously been considered in the economic literature. Different age 10 abilities and attributes have implications for different adult outcomes. Age 10 conduct disorder predicts male adult unemployment particularly well but it is self-esteem that predicts male earnings. For women the 'locus of control' is important. Omission of psychological and behavioural capital leads to an upward bias of the return to education, although this bias is not significant in these data.

Paper 3: The role of self-esteem in the psychopathology of adolescents with eating disorders

G WALLER, St. George's Hospital Medical School, University of London
While self-esteem has been suggested to be a critical variable in the aetiology and maintenance of the eating disorders, the evidence to date suggests that its role as a causal agent can best be described as 'necessary but not sufficient'. On its own, it lacks specificity for the eating disorders, and tends to be important only when seen in combination with moderating factors (particularly perfectionism). However, the clinical relevance of self-esteem in eating pathology is clear, with evidence of complex roles in the causation and maintenance of anorexia and bulimia. Longitudinal studies show that poor self-esteem is related to

the development of eating pathology and the failure of treatment. It will be argued that the eating disorders have ego-syntonic properties, such that the individual may rely on their symptoms (especially restriction) to provide a short-term boost to self-esteem. Thus, simple cause-effect models are unlikely to be effective with this population. Recent clinical data will be presented, showing how self-esteem might fit into a more complex but comprehensive model of the eating disorders.

Symposium 10: Addressing emotional needs in primary education

Convenor: R SPALDING, Dept of Education, University of Liverpool

Following a period of emphasis on the cognitive curriculum, there is growing interest within primary education on the emotional development of the child and the whole school approaches to 'emotional literacy'. This symposium will examine some of the work currently in progress on Merseyside in primary schools to address emotional need. The Quiet Place project has been developing targeted provision in primary schools for six years for children and families in need of school and community-based therapeutic interventions. The programme is very distinctive in its approaches, embracing as it does a range of conventional and complementary therapeutic approaches. Evaluation is an important part of the programme, and this presentation will present the latest research findings. Complementary to this are concerns about the inner state of teachers who are dealing with children under stress, and the second presentation will outline the results of a number of interventions designed to assist teachers in managing their own emotional well being. The final presentation concerns itself with the interplay between specific learning difficulties and emotional well being in children, with particular reference to self esteem.

Paper 1: A 'Quiet Place' project: early therapeutic intervention within mainstream provision

F RENWICK, Dept of Education, University of Liverpool

Objectives: This evaluation of the effectiveness of the therapeutic intervention provided by a Quiet Place project within junior mainstream provision seeks to explore the impact on the behaviour of children participating in the programme, as measured by an increase in behaviours associated with inclusion. **Design:** Building upon the pilot study of the initial 22 pupils completing the programme, this evaluation has extended the sample by a further 50 using quantitative and qualitative data on a pre and post test comparative design. A matched sample has been taken as control. **Method:** Quantitative data on the progress of the children in terms of emotional development and behavioural conformity have been gathered using the Boxall Developmental Profile and a customised classroom observation rating schedule. Qualitative interview data have been gathered from the parents and teachers of the pupils involved. **Results:** The results of the pilot evaluation have indicated positive, but not statistically significant tendencies in emotional development and behavioural conformity. An analysis of both the quantitative and qualitative data has indicated particular progress in the areas of self esteem, self calming techniques, the ability to reflect and talk things through, anger management and enhanced parental confidence. **Conclusions:** As action research, the evaluation of on-going process has resulted in constant refinement to the programme. The usefulness of current and new data, while not confined to the context of a Quiet Place programme, focuses on implications for future practice.

Paper 2: Teacher stress as a factor in the management of emotional and behavioural difficulties

P MOON, Liverpool Local Education Authority/Cheiron Project

Purpose: An investigation of the impact of stress management skill acquisition by teaching staff on their management of emotional and behavioural difficulties within the classroom. **Background:** Field experience indicates a relationship between teacher stress and classroom management, specifically in relation to children with emotional and behavioural difficulties. The usefulness of training in stress management techniques is dependent on follow through and regular use of the skills. **Key points:** This paper offers a discussion of current literature on the subject of teacher stress, supported by data collected via stress questionnaires, biofeedback and take-up of stress management support. This is correlated with interview data to provide a composite of the factors leading to experienced and perceived stress, and the impact of stress management training on the classroom management of emotional and behavioural difficulties. **Conclusions:** While maintaining a theoretical bias, the question regarding the effectiveness of support programmes which do not include teacher support, specifically in terms of stress management, is addressed.

Paper 3: Self-concept and self-esteem in developmental dyslexia: implications for teaching and learning

N HUMPHREY, Liverpool John Moores University

Objectives: The current research investigated self-concept and self-esteem in children with developmental dyslexia. The researcher was interested in the nature of any deficits found (global or domain-specific), and differences between children with dyslexia in mainstream education and those attending SpLD units. **Design:** The study, largely causal comparative in nature, was conducted in light of the paucity of research in this area, despite strong feelings among practitioners. **Methods:** Self-concept and self-esteem were measured in 63 children with dyslexia, using interviews, inventories and personal construct grids. Where appropriate, a control group of children without learning difficulties was assimilated into the research design. **Results:** Data were evaluated and, where appropriate, subjected to statistical analysis. The main findings were that the presence of dyslexia produced marked effects on the self-concept and self-esteem of children, although this was more apparent in the participants attending mainstream schools. Deficits in self-concept and self-esteem were shown to be both global and domain-specific in nature, in line with the conceptualisation of the self as multi-dimensional and hierarchical. Qualitative data from the interviews revealed that children with dyslexia felt isolated and excluded in their schools, and that, typically, up to half were regularly bullied or teased as a consequence of their difficulties. **Conclusions:** The implications of the research findings centred on self-concept and self-esteem enhancement programmes, changing the role of teachers and peers, early identification of dyslexia, school climate and the 'dyslexia friendly' school, awareness of and provision for dyslexia, and inclusive education at cultural, policy and practice levels.

Symposium 11: Longitudinal studies of young children's literacy development

Convenor: P D PUMFREY, Centre for Special and Inclusive Education, University College Worcester & Emeritus Professor of Education, University of Manchester.

Longitudinal studies of young children's development of literacy are relatively rare. Such researches provide an essential complement to the more frequently carried out cross-sectional studies of literacy development. Longitudinal studies can be approached in many ways and

from different professional and theoretical stances. The three presentations in the present symposium are each set in complementary theoretical contexts designed to test explicit hypotheses. Each research is based on regular contact with children by the respective researchers over significant periods of time. Each study involves samples of pupils attending mainstream first schools. The issue of reading attainments and standards assessed in different ways raises important pedagogical and methodological issues (Paper 1). Attitudinal aspects of young children's literacy development are then presented (Paper 2). The final presentation focuses on the theoretical bases of children's spelling development and analyses changes from 'invention' to 'convention' (Paper 3).

Paper 1: Year 2 children's reading attainments and the National Curriculum

J DAVIS, Centre for Primary Education, Faculty of Education, University of Manchester

The aim of this study was to examine whether standards were raised, and to what degree, in reading in year 2 by the introduction of the National Curriculum. The cross sectional investigation, spanning one year pre-National Curriculum and three subsequent years, was designed to have two distinct, yet related, parts. The focus of the effects of policy changes over time meant that six two-way Anovas using Cohort and each of the other six independent variables were the central concern (Part 1). Qualitative aspects of school policy and practice were also analysed through semi-structured interviews with each headteacher (Part 2). The random sample of six primary schools was selected from within one Local Education Authority and comprised all year 2 children within these schools. Information in the dependent variables was collected by way of standardised tests. In addition, a semi-structured interview schedule was devised to use with each headteacher. Part 1 results indicated a complex pattern of findings. Did the implementation of the National Curriculum have any significant results? The reading scores of the four cohorts showed Cohort 3 had the highest scores followed by Cohort 4, Cohort 2 and lastly Cohort 1. The rise in reading attainments was confined mainly to two schools out of six. The SAT scores of Cohort 4 were significantly higher than Cohort 3. Part 2 results indicated that the National Curriculum had affected both the pedagogy and resourcing of the reading curriculum. The key implications for future research are: the pressing need for continued investigation into the effects of the National Curriculum on standards in literacy; the effectiveness of SATs as summative indicators of children's reading attainments should be monitored by impartial researchers; school effectiveness in promoting literacy should continue to be investigated. The pupils in this research have been regularly followed up for a number of years.

Paper 2: Attitudinal aspects of early reading development

J PIOTROWSKI, Centre for Primary Education, Faculty of Education, University of Manchester

Context: The study is set within the theoretical framework of social learning theory, locus of control belief and, more specifically, attribution theory. The current research investigates hypotheses derived from the developing attributional characteristics of male and female primary school children identified as having, or not having, Special Educational Needs (SENs) in the mainstream learning situation. **Objectives:** To explore the changing patterns of internality of children's attribution of responsibility over time for learning in the academic context and relate this to cognitive measures including reading attainments. **Design:** The studies comprise a cross sectional study covering four occasions and based on approximately 2000 boys and girls attending mainstream Primary schools (Year 3–Year 6) and a longitudinal study of one cohort of children followed from Year 3 through to Year 6. **Methods:**

From one urban LEA in the north of England, three schools were selected randomly from the subset of large (i.e. two or three forms per year group) schools as identified by the LEA administrators. All children in each year group were tested for attribution of responsibility, self-esteem and sociometric status. Other information recorded related to cognitive attainments such as Standard Assessment Task (SAT) results for National Curriculum English and mathematics and reading ages (NFER-Nelson Group Reading Test 6-12). The tests were administered by the researcher in July of each of the four years of the study. **Results:** For both the cross-sectional and the longitudinal studies, series of anovas were carried out with carefully screened, balanced data using the independent variables of sex, age, term of birth and special needs status in relation to the dependent variables specified above. The results of the analyses were examined for both statistical and educational significance. Overall, and in keeping with patterns established by other researchers, (Crandall 1965/1978 and Reid 1981), on average, levels of internality increase with age. There is some evidence that girls have higher levels of internality than boys. Boys generally demonstrated higher levels of self-esteem than girls. The most marked significant differences were identified in analyses carried out using special needs status. Typically, children with special needs have lower levels of internality than their non-SEN peers, and this pattern persists for levels of self esteem. Encouragingly, the results of the sociometric status analyses suggest that at a sociological level integration may be having some beneficial effects. There was no overall pattern of difference between the positive nominations of pupils identified as having Special Educational Needs (SEN) pupils compared with non SEN pupils.

Paper 3: From invention to convention: identifying optimum times for children's spelling development

E BARNES, Faculty of Education, University College Chester

Objectives: The development of conventional spelling in children's free writing during their infant education, in relation to the schools' stated approach to writing instruction, sex, cohort and occasion of testing, was the focus of the research. **Design:** Six dependent variables were identified, of which four are the focus of this report: (1) the total number of words written in the writing sample; (2) the number of different words written; (3) the total number of correctly spelt words written; and (4) the number of different correctly spelt words written. **Methods:** The sample population consisted of those children admitted to the Reception Year of six schools during the academic year 1991-92. Two of the six schools professed an eclectic approach to the teaching of writing and spelling, two a developmental and two a traditional approach. Writing samples (unaided writing) were obtained termly. As the study is developmental, change across occasion of testing is of central interest and will form the basis for the results presented. The four dependent variables considered for this paper were analysed using simple factorial ANOVAs. **Results:** Children's spelling development moved from invented to conventional spelling over time, but this progress was not even. Certain periods of time saw significant development, and this pattern of development occurred irrespective of gender, school, and approach to teaching. **Conclusions:** The study appears to identify periods of time during which children make significant progress in spelling development. If confirmed by further study, this could indicate optimum times for teaching, and this could have significant implications for teachers and parents.

Symposium 12: Coloured filters and reading

Convenor: J R BEECH, School of Psychology, University of Leicester

Theme and objectives of the symposium: Many children suffer from visual difficulties when reading. The present symposium considers the

role of coloured filters in reading from three important perspectives. It reviews the potential benefits of coloured filters for enhancing children's reading performance; proposes that coloured filters may aid reading by affecting the role of the magnocellular part of the visual system, which has an important role in the control of eye movements, and finally, it examines the clinical relevance of coloured filters. **The relevance of the individual contributions:**

1. Wilkins' paper has direct relevance for practitioners and teachers involved with helping children to read. His paper demonstrates that many children would benefit from the use of coloured filters and discusses contrasting explanations for their efficacy. 2. Stein and Hebb concentrate on an explanation for the benefits of coloured filters in reading being primarily due to effects on the magnocellular system, which in turn helps eye movement control and from there, reading. 3. Evans approaches the problem of coloured filters in reading from the orientation of an ophthalmologist. He examines the relationship between coloured filters and several problems encountered by practitioners in ophthalmology (e.g. binocular instability). Finally, among other issues all contributors discuss the importance of selecting the most appropriate filter in order to produce optimal results.

Paper 1: Improvement in reading fluency with coloured filters: prevalence and mechanisms

A WILKINS, Psychology Dept, University of Essex

Purpose: To review the basis of improvements in reading fluency with coloured filters. **Background:** Many children report perceptual distortions when reading, and an improvement in clarity and comfort if coloured filters are used. **Key points:** The rate at which the size of text in children's reading books decreases with increasing reading age is shown to compromise the speed at which children read, particularly those children who report distortions. About 20 per cent of unselected school children aged 7-11 reliably select an overlay of a particular colour as reducing the distortions, reliably read faster with it, and use the overlay without prompting for several months, reporting reduced distortions and associated discomfort. Demand characteristics cannot provide a complete explanation of the above effects. It is shown that in those who regularly use coloured glasses, the reading speed varies with chromaticity in such a way that departures from optimal chromaticity of two jnd's are sufficient to reduce reading speed by an amount equivalent to one standard deviation of reading speed at any given chromaticity. The slowest reading occurs with white and not with colours that are complementary to the optimum. Individuals who benefit from coloured filters show abnormal fluctuations in accommodation. The fluctuations are normalised with both coloured filters and those that are spectrally neutral and absorb the same photopic energy. The fluctuations may provide an objective index of CNS stress rather than an explanation of the effects of colour. An alternative explanation that integrates magnocellular deficits with a theory of visual stress is offered. **Conclusions:** Many school children would benefit from coloured filters and from reading schemes in which the text remained large and widely spaced despite an increase in semantic complexity.

Paper 2: Coloured filters for reading difficulties

J STEIN & G S HEBB, Physiological Laboratory, University of Oxford

Objectives: Anatomical, electrophysiological, psychophysical and brain imaging studies suggest that the visual confusions that many children with reading difficulties suffer may result from abnormal development of the magnocellular component of the visual system which is specialized for processing visual transients and therefore plays a crucial role in the control of eye movements. Individuals' magnocellular sensitivity can be assessed by measuring contrast sensitivity (CS) at low spatial frequencies and sensitivity to

moving random dot kinematograms (RDK) and their parvocellular sensitivity assessed by measuring their contrast sensitivity at high spatial frequencies and their static form coherence (SFC) sensitivity. Coloured filters may alter the balance of magnocellular and parvocellular input to the visual system; and the improved eye control that this enables may explain their beneficial effect on reading. **Design:** Correlational study. **Methods:** Visual CS, RDK motion, SFC sensitivity, eye control and reading progress were measured in poor readers who chose yellow or blue filters. **Results:** The ratio of magno- to parvocellular sensitivity was higher than normal in subjects who chose blue filters and this returned towards normal during the follow-up period. This was accompanied by improvements in eye control and reading. In yellow choosers the ratio was initially lower than normal; this returned to normal over three months and was accompanied by improvements in eye control and reading. **Conclusions:** The balance of magnocellular and parvocellular input to the ocular motor control system may play an important part in the development of the orthographic skills required for reading. Coloured filters may alter this balance to improve ocular motor control, hence reading.

Paper 3: Clinical aspects of the use of coloured filters for reading

B J W EVANS, Institute of Optometry & Visiting Professor, City University, London

Objectives: To develop a clinical protocol for the evaluation of optometric factors that can influence reading. **Design:** A series of studies have identified the key optometric variables that influence comfort and performance whilst reading and have evaluated the use of coloured filters for reading. These studies are reviewed. **Methods:** The three systems in clinical use for prescribing coloured filters for reading in the UK are compared and the other visual factors that may interact with the use of coloured filters are reviewed. Specifically, the discussion will centre on studies that have investigated the relationship between the benefit from coloured filters and binocular instability, accommodative (focusing) difficulties, a magno-cellular deficit, and attentional deficits. The role of these factors is evaluated, to establish which are the important anomalies for eye care practitioners to detect and treat. **Results:** A key difference between the systems that are used to prescribe coloured filters for reading is the specificity of the required tint. Two independent randomised controlled trials demonstrate that precision is required. Specifically, the blanket prescribing of one colour (e.g. blue) has been shown to produce sub-optimal results. The literature identifies several correlates of the benefit from coloured filters, including binocular instability. There is little experimental support for a relationship between the benefit from coloured filters and a magno-cellular deficit. **Conclusions:** The symptoms that are alleviated by coloured filters are non-specific and may also arise from anomalies of ocular health, refraction, binocular co-ordination, and accommodation. A sequential protocol for the investigation of visual symptoms associated with reading is discussed.

Symposium 13: Understanding and alleviating Developmental Dyslexia (DD): converging approaches

Convenor: P D PUMFREY, Centre for Special and Inclusive Education, University College Worcester & Emeritus Professor of Education, University of Manchester

Developmental Dyslexia (DD) is legally recognised in this country. It is also scientifically controversial and continues to be investigated by professionals from many disciplines. Some workers consider it to be a conceptual cul-de-sac; others accept its utility. The history of research and its applications concerning DD in educational practice has been characterised by divergences rather than convergences. This symposium explores both the former and the latter through the inputs of the four speakers. The aim is to identify theoretically promising lines of further enquiry. In 1999 the BPS published a report entitled *Dyslexia, Literacy and Psychological Assessment*. It was

produced by a Working Party drawn from the Division of Educational and Child Psychology and chaired by Dr Rea Reason. From this work, selected theoretical and applied positions are identified. Research findings that have taken place since the publication of the report are taken into account (Paper 1). In the context of this overview of current research, continuing experimental and empirical research with primary school children is presented in the subsequent three presentations. Evidence concerning the importance of low level visual and auditory transient sensitivities in children's acquisition of cognitive skills underpinning reading and its development is presented. Individual differences in magnocellular development contribute towards an understanding of differences in children's reading abilities and skills (Paper 2). The design, validation and applications in practice of four computer-based systems for the identification and assessment of dyslexia based on psychological profiling that cover the age range from 4:00 yrs. to adulthood, are described. Some implications for applied educational psychology are considered. A longitudinal study of young children initially assessed by a computer-based test of eight cognitive abilities and their subsequent reading attainments is then described. The educational potential of such an approach to cognitive profiling in the early identification of poor reading skills, and of DD is considered (Paper 3). The final presentation outlines the theoretical basis, and emerging findings, of a longitudinal methods experiment into the effects of three programmes on the attainments of pupils with specific literacy difficulties (Paper 4).

Paper 1: Developmental dyslexia, literacy and learning opportunities

R REASON, School of Education, University of Manchester

Purpose: A report by a Working Party of the Division of Educational and Child Psychology (BPS, 1999) regarded dyslexia as a function of the reciprocal effects of learning opportunities and the type and extent of phonological and semantic strengths and weaknesses. The presentation outlines key aspects of the report and then focuses on implications for the evaluation of learning opportunities. **Background:** The remit of the Working Party was to review relevant research and practice in order to write a brief report to clarify the current concept of dyslexia, its links with literacy learning/difficulties and implications for educational psychology assessments. School-aged children were to be the primary focus of the report. **Key points:** A discussion of the concept of dyslexia, and its limitations leads to a working definition that separates description from causal explanations. This links with research about reading and spelling development in general and with different theoretical hypotheses that can account for literacy difficulties within a causal modelling framework. Implications for practice stress the importance of educational opportunities. Current research at Manchester University illustrates this in relation to measures of children's phonological development. **Conclusions:** The report accords with the staged process of assessment through teaching central to the Code of Practice on the Assessment and Identification of Special Educational Needs (DfEE, 2000). Further work is in progress and draws on the concept of 'noticing and adjusting', introduced in the report, which enables educational psychologists, together with teachers, parents and the learners themselves, to monitor progress in relation to the learning and teaching that has taken place.

Paper 2: The sensory basis of reading and reading difficulties

J STEIN, Physiological Laboratory, University of Oxford

Objectives: More than five per cent of children fail to learn to read fluently despite adequate intelligence, teaching and access to literature. These children are often termed 'developmental dyslexics' because it is now widely recognised that their reading problems stem from mild neurodevelopmental impairment. Fluent reading

depends on the acquisition of orthographic skill for processing the visual form of letters and words, and phonological skill for recall of the sounds that are associated with each letter. Several studies have suggested that dyslexics have impaired development of the visual magnocellular system that interferes with their perceptual stability and therefore impairs their ability to lay down stable representations of the visual form of words. Most poor readers are also slow at translating letters into the phonemes that they represent. Such phonological skill depends on sensitive auditory processing of the frequency and amplitude modulations that distinguish phonemes. **Design:** Correlational Studies. **Methods:** Sensitivity to visual motion in random dot kinematograms (RDK) is known to be a good index of visual magnocellular function, whereas form sensitivity depends more on the parvocellular system. Therefore with local ethical approval we have been measuring visual motion and form sensitivity in adults and children, both good and poor readers, and comparing these with their orthographic reading skill. Likewise we have been measuring sensitivity to auditory frequency (FM) and amplitude modulations (AM) and comparing these with phonological reading skills. **Results:** Visual motion, but not form, sensitivity explains a high proportion of subjects' variance in orthographic skill, suggesting that visual magnocellular function may help to determine how well visual reading skills develop. Also auditory 2, 20 and 40 Hz FM and 20 Hz AM, but not 240 Hz FM, sensitivities, correlate well with phonological ability in both adults and children over the whole range of reading abilities from good to poor readers. These slow modulation frequencies are tracked in real time; they reflect aspects of auditory temporal processing that may be analogous to visual magnocellular processing, whereas higher frequencies are identified by their spectral features. We have also found that dyslexics have selective deficits in vibrotactile sensitivity that is subserved by large dorsal column afferents. **Conclusions:** We speculate therefore that reading problems arise from impaired development of a system of cerebral magnocellular neurones throughout the brain.

Paper 3: Computer-based identification and assessment of dyslexia

C SINGLETON, Dept of Psychology, University of Hull

This paper will review the design, validation and application of four computer-based systems for the identification and assessment of dyslexia, which have been developed in the Psychology Department at the University of Hull. These programs, which span the age range four years to adult, are CoPS Cognitive Profiling System (1996), LASS Secondary (1999); LASS Junior (2001) and LADS (2001). They provide teachers with effective assessment instruments that can be used easily in the classroom and so avoid children with dyslexia 'slipping through the net'. The latest development, LADS (Lucid Adult Dyslexia Screening), has recently been trialled in universities and colleges of further education, and is expected to meet a major need for swift identification of dyslexic students. The theoretical and empirical rationale behind these significant innovations in the field of psychological assessment will be outlined, the implications for educational psychology discussed, and some pertinent case studies examined.

Paper 4: Intervening effectively in Developmental Dyslexia: results from the SPELLIT project

J RACK, The Dyslexia Institute and the University of York & J HATCHER, University of York

Study Programme to Evaluate Literacy Learning through Individualised Tuition (SPELLIT) is evaluating three intervention programmes which involve specialist withdrawal teaching, home support activities or a combination of the two. Approximately 45 pupils with specific literacy difficulties were assigned to each of these three groups and a further group, who received tuition

after a period of waiting, served as a control. Final post-test data will have been collected by the end of July 2001 and preliminary outcomes will be presented. The sample as a whole have been found to show the memory and language processing difficulties which are characteristic of a dyslexic profile, but there is considerable variation. Amongst those who received tuition, we have found that specific difficulties in short-term verbal memory are associated with slower progress whilst those with relatively weak rhyme skills respond better. It is argued that specific cognitive deficits in verbal short-term memory provide an index of dyslexia which is predictive of teaching outcome. This finding has important implications for contemporary assessment practices.

Symposium 14: Ability grouping in the secondary school

Convenor: S HALLAM, Institute of Education, University of London

Recently, there has been increased interest in structured ability grouping as a means of raising educational standards. Responding to guidance from the DfEE, many schools have changed their grouping practices. Previous research undertaken in the UK and elsewhere has indicated that the effects of structured ability grouping on pupil achievement may not be positive and that there may be detrimental effects on pupils' personal and social development. The papers in this symposium report findings from projects undertaken within the current UK educational context which explore:

- students' perceptions of different kinds of ability grouping, their preferences and how these are related to gender, eligibility for free school meals and 'ability';
- the effect of ability grouping on pupils' relationships with school;
- changes in the relationships between setting in mathematics, self-concept and attitudes towards school as children progress through secondary school; and
- the beliefs of teachers of different subjects about ability grouping, the teaching practices they adopt and how these relate to the school in which they teach.

The findings will be discussed in relation to their implications for schools in deciding ability grouping policies and the possible subsequent outcomes for pupils.

Paper 1: Ability grouping: pupils' experiences of different grouping practices

S HALLAM, J IRESON & C HURLEY, Institute of Education, University of London

Objectives: In response to recent pressures to raise standards, schools have increasingly adopted structured ability grouping practices. This paper explores how the effects of different types of ability grouping in the secondary school are perceived by pupils. **Design:** Data were collected from three types of school adopting different levels of structured grouping. **Methods:** Over 6,000 pupils, in year 9, in 45 schools, 15 of each type, took part in the research. Each pupil completed open and closed questionnaire responses. Interviews were undertaken with small groups of pupils in six selected schools. **Results:** Analysis of variance, t-tests and chi-squared tests were undertaken to ascertain the differences in perceptions between pupils attending different types of school and in different ability groups. The majority of pupils preferred setting, although responses were mediated by the type of school attended, ability group placement, gender and eligibility for free school meals. Pupils tended to prefer the grouping structures adopted in their school. Lower ability pupils and those eligible for free school meals tended to prefer mixed ability classes, while girls preferred setting. Setting was preferred as it enabled work to be set at an appropriate level. Moving up a set was perceived as desirable because it improved status, examination opportunities and enhanced employment prospects. **Conclusions:** Structured grouping legitimised and made more transparent differences in pupils' attainment and this led, in

some cases, to stigmatisation of those in the lower sets.

Paper 2: Pupils' relationships with school: does ability grouping make a difference?

J IRESON, S HALLAM & C HURLEY, Institute of Education, University of London
Objectives: This paper examines year 9 pupils' relationship with their secondary schools and compares pupils in schools with different levels of structured ability grouping. **Design:** A sample of 45 mixed secondary comprehensive schools was selected to represent three levels of structured ability grouping (mixed ability, partially set and set) in years 7 to 9. All year 9 pupils (over 6000 pupils) were included in the research. **Methods:** Year 9 pupils completed questionnaires containing items on their relationship with school. **Results:** Pupils' responses to the questionnaire items were compared to examine differences in responses in the three types of school. The analysis of individual items revealed that pupils in schools with high levels of ability grouping were less positive than pupils in schools with mixed ability organisation. Eight items formed a scale with good reliability. **Conclusions:** The amount of structured ability grouping may influence pupils' relationships with their school. These findings are consistent with our previous analysis of pupils' self-esteem in the different types of school. Possible factors mediating between school organisation and pupils' affective responses to school will be discussed. The scale may provide a useful measure in future research.

Paper 3: Changes in the relationships between setting in mathematics, self-concept and attitudes towards school as children progress through secondary school

K DEATHE & S HALLAM, Institute of Education, University of London
Objectives: To explore changes in pupils' self-concept and attitudes towards school as children experience different types of ability grouping as they progress through secondary school. **Design:** Cross sectional study of responses at different ages. **Methods:** Attitudes towards school and mathematics; mathematics, general and school self-concept and preferences for different kinds of grouping were measured in 234 students from years 7 through 10 attending a mixed comprehensive school. **Results:** The findings indicated that maths self-concept was consistently lower than school self-concept and general self-concept. All aspects of self-concept increased up to year 9 and then declined to their original levels in year 10. Pupils in the higher sets tended to have higher self-concepts. Preferences for setting increased as pupils progressed through school as did the extent to which the top set was perceived to be the best. Most pupils were satisfied with the set they were in. Of those who were not, most wanted to move to a higher set. This pattern did not change as pupils progressed through school. Pupils' attitudes towards school remained fairly constant over time. Those in the lowest ability groups tended to have less positive attitudes. Attitudes towards mathematics showed no consistent pattern across sets and may have been mediated by teacher effects. **Conclusions:** The effects of setting in mathematics on aspects of self-concept, preferences for different types of grouping and attitudes towards school were mediated by set placement, experience of setting and year group. Set placement does not appear to have a consistent effect on attitudes towards mathematics.

Paper 4: Ability grouping: attitudes and pedagogical practices of teachers in different subject domains

S HALLAM & J IRESON, Institute of Education, University of London
Objectives: In response to recent pressures to

raise standards, schools have increasingly adopted structured ability grouping practices. This research, funded by the ESRC, explored the differences in attitudes towards grouping and pedagogical practices expressed by teachers in different subject domains in schools adopting different ability grouping practices. **Design:** Data were collected from three types of school adopting different levels of structured grouping. **Methods:** 45 secondary schools took part in the research, divided into three groups varying in the extent to which they adopted structured ability grouping. The teachers working with the pupils from years 7 to 9 in each school completed a questionnaire with open and closed questions which explored their attitudes towards ability grouping and the differences in their pedagogical practices when teaching low, high or mixed ability classes. **Results:** The data from the questionnaires were analysed using chi-squared tests, analysis of variance and multiple regression techniques. Generally, teachers of mathematics and modern foreign languages were more in favour of structured ability grouping than those teaching English and humanities, with those teaching science expressing intermediate attitudes. Teachers' pedagogical practices differed when they were teaching groups of different abilities. **Conclusions:** Teachers' attitudes towards ability grouping and their pedagogical practices appeared to be determined, in part, by conceptions of the nature of the subject but also by the type of ability groupings adopted by the school in which they taught.

Symposium 15: Educational and developmental aspects of autistic spectrum disorder

Convenor: M BLAMIRE, Centre for Educational Research, Canterbury Christ Church University College

Paper 1: Multidisciplinary use of 'structured teaching' to promote a consistent approach for learners with autistic spectrum disorders

M HOWLEY, University College Northampton & D PREECE, Northamptonshire Social Services
Consistency of approach across environments is an integral part of service delivery for children with autistic spectrum disorders in Northamptonshire. These services use the 'structured teaching' approach developed by Division TEACCH (Treatment and Education of Autism and related Communication Handicapped Children). A collaborative, multi-disciplinary approach to using structured teaching has been established involving practitioners from education, social services, health and voluntary agencies, enabling cohesive provision of services to be developed. This paper describes how different agencies worked together to meet the needs identified by two families. A narrative case study approach illustrates how collaborative practice was used to develop appropriate and consistent provision across settings. There are clearly limitations to this case study approach. However, it is anticipated that the conclusions might relate to other situations and a number of tenets for effective multi-disciplinary working are therefore proposed

Paper 2: Ethical and strategic dimensions of establishing support systems for students with autistic spectrum disorder (ASD) in higher education: the ASPHIE Project

M BLAMIRE, Centre for Educational Research, Canterbury Christ Church University College
This paper examines the conceptual frameworks and ethical issues that have been examined in relation to a HEFCE-funded project to locate the need for support for students experiencing these difficulties across higher education and to establish examples and criteria of successful support conforming to the Quality Assurance Agency (QAA) code of practice for increasing

access to higher education for students with disabilities. The project has found at least two students with ASD in each institution but that this group may be underrepresented due to the stigma of the label. Issues of disclosure and research agendas are explored alongside the role of teaching and learning institutions in responding to the needs of students with ASD.

Paper 3: The future of assessment for learners with autism

S TYLER, Headteacher, Inscape House Boys and Girls Welfare Society, Stockport
The Teacher Training Agency (DfEE) has suggested skills knowledge and understanding underpinning specialist teaching for learners with complex needs including autistic spectrum disorders. Contradictory guidance from the Centre for Studies in Inclusive Education (Index of Inclusion, 2000) has been distributed to schools in England and Wales. This paper examines the contested role of specialist assessment in enabling the education and social inclusion of learners with autistic spectrum disorder across specialised and mainstream settings.

Symposium 16: The George Butterworth memorial symposium

Conveners: G BREMNER, Dept of Psychology, University of Lancaster & A SLATER, Dept of Psychology, University of Exeter

Paper 1: Object search revisited

G BREMNER, Dept of Psychology, University of Lancaster
Piaget's stage IV or A not B error has proved elusive of an explanation and recently has attracted a number of new interpretations. Smith *et al.* (1999) have suggested that the error is due to motor history of search at A, pointing out that similar errors arise even if no object is hidden at either place. Diamond (1990) proposes that the error can be traced to frontal cortex immaturity: infants can represent a hidden object at B in memory but are unable to use this information to inhibit a past action to A. Munakata (1998) presents a neural network model that explains the error in terms of the competing influences of information about hiding and retrieval at A versus hiding at B. All these accounts have difficulties with two findings that George Butterworth obtained in his D.Phil work. Firstly, infants make errors even when the object is visible under a transparent cover at the B location. In this case there is no need to use an object representation to inhibit past action at A, yet infants still err. Secondly, infants make errors after purely observational trials. Unlike other studies investigating this, Butterworth was careful to allow no prior reaching to A, but still infants made errors on B trials. This finding provides difficulties for accounts based on motor history or inhibition of past responses.

Paper 2: Newborn infants prefer attractive faces – some of the time!

A SLATER, Dept of Psychology, University of Exeter
This research began in collaboration with George Butterworth, and initially was an investigation into the 'attractiveness effect' in newborn infants. Previous research has shown that infants, three months and older, have consistent preferences for attractive faces in that they will look more at faces judged by adults to be attractive when these are shown paired with faces judged to be less attractive. In this first set of experiments the attractiveness effect was also found in newborn infants, and later experiments explored the roles of internal and external facial features, and facial orientation, in modifying the effect. These findings are presented and discussed in terms of early prototype formation and early facial representations.

Paper 3: Initiating joint attention: pointing in infancy

F FRANCO, Dept of Psychology, Middlesex University

The last 15 years or so have seen a great development of interest in research on joint attention in infancy. Some of this interest was stimulated by the fast growing Theory of Mind (TOM) research: the developing understanding of psychological or 'mental' states such as attention appeared good candidates for the identification of precursors of or prerequisites to TOM. However, interest in joint attention pre-existed in this era, both in spatial cognition development and in communication development. It is precisely from the latter two backgrounds that, respectively, George Butterworth and I came to collaborate. In this talk, I will briefly outline the initial research concerns George Butterworth and I had, namely the development of infants' ability to follow someone's gaze or point and correctly identify a target (GB), and the relationship between the communication and social cognition in the transition to language (FF). Next I will describe the common ground that we developed in the study of infants' initiating joint attention with a social partner, in particular focusing on the pointing gesture. Finally, I will illustrate some research lines that this early work generated.

Paper 4: Interactions between voluntary and involuntary movements in neonates: the case of hand-mouth co-ordination

D LEW, Dept of Psychology, Lancaster University

Until the second month of life, infants engage in spontaneous General Movements (GMs) of the trunk and limbs. Traditionally, these GMs were interpreted within the context of a view of the neonate as a passive, reflexive being, incapable of purposeful behaviour. An opposite view of these GMs in taken by Van der Meer et al. (1996). These authors suggest that GMs are purposeful and serve to develop visual control of reaching. Using the examples of pre-reaching and particularly hand-mouth co-ordination, I will argue that these elements of goal-directed behaviour can be observed in neonates. However, the expression of such movements, arising is a continuation of foetal movement patterns which are endogenously generated by the rapidly developing CNS.

Paper 5: Left holding the baby? The functions and development of the left cradling bias

B TODD, Dept of Psychology in the School of Cognitive and Computing Sciences, University of Sussex

Between 70–85 per cent of women show a bias to hold young infants to the left of the body midline which is independent of handedness and parity (Salk, 1960). The bias is generally reported to be weaker in males than in females yet this finding may relate to levels of experience rather than gender per se. A preference to cradle on the left is apparent very early in the development of girls. Even pre-school girls were found to exhibit a left cradling bias when they held a doll yet no equivalent bias is found in young boys. Several theories which have been proposed in explanation of the left cradling bias will be examined. These relate to lateral preferences for holding weights similar to that of a baby, the relationship to infants' preferential head turning response and the tranquillising effect of maternal heart beat sounds. Experimental evidence failed to support these explanations and alternative theories relating to hemispheric specialisation of the infant and the cradler are considered.

Discussant: P BRYANT, Dept of Experimental Psychology, University of Oxford

Symposium 17: Making educational sense of Attention Deficit Hyperactivity Disorder (ADHD)

Convenors: P COOPER, University of Leicester, P MARAS, School of Social Sciences, University of Greenwich & B NORWICH, School of Education, University of Exeter

ADHD continues to be a focus of controversy. This controversy is most clearly articulated in terms of a clash between social and bio-medical models of disability. The presenters in this symposium are all associated with attempts to eschew the crude polarities of this sterile debate in favour of a bio-psycho-social perspective which seeks to illuminate the ways in which individual and social factors interact in emotional, social and learning problems. This symposium contributes to the development of this perspective in relation to ADHD through the presentation of three related papers.

Paper 1: Attribution and ADHD

P COOPER, University of Leicester, P MARAS, University of Greenwich & B NORWICH, University of Exeter

This paper reports on an ESRC-funded project carried out by the three presenters. The national study of over 4,000 school-aged children identified the nature and prevalence of a range of social, emotional and behavioural difficulties. Detailed case studies revealed the patterns of attributions employed by children, their parents, and their teachers in relation to their social, emotional and behavioural difficulties. Particular attention is paid in the presentation to relationships between attributional patterns and the presence or absence of formal diagnostic and service labels.

Paper 2: Are nurture groups an appropriate intervention for ADHD?

P COOPER, University of Leicester

This paper draws on a recently completed research project on the effectiveness of nurture groups as an educational intervention for children with social, emotional and behavioural difficulties. It considers the characteristics of children placed in these groups in relation to the ADHD diagnostic criteria and examines the potential role of nurture groups in intervention for ADHD.

Paper 3: Guidelines and principles for successful multi-agency working in relation to ADHD

P MARAS, University of Greenwich & P COOPER, University of Leicester

The presenters were involved in the working group that produced these Society guidelines (the group was co-chaired by Pam Maras and Paul Cooper). The guidelines offer insight into the ways in which professionals from different disciplines might deal with some of the difficulties involved in multi-agency working. The guidelines begin with a definition of ADHD that has found acceptance in a multi-disciplinary forum, and proceeds with principles for co-operation in relation to identification of, intervention with, and prevention of ADHD.

Symposium 18: The development and education of gifted and talented children

Convenor: J FREEMAN, Faculty of Education, University of Middlesex

Much mythology circulates about the gifted, which may be taken up by teachers and other professionals. This symposium presents a more scientific approach by examining the current state of knowledge and suggesting ways of using it for the benefit of the children. It covers international research, specific underachievement and prodigies. Joan Freeman begins with a critical

overview of international research findings, including identification and special educational methods, e.g. acceleration, enrichment, creativity and policy. To reach an exceptionally high standard in any area, gifted children need the means to learn, generous material to work with, focussed challenging tuition and encouragement. Measurement and selection of an élite for special education can be less important in promoting excellence than the style of high-level educational provision which harnesses children's motivation. Diana Montgomery provides evidence on underachievement in dyslexic gifted children, with particular emphasis on the underlying difficulty of phonological processing problems. When this difficulty is addressed, they can be brought up to grade-level within two years. Bottom-up or top-down approaches are recommended, depending on the particular pattern of 'logographic', 'alphabetic', or 'orthographic' dyslexia. Examples are given of the top-down corrective and developmental methods as well as bottom-up APSL-(Alphabetic-Phonic-Syllabic-Linguistic) multisensory approaches. John Radford describes three related dimensions regarding recognised child prodigies. He looks at regularly appearing newspaper reports and the messages they give. He considers follow-ups of contemporary cases, further information on historical cases, the relationship between early and late achievement and recent knowledge about prodigies.

Paper 1: Overview of international research on gifted development

J FREEMAN, Faculty of Education, University of Middlesex

A critical overview of scientific findings on the development and education of gifted pupils is presented. Research problems are examined, notably re: identification, as well as claims for special educational methods, particularly with regard to acceleration, enrichment, creativity and policy. No single style of teaching is adequate for all. To reach an exceptionally high standard in any area, it is clear that gifted children need the means to learn, the right material to work with, focused challenging tuition and encouragement. Follow-up studies show that school achievement is not a reliable signal to adult success because gifts can take many forms and turn up in quite unexpected situations during a lifetime. Measurement and selection of an élite for special education can be less important in promoting excellence than widespread educational provision which harnesses children's motivation. Currently, extra help, such as master-classes or grade-skipping, is provided for already highly achieving children. A wider and more dynamic approach is suggested, which takes children's opportunities into account, to pick up the perhaps 20 per cent more who have hidden talents. The key is the children's interests, along with guidance and opportunity to develop excellence. Just as every school provides extra tuition, equipment and transport for sports, we could easily and inexpensively do the same for other subjects.

Paper 2: Able underachievers

D MONTGOMERY, Middlesex University

The double exceptionality of high ability and dyslexia expose a spectrum of patterns of difficulties. However, case-study work, grounded research and quantitative measures with over 300 dyslexics and matched controls have revealed an underlying difficulty with phonological processing problems not entirely consonant with current paradigms. This research has also shown that when this difficulty is addressed through the spelling and handwriting teaching of these pupils' literacy skills, including reading, they can be brought up to grade-level within two years. Bottom-up or top-down approaches are recommended depending on the particular pattern of 'logographic', 'alphabetic' or 'orthographic' dyslexia. For the highly able dyslexics, who make up at least 10 per cent of the above-average sample, all remediation techniques should emphasise the 'engage brain' element to satisfy the able learners' needs. These remediation techniques include APSL (Alphabetic-Phonic-Syllabic-Linguistic) programmes run by specialists, Cognitive Process Strategies for all class and

subject teachers and the '15 Spells' approach to unlock all misspellings. Examples will be given of the top-down corrective and developmental methods as well as bottom-up APSL-multisensory approaches. The National Literacy Strategy, with its overemphasis on reading and the general 'urge to phonics' and 'multisensory teaching', is found to be necessary but not sufficient for helping the able and less able dyslexic, and so other strategies and techniques need to be included in any portfolio of provision suggested by psychologists to teachers.

Paper 3: High achievement: child prodigies re-visited

J RADFORD, University of East London

In 1990 I published what I believe to be still the only attempt at a comprehensive coverage of what have been popularly called 'child prodigies'. The only attempt to define this term precisely that I have come across (by Feldman, 1986), is inadequate. Rather, I prefer my original conception of three dimensions which must be taken in relation to each other. 'Child prodigies' can be considered as 'exceptional early achievers'. Such cases are constantly in the news: a ten-year survey of two national newspapers (Radford, 1998) found reports on average once every 12 days or so. Child prodigies, considered in this sense, are revisited in the following senses: (1) Can those contemporary cases mentioned in 1990 be followed up? Is there more information available on the historical cases? (2) More generally, what happens to early achievers in later life? What is the relationship between early and later achievement? (3) Is more known now about the conditions of high achievement than a decade ago? Available data allow partial, but not complete, answers to these questions.

Symposium 19: Children with speech and language difficulties

Convener: G LINDSAY, Centre for Educational Development, Appraisal and Research, University of Warwick

Children with speech and language difficulties have needs which require attention by both education and health services. The population is highly varied, including children with primary language difficulties and those for whom speech and language difficulties are associated with one or more other major developmental problems, e.g. hearing impairment and autism. This symposium aims to identify the educational implications of the needs of children with speech and language problems, with particular emphasis on those with primary language difficulties. The symposium will report on a national 'scoping' study which identified speech and language needs, the provision made to meet those needs, and also identified models of effective collaborative practice between education and health professionals, especially speech and language therapists. Three other papers will address specific aspects of the needs of children with primary language difficulties, focussing on their educational attainments and social-behavioural development. Issues to be addressed include patterns of numeracy development, co-morbidity of social and behavioural difficulties, and the performance of children on SATs. The symposium will identify the implications for the development of inclusive education in a context of increased accountability eg league tables, including effective collaborative multi-disciplinary models of support, parental involvement and children's entitlement.

Paper 1: Patterns of difficulties in numeracy development of children with specific language impairment

R GEORGE, University of East London & J DOCKRELL, Institute of Education, University of London

Objectives: Children with language impairment frequently experience problems in their number work at school. For example, there are difficulties in producing number words, counting objects and problem solving. However, the relationship between the pattern of difficulties observed in numeracy and the children's verbal processing capacities is not yet clear. The present study

provided evidence to address this gap. **Method:** The participants were 27 children with SLI aged 6-7 years and two separate comparison groups individually matched for chronological age and language level. Tasks were presented to systematically investigate children's counting, production and comprehension of double-digit numbers and solutions to addition sums. The tasks were designed to explore the effects on performance of number size, verbal context, phonological factors, use of concrete materials and use of written versus oral numbers. **Results:** Responses were analysed in terms of accuracy and error types. There were similarities and differences between the performance of the language impaired and typically developing groups suggesting areas of strengths as well as weaknesses in the children's numeracy development. Performance also varied according to task features suggesting that the children's difficulties were related to both verbal and non-verbal demands of the tasks. **Conclusions:** These findings have implications for supporting numeracy development. They will be discussed in relation to the children's verbal and non-verbal abilities and the processing demands of the tasks.

Paper 2: The behaviour and self esteem of children with specific speech and language difficulties (SSLD)

G LINDSAY, Centre for Educational Development, Appraisal and Research, University of Warwick, J DOCKRELL, Institute of Education, University of London, C MACKIE, University of Warwick & B LETCHFORD, Institute of Education, University of London

Objectives:

- to report the social and behavioural characteristics of children with SSLD, as identified by their parents and teachers at Year 6;
- to report the children's self esteem, as identified by themselves and their teachers;
- to investigate the stability of these characteristics from Year 3-6.

Design: Longitudinal study of sample of children with SSLD, with present data taken from Years 6, and comparisons with Year 3. **Methods:** A sample of 69 children with SSLD, 59 from 2 LEAs and 10 attending regional special schools, was identified in Year 2, and has been followed up at Years 3 and 6. At Year 6 the children were assessed on a battery covering language, cognition and educational attainment; data were also collected on their emotional and behavioural development, including the Strengths and Difficulties Questionnaire, Junior Rating Scale and Self Perception Scale for Children. **Results:** Children with SSLD in Year 6 have an increased likelihood of social and behavioural difficulties. Ratings by parents and teachers generally correlate significantly, but parents report higher levels of problem behaviour. These patterns show stability over the period Years 3-6. **Conclusions:** The implications of these results are considered with respect to provision for children with SSLD, including inclusion in mainstream education.

Paper 3: Effective provision for children with speech and language needs

J LAW, City University, London, G LINDSAY, University of Warwick, N PEACEY, Institute of Education, M GASCOIGNE, City University, N SOLOFF, City University, J RADFORD, Institute of Education & S BAND, University of Warwick

Objectives: The objectives of this study were to examine existing provision and identify areas which need to be addressed. **Design:** Phase 1. A questionnaire was circulated to all SLT managers in Health Trusts with a community children's service and 50 per cent of all LEA managers in England and Wales. Phase 2. Fifteen LEA/Health Trust collaborative pairs were targeted for a more detailed qualitative analysis of the factors determining the process of collaboration between

health and education services. Phase 3. The third phase comprised a series of five meetings made up of managers, practitioners and parents from across England and Wales to cross validate findings from the two previous phases. **Results:** A number of interdependent themes were identified: *Managerial issues.* Funding, the need for common data sets, the identification process, co-terminosity between LEAs and Health Trusts, collaboration between LEAs and Health Trusts, the recruitment and retention of speech and language therapists, issues which specifically relate to Welsh and English as an additional language. *Service delivery.* Models of provision for supporting children. The size and changing nature of caseloads, prioritisation systems. The role played by parents and carers. *Training.* Education, training and continuing professional development, the expectations of colleagues and parents. **Conclusions:** It is essential that providers address the issues raised in this report before assuming that effective provision is in place.

Paper 4: SATs and children with specific speech and language difficulties (SSLD): entitlement denied?

J DOCKRELL, Institute of Education, University of London, G LINDSAY, C MACKIE, University of Warwick & B LETCHFORD, Institute of Education, University of London

Objectives:

- identify the arrangements for, and results of, SATs at Key Stage 2 for children with SSLD; and
- to identify the relationships between SATs and the children's cognitive and language abilities.

Design: Longitudinal study of sample of children with SSLD, with present data taken from Year 6. **Methods:** A sample of 69 children with SSLD, 59 from 2 LEAs and 10 attending regional special schools, was identified in Year 2, and has been followed up at Years 3 and 6. At Year 6 the children were assessed on a battery covering language, cognition and educational attainment; data were also collected on their emotional and behavioural development, and on their results on end of KS2 national curriculum assessments (SATs). **Results:** The present paper focuses on the SATs results of 63 of the original sample. Data will be presented which indicate substantial differences in attainment across English (lowest), maths and science (highest). A high proportion of these children were disapplying from SATs, particularly English; disapplication was related to cognitive, language and literacy abilities but not to type of school (special vs mainstream). **Conclusions:** The findings have implications for policy and practice. Do these trends for disapplication reflect sensitive responses to the needs of children with SSLD, or schools' responses to league tables?

Symposium 20: Processes involved in successful collaborative learning

Convener: S LAMB, Division of Psychology, Nottingham Trent University

This symposium addresses the nature of successful collaborative learning. A range of research findings is presented which demonstrate some of the underlying processes and factors which affect a successful collaborative outcome. The issue is explored by looking at examples of children interacting across several different domains and with a range of abilities and ages. The first paper focuses on the nature of collaborative interactions of children with learning difficulties. This paper discusses the factors which affect productive interactions and thus lead to successful collaborative outcomes. Paper 2 looks at the effects of a particular task factor on children's interactions during collaborative problem-solving in mathematics. By changing the nature of the task, the author demonstrates higher level discussion and consequent improved performance on the task itself. Similarly in the third paper, the authors discuss how characteristics of both the learner and the task affect the collaborative outcome in a computer mediated language environment. The final paper specifically

addresses the finding that these positive effects of collaborative learning are not always observed immediately. By analysing the interactions occurring during group tasks, the authors demonstrate that the nature of these interactions determines later conceptual learning. In their conclusions, the papers address the significance of these findings for the classroom context. In particular, the symposium highlights aspects such as the effects of task characteristics and learner characteristics, the significance of the previous experiences of the children, and the implications of post-group work for successful collaboration between children in the classroom.

Paper 1: The nature of strategic change in collaborative interactions

S LAMB, Division of Psychology, Nottingham Trent University

Objectives: This paper reports the findings of a study designed to explore the nature of the change in strategic behaviour of a group of children with moderate learning difficulties over the course of a communication skills intervention programme. **Design:** The paper reports part of a longitudinal intervention study designed to improve communication and self- and other-regulatory skills. **Methods:** Two children with moderate learning difficulties who took part in the intervention were videoed as they completed a series of collaborative tasks in pairs. Changes in strategic behaviour were measured using a coding frame designed to identify changes in behaviours such as monitoring one's own understanding and that of one's partner, checking agreement, readiness and attention and reflecting on information provided by one's partner. **Results:** The results suggest that the improved performance on these collaborative tasks can result from changes in several different aspects of strategic functioning. The development of these changes is affected by a variety of factors such as the ability of the child's partner, the type of the task and the nature of the child's previous interactions in earlier tasks. **Conclusions:** The results suggest that a range of factors contribute to a child benefiting or not benefiting from intervention programmes designed to improve communication skills. The results of the study are discussed within a Vygotskian framework, in particular the role of the ZPD in collaborative interactions. The practical implications for improving the strategic skills of children with learning difficulties are also discussed.

Paper 2: The use of analogy for collaborative problem-solving in primary mathematics

S DING, Centre for Childhood Development and Learning, The Open University

Objectives: There is considerable evidence that the use of analogy can improve children's problem-solving, and that peer interaction can also facilitate such activity. The objective of this study was to investigate: (a) Whether the introduction of an analogy to a collaborative task would improve outcomes; and (b) The types of on-task dialogue used in both situations, with a view to investigating how the introduction of an analogy affected children's underlying problem-solving processes. **Design:** A between subject design was used, so that all participants could work with the same set of problems. **Methods:** 20 pairs of 8- to 9-year-old children participated. Each pair was used to working together, and all participants were pre-tested for mathematical ability. They all solved the same set of problems, but ten of the pairs were introduced to an analogy as part of the experimental procedure. **Results:** The outcome data were analysed using a t test, and the dialogue was coded for various task-relevant features, and then analysed. The results showed that the use of analogy did improve performance, and that this was associated with a greater use of exploratory and inferential talk. **Conclusions:** This study has demonstrated that the use of analogy can further enhance the cognitive effects of peer interaction, and has begun to sketch out some of the reasons which are associated with this improvement, thus adding to our

understanding of the processes which underlie successful collaborative learning.

Paper 3: Structured conversations with "bubble dialogue" (BD)

G DILLON, J UNDERWOOD & S LAMB, Division of Psychology, Nottingham Trent University

Objectives: The aim of this study was to further investigate the effect of ability, gender, power and task on the nature of collaborative interactions in a computer supported environment. A subsidiary goal was to provide baseline measures of the use of BD with normally developing children for future studies with autistic children. The software 'Bubble Dialogue' (BD) is designed to structure communication between users through processes such as role-play and multiple perspective turn taking, and makes a clear distinction between the processes of talk and thought. **Design:** The design comprised four between group factors, each with two levels: Ability, Gender, Power Relationship and Task. **Methods:** The sample comprised 53 children (seven to eight-years-old). The children were matched on chronological age and reading ability and in the peer/peer condition according to friendship when all other criteria had been satisfied. Measures taken included performance, process, and task measures associated with the use of BD. **Results:** Preliminary analysis revealed both qualitative and quantitative differences across the ability range. More able pupils produced dialogues that were longer and more coherent than less able peers, and were better able to distinguish thought from speech. **Conclusions:** This study has highlighted the interaction between learner and co-worker characteristics and the task characteristics; shown that BD is an effective tool for investigating collaborative interactions; provided base-line data on BD, particularly the frequency of use and depth of understanding between thought versus speech acts which will support future work with autistic children.

Paper 4: Group work and conceptual growth: Clarification of delayed effects

C HOWE, D McWILLIAM & G CROSS, Dept of Psychology, University of Strathclyde

Background: Research by the author has shown that although group work between children can trigger conceptual growth, the full benefits are not always apparent until some time after the group work is complete. The processes by which such delayed effects occur are poorly understood, often being subsumed under vague terms like 'equilibration'. As such, the processes pose challenges not just for psychological theory, but also for teachers trying to contextualise group work in classroom routines. **Purpose:** The aim of the paper is to offer clarification, by linking the author's group work data with traditional research into 'incubation' in problem solving. **Methods:** Dialogue analysis will be used first to show that group interaction is the causative agent in post-group conceptual growth and second to sharpen a series of hypotheses about process that can be drawn from the incubation literature. These hypotheses include mental set breaking, private (possibly unconscious) post-group work and group-induced sensitivity to relevant external events. Observations of nine to 12-year-old children engaged in specially designed group tasks and/or post-group exercises will be presented as evidence relevant to these hypotheses. **Conclusions:** The paper will end by emphasising that investigating the delayed effects of group work is not only important but also, in view of obtained results, more tractable than hitherto assumed.

INDIVIDUAL PAPERS

Phonological awareness in children in and out of school

K ALCOCK, M JUKES & D NGOROSHO, Dept of Psychology, City University, London

Objectives: Phonological awareness is a composite skill including awareness of words, phonemes, and phonological similarities, and the ability to break down words into component parts. Skill in phonological awareness tasks predicts future or concurrent reading skill; however some phonological awareness tasks are not possible for preschool children or illiterate adults. This study aims to investigate the direction of causality by studying children who cannot read through lack of opportunity rather than lack of aptitude. **Design:** The study aimed to investigate the impact of age and schooling on phonological awareness in an age group that in Western settings would already be at school. A two by four (attending and never attended school groups, with four age groups in each schooling group) design was employed. **Methods:** Matched groups of Tanzanian children aged seven to 10 years with no schooling or in first or second grade performed reading tests and phonological awareness tests. **Results:** Most phonological awareness tests were predicted better either by reading skill or by exposure to instruction than by age. Letter reading skill was more predictive of phonological awareness than word reading skill. **Conclusions:** While some tests could be performed by nonreaders, some tests were only performed above chance by children who were already able to read and hence we conclude that these tests depend on reading skill, and more particularly letter reading skill. We discuss the implications of these findings for theories of normal reading development and dyslexia.

The social context of peer relations: Children's social networks on the school playground

E BAINES & P BLATCHFORD, Psychology and Special Needs, Institute of Education, University of London

Introduction: This paper reports findings from a Spencer Foundation-funded longitudinal and multi-method study of playground activities and social relations in junior school. The paper explores the social context of children's peer relations in the playground and will focus on children's social networks in terms of their structural composition, the extent to which they relate to friendship relations and the social roles taken within these groups. **Design:** Data were collected at the start and end of the year on over 120 Year 3 (seven to eight-year-old) children attending four different primary schools in England. On the basis of systematic observations of pupils' involvement in playground activities, social networks (indicated by joint involvement in a playground activity) were identified at the start and end of the year. Peer nominations, child self report, and teacher and researcher ratings provided multiple indicators of social relations. **Results:** Findings indicate that peer networks on the playground often had a core set of members around which others cohere; were predominantly sex, but not ethnically, stereotyped; overlapped with reciprocal friendships and best friendships and consisted of members that took on different roles in activities. Sex differences were found in terms of the composition, size and stability of peer networks. **Conclusions:** Results contrast and complement previous research. The basis of social network formation and stability is discussed in relation to sex differences and friendship relations.

The development of reading skills in children with Down syndrome

P BAYLIS, M J SNOWLING & P HATCHER, Centre for Reading and Language Development, University of York
Previous research has shown children with Down syndrome (DS) learn to read but at an elementary level and find decoding unfamiliar words difficult.

This study examines the reading skills of mainstream educated DS in two education authorities (LEA). Recruitment was via the special needs registers of the LEAs. Every participant had received at least two years' formal reading instruction, was aged over seven and attended mainstream school full-time. Twenty children with a statement of moderate learning difficulties (MLD) were recruited in the same way to form a contrast group. An assessment battery comprised of reading, phonological and cognitive tasks was administered to 60 children, 40 DS and 20 MLD. Each child received two visits at school and all assessments were carried out by the same person. Parents and schools received a report based on the assessment. The results were analysed using correlations and analysis of variance. The results show that the DS group could be divided into three distinct reading groups. The MLD children show a different pattern of skills in reading when compared to DS children. The DS group show evidence of the use of phonological skills in their reading. The influence of the National Literacy Strategy is considered. The next phase of this study is a controlled teaching intervention to develop the reading of the two DS groups that showed the poorest reading skill.

Dictionary use and its effects on literacy and phonology

J R BEECH, Dept of Psychology, University of Leicester

Objectives: To examine the developing use of the dictionary as a possible self-teaching aid for developing reading, spelling and general phonological skills. **Design:** Children's patterns of use of dictionaries was examined in two studies, looking at skill and frequency of use and the relationship between these and reading, spelling and phonological development. The first study used a matched reading level design with poor readers and two other control groups and the other examined developmental differences between two age groups. In both studies levels of nonverbal IQ were controlled between groups. **Methods:** Tests of non-verbal IQ, reading vocabulary, spelling and non-word reading and speed and accuracy in looking up words in a dictionary were given. **Results and conclusions:** As would be expected, poor readers were significantly slower and less accurate in looking up words in a dictionary than their age peers who were average readers. Both age groups in the second study had significant associations between dictionary access speed and accuracy with reading, spelling and phonological skills. Younger readers were three times more likely to use a dictionary to look up spellings. Poor readers were much closer to their age-matched controls, who were evenly divided between using dictionary for looking up spellings and meanings. Self-rated frequency of dictionary use only correlated with spelling skill in the younger readers. Persuading younger children to use a dictionary more could help to develop their spelling skills.

Tutors' constructions of discussion tasks in university tutorials

B BENWELL, Dept of English Studies, University of Stirling & E H STOKOE, Dept of Psychology, University College Worcester

Objectives: This paper adopts a discursive approach to the study of educational talk-in-interaction. Specifically, the focus is upon the opening sequences of university tutorial sessions where the tutor sets out, and students respond to, the business of the day's activity. Whilst a number of studies have tackled the interactional organisation of openings in mundane conversation, openings in educational settings have received little attention. **Design:** Tutorial classes from two higher education institutions were recorded. A variety of discussion tasks, both tutor and student-led, were included in the data collection and we drew across a variety of discipline areas. **Methods:** The resulting data were transcribed and analysed using a combination of conversation and discourse analysis, to allow a focus both on the sequential organisation and rhetorical function of the opening sequences. **Results:** We found that, when

compared to openings in mundane conversation, distinct features combined to mark the encounter as institutional and educational. Second, the interpersonal and metadiscursive functions of such opening sequences were found to be a crucial component of the educative process. In contrast to findings from previous studies of tutor-student interaction, we found that interactional power was negotiated between tutor and students in often-contradictory ways. **Conclusions:** We argue that opening sequences reflected not just educational but social and interpersonal functions. The reluctance displayed by students in relation to task introductions, we argue, may signify broader student ambivalence about their own orientations to academic or intellectual identity. This, in turn, may embody a range of complex social functions including attention to the face wants of the group, group membership and orientation to broader cultural trends.

Time processing and temporal knowledge in children with autism

J BOUCHER & S CRISPIN, Dept of Psychology, University of Warwick

Objective: To assess the hypotheses that biopsychological time processing is impaired in children with autistic spectrum disorders (ASDs), but that knowledge of clock and calendar time is unimpaired. **Design:** A 'fine cuts' design was used in that contrasting predictions were made concerning two closely related cognitive capacities. **Method:** A group of 20 high functioning children with ASDs was compared with a group of age and verbal ability matched controls on four tests of involuntary time processing and temporal knowledge. Tests of the first hypothesis were made in experiments assessing (1) children's ability to use the undated cue 'last week' to access accurate and specific event memories; (2) children's ability to remember the order in which a set of recent undated events occurred. Tests of the second hypothesis were made in experiments assessing (3) children's knowledge of dates and clock times relevant to their own lives, and (4) children's knowledge of days, months, seasons, etc. **Results:** The results support the contrasting hypotheses. **Conclusions:** Children with ASDs may have fundamental impairments of biopsychological (involuntary, unaware) time processing. However, alternative explanations of the findings should also be considered.

Way finding and map reading abilities in teenagers with Williams syndrome (WS)

J BOUCHER, Dept of Psychology, University of Warwick, M BLADES, Dept of Psychology, University of Sheffield & S CRISPIN, Dept of Psychology, University of Warwick,

Objective: To assess way-finding and map-reading abilities in teenagers with Williams syndrome (WS). **Design:** Experiments taken from the literature on typically developing children, some of which were developed by the second author, were used in this study. **Method:** A group of 12 teenagers with WS was compared with a group of typically developing, verbal ability matched controls on (A) a test of way-finding; (B) tests of the ability to use a map-like diagram to find a hidden object in a room; and (C) tests of primary and secondary perspective taking. Children were also given a test of nonverbal ability. **Results:** The children with WS were not impaired relative to controls in their ability to retrace a route they had only experienced once before, both groups of participants appearing to rely mainly on a landmarks strategy, rather than on building a cognitive map of the area traversed by the route. The young people with WS also had unimpaired primary perspective taking, and unimpaired ability to use the map-like diagram when this was presented in an orientation corresponding to the child's physical orientation to the room. However, the WS participants were impaired on secondary perspective taking and on the ability to use an 'upside down' diagram. **Conclusions:** The specific spatial impairments demonstrated, warrant further investigation, which is planned. The relatively good way-finding skills

are encouraging, and have practical implications for helping children and young people with WS to become independent.

Seeing round corners: children's understanding of line of sight

M BOYDELL, R N CAMPBELL & M DOHERTY, Dept of Psychology, University of Stirling

Flavell *et al.* (1991) showed that three and five-year-old children overpredict what can be seen through a tube which is bent to varying degrees. We obtained similar findings with four and five-year-olds, with four-year-olds showing more overprediction than five-year-olds. When provided with feedback (letting them look) five-year-olds mostly corrected their predictions, but four-year-olds continued to overpredict. In a second study, curved walls (50°, 90° and 180°) or walls with corners (same angles) were used in place of tubes. Both four- and five-year-olds overpredicted what could be seen round the curved walls, but their predictions about looking round the walls with corners were more accurate. Five-year-olds outperformed four-year-olds, as before. These experiments show that children's understanding of gaze and vision shows gradual and context-dependent progression through the preschool age-range. Subsequent experiments explore the effects of other variations in the type of obstacle affecting line of sight.

Infant understanding of form: can four-month-olds accurately map the shape of an object?

A BREMNER, P BRYANT & B ROGERS, Dept of Experimental Psychology, University of Oxford

Although newborn infants discriminate between different linear forms independent of orientation (Slater *et al.*, 1991), the precise basis upon which they are doing so is unclear. There is more to an understanding of form than recognition across several orientations. This research pursues form perception further by investigating the extent to which four-month-old infants can represent and remember a specific location within a three-dimensional form. This study was conducted with a real, moving object in order to offer as much information as possible regarding its invariant form. The stimulus presentation was a T-shaped object, all three limbs of which were the same length from the point of intersection. At the end of each of the limbs was a computer controlled light. During familiarisation, infants were presented with the T in a different orientation on six consecutive trials. Throughout all of these trials, a light was illuminated in the same location with respect to the object. Between each trial the light was turned off and the object rotated (in full view of the infant) to a new orientation. Two test trials then presented the light in a novel and then the old location on the object. For the test trials, the T was presented in a new orientation, that was held constant. Infants' mean looking times in novel location trials and old location trials were 11.1 seconds and 10.0 seconds respectively ($F=5.2$, $df=1,14$, $p=0.038$). This finding demonstrates that young infants are able to distinguish between two locations within an object independent of the orientation of that object. The strategies that infants could be using to achieve this discrimination are considered. Implications for theories of the development of object finding are also discussed.

The lexicality effect in serial recall in Williams syndrome

J BROCK, J BOUCHER & G D A BROWN, Dept of Psychology, University of Warwick,

Objectives: Serial recall performance is better for lists of words compared with non-words (the lexicality effect) and for high- compared with low-frequency words (the word-frequency effect). Both findings have been attributed to 'reintegration' – the use of long-term vocabulary knowledge to reconstruct partially decayed phonological traces. Previous research has shown that children with Williams syndrome (WS) showed a reduced word-frequency effect. If this is due to a reduced influence of reintegration then individuals with

WS should also show a reduced lexicality effect. The current study, therefore, investigated the lexicality effect in WS. **Design and method:** 16 children in each of three groups – WS, moderate learning disability (MLD) and typical development (TD) – performed computerised probed recall tasks in which they were asked for an item which occurred in a particular position in a list. Each child performed the task with words and with non-words. **Results:** Children with WS performed better than MLD controls and both groups showed a significant lexicality effect. However, there was no interaction between group and lexicality. Results from TD children will also be reported. **Conclusions:** The results suggest that the reduced word-frequency effect reported in WS cannot be attributed to a reduced influence of reintegration processes. Instead it may reflect a general insensitivity to word-frequency in WS. Current studies are investigating the word-frequency effect using the same probed recall task and with a traditional word-span task.

New entrants to the teaching profession – their theories of teaching

M BROWNLEE, Dept of Education, University of Adelaide, Australia

The intensive one-year, postgraduate, pre-service Graduate Diploma in Education programme is seen as a preparation for teaching in secondary level schools. Part of the major assignment for the common core subject which considers psychology of education required the students to outline their current theory of teaching. The assignment was outlined in the handout for the subject at the beginning of the year and the due date set for four months later. The assessment outcomes were either 'non graded pass' or 'fail'. At the time of the due date nine of the 13 weeks for the subject, and most of the content, had been completed. One of the two teaching practice blocks had also taken place and many of the students were applying for appointments for the next academic year. The primary objective of the paper was to identify in which family, or families, of models of teaching (Joyce, Calhoun & Hopkins 1997) these pre-service student teachers' 'theories of teaching' were sited. It identified those concepts to which they attached most importance for effective teaching. All 122 papers were considered. A content analysis of the writings was made in terms of the psychological concepts and theories included in the course, looking for the extent to which they were incorporated into the students own 'theories' of teaching. The conclusions that may be drawn from the study have a relevance for the ongoing course development, and can inform potential employers of newly qualified teachers where new appointees may have gaps in their overall concepts of teaching and where support and extension is appropriate for understandings already formulated.

Pictorial support for text comprehension in children

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It is well documented that less skilled comprehenders experience difficulties understanding text. This study aims to explore the suggestion that presenting a picture alongside a text will help less skilled comprehenders to understand a story. It is hypothesised that presenting a picture alongside a text will not always aid less skilled comprehender's story understanding, but depend specifically on the relation between the content of the picture and the text. 11 skilled comprehenders were compared to 14 less skilled comprehenders (six and seven-year-olds) who, despite performing at an age appropriate level for reading accuracy, were poor at understanding stories. Skilled and less skilled comprehenders' understanding of three different stories was compared. Stories were either presented as text only or as picture and text, where the picture either overlapped or supplemented text information. Providing a picture that overlapped with the text allowed less skilled comprehenders to understand the stories more appropriately than the

text alone and where the picture supplemented the text. In fact less skilled comprehenders found it more difficult to integrate the supplementary picture and text than the text only story. Where the picture provided new information this needed to be integrated with the text in order to get a full understanding of the story. However, where the picture overlapped with the text the picture was redundant, but for the less skilled comprehenders provided a more appropriate opportunity to understand the story as it avoided the text with which they experience difficulties.

Individual differences in children's addition and subtraction knowledge

K CANOBIE, School of Behavioural Studies, University College Northampton

Objectives: Individual differences in young children's understanding of part-whole concepts in addition and subtraction were examined. Part-whole knowledge is fundamental to number sense and forms the basis for many relationships among addition and subtraction problems (e.g. parts added in different orders still equal the whole – the commutativity principle). However, although researchers have explored isolated aspects of part-whole knowledge (e.g., commutativity), little is known about different patterns of part-whole knowledge and their role in mathematical development. **Design:** In order to identify and describe different patterns of part-whole knowledge, the accuracy of children's judgments about various part-whole relations between problems, their justifications for these judgments and spontaneous use of such relational properties were examined. **Methods:** 90 six to eight-year-olds were individually interviewed in three sessions. Children solved a set of single-digit addition and subtraction problems in which relational properties between consecutive problems were manipulated to reflect various part-whole concepts. They also judged relations between problems in the context of a puppet demonstration. **Results:** A cluster analysis was conducted to explore aspects of children's part-whole knowledge. The solution revealed distinct groups of children with different profiles of conceptual understanding. **Conclusions:** The possibility that the distinct patterns of understanding identified in the study indicate different pathways to mathematical development has important implications for cognitive developmental theory in early arithmetic. The results also have educational implications, as a greater understanding of the conceptual profiles of different groups of children is likely to help inform the development of effective teaching and learning strategies.

Research in infant cognition: implications for early years education

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Purpose: The paper reviews main strands of research dealing with infant cognition, highlighting the radical reappraisal of early cognitive competence that has occurred over recent decades. The issue of whether such research has potential ramifications for the early education and care of young children is explored. **Background:** Research dealing with the neurophysiological growth of the infant brain is discussed, as are general findings on infant attention, memory and categorisation in regard to the sensory environment. **Methods and key points:** Key findings and methodologies in the domain of infant cognition are described. To illustrate this material, reference is also made to experiments by the presenter dealing with infant attention to, and memory, for coloured stimuli. It is argued that the prevailing impression from this body of research is that: (1) infant cognition operates in a coherent manner; and (2) is driven in the first instance by inherent sensory-perceptual processing tendencies, with subsequent moulding by early experience. **Conclusions:** It is also proposed that this portrayal of early capacities has profound implications for early education, in respect to a reappraisal of the baseline or raw competencies which might be expected to be fully functional in

young children prior to formal educational experiences. The necessity to maintain an active relationship between developmental psychology and scholarship in the field of early education studies is argued.

Can central coherence explain individual differences in emotion recognition?

P COLMAN, Dept of Experimental Psychology, University of Cambridge

Objectives: Children's individual differences in recognising facial emotions could be explained by differences in central coherence ability. This study uses two tests of strong central coherence and one test of weak central coherence along with a test of emotion recognition. If central coherence is able to explain individual differences, then strong central coherence would be positively correlated, and weak central coherence would be negatively correlated with emotion recognition. **Design:** Six reception classes in three schools were recruited and every child in the classes participated. A range of tests was administered over the academic year as part of a larger study. **Methods:** Around 140 children (four to five-year-olds) participated in this study. The Children's Embedded Figures Test was administered along with three novel tests. The first of these was a measure of gestalt processing. In this test, well-known objects are shown masking a patterned background, requiring the perceptual grouping of isolated components. The second was the contour test in which participants have to spot contours within an irregular pattern. The final test was an emotion recognition test in which participants were required to make forced choices to indicate named emotions. **Results:** All three central coherence tests are positively correlated with emotion recognition even when age and verbal ability are partialled out. **Conclusions:** These results are not consistent with the theory of central coherence and instead suggest independent perceptual skills. This has implications for theories of young children's emotion recognition, and these newly developed tests promise to be useful in study of social understanding.

Two little boys: calendrical calculators but not savants

R COWAN, M ANASTASIOU & M KAPNOGIANNI, Institute of Education, University of London

Objectives: This study follows up a previous investigation of two boys with some ability to name the weekdays corresponding to dates in the past and future. The aims were to determine whether their ability had improved in two years, to assess their skills in numeracy, literacy, and memory, to assess their general ability and interests. **Design:** The design is a case study using standardized tests of literacy, numeracy, memory and ability and tests of calendrical knowledge and skill used in previous research with adult calendrical savants. **Methods:** Assessments using the WISC III, WORD, WOND, NARA II, BPVS II, PhAB, Working Memory Battery, computer-presented calendrical tasks, and tests to determine their knowledge of calendrical regularities. Interviews of the boys and their parents to determine their current interests. **Results:** Neither of the two subjects has improved their calendrical skills. Both are exceptional in their vocabulary, numeracy and memory abilities, and one, with higher general intelligence, is also unusually accurate in reading and comprehension. **Conclusions:** The boys resemble adult savant calculators in several respects: they acquired the skill when young without instruction from others, and the basis of their skill appears to be calendrical regularities rather than rote memorization of calendars. However, they have not progressed to mastering this skill with the extraordinary range, accuracy, and speed of the adults in the sample collected by Neil O'Connor and Beate Hermelin. Possibly the explanation for this is that the boys, unlike the adults, receive encouragement and reinforcement for more conventional achievements and this has led them to lose interest in their unusual skill.

Initiatives for cross-service collaboration to meet children's and families' needs: examples from an Education Action Zone (EAZ)

V DANN, Director Herefordshire EAZ & K WEDELL, Herefordshire EAZ

The purpose of EAZs is to explore innovative ways of meeting the educational needs of children and young people in areas where there are barriers to educational achievement. We report on two initiatives within an EAZ. The Herefordshire EAZ started in Autumn 1998, and includes 22 schools. The majority are located in remote rural areas with dispersed populations, and this makes it difficult to provide support services to children and their families. The two projects focus on providing preventive developmental support for children in the early years of schooling, by enhancing impact through collaboration between services. One project focuses on early identification of language delay and support for children, and the other on helping parents to support their children on entry to school. The aim of the language development project was to support teachers in recognising and responding to children whose language was delayed, particularly those in reception classes. The project was based on the Teaching Talking Programme devised by Locke. The EAZ funded a Speech and Language Therapist from the Herefordshire Primary Care Trust to work part-time with the County Learning Support Service. The parent support project was located in a large infant school serving a housing estate. The aim was to offer support to vulnerable parents. A room was provided in the school, where social workers could interact with parents who had been informally referred by teachers and Social Services. Both these projects illustrated how cross-service collaboration could enhance the preventive support for children.

This is 'my' story: children's stories and philosophical discussion

B DELAFIELD & M HARDMAN, Dept of Psychology, Bolton Institute

Objective: Narrative texts and stories are widely used in schools in a variety of different ways. It has been claimed they are an effective way of gaining and holding children's interest, building on prior knowledge and introducing young children to moral argument. However, it has also been suggested that the use of narrative may act to produce closure to a discussion. This paper examines the use of stories as a basis for classroom discussion in 'Philosophy for Children' sessions. This study forms part of a larger research project, designed to explore the socio-cultural context of introducing Lipman's 'Philosophy for Children' (P4C) programme in British primary schools. **Design:** A qualitative design was employed and discourse analysis used to explore the themes embedded in both the narrative texts and class discussion. **Method:** Two classes of seven to eight-year-old children were observed and their discussion tape-recorded as they participated in their weekly P4C session, using texts chosen by the teacher. **Results:** Discourse analysis of transcripts of the sessions, examining the relationship between the themes embedded in the stories and those present in the class discussion, is currently being completed. **Conclusion:** Preliminary analysis of the results suggest that the choice of text used as a basis for classroom discussion is important, particularly in promoting critical perspective taking. The implications of the findings in relation to the use of narrative texts and stories in the primary classroom will be further explored.

Linguistic influences on mathematical development: the case of Welsh

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Objectives: The counting system in Welsh is more transparent than in English. The study aimed to test the prediction that Welsh-speaking children would perform numerical tasks better than

English-speaking children. **Design:** Three groups of Welsh children with varying degrees of exposure to the Welsh language were given standardized tests of arithmetic, and a more specific test of understanding representations of two-digit numbers. **Methods:** Participants were 60 children: 10 six-year-olds and 10 eight-year-olds from each of three schools. Children at school WW spoke Welsh both at home and at school; school WE spoke Welsh only at school; and school EE spoke only English. They were given two standardized arithmetic tests (WISC Arithmetic and BAS Number Skills); a standardized non-arithmetical cognitive test (WISC Block Design); and a Number Comparisons test of reading aloud and comparing 24 pairs of two-digit numbers. **Results:** Two-way ANOVAs, with age and school as factors, revealed no significant differences in the different groups' performance on the standardized arithmetic tests, or Block Design. Both groups of Welsh speakers read and compared two-digit numbers more accurately than monolingual English children. Eight-year-olds performed better than six-year-olds on all raw scores; but not on age-standardized test scores. **Conclusions:** There are differences between the numerical skills of children who learn mathematics in Welsh and English. Unlike Asian children, who differ from English children in both language and culture the Welsh speakers' superiority appears specific to tasks that directly involve the written representation of place value.

The psychological study of inner speech and development: theoretical assumptions and implications for novel approaches

M N DUNNE, Dept of Experimental Psychology, University of Oxford

Why is it, despite the obvious central importance of inner speech to the theories of Piaget and Vygotsky, that very little remains known about its nature, despite nearly a century of developmental research? This paper addresses this question and discusses the following main issues: (1) The methodological difficulties of studying inner speech, both experimentally and developmentally; (2) The theoretical assumptions employed in the former psychological investigations on inner speech; and (3) An analysis of the divergent theories of Piaget and Vygotsky on inner speech in light of Fodor's 'language of thought' hypothesis and recent developmental research on theory of mind. Following Vygotsky, a proposal is made for the importance of social verbal interaction in shaping particular kinds of mental content, namely inner speech. Moreover, it is argued that the nature of other kinds of mental content, namely visual imagery, whose development may be less dependent on participation in social linguistic relationships. Support for this suggestion comes from the recent proposal by Hams and Leevers (2000), mental rotation tasks by pre-school children (e.g. Estes, 1998) and self-reports of adults with high-functioning autism. Finally, a theoretical model that examines inner speech and visual imagery from the perspective of social experience, mental representation and theory of mind is proposed. Novel approaches to the psychological and developmental study of inner speech are formulated and future research directions discussed.

Morphological cues and on-line syntactic processing: a developmental study in French

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Two groups of French children (mean age:10 and 12) and one group of adults took part in an experiment designed to investigate the syntactic strategies used in the on-line comprehension of ambiguous closure sentences, and the way different levels of processing (morphological and syntactic) interact at different stages of linguistic development. All participants were tested individually, using the same apparatus and

linguistic material. We used sentences like the following, manipulating all acceptable singular/plural combinations on the first and second nouns, the auxiliary and the past participle. 'L'ami (1st N) du prince (2nd N) qui était (Aux.) respecté (Part.) dans toute l'Europe est malade' (the friend of the prince who was respected throughout all Europe is ill). Each participant read 64 sentences (50 per cent experimental) presented using a self-paced reading procedure. Reading times per character were recorded for each word, and an ANOVA/MANOVA was conducted. The data show a massive number effect. They also show that, whatever the age, syntactic and morphological (number) processing interact in the computation of a single on-line representation, and reveal developmental changes in both the time course and the outcome of interactions. Overall, the results are compatible with a serial model in which the single representation initially computed corresponds to either the most frequent form in French (adults), or the most economical in terms of processing cost (children). A further experiment focussing on the way working memory resources determine processing strategies is currently in progress.

Developing support for more inclusive schooling: a review of the role of SEN Support Services in English LEAs

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The research was jointly funded by the DfEE and the National Association for Special Educational Needs (NASEN).

Objectives: The aim of the research was to understand the developing role of support services for pupils with special educational needs (SEN) in English LEAs, in the context of two major national initiatives: the move towards greater inclusion and the increased delegation of central LEA funding to schools. **Design:** The research was carried out in two stages: the first involving a questionnaire to all English authorities (150); the second, a more in-depth investigation into three contrasting LEAs. The work was carried out in Spring/Summer 2000. **Methods:** A postal questionnaire was used, involving a mixture of closed and open-ended questions. The investigation in the three case study LEAs involved individual and group interviews (semi-structured) and an analysis of relevant documentation. **Results:** The research revealed significant variation between LEAs in the nature, organisation and funding of their SEN support services. However, there were some emerging trends, including the increased delegation of funding for services for pupils with 'high incidence' needs (general learning and behaviour difficulties) and the retention of more specialist services. There was evidence that an increasing emphasis in LEAs on inclusion and on managing provision within available budgets was leading to some differences in agenda between support services and schools. Managing such stakeholder differences appeared to be a significant challenge, particularly where changes to service funding arrangements were being planned (or had already occurred). Both LEAs and schools were having to adjust their expectations in the light of policy and funding changes. **Conclusions:** A key issue for LEAs is the need to ensure that any transfer of SEN funding is properly linked to a corresponding transfer of responsibility. There was evidence from the research that the speed of changes in some LEAs is presenting some significant strategic challenges. Drawing from examples of good practice, the research report to the DfEE and NASEN made a number of recommendations. These aim to help ensure that any changes in the funding, focus and organisation of LEA support services are effective in promoting the further development of more inclusive approaches to meeting children's special educational needs.

The child-centred approach in bullying research

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The main aim of this paper is to consider the

suitability of the child-centred approach to research for use in the study of bullying in school. With the view of the child's role in research moving from that of the child as research object to the child as research partner, this approach is becoming increasingly common in developmental psychology. The main argument for the use of the child-centred approach in bullying research is that bullying often occurs away from adults and relies on the secrecy of those involved to continue. As a result, examining children's own views can provide insights that adults cannot offer. Apart from reviewing relevant literature, the results of a recent study, which looked at children's views and involvement in bullying, are used to highlight the benefits of this approach. This work appears to suggest that children place more emphasis on the effect of bullying than on aspects of repetition and intention which have been previously stressed in the literature. Also the benefits of involving children in programmes designed to tackle bullying in school are considered. Conclusions are drawn around the issues involved in the child-centred approach as well as suggestions for future developments in bullying research.

Post-modernism? Developmental research and educational practice

S HALLAM, H FRANCIS & G SCHOTT, Institute of Education, University of London. Does post-modernism thought radically undermine or transform the concept of scientific psychology? Regardless of how one answers this question, the themes of post-modernism already permeate psychological thought. This round table discussion will introduce a range of issues that consider the meaning of post-modernism to psychology, before exploring whether hesitation over the term post-modern may, in part, be associated with a reluctance to announce a dramatic disjuncture in the history of psychology as a science? The unequivocal epistemological break so often expected from post-modern theory and research may be too sharply drawn. To illustrate this point, speakers will reflect on how their own research has led them to consider some of the issues involved in the post-modern challenge. It is anticipated that audience participation will take the form of an exchange of similar concerns within their own research and practice.

Paired-associate learning and the development of reading skills

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A component of the process of learning to read is the ability to form associations between letters and sounds as well as between the written and spoken word, both of which can be thought of as a form of visual-verbal paired associate (PA) learning. It has been shown in the past that poor readers have a deficit in this form of visual-verbal learning. This paper investigated whether this kind of impairment is specific to visual-verbal PA learning, or is in fact a more general PA learning deficit. Thus, the relationship between the ability to learn paired-associates (intra-modal and cross-modal), phonological and reading skills in groups of poor and good readers was examined. Participants were a group of 40 primary school children (mean age of eight years) with literacy difficulties and groups of individually matched chronological and reading age control children. The groups were administered single word and nonword reading tests, tests of phonological sensitivity, measures of rapid automatized naming and one of three (visual-visual, visual-verbal, verbal-verbal) paired associate learning tasks. Using a factorial design analysis, it was found that children with literacy difficulties were impaired on the visual-verbal PA learning task but performed as well as children of the same chronological age in visual-visual and verbal-verbal learning tasks. Since the absence of an impairment on the verbal-verbal task condition was surprising, a second study investigated verbal-verbal PA learning further, using a different Learning paradigm. Results are discussed within a developmental model of the acquisition of reading skills.

Context specific script formation: the relationship between children's perceptions of play, work and learning, and early classroom experience

J HOWARD, Dept of Psychology, University College Worcester

Many theorists have suggested that the scripts, perceptions and behaviours of young children are determined, or at least partially influenced, by cues in the environment. According to this perspective, the way children categorise activities and events, and organise appropriate behaviour patterns, is dependent on experience. This paper investigates the relationship between children's perceptions of play, work and learning, and early classroom experience using two instruments, the Activity Apperception Story Procedure (AASP) and the Appropriate Childhood Experience Rating Scale for the early years (ACESeY). Where early years classroom experiences are highly appropriate, children have broad perceptions of learning, acknowledging the opportunity for development in a range of classroom situations. Where experiences are less appropriate, a dichotomy between play and work is clear, and learning is generally associated with formal, teacher directed tasks. Analysis of provision suggests that less appropriate early years practice, where educational goals predominate over developmental objectives, tends to promote a subordinate role for play. A wide learning spectrum is promoted where children experience a balance between child-initiated and teacher-directed activity, particularly when both activity types are valued equally, attracting adult involvement. The environmental cues identified by children are used to highlight how the learning environment could be improved. The implementation of a developmentally appropriate environment is considered from an ecosystemic perspective.

Children's disputes: intellectual benefits or social costs?

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Objectives: Children's disputes have been associated in the developmental literature with both intellectual benefits and social costs. The intellectual benefits are believed to stem from the propensity of disputes towards 'transactive dialogue', i.e. dialogue where the contribution of one participant is elaborated by another participant through, e.g. justification or compromise. The social costs are inherent in models which see disputes as leading to aggression in children of certain temperaments, and aggression resulting in social rejection. The starting point for the study to be reported here is that: (a) the evidence for both stances is weak; (b) incompatibility between intellectual and social mechanisms is a priori implausible. **Design:** Accordingly, the study was designed to explore the issue further using cross-sectional observational procedures. **Methods:** 49 triads comprising children aged four to five or six to seven-years-old were videotaped while they engaged in free play and structured tasks. The children varied in gender, popularity (as ascertained from sociometric interviews) and temperament (as ascertained from a standard parental response scale); the groups varied in gender composition and popularity composition. **Results:** The results show that disputes were indeed more likely than other forms of social interaction to lead to transactive dialogue, and they did engender aggression. However, the effects of temperament on both dialogue and aggression were mediated by group composition, and once composition was taken into account the impact of dialogue and aggression on popularity and/or rejection was minimal. **Conclusions:** The paper will conclude that the social costs of disputes may have been over-played.

The developmental progression of comprehension related skill in EAL (English as an Additional Language)

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Objective: There is a tendency for the comprehension skills of children with English as an additional language (EAL) to lag behind their level of reading accuracy. This is a reversal of the general pattern found for their monolingual peers. The comprehension difficulties EAL children experience are often attributed to lower levels of English language word knowledge. A greater awareness of the process of literacy development, especially the impact of weaker language skills, will give a clearer understanding of their educational needs. **Design:** The study is a three-year longitudinal project following the developmental progression of the cognitive-linguistic skills of EAL children and their monolingual peers from school years two to four. **Method:** 43 EAL children and 43 monolingual English-speaking children matched on age, gender and general ability were assessed on measures of reading accuracy, reading and listening comprehension, receptive and expressive vocabulary and reception of grammar to identify the similarities and differences of the two groups of children at each point in time. **Results:** Analysis revealed similarities between the two groups of children on reading accuracy but EAL children had lower levels of vocabulary and comprehension at each point in time. **Conclusions:** EAL children experience no specific difficulty with reading accuracy but continue to have difficulty with vocabulary knowledge and comprehension skill. Data are discussed in terms of the progression of the development of underlying language skills and the impact of these skills on both reading and listening comprehension. The implications of the findings for classroom practice are considered.

Children's evaluations of the distinctive features and motivational aspects of play

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Objectives: Two different studies aimed to investigate (a) what behavioural features children attended to and (b) the motives they attributed to different types of play activities. **Design:** Two separate studies elicited children's descriptions of behavioural features and motivational aspects of play in response to interviews about (a) five video excerpts, and (b) transcriptions of self-reports of their usual play activities. Debate exists about the distinguishing features of play and its potential developmental significance. Thus, present studies investigated how children themselves classified play. **Methods:** Study 1: 34 (17f, 17m) six to 12-year-olds were shown five video excerpts of salient examples of different types of human and animal play and interviewed about how they recognised such behaviours as play. Study 2: 32 (15f/17m) six to 12-year-olds were given four transcripts of their self-reported play activities collected one month earlier. Children were interviewed about why they reported those activities as play. Responses were categorised according to the behavioural features identified by children and motives attributed to the activities in the videos and transcripts. **Results:** In Studies 1 and 2, frequency analyses showed that, in order, behavioural features identified by children were: positive affect; non-literality; use of toys and motives attributed to the activities were, in order: practice; communication; intimacy and, in Study 2 alleviating boredom. Further analyses showed that frequencies of responses differed according to different play types in videos and self-reports. **Conclusion:** Children identified common behavioural features in others' and their own play; identified different types of play by subtle differences in behavioural features, and readily attributed motives to their own and others' play.

The relationship between production and comprehension in drawing

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Comprehension is often found to be in advance of production within many aspects of a child's development. In the drawing domain, however, the findings have not been conclusive. By addressing some of the methodological concerns in the previous research we present three studies that attempt to clarify and extend our knowledge of the relationship between production and comprehension in drawing. In Study 1, children (n=134) were asked to select from an array of children's drawings the most realistic and their most preferred. Their own drawings were used to categorise their drawing ability. Children selected more advanced figures than they produced themselves, indicating that production lags comprehension. Study 2 (n=76) replicated the findings from Study 1 but also asked children to comment on their own drawings as well as to justify their selections. For younger children it seemed important for drawings to have many features and for older children for the features to be shown realistically. In Study 3, children (n=65) were interviewed on a range of issues relating to their understanding and production of pictures. In particular, the number of factors that influence developmental change in drawing which the children cited was positively correlated to their production level (with age partialled out). We comment on why production in drawing is likely to lag comprehension and how advances in either comprehension or production may mutually benefit the other.

Pride and happiness: can young children differentiate between these two emotions?

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The study examines whether young children can differentiate the situational antecedents of happiness and pride. One-hundred-and-fifty seven to 11-year-olds were asked to rate the extent to which two types of situations, presented to them in a random order, would elicit a protagonist's feelings of happiness and pride. Type A situations were expected to elicit happiness only, because the protagonist received a gift, a desirable result, but beyond his personal control. Type B situations were expected to elicit both happiness and pride, because the protagonist won a prize, a desirable result which (s)he was personally responsible for bringing about and which surpasses the normative standards. If the children could differentiate the situational determinants of happiness and pride, they were expected to give high ratings of happiness in both situations, but high ratings of pride in Type B situations only. The results of the study revealed that the seven-year olds could not differentiate between the two situations and gave high ratings of pride and happiness in both. By the age of nine a number of children gave Type A situations lower rates of pride than Type B. Only the 11-year-olds were able to fully differentiate between the two emotions and attributed happiness only to the Type A situation protagonist and both happiness and pride to the Type B protagonist. The findings of the study show that young children progressively differentiate between these two positive emotions, possibly by the time they become able to assess the role of personal responsibility and normative standards.

Teachers' perceptions of the effect of season of birth and gender on achievement

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Objectives: The aim of the study was to examine Key Stage 1 and Key Stage 2 teachers' perceptions of the effect of season of birth and

gender on children's school achievement. **Methods:** 60 teachers completed a questionnaire that comprised two sections. The first section presented a short vignette giving details about the season of birth and gender of an eight-year-old child. Participants were requested to rate how likely they thought the child would require extra support during Key Stage 2. The second section asked participants to indicate their strength of agreement with a series of statements about the effects of season of birth and gender on a range of aspects of school achievement. **Design:** A between-groups design was employed. Independent variables were teachers' Key Stage and the gender and season of birth presented in the vignette or statements. Dependent variables were teachers' ratings of the vignette and their extent of agreement with the statements. **Results:** Analysis of teachers' responses to both sections of the questionnaire revealed a similar pattern of results. Key Stage 1 and Key Stage 2 teachers demonstrated a differential awareness of the effects of season of birth, with Key Stage 1 teachers demonstrating greater awareness. Both groups perceived gender as having a potential effect on school achievement. **Conclusions:** The reduced awareness of Key Stage 2 teachers of the potential effects of season of birth has important implications for the effective support of summer-born children, particularly once they reach Key Stage 2. These implications are discussed.

Phonological memory as a predictor of language development in Down syndrome: a five-year follow-up study

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Objectives: To observe the memory and language development over five years of individuals with Down syndrome. To investigate the role of phonological memory in this development. **Design:** A longitudinal design with assessments repeated after a period of five years. **Methods:** 30 individuals with Down syndrome, aged five to 19 years at Time 1, were studied. Assessments included tests of nonword repetition, digit span, receptive and expressive vocabulary, grammar comprehension, sentence repetition, reading, a number of non-verbal tests from the Kaufman Assessment Battery for Children, and a hearing evaluation. **Results:** There were modest increases in most measures after five years, except for phonological memory tests where, overall, no progress was recorded. There was little improvement in grammar comprehension, but greater advances in receptive vocabulary and nonverbal performance. Younger members of the sample made more progress, while many of the older participants seemed to have reached a plateau of development, or to have declined on some memory and language measures. Partial correlations between earlier memory measures and later language scores, controlling for nonverbal ability and earlier language scores, showed that phonological memory predicted later vocabulary knowledge, but was not related to later grammar understanding. There was no evidence that earlier language scores predicted later memory development, or that earlier vocabulary knowledge predicted later grammar. **Conclusions:** The results confirmed the pattern of developmental strengths (in nonverbal ability and vocabulary) and weaknesses (in phonological memory and grammar) established in earlier research. The age related declines are worrying but attention should be drawn to important individual differences. The role of phonological memory in determining vocabulary development reflects that established by extensive research in typical development.

Working memory, language comprehension and mental state understanding in pre-schoolers: longitudinal evidence

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In recent years there has been a heated debate over the nature of executive skills and over the relationship between these and a grasp of mental states. While there is good evidence to show that an understanding of false belief emerges at around the same time as developments in the use of working memory, attentional flexibility and inhibitory control, the nature of this relationship is still hotly debated (see e.g. Perner & Lang, 2000). This paper explores the relationship between false belief performance and working memory skills, taking language development into account (following Astington & Jenkins, 1996). In two experiments false belief tasks (unexpected transfer, unexpected contents and appearance reality), two working memory tests ('memory capacity' and 'working memory') and verbal comprehension (BAS) were administered to three-year-olds and logistic regression analyses conducted. In experiment 1 both language comprehension and the two working memory tasks predicted unique amounts of variance in the false belief performance of the three year olds. In the second experiment a group of 39 children was tested at three ages (39, 42 and 47 months). Longitudinal analyses suggested that working memory skills at age 42 months predicted false belief understanding before language became a significant predictor. The results are discussed in terms of the many possible causal connections proposed by Perner and Lang (2000) and the disadvantages and advantages of longitudinal statistical analyses used to tease apart causal patterns.

Infants' memory for feature and location following brief occlusions

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Objectives: The purpose of this study is to examine four-month-olds' ability to remember surface feature (identity), location, and the conjunction of surface feature and location information following brief occlusions. This has direct implications for the studies of object permanence. **Design:** We report on four studies using familiarisation and preferential looking procedures. Each study uses a repeated measures design with four test trials. Test order is determined by a repeated Latin-Square. **Method:** All four studies use the same presentation method but with different stimuli. Infants see five familiarisation trials in which two objects come in and out of hiding, each from behind a different screen. In the test phase, the screens are raised to reveal either (1) the two expected objects – baseline condition; (2) one familiar and one novel object – feature violation condition; (3) both familiar objects behind the same screen – location violation condition; and (4) the familiar objects swapped around – conjunction violation. There were 20 four-month-olds in each experiment. The target objects used were faces, coloured flowers, toys with prior manipulation, and toys without prior manipulation in Experiments 1 to 4 respectively. **Results:** With Faces (Exp. 1) infants responded only to violations of identity, with coloured flowers (Exp. 2) infants responded only to violations of identity, with toys (Exps. 3 and 4) infants responded only to violations of location. **Conclusions:** The affordance of the objects to support action determines what features infants attend to in occlusion events.

Category exclusivity in infant perceptual categorisation

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Objectives: The purpose of this work was to test

the hypothesis that early infant perceptual categories of cat and dog reflected bottom-up processes rather than the application of top-down schemas. **Design:** We report on one study and one connectionist model. Previous connectionist modelling work suggested that infant perceptual categories were determined by the feature distributions in the stimuli used to familiarise the infants. We used a combination of connectionist modelling (autoencoder models) and familiarisation followed by preferential looking methodologies to test the model predictions on infants. **Methods:** A subset of actual photographic exemplars cats and dogs were selected for testing such that the dog feature values were subsumed within the distribution of cat feature values. In Model 1, The photographs were presented to the networks for categorisation. In Experiment 1, 20 three to four-month-olds were familiarised with 12 cat exemplars and tested with a novel cat and a novel dog while 20 three to four-month-olds were familiarised with 12 dogs and tested with a novel cat and a novel dog. **Results:** Given this data, the model formed an asymmetric category: the dog category excluded novel cats whereas the cat category did not exclude novel dogs. This is the revised asymmetry previously reported in the literature. A t-test comparison of infant looking times to the novel stimulus during testing revealed that they had formed the same category asymmetry as the model. **Conclusions:** These results confirm that early infant perceptual categorisation is driven by the distribution of features encountered and provides support for a connectionist account of early infant categorisation.

Is following a simple arbitrary rule problematic for 18 to 24-month-old infants in an executive task?

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Previous findings demonstrated that infants could operate a novel object, containing a prepotent lure, using a non-arbitrary means from 15 months of age. In contrast they could not perform an additional arbitrary step to operate the same object until 24 months, even with the benefit of adult scaffolding. The present research aimed to determine why the arbitrary task was so demanding for the children. It may have been the case that the arbitrary task was problematic due to: (1) the arbitrariness in combination with the prepotency of the task; (2) the fact that two steps were used; or (3) difficulty in performing the arbitrary step alone. To disentangle amongst these hypotheses, 41 children aged 18–24 months were presented with a two-step causally connected task or a one-step arbitrary task. The results demonstrated that children performed significantly better on a two-step causally connected task than they did on the two-step arbitrary task. In contrast performance in the one-step arbitrary task was not significantly different to performance in the two-step arbitrary task. Thus it appears as though young children have difficulty in performing an arbitrary action in the presence of a prepotent lure, regardless of the number of steps involved in the task.

The influence of memory factors on children's drawings of a cube

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Objectives: The drawing of a cube presents children with a number of challenges. To date, little attention has been paid to the way in which children represent the properties of cubes presented in projections other than oblique. Manipulation of view point information may provide insight into the strategies that children use. **Methods:** Children ($n=218$) aged six and 10 years produced drawings of a cube presented in either oblique projection (face-on) or isometric projection (point-on). Drawings were made under one of three conditions: (a) continual exposure, (b) unfilled delay, or (c) a filled delay consisting of a counting task which is thought to remove visualisation. A number of approaches to scoring the drawings were utilised. **Results:** The results

revealed that children produced more accurate drawings of the cube presented in oblique than isometric projection. Accuracy scores for the oblique projection did not differ across the two age groups. However, 10-year-olds produced more accurate drawings than the six-year-olds for the isometric projection. The filled delay led to a decrease in accuracy scores for the isometric stimulus, whereby drawings showed a greater tendency to reflect semantic information. **Conclusions:** Using an interference task appears to go some way to suggesting that view point information is easily lost; in such cases children may rely on semantic information, or perhaps a graphic solution stored in long-term memory which does not reflect view point.

A meta-analysis of behaviour genetic studies of IQ: evidence for 'g' factor?

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Purpose: To examine the range in heritability estimates for intelligence cited in recent behavioural genetic literature using meta-analysis. **Background:** Debates over the nature of intelligence have been dominated by two questions: is there such a unitary 'thing' as intelligence, measurable by surrogate procedures such as IQ tests; and if so, to what extent is it determined genetically? According to those who argue for a general cognitive ability, intelligence is based upon a hierarchy comprising a general factor, *g*, supported by specific abilities. The practice of assigning a substantial genetic component toward explaining individual differences in intelligence, in the form of estimates of heritability associated with *g*, has been much questioned by critics of behaviour genetics. Estimates for the heritability of intelligence cited in recent behavioural genetic literature range between 0.4 and 0.8. Reasons for this variation were investigated. **Methods/Key points:** A meta-analysis was undertaken using papers published between 1970–1997 using ICCs derived from 9304 twin pairs (aged between two months and 88 years). The results demonstrated significant differences between mean weighted ICCs dependent on IQ test employed. **Conclusions:** The wide range of heritability estimates associated with *g* cited in the literature can be attributable, at least in part, to type of IQ test used. The application for *g* with most notoriety has been the use of IQ scores as predictors of educational, occupational and social success. Therefore, simplistic conclusions about the unitary nature of intelligence and its associated high heritability must be treated with great caution.

Learning to spell affects children's phonological awareness: evidence from Finnish

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There is scarce evidence that acquiring literacy affects children's phonological awareness, though numerous studies have indicated the opposite effect. We wanted to see whether experience of written language affects children's awareness of sounds in the words they spell. To test this, we asked Finnish children to spell words with double consonant and vowel letters (e.g. laal, lssi), and to count phonemes in similar words. Testing both spelling and phoneme awareness enabled us to see in which order these skills develop. Forty-two first-year children spelled 48 words including either double consonant or double vowel letter clusters. In the phoneme awareness task, we asked the children to indicate the number of sounds in 15 words (containing double letter clusters) by tapping once for each sound they heard. We counted the percentage of correct representations of double letters in spelling and the number of times children tapped twice for double letters (a tactic adopted by adults in

Finnish, Dufva 1992). Children were more often spelling double letter clusters with two letters than indicating them with two taps in the phoneme awareness task. A sign test showed that children represented double letter clusters with two letters in spelling but not in phoneme counting significantly more often than expected by chance ($c2=12.4$, $d.f.=1$, $p<0.05$). Therefore, children were spelling double phoneme clusters correctly before they counted these as two. This indicates that children consider double letters as two sound units (as adults) only after having learned to spell them and shows how acquiring literacy affects phonological awareness.

Gravity rules in dogs?

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Within the framework of the so-called 'Naive Physics' the concept of gravity has been tested in a straight line, even if obvious physical obstacles divert the fall (Hood, 1995; Hood, Hauser, Anderson & Stratos, 1999). The results of these studies indicate that 'Naive Physics expectations' can be stronger than information gathered by learning. Dogs (*canis lupus familiaris*) are able to predict the ballistic curve of a thrown object, however, their understanding of gravity has not been researched in a scientific way. Sixteen adult dogs were tested with a task where food was dropped through an opaque tube connected either vertically or diagonally to one of three goal boxes (following Hood's experimental procedure). Like children and monkeys the dogs at first searched significantly more often in the location directly beneath the drop-off point, even if this box was not connected with the tube. But unlike monkeys the dogs did not persist in searching for the food in the gravity location. The initial occurrence of this behaviour indicates that dogs apply the concept of gravity. But like the studies of human children, the results of this experiment show that the number of correct searches increases over time. This finding could indicate a learning process.

Executive function in Asperger's syndrome and the broader autistic phenotype

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Objectives: This was an epidemiological investigation of the extended phenotype of autism. Initially the cognitive phenotype was examined in Asperger's syndrome and then in the relatives of autistic probands. By comparing autism where tuberous sclerosis was the cause to idiopathic (unknown) causes, we could directly examine the genetic and environmental influences in a more representative epidemiological sample. **Design:** (i) 14 Asperger's syndrome and 18 non-clinical control participants (ii) 52 relatives of individuals with idiopathic autism and 47 relatives with comorbid autism and tuberous sclerosis, were assessed on a range of executive function measures. **Method:** An extensive battery of executive function tests was administered from the CANTAB: the Tower of London, Intra-dimensional/Extra-dimensional set shift test, and the Spatial span test, and a newly developed Tower of London test. These measures were used on individuals with Asperger's syndrome followed by an investigation in the relatives of autistic probands to determine their deficits. **Results:** There were set shifting impairments in individuals with Asperger's syndrome. Further, it was found that when the relatives of probands with idiopathic autism were matched to a group more equated for the burden of raising a child with these disabilities, many of the differences reported previously disappeared. **Conclusions:** It was found that there were prevailing executive function impairments in Asperger's syndrome, and that the environment appeared to play a role in the cognitive deficits observed in the relatives of autistic probands.

Analogical reasoning in pre-school children: cross-domain transfer of procedural knowledge

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Objectives: The research addressed the acquisition and transfer of procedural knowledge in relation to analogical reasoning in pre-school children. It was predicted that a cross-domain transfer would occur from causal classical analogies to abstract classical analogies. **Design:** Independent groups were asked to complete several tasks consisting of either causal relations or abstract relations, with the final task presenting novel classical analogies. All tasks were presented in picture format. **Methods:** 30 three-year-old and 30 four-year-old nursery children took part in the study. They were randomly divided into either the causal relations group or the abstract relations group, and were then, over the course of a week, given four sets of tasks: (1) pre-test classical analogies; (2) matching relations; (3) post-test classical analogies; and (4) cross-domain analogies. **Results:** ANOVA showed an improvement in performance from pre- to post-classical analogies and transfer of analogical reasoning skills to the novel cross-domain analogies. However, planned comparisons showed children were better able to extract and transfer procedural knowledge from causal analogies to abstract analogies than they were from abstract to causal. **Conclusions:** Further analyses and interpretation of findings are in progress, and will be considered in terms of relevant theory.

Peer interaction and the moral development of the child

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The paper examines the role of peer status in the moral reasoning of children. It is hypothesised that those children who experience better peer relations will exhibit more developed moral reasoning. The ability to distinguish moral from conventional rules is widely accepted to be a measure of their moral reasoning. The moral reasoning of 80 male and 80 female participants, ages six to nine years, from four primary schools in London will be measured through the presentation of eight story vignettes involving different types of rules. As a measurement of the participant's peer status, each participant will be peer-rated by each of their classmates on a three-point Likert scale. The British Picture Vocabulary Scale will be administered to control for any differences in the verbal reasoning abilities of the participants. Correlational analysis of the moral reasoning measures and the child's peer status will be conducted. At present there is little understanding of the differences between young children in their moral reasoning. A significant correlation between the child's moral reasoning and their peer status would highlight how, and to a degree why, children differ in aspects of their moral development. Furthermore, support for the current hypothesis would provide further support for Piaget's (1932) hypothesis that the development of children's moral reasoning is facilitated by peer interaction. Data collection has been completed and analysis is imminent.

A Japanese child's understanding of the superordinate categories Natural and Artificial: comparisons with children from the UK

O PETROVICH, Dept of Experimental Psychology, University of Oxford

Children aged four, five and six years from Japan ($n=102$) and Britain ($n=90$) were tested individually in two sessions. First, they performed in a categorisation task consisting of colour photographs of 12 different objects selected according to the category of origin (natural, artefact), familiarity (previously seen, unfamiliar), and living status (alive, not alive). Children's task was to identify each item according to its origin and its biological status as well as to provide justifications for their categorisation responses. In the second session, each child was given a standardised version of a picture vocabulary test

used in each country. Contrary to the predictions arising from the Japanese religious tradition and cosmology, Japanese pre-schoolers performed similarly to their UK counterparts when identifying origin of the different items and significantly better than expected by chance. Consistent with other studies, both cultural groups performed slightly better on artefacts than on natural items. Surprisingly, however, Japanese children were significantly more accurate than UK children of the same age on the animacy questions. This finding contradicts some earlier claims about the prevalence of animism in Japanese children's conceptions of nature but is consistent with the linguistic explanation. Implications of these results for the development of cosmological reasoning in childhood are discussed.

Working memory and education difficulties during childhood

S J PICKERING & S E GATHERCOLE, Dept of Experimental Psychology, University of Bristol

Objectives: To systematically examine the nature of working memory performance in children with special educational needs in comparison to children without special needs, using a set of measures which significantly advance the study of memory in this type of population. **Design:** A cross-sectional study of children between five and 15 years of age, comparing performance of two groups (SEN and non-SEN). **Methods:** A battery of working memory tests was developed on the basis of the working memory model (The Working Memory Test Battery for Children or WMTB-C). The battery includes tests of phonological loop, visuo-spatial sketchpad and central executive function and was administered to a group of 750 children including 103 children identified as having special educational needs. **Results:** Using group comparison methods, we have examined the extent to which children with different types and degrees of special educational needs vary in their performance on the three different components of working memory tested. **Conclusions:** It is suggested that a test of working memory that is based on well established theoretical accounts of this type of cognitive activity provides an excellent basis for assessing special needs and developing appropriate educational provision. Moreover, by sampling across different types of working memory it is possible to establish a profile of strengths and weaknesses, even for children with quite profound educational problems.

Can contrast modelling promote children's learning in domains other than language?

K J PINE & D MESSER, Dept of Psychology, University of Hertfordshire

Objective: To investigate the effectiveness of immediately modelling the correct solution to a task on which children were making errors in two domains. The technique is based on proposals by Saxton (1997) who, in his Contrast Theory of negative input, claims that corrective speech input is most effective if it immediately follows (and is therefore contingent upon) the child's own errors. Our studies concern very different domains, but ones in which children also make errors and may benefit from this technique. **Design:** Both studies used a pre-test, intervention, post-test design. The intervention involved either Contrast or Non-Contingent modelling. **Method:** Study One identified 79 children (mean age 6.3) who were making consistent errors on a balance beam task at pre-test. These children were randomly assigned to two groups who either (a) watched the correct solution being modelled by an adult (the Non-Contingent Modelling group) or (b) saw the correct solution being modelled by an adult immediately after their own error (the Contrast Modelling group). Study Two involved 62 children (mean age 6.1) learning to spell words on which they had made errors following administration of a sub-section of the British Ability Scales. **Results:** The Contrast Modelling condition produced a significantly higher number of children who showed improvement at post-test in both studies. **Conclusions:** This suggests that a common learning mechanism may operate across domains

and the implications of these findings for general models of development are discussed.

A developmental evaluation of the Plaut, McClelland, Seidenberg and Patterson (1996) connectionist model of single word reading

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Objectives: The primary objective was to evaluate the Plaut, McClelland, Seidenberg & Patterson (1996) model of reading against developmental data. The model was evaluated, at two points during training, against data from 23 children in the first term (Time 1) and third term (Time 2) of their reception year. Two main findings emerged: 1. At Time 1 the children read more words than non-words correctly, but at Time 2 the word advantage disappeared. The network, however, showed a word advantage at both Time 1 and Time 2. 2. Children made more lexical than non-lexical errors. The network produced the opposite pattern of performance. Two adaptations were made to the training of the network, to bring it closer to the learning environment of a child. An incremental training regime was adopted, as was training on grapheme phoneme correspondences (GPCs). **Design:** All combinations of the two adaptations, incremental training and training on GPCs, resulted in four networks, each of which was evaluated against the children's data. **Methods:** Two points were identified in each network's training where word reading performance matched the children's at Times 1 and 2. Non-word reading was then assessed, as were the types of errors made. **Results:** Non-word reading sharply improved relative to word reading. However, each network still produced more non-lexical than lexical errors. **Conclusions:** The combination of incremental training and training on GPCs improved generalisation (non-word reading), bringing performance closer to the children's. However, the type of errors made by each network remained qualitatively different to the children's.

Knowledge re-structuring during problem solving by analogy amongst 10 to 11-year-old children

S J PRESLER & J WILLIAMSON, St. Martin's College, Carlisle

The primary objective of the work presented was to investigate whether or not 10 to 11-year-old children would show solution and causal reasoning transfer from a base to target analogy problem. It was predicted that more sophisticated solutions and/or causal reasoning explanations would be given to a target (difficult) problem when preceded by an analogous base (easy) counterpart than when responded to alone. Overall, a mixed design was used whereby 202 10 to 11-year-old children either participated in the initial or main stage of the study, but one of the main stage groups involved a repeated measures design. The initial stage of the study established that 'easy' ($n=29$) and 'difficult' ($n=29$) problems, named 'BattleShip' and 'Growth' problem respectively, were disparate in terms of solutions and causal reasoning responses. During the main stage of the study one group of children ($n=120$; consisting of sub-groups $n=57$; $n=30$; $n=33$) responded to the 'difficult' problem preceded by the analogous 'easy' counterpart with solution and another group of children ($n=24$) to the 'difficult' problem preceded by the analogous 'easy' counterpart without solution. All responses to problems were written in ready prepared booklets and coded in keeping with the existing literature. Analyses revealed that causal reasoning explanations but not solutions were transferred from 'easy' to 'difficult' problem, regardless of whether or not a solution was provided to 'easy' problem preceding 'difficult' problem. It was concluded that evidence of re-structuring occurred, supporting knowledge based accounts of analogy development, with implications for

similarity reasoning during the course of knowledge acquisition.

Analogical reasoning in pre-school children: cross-domain transfer of procedural knowledge

S PRESTON, Dept of Psychology, Bolton Institute

Objectives: The research addressed the acquisition and transfer of procedural knowledge in relation to analogical reasoning in pre-school children. It was predicted that a cross-domain transfer would occur from causal classical analogies to abstract classical analogies. **Design:** Independent groups were asked to complete several tasks consisting of either causal relations or abstract relations, with the final task presenting novel classical analogies. All tasks were presented in picture format. **Methods:** 30 three-year-old and 30 four-year-old nursery children took part in the study. They were randomly divided into either the causal relations group or the abstract relations group, and were then, over the course of a week, given four sets of tasks: (1) pre-test classical analogies; (2) matching relations; (3) post-test classical analogies; and (4) cross-domain analogies. **Results:** ANOVA showed an improvement in performance from pre- to post-classical analogies and transfer of analogical reasoning skills to the novel cross-domain analogies. However, planned comparisons showed children were better able to extract and transfer procedural knowledge from causal analogies to abstract analogies than they were from abstract to causal. **Conclusions:** Further analyses and interpretation of findings are in progress, and will be considered in terms of relevant theory.

Differentiated intervention in dyslexia: a neuropsychological approach.

J ROBERTSON, Institute of Education, Manchester Metropolitan University

Objectives: This study aimed to evaluate the impact of neuropsychological intervention on the reading of dyslexic pupils. According to the Balance Model, early reading is mediated by the right hemisphere (specialist for visual spatial function) and advanced reading by the left hemisphere (usually specialist for language). If this normal developmental process is interrupted, two sub-types of dyslexia result: the P-type (perceptual who is arrested at the visual perceptual stage) and the L-type (linguistic who has transferred prematurely to the linguistic stage). This study investigated two types of differentiated intervention: Hemisphere Specific Stimulation (HSS) and Hemisphere Alluding Stimulation (HAS). **Design:** Two studies were carried out on statemented pupils. One study adhered to the stated theoretical position (HSS) (n=6) and one (HAS) (n=37) challenged both the sub-typing and the intervention by random allocation of pupils to treatment groups. **Methods:** Pupils received intervention once weekly for 16 weeks by the researcher or a specialist support teacher. The Neale Analysis of Reading Ability (NARA) was administered pre, post and following the intervention. **Results:** Though analysis of variance revealed no significant differences, pupil results (over three testing occasions) supported the validity of the original L and P-sub-type classification and revealed a Mixed sub-type, who showed a qualitatively different response to differentiated intervention. **Conclusions:** The results supported neuropsychological intervention as a legitimate alternative intervention method for some dyslexic students. Interestingly follow-up testing indicated that the subjects showed sustained improvement even after direct intervention ceased. This may address the often-documented problem of long-term retention in dyslexic subjects.

Lexical contrast and early word learning

G SCHAFFER, Dept of Psychology, University of Reading

We present data and reanalysis of earlier experiments to argue against the notion of linguistic, domain-specific mechanisms in word learning in the second year of life. When confronted with a pair of referents, one of which is name-known, do infants map novel names onto novel categories, as predicted by the so-called 'Developmental Lexical Principles Framework'? In a within-subjects design, infants of 16 months were presented with pairs of images, and instructed to look at one of them. The lexical status ('known', or 'unknown') of each image was ascertained from parental report. If caregivers had reported a word to be 'known' to the infant, infants looked at its referent when instructed to do so. Importantly, infants' responses showed no evidence of use of the contrastive principle: In situations where infants were reported not to know the name of the target, but to know the name of the distracter, infants looked reliably at the distracter image. This is the opposite direction to that predicted by the principle of contrast. Results are discussed with respect to these theories and to other recent similar findings. It is suggested that one influential account of contrastive responding by infants has overlooked infants' preferential selection of name-known referents. Possible mechanisms for this behaviour are discussed, and a domain general account of infants' responses in contrastive situations is tentatively proposed.

The development of executive control and theory of mind in three to five-year-old children

K SHIMMON & C LEWIS, Dept of Psychology, University of Lancaster

This paper presents findings from a longitudinal study employing a cohort-sequential design, which examined the development of executive control and mentalising in a young, cross-sectional population over the course of one year. 115 children aged between 36 and 56 months were presented with a battery of four executive tests, a measure of language (BPVS) and three false-belief tasks. The executive tasks aimed to modify different components of executive function (working memory; attentional flexibility and inhibitory control), in a way that substantially reduced at least one executive requirement. Each executive task (the Tower of London; six boxes scrambled; colour-shape card-sort and Stroop 'day-night') was presented in two formats. The Tower of London, for example, compared trials in which there was a move away from a the target (a subgoal move with a high degree of inhibitory control), and trials with the same number of moves but no subgoals. Children will have been tested three times in June 2001, the first wave of testing having been completed in June 2000. Much of the paper is dedicated to discussing statistical analyses (path analysis using EQS) which attempt to tease apart the age of acquisition of, and causal relationships between, the range of 'executive' and theory of mind skills around the child's fourth birthday.

An evaluation of the effectiveness of summer school and extra year support for children with literacy difficulties

C SMITH & H WHITELEY, Dept of Psychology, University of Central Lancashire

Objectives: The transition from primary to secondary school has become a focus for attention, because of the adverse effects of transition shown by many children, especially boys. Schools run literacy summer schools for children who have not attained the desired SATS level and may offer additional support. The objectives of this study were to assess the effects of attendance at a literacy summer school and of Year 7 additional support on a range of cognitive, literacy and motivational measures. **Design:** Year 7 pupils in four high schools in Blackpool were

divided into 4 groups, namely: Children attending summer school and receiving Year 7 support; Children not attending summer school, but receiving Year 7 support; Low attainment children; and Reading age appropriate children. All groups completed the same measures, which included: self esteem; home literacy; reading attitudes and motivation; word reading; word spelling reading – accuracy, fluency, comprehension and expressiveness; learning style; free writing. **Method and key points:** The groups were identified from SATS data. Data were then gathered via group sessions lasting 45 minutes and via individual sessions. All data were gathered in two four-week periods – in Autumn 2000 (T1) and Summer 2001 (T2). T1 results generally showed no facilitating effects of summer school on any of the performance measures. There were also no overall gender or learning style differences. T2 results show whether there is an effect of additional support in Year 7. **Conclusions:** The data are discussed in terms of their implications for literacy summer schools and Year 7 support.

Phonological awareness and precocious reading ability: How long do individual differences last?

R STAINTHORP, Institute of Education, University of London & D HUGHES, Dept of Psychology, Royal Holloway and Bedford New College

Objectives: To investigate whether precocious readers maintain superiority in measures of phonological awareness by the time they reach the end of primary school. **Design:** A longitudinal follow-up study. A group of precocious readers who were originally studied during their time in Key Stage 1 took part in this follow-up study at the end of their time in KS2. This enabled a study to be made of the stability of individual differences in phonological awareness over time. **Methods:** 28 children took part in this study. They formed two groups. The Young Early Readers (YER) had first been identified as being precocious readers before they started school in 1993. The Non Early Readers (NER) had been identified as a comparison group at the same time. None of these NER children were able to read before school. Each NER child was paired with a YER child on the basis of age, sex, SES and verbal ability. All the children were given a series of standardised reading, language, cognitive abilities and phonological abilities assessments and an experimental phonological awareness tasks. **Results:** The data were analysed using exploratory analyses and analysis of variance. The results showed that both groups were above average in reading ability, the YER group had maintained their advantage in phonological awareness over the NER group. **Conclusions:** Individual differences in phonological awareness remain long after children have achieved fluent word reading skills. It is possible that precocious reading ability results in part from high levels of phonological awareness.

Handwriting policy and practice in primary schools

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This research was supported by a grant from the Nuffield Foundation.

Objectives: To investigate the approach to teaching handwriting in primary schools. At a time when there is concern about writing standards there is only limited knowledge about how the transcription skills are being taught. This research was designed to begin to document pedagogic practices in the early years of the introduction of the National Literacy Strategy. **Design:** Structure questionnaire with selected follow-up interviews. **Methods:** A questionnaire was sent to approximately 160 primary schools in SE England requesting information about their policies and practices in the teaching of handwriting. **Results:** There was only a 25 per cent response rate. Though poor this is understandable given the overwhelming calls upon teachers' time at the present moment with the introduction of both the

NLS and NMS. The responses to the questionnaire enables a picture to be gained of the pedagogies being used. **Conclusions:** Handwriting appears to have a higher profile than in the recent past but teachers report that they are unable to meet the needs of children within the context of the Literacy Hour. There is a great deal of variability in teaching practices particularly in relation to children with handwriting difficulties.

Animism in later life: a follow-up study

I STUART-HAMILTON, A WINDSOR & L McDONALD, Department of Psychology, University College Worcester

Previous research on older adults' performance of Piagetian tasks generally indicates a decline, but findings are often weakened by, inter alia, use of institutionalised patients or failing to include measures of psychometric intelligence tests. In addition, cross-sectional methods are used, leaving studies open to the criticism that performances might reflect intentionally 'whimsical' thinking on the day of testing. This paper presents findings of a six-year longitudinal study of performance of 20 older adults (mean age 70 years) on Piaget's animism task, in which participants were required to judge if a selection of inanimate and animate items of artificial or natural origins were 'alive'. The initial testing found a significant age difference relative to younger controls, but amongst the older group there was subsequently no significant change in performance over time (thereby undermining the 'whimsical thought' hypothesis), and indications that performance was related to level of need for cognition rather than fluid or crystallised intelligence. The implications of these findings are discussed.

How do lecturers perceive the function of lectures?

P SUTHERLAND, Institute of Education, University of Stirling

Objectives: To ascertain whether lecturers offer any other activities (besides traditional lecturing). To identify what lecturers hope students will do before, during and after a lecture. To determine to what extent lectures use handouts and, if so, how? To investigate whether different attitudes are held by lecturers in different subjects? To what extent do lecturers value Power Point presentation and making the contents available on the Internet? **Design:** This is a second phase, complementing an earlier study of how students perceive lectures. This pilot study is preliminary to a more systematic study across the UK Higher Education sector. It is therefore designed to establish the main issues worth investigating later on a broader scale. It therefore includes many aspects of possible interest. **Method:** 20 lecturers, chosen from across a range of subjects at a British university, have been interviewed using a semi-structured schedule. **Results:** From a preliminary analysis of the data the sample can be categorised into 'traditional' lecturers and 'modernisers' who have adapted to recent developments. The former, influenced by their own Oxbridge education, give inspirational, wide-ranging addresses (History and Business). Since the much broader student intake of the 1990's some 'modernisers' have switched to making a just few points with a lot of illustration (Education). Most of these lecturers see the value of Power Point, but also its disadvantages: preparation time, possibility of breakdown and a possibly false sense of intellectual authority. One 'traditional' lecturer likes to use videos of the world expert in his field (Business). A 'moderniser' (Education) argues that students should use videos like textbooks. Some lecturers (Education, Film and Media and Philosophy) perceive the function of lectures to be advanced organisers for subsequent seminar discussion, reading and essay writing. **Conclusions:** There is a wide range in the perception of what lecturers see the purpose of lectures to be: from delivering the facts which must be learnt (Nursing) to inspiring students with ideas for further reading (History) and how new technology is valued: from no interest (Business) to enthusiastic usage of Power

Point, the Internet and videos (Education).

The role of semantically general verbs in the acquisition of syntax.

A THEAKSTON, Dept of Psychology, University of Manchester

Objectives: In many areas of language acquisition, researchers have suggested that semantic generality plays an important role in determining the order of acquisition of particular lexical forms. However, typically generality is confounded with the effects of input frequency such that the most general instances of a particular linguistic category are also the most frequently modelled forms in the linguistic input children receive. It is therefore unclear to what extent semantic generality or input frequency determines the early acquisition of particular lexical items. The present study attempts to evaluate the relative influence of semantic status and properties of the input on the acquisition of verbs and their argument structures. **Design and methods:** To evaluate the relative influence of semantics and the distributional properties of the input on early verb acquisition, the verb utterances of 10 English-speaking children at Stage 1 (MLU 1.00-1.99) are examined with respect to (1) the order of acquisition of particular verbs, (2) the syntactic diversity of use of individual verbs, (3) the relative proportional use of semantically general verbs as a function of total verb use, and (4) their grammatical accuracy. **Results and conclusions:** The data suggest that although measures of semantic generality correlate with various measures of early verb use, once the effects of verb use in the input are removed, semantic generality is not a significant predictor of early verb use. The implications of these results for semantic-based theories of verb argument structure acquisition will be discussed.

Social play in group care

C URE & H HUNT, Faculty of Education, University of Melbourne, Australia

Objectives: Young children's play has been studied to examine whether a relationship exists between grouping practices employed in long-day care and social play. It was hypothesised that social play would show advanced development in children in multi-age group settings. **Design:** The research employed a comparative study of children's dramatic play in two long-day care centres using a naturalistic video-recorded sampling procedure. The study contrasted the play of children in two centres, implementing different grouping strategies based on the commitment of staff to single-age and multi-age grouping practices. **Method:** The two centres selected for study were matched for socioeconomic background, parent and family characteristics and enrolment numbers (n=57). The centres were identical in their physical layout and were purpose-built centres serving children aged three to five years. Play behaviour was video-recorded in a prepared play corner for half an hour each day over a five-week period and coded using the Howes Peer Play Scale. **Results:** Results were coded using a one-minute sampling procedure and compared using cross tabulation with the chi square statistic. The results suggest differences in the play of the children in the two centres with more complex social play in the multi-age group. Preliminary data suggest there were differences in the teacher involvement in the play in these different settings. **Conclusions:** The study suggests the grouping strategies used in childcare settings influences the social play characteristics of the group. Preliminary data suggests these differences are associated with differences in the role of the teacher in the children's play.

Communication interactions between grouped five to six-year-olds in the primary classroom.

K R WALL, Institute of Education, University of London

Objective: Grouped work in the primary classroom is increasingly attracting research interest. The aim of this study was to explore how

such groups work communicatively and the significance of these interactions, both verbal and non-verbal. **Design:** A mixed methods, quasi-experimental approach was used. **Method:** Five-year-old pupils drawn from six classes located in four inner city primary schools were allocated into one of two categories by school. One category involved teacher-led grouped activities, whilst a second category, the control groups, worked on their own. In each class, two groups of up to six pupils were identified (n=72 pupils) and observed on up to four occasions over a six-month period, verbal and non-verbal interactions were recorded, the latter using a novel, audiotape technique. **Results:** Conversation analysis strategies were applied to both verbal and non-verbal data revealing, first, who interacted with whom and in what circumstances; second, the nature, range and frequencies of interactions and their development over time, and third, relatively stable and meaningful interaction sequences that transcended particular groups and circumstances. The results suggested that task type, turn taking, intervention and permissioning strategies, pupil expressive and participation moves, questioning strategies and participant spatial arrangement all had a bearing on the nature of participant interactions in the observed groups. **Conclusions:** The results suggest a range of interactional issues that primary teachers may need to consider in their management of grouped pupil activities.

Assessment of dyslexia:

The influence of different contexts

P WATSON, Education Dept, University of Leeds

Objective: The National Working Party on Dyslexia in HE noted that 43 per cent of students classed as dyslexic in HE were assessed as such only after entry to HE, i.e. at school they were not assessed and stated as dyslexic. This paper's objective is to try to explain this gross difference in assessment in the two settings. **Design:** The project involves case studies, with an ethnographic orientation, of students and SN provision in child and adult education. **Method:** This northern city study compares procedures in two universities and four FE colleges with those in the city schools. It involves interviews with students and staff and study of documents including psychological reports. **Results:** There are important major differences between child and adult SN education, outlined at an earlier conference of the Education Section, including differences in terminology, assessment procedures and teaching and support arrangements. From each of these groups of differences, there are reasons why students who are not assessed as dyslexic at school, are assessed as such in HE. This is illustrated with cases of specific students. The account also reports some apparent false positives in adult education. **Conclusions:** Practical suggestions are proposed to improve consistency between the two contexts. It is noted that there are basic differences in what is assessed as dyslexia in child education and HE.

The role of nurture in children's social and academic functioning: a study of nurture groups

D WHITEBREAD, Homerton College, Cambridge, P COOPER, School of Education, University of Leicester, R ARNOLD, School of Education, University of Cambridge & E BOYD, School of Education, University of Cambridge

This paper reports interim findings from a three-year study of nurture groups in England relating to the impact of nurture group placement on children's social, emotional, behavioural and educational functioning. The nurture group approach is underpinned by attachment theory and has strong resonance with current social-cognitive models indicating close relationships between social and academic self-regulation. The study combines qualitative and quantitative methods, employing survey questionnaires, interviews, a standardised questionnaire on social, emotional and behavioural functioning (the Goodman SDQ),

and a diagnostic instrument (the Boxall Profile). The progress of children in nurture groups is compared with that of two matched groups: children presenting similar EBD characteristics to those of the nurture group children, and a group of children presenting no such difficulties. Evidence so far (after two terms) indicates that the nurture group children, whilst starting with generally poorer scores on the Goodman questionnaire, improve on this measure at a higher level than the children in the EBD comparison group, whilst the non-EBD comparison group remains stable. Qualitative data supports this finding, with children, teachers and parents identifying improvements in children's social, emotional, behavioural and academic functioning. Within that, some initial evidence is presented that indicates differential impact for children with specific developmental or behavioural problems. The study is also beginning to provide a set of clear characteristics that distinguish nurture groups from other forms of provision. The theoretical and pedagogical implications of evidence from the study are discussed.

Understanding children who fail to benefit from literacy intervention in Year 1

H WHITELEY, C D SMITH, M GODWIN & S OAKLEY, Dept of Psychology, University of Central Lancashire

Objectives: Phonologically-based literacy intervention schemes are successful with most young children identified as being at risk of literacy difficulties. However, up to 30 per cent of at risk children do not benefit from such interventions. This paper reports a project which identifies the characteristics differentiating beneficiaries from non-beneficiaries. **Design:** A pre- and post-assessment design is adopted to allow the categorisation of a group of children at risk of reading difficulties into beneficiaries and non-beneficiaries. Between assessments, all the children experienced the same phonologically-based intervention. **Methods:** 90 children at risk of literacy difficulties and 90 control children were identified in Reception class. In Term 1, Year 1, detailed cognitive-linguistic and socio-emotional profiles were compiled for all 180 children, who were then assessed on their reading, spelling and phonological awareness abilities. In Term 2, a daily 15 week, phonologically-based intervention was implemented with the at risk children. In Term 3, all 180 children were re-assessed. Beneficiaries and non-beneficiaries were identified through an inspection of pre- and post-intervention data. **Results:** Profiles for the beneficiaries, non-beneficiaries and the control children are presented which include information about language skills, memory, rapid naming, motor skills, self-esteem, family literacy behaviours and attitudes to reading. **Conclusions:** Data are discussed in terms of profiles likely to identify potential non-beneficiaries. Finally, implications for the development of intervention schemes for use with potential non-beneficiaries are considered.

A longitudinal study of temporal information processing, speech perception, phonological awareness and literacy.

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While we know that phonemic awareness is important for children's literacy acquisition, we still do not understand why some children experience difficulty with its acquisition. It is suggested that phonemic awareness development may be rooted in children's spoken word recognition strategies. However, it has also been proposed that poor phonemic awareness is the result of a deficit in rapid temporal information processing. As difficulties in speech perception may also be a consequence of such a deficit, a longitudinal study was designed to examine whether difficulties in acquiring phonemic awareness are best predicted by a deficit in rapid temporal information processing or spoken word recognition. A sample of children completed two predictive test batteries, one during pre-school (when all children were pre-

readers), and another during their reception year at school. The children have also been assessed during reception and Year 1 at school on their emergent reading and spelling ability, and will continue to be assessed for a further two years. The first two years' data revealed that while a rapid temporal information deficit was associated with low reading and spelling attainment in reception class, this could not be attributed to difficulties with either phonological or phonemic awareness. This paper presents the results of the Year 1 class data, which it is hoped will clarify the nature of this finding, and explore whether the children showing signs of a temporal information processing deficit are also affected by difficulties in rapid naming (automaticity).

School's out: a discursive analysis of parents' talk about home education

S WYATT, Dept of Psychology, University College Worcester

This paper studies the speech of a group of parents who are educating their children at home. The fast-growing practice of home-education challenges many of the basic assumptions of the present conventional schooling system. Six separate parents, five mothers and one father, were interviewed in their homes and analysis of the transcripts identified two main discourses about education. Education was constructed as either 'imposed' or 'absorbed' and at different times each was dominant in parents' accounts. Other discourses were identified in which parents spoke of school as a battleground and home as a sanctuary. Fathers in these families were constructed as both 'private' and 'public'. The data were collected through four separate semi-structured interviews and the study uses the form of discourse analysis developed by Potter and Wetherell where focus is placed on the negotiations and renegotiations that occur within the discourse itself. It identifies content and meaning as they are generated in interaction and looks at the cultural resources speakers draw upon to construct these accounts and the manner in which this construction is carried out in different contexts where talk is orientated to different functions, both global and specific. It concludes that parents speak at different times from within two main education discourses and that the power in one may be perceived from a resistance implicit in the other. This variation is the source of a dilemma which persists throughout the parents' accounts of home education.

POSTERS

1. Do children with autism have superior understanding of physical phenomena?

L M BINNIE & M WILLIAMS, Faculty of Education, University of Edinburgh

The two linked experiments reported in this paper investigate the differential understanding of intuitive psychology and intuitive physics reported in children with autism. Baron-Cohen *et al.* (2000) showed that understanding of folk psychology is impaired in individuals with Asperger's Syndrome whereas their folk physics is superior to that of a mental age comparison group. Other research provides supportive evidence for this finding (e.g. Baron-Cohen, 1997). The experiments employed four tasks designed to compare psychological and physical understanding (physical vs. psychological categorisation, physical vs. psychological causality picture sequencing, physics and psychology multiple choice, intentional vs. non-intentional action). Experiment one examined normative developmental trends on these tasks among typically developing four-year-olds ($n=18$), 7-year-olds ($n=21$) and nine-year-olds ($n=18$). Experiment two tested 21 children with autism and a CA match group on the same four tasks. Each task was analysed in terms of group differences in performance to test the claim that children with autism have superior understanding of intuitive physics. The possibility that within the context of the same task children with autism prefer physical to psychological

reasoning is investigated to explore whether physical reasoning is their preferred way of thinking about many aspects of the world (including both physical and psychological phenomena). Educational and theoretical implications of viewing physical causation as a cognitive strength of children with autism rather than focusing on a potential deficit of theory of mind are explored. Findings are discussed in terms of domain specificity of cognition in typical and atypical development.

2. The influence of verbally marked behavioural salience on children's understanding of the role of knowledge in pretence

A J BOURCHIER, Dept of Human Sciences, Brunel University

Objective: This study investigated children's understanding that knowledge is a prerequisite for pretence and that one cannot pretend about an entity one knows nothing about. The study focused on the influence of verbally increasing the salience of a character's behaviour on children's understanding in this domain. **Design:** The study used an experimental design involving two conditions. In the 'high salience' condition, the experimenter verbally highlighted the character's behaviour, but did not do so in the 'low salience' condition. **Method:** 57 children (28 boys, 29 girls) aged 4 years 6 months to 7 years 10 months (mean: 6 years 6 months) were randomly allocated to either the 'high salience' or the 'low salience' condition. The children were introduced to a character who knew nothing about birds but who was nevertheless waving his arms up and down. In the 'high salience' condition, children were told that 'birds wave their wings up and down like that'. This behavioural comparison was not made in the 'low salience' condition. The children's understanding of the character's ignorance about birds was checked and they were asked whether they thought he was pretending. **Results:** The findings were unexpected: significantly more children correctly responded that the character was not pretending in the 'high salience' condition than did so in the 'low salience' condition. **Conclusions:** The findings support previous evidence suggesting that children have a limited understanding of the role of knowledge in pretence. Moreover, these findings further suggest that verbally marked behavioural salience is an important influencing factor warranting fuller investigation.

3. Children's use of the availability heuristic when judging probability

A J BOURCHIER, Dept of Human Sciences, Brunel University & A DAVIS, Psychology Dept, University of Surrey

Objective: Through the use of the availability heuristic, adults' probability judgements are systematically influenced by how easily examples of what is to be judged can be brought to mind, namely, their cognitive availability. The aim of this study was to establish whether children also use the availability heuristic when judging probability. **Method:** 61 children (33 boys, 28 girls) aged 7-10 years (mean: 8 years 7 months) were asked to assess the probability of a series of events (e.g. you will do maths at school, it will be cloudy) on a seven-point scale. The probability scale ranged from 'definitely will happen' to 'definitely will not happen'. Subsequently, the children were asked to provide an example of when each event has happened. The time taken to provide each example was recorded. **Results:** The findings showed that even the youngest participants were able to use the probability scale appropriately. Moreover, as is predicted by the availability heuristic, the time taken to provide an example of the event tended to be shorter for events judged to be likely, than for events judged to be unlikely. **Conclusions:** These results suggest that there is a relationship between cognitive availability (case of bringing an event to mind) and children's probability judgements. Therefore, there seems to be an important continuity between children and adults in their use of the availability heuristic when making probability judgements.

4. Factors supporting young infants' perception of trajectory continuity

G BREMNER, Dept of Psychology, University of Lancaster, S P JOHNSON, University of Cornell, A SLATER, Dept of Psychology, University of Exeter, U MASON, Dept of Psychology, University of Lancaster & K K FOSTER, Dept of Psychology, University of Lancaster

Trajectory continuity concerns recognition that objects move on continuous paths even when temporarily occluded. Some claim a cognitive basis for this ability, but it has been suggested that existing data may be explained on the basis of lower order perceptual factors. Here we use an habituation-novelty method to explore possible perceptual bases of trajectory continuity. In work reported elsewhere, four-month-olds were habituated to a ball moving behind an occluder, such that part of the ball's trajectory was occluded. They then saw test displays in which the box was removed and the ball was shown on a complete or a discontinuous trajectory. When a wide occluder was used, infants appeared to perceive the habituation display as discontinuous, looking longer at the continuous test. However, this preference pattern reversed with a narrow occluder, suggesting that trajectory continuity is perceived when spatiotemporal demands are reduced. To clarify the screen width effect, we tested infants using two new occluder widths intermediate between those used initially. Added to the earlier findings, the results show a clear relationship between occluder width and perception of trajectory continuity. These findings are consistent with either time or distance out of sight as the crucial variable. Thus we manipulated time out of sight independent of screen width by having the ball accelerate or decelerate while behind the occluder. The results indicate that a short time out of sight or a short distance out of sight is sufficient to support perception of trajectory continuity. It appears that young infants' perception of object continuity is closely tied to spatiotemporal variables, a finding consistent with the proposal that such abilities have a perceptual rather than a cognitive basis.

5. Spontaneous use of counting as a strategy by four to five-year-olds: The effect of adult prompting and feedback

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Objectives: Previous research indicates that children typically do not understand the connexion between counting and cardinality until around their fourth birthday, in spite of having achieved a procedural mastery of object counting many months earlier. Even then they do not necessarily employ counting in situations where it would be the most appropriate strategy. This study investigates four- to five-year-olds' spontaneous use of counting in cardinal equivalence tasks, and the effects on this of (a) age and (b) adult prompting and feedback. **Method:** 51 children were asked to place the same amount of toy cookies onto a plate as there was on another plate. They were also asked to judge whether two rows of toy jam tarts contained the same amount. Suggestions to count were made to half (n=15) of those who did not use counting in the first task, and feedback about the effects of counting was given afterwards. **Results:** Contrary to previous research, when asked to produce a set equal to a given set 21 out of 51 children spontaneously counted, and when asked whether two rows contained the same amount 27 out of 48 counted. No significant differences were found between counters and non-counters for these tasks, although older children counted significantly more often. However, those participants who received encouragement to count were significantly more likely to employ counting in a subsequent task. **Conclusions:** The findings indicate that the children had sufficient understanding of cardinality to complete cardinal equivalence tasks, and were able to overcome the distraction of the length cue, but their confidence in counting as an optimal

strategy was lacking.

6. Using clapping as a tool for enhancing spelling: What help is an acoustic cue?

J COOK & B PLESTER, University of Coventry School of Health and Social Sciences, Psychology Subject Group

The primary objective was to ascertain if clapping hidden letters or irregular letter sound (LS) correspondences in opaque spellings enhances children's spelling of these word types. Clapping corresponded with articulatory recoding of visually presented material which, although it allows elaborate coding, may still require rehearsal before entry to long term memory. The multifactorial design had factors of gender, reading age (RA) and experimental group: a control, a clapping group and a completion of sentences group. Within subjects factors were word-type (regular words, opaque, and Tion-family words) and time (baseline, after intervention, and spelling scores one week later). Forty-one children were involved, aged between 7.2-8.2 years old, (reading age range 7.0 to 12.3). Tests for five spellings of each word-type were administered before and after intervention, or no intervention as appropriate, and again one week later. The results were analysed using a five-factor ANOVA, with factors of gender, RA, experimental group, word-type and time. The results showed that clapping spellings as an educational intervention was found to be the most successful method for encoding spellings for accurate retrieval. Clapping was most successful as a short-term memory task, probably due to the auditory nature of the intervention. Other elaborate coding (analogy or semantic recoding) was found to assist entry to long-term memory.

7. On-line inferences during children's reading of narrative and expository texts

C CRANE & M SNOWLING, Dept of Psychology, University of York

Objectives: To investigate whether text format influences inferential processing. **Design:** A passage reading and sentence judgement task was used to assess: (i) whether children responded faster to a sentence stating an idea that had previously been used to form a causal link than to a sentence stating a simple elaboration; and (ii) whether response times differed as a function of text format. **Methods:** 22 children were selected as average readers using the Suffolk Reading Scale. The children were asked to read a list of 32 passages. Each passage was six sentences long and the fourth and fifth sentence required a causal bridging inference to link them together. Two versions of each passage were written – a narrative and an expository version – and these versions were matched for content. Each list contained only one version of each passage and contained 16 narrative and 16 expository passages. Following each passage, two test sentences were presented which children had to judge as true or false. The test sentences stated either the mediating idea needed to make the causal bridging inference, or a possible elaboration from the text. **Results:** Children responded faster to causal link sentences than to elaborative inference sentences in the sentence judgement task. This pattern was consistent irrespective of text format. **Conclusions:** Text format had no effect on children's ability to generate inferences. Children generated causal inferences when reading and did so equally well in narrative and expository text. Elaborative inferences were not drawn in either narrative or expository text.

8. Episodic memory in autistic spectrum disorders

S CRISPIN, J BOUCHER & T MCCORMACK, Dept of Psychology, University of Warwick.

Objective: The objective was to assess the hypothesis that children with Autistic Spectrum Disorders (ASDs) are impaired on tasks of

episodic memory. Further, the aim was to distinguish between recall of self-performed versus other-performed tasks. **Design and method:** Recognition, cued and free recall tasks were used to assess episodic memory. Self-performed versus other-performed tasks were contrasted with the use of tasks of cued recall and free recall. A group of 16 high-functioning children with ASDs was compared to a group of typically developing children matched on chronological age and verbal-mental age. **Provisional results:** Provisional results support: (a) the hypothesis that children with ASDs are impaired on tasks designed to assess episodic memory; and (b) the prediction that children with ASDs do not benefit from the self-performed experience in a task of free recall. **Provisional conclusion and further research:** Children with ASDs are impaired on tasks of episodic memory. This may be linked to a fundamental impairment of autoeognitive awareness required to re-experience episodes of the past. This is consistent with previous work, which found that children with ASDs are impaired in their understanding of self-aware aspects of the self.

9. Movement, attention and reading ability in primary school children

S CRUDDACE, P RIDDELL & J WANN, Dept of Psychology, University of Reading

Objectives: This study addresses the problem that research supporting the co-occurrence of Attention Deficit Disorders with reading and/or movement difficulties often fails to distinguish between Attention Deficit and Hyperactivity Disorder (ADHD) and the less frequently diagnosed Attention Deficit Disorder (ADD). This is despite evidence that these disorders are associated with qualitatively different forms of attention. The hypothesis is that reading difficulty is more likely to be associated with impairments in selective attention (ADD) whereas movement difficulty will be associated with sustained attention and/or response inhibition (ADHD). Children with comorbid reading and movement difficulties should show multiple attention deficits. **Design and method:** A year group of 9-10 year olds (n=70) are screened for general cognitive ability, reading and movement abilities. Those with movement and/or reading difficulties (n=25), together with a control group matched on cognitive ability, age and gender, are then assessed on selective and sustained attention and response inhibition using standardised tests taken from 'Test for Everyday Attention for Children' (TEA-CH). **Results:** Initial results show that most children showing reading difficulty also have movement difficulties, although many have impaired movement without obvious reading difficulty. After completion of the TEA-CH tests in June 2001 it is proposed to develop more specialised tests of attention together with a dynamic 'real world' test of attention. **Conclusion:** This research indicates whether or not children with problems in reading and/or movement also show underlying problems with different forms of attention and the pattern of deficits may inform the search for causal mechanisms in disorders of movement, attention and reading difficulty.

10. Friends and siblings: Young children's close relationships with other children

A L CUTTING, Dept of Psychology, University of Reading & J DUNN, Institute of Psychiatry, King's College London

Children's early relationships with their siblings and close friends are examined in a largescale multimeasure study of 128 four-year-old children, of whom 83 had a sibling aged between two and 12 years. The children were from a wide range of family backgrounds. Children were interviewed about the permissibility of a series of moral transgressions between themselves and their close friends and siblings. They were also recorded as they played with a close friend, and (separately) with their sibling. Teachers and mothers rated the quality of the friendship and sibling relationship respectively. Measures were also taken of family background, and each child's social cognition, behavioural adjustment and temperament. Differences in children's

relationships with friends and siblings are examined, particularly with respect to individual differences in family background, sociocognitive and temperamental characteristics. Early results suggest that there are distinct differences in children's behaviour with their friends versus their siblings, although views about the permissibility of moral transgressions were more similar. Children's behaviour towards their friends and siblings are expected to relate to individual differences in social cognition and temperament.

11. Children's learning of morphemic spelling patterns: Any notion about the connection?

S H DEACON & P BRYANT, Dept of Experimental Psychology, University of Oxford

Objectives: Children's use of morphological connections in spelling derived and inflected words was examined. Based on previous research, it was hypothesised that older children would use morphologically-based spelling patterns. **Design:** This cross-sectional study involved 128 English-speaking children in Years 2–5. Each child was tested once in a small group and once individually. **Methods:** The WORD, a standardised measure of spelling, was administered. For the experimental tasks, children spelled 27 words in context sentences. The children were told to look for a clue in the context sentence about the spelling of the target word (e.g. 'rejection'). Scores in the Two-morpheme cue condition (e.g. 'connection') were compared to scores in the One-morpheme cue (e.g. 'notion') and No-cue conditions. The One-morpheme cue condition controlled for the orthographic and phonological similarities between morphologically-related words. The No-cue condition provided a base measure of spelling of the target words. **Results:** Correct spelling of stems and morphemes were analysed separately with Repeated-Measures ANOVAs with the factors of Cue and Year. For the stems, there was no significant effect of Cue. For the endings, there was an interaction between Cue, Morpheme Type, and Year ($F(6, 240) = 240.0, p < .05$). While derivation scores were higher in the Two-morpheme condition for all children, this effect only reached significance for Year 3. For the inflections, there was no significant effect of Cue. **Conclusions:** Results suggest that Year 3 children use morpheme specific spellings in their spelling of derivations. Further studies are currently exploring Year and Morpheme Type differences.

12. The role of toy play in early mapping and geographical understanding

K DESMOND, M BLADES & C SPENCER, Dept of Psychology, University of Sheffield

Children's geographical awareness was tested through the medium of toy play to establish at what age children are capable of creating a model town or city comparable to that of an adult. Four different age groups: three to four years, five years, six years and adults, were asked to create a town or city landscape from a set of toy houses, roads, trees and cars. Play was recorded on film and the resulting landscapes marked using a coding system developed for the study. The findings indicate that there were considerable differences between the landscapes produced by the three- and four-year-olds and by the adults because the pre-school children grouped the elements but the adults created realistic landscapes. The landscapes produced by the six-year-olds were comparable to those created by the adults but the five-year-olds performed in a similar manner to the three- and four-year-olds. These findings suggest that children of six years of age are capable of recognising a novel perspective of the world and creating a realistic, physical representation of a town or a city, with a set of toys, which is of a similar standard to that produced by an adult. These results have implications for geography education at both nursery level and key stage one.

13. Language, social cognition and social competence in seven to 11-year-olds

M FARMER, Dept of Psychology, University of Northumbria at Newcastle

Objectives: To investigate the relationship between the development of aspects of language and the development of social cognition and social competence in normally developing children aged 7–9 years ($n=30$) and in children with SLI with pragmatic language difficulties ($n=12$). **Methods:** Social cognition was assessed using second order theory of mind assessments and display rule vignettes; language development was assessed using measures of comprehension, expression and figurative language; the understanding and use of verbs relating to mental states and to social interaction were assessed using new measures of comprehension and story recall; socio-emotional development and social competence were assessed using teacher ratings. **Results:** The results were analysed using ANOVAs and linear regression. **Conclusions:** The results of Study 1 (with normally developing children) show: (1) aspects of language development act as significant predictors of social cognition; (2) Social cognition does not predict language ability; (3) Many aspects of social competence as rated by the children's teachers are predicted by the comprehension of mental verbs; (4) The comprehension of abstract verbs depicting mental and social events is more difficult than the comprehension of concrete verbs; and (5) The recall and narration of concrete and mental events was easier than the narration of social events for the children in this sample. The results of Study 2 (with children with SLI with pragmatic difficulties) show a relationship between social cognition, social competence and some aspects of language.

14. Social cognition in hard-to-manage pre-schoolers followed up in middle childhood

N FISHER, Institute of Psychiatry, London

Objectives: Do hard-to-manage pre-schoolers have socio-cognitive problems at age eight? What is the relationship between theory of mind and ability measures in this age group? **Design:** Participants were part of a longitudinal study of hard-to-manage children. At age four they had a distinctive cognitive and behavioural profile, including a delay in passing theory of mind tasks. To investigate their socio-cognitive performance, and, for the first time, to examine the relationship between theory of mind and ability measures at age eight, we developed a battery of advanced theory of mind and ability measures. **Methods:** **Participants:** 24 'hard-to-manage' children (rated highly for hyperactivity at age four). 28 control children. **Measures:** BPVS, Raven's Matrices, Theory of Mind/Control Stories (Happé), Theory of Mind/Control Cartoons (Happé), Children's Eyes task (Baron-Cohen), Second order false belief tasks, Mental-state talk, word count, Strengths and Difficulties Questionnaire. **Results:** The hard-to-manage group performed poorly on several measures, but these deficits were not specifically in theory of mind tasks. Correlations found no clustering of theory of mind measures. Factor analysis found two components, one included tasks with a receptive language burden, the second included tasks requiring productive communication. The hard-to-manage group performed specifically poorly in productive communication. **Conclusion:** The hard-to-manage group performed poorly on some socio-cognitive tasks. This was due to problems in productive communication, rather than to theory of mind or ability. In this first study to use a range of theory of mind tasks with eight-year-olds, no evidence for a 'theory of mind' factor was found.

15. Alcohol use among adolescent siblings: Familial interrelations and effects

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Objectives: The study investigates intra-familial influences on alcohol use among adolescent siblings. It examines how adolescent substance

use is related to differential experiences with parents and siblings. Furthermore, it looks at interactions between the demographic variables such as gender composition of sibling pairs and other familial influences. **Design:** Two-parent families within an urban area in Scotland are investigated in a cross-sectional study. During home visits, each family member completes a standardised questionnaire in private. A multiple informant approach is chosen to control for reporter bias and to assess the importance of perceptions of others' behaviour. **Method:** Only intact families with at least two children, a younger child age 11–14 and an older one aged 15–19 are included in the present analysis. Families are recruited through schools, snowballing and media. The final sample consists of 60 two-parent families (120 mothers and fathers, 120 adolescents). A balance of the four sibling gender composition groups is attempted. Data are collected on parent-child and sibling relationships, parental and adolescent alcohol use, attitudes towards adolescent use and specific norms for use set by parents. **Results and conclusions:** Key analyses consider whether siblings are an important source for a stronger influence on adolescent drinking which needs to be considered in prevention programmes as American research suggests. Further analyses examine whether family processes differ depending on the gender composition of sibling dyads and the implications of it. Results reveal the importance of considering the context of parents and siblings in the use of alcohol among adolescents.

16. Peer presence and social facilitation: Girls, boys and classroom computer tasks

M A HARDMAN & H S PEACOCK, Dept of Psychology, Bolton Institute

Objective: Previous research suggests girls may be disadvantaged when working in mixed gender classes on computer-based tasks, regardless of whether they are actually interacting with others. Explanations have tended to highlight issues such as stereotyping, self-confidence, self-perception and social comparison. The aim of this research was to compare performance of girls and boys on a computer-based mathematics task undertaken individually as part of a normal class activity and completely alone. **Method:** 31 10- to 11-year-old children (18 girls, 13 boys) completed the task individually alongside peers also working alone (co-action condition) and individually whilst in a room with no other children (alone condition). All children also completed a questionnaire regarding access to computers and feelings about working on computers in class. **Results:** Contrary to expectation, between-group comparisons indicated that girls were more accurate than boys in both conditions. However, boys took less time than girls to complete the task in the co-action condition, but more time in the alone condition. Within-group comparisons of individual performance indicated that girls were less accurate, whereas boys were more accurate, in the co-action condition compared with the alone condition. **Conclusion:** Increasing computer usage, a possible lessening of gender stereotyping and the advantage of using educational test-like software rather than game formats in the classroom may explain the results. However, the lability of performance and differences found confirm previous research suggesting the inextricably social nature of learning in the classroom.

17. Children's perceptions of play, work and learning: Implications for the exploitation of play as a learning medium

J HOWARD, Dept of Psychology, University College Worcester

Although there is wealth of research surrounding play, both in terms of its definition and developmental potential, the majority of this is based on adult perceptions of the early years. An ecosystemic review of the literature reveals a paucity of research, which considers early education and development from the child's perspective. This absence is particularly curious,

given the recent increased emphasis on anti-reductionist, ecosystemic or global approaches to research, which highlight the importance of considering development holistically. If we support these paradigms, and seek to fully understand learning and development, then a consideration of the child's perspective is necessary. This study is concerned with the way in which children categorise classroom activities. Perceptions of play, work and learning were elicited from 111 children aged three to six years using the Activity Apperception Story Procedure (AASP). This game-like 'posting' procedure involves presenting children with 26 photographs of classroom activities, which they sort into those perceived as play, work, learning and not learning. Analysis reveals how children's definitions of play vary from traditional theoretical definitions. Children's perceptions are linked to early classroom experiences. Widespread assumptions about development through play are challenged, and the defining characteristics used by children are discussed with particular reference to developmentally appropriate practice. The importance of considering the child's perspective for the exploitation of play as a medium for learning is emphasised, as is the usefulness of actively engaging children in research.

18. Self-esteem and locus of control in children with language difficulties, attending mainstream or special schools: Teachers' evaluations match or mismatch?

E KATSAPI, Institute of Education, University of London

Objectives: The present study tested the self-esteem and the locus of control of children with language difficulties attending mainstream or special schools; and also teachers' evaluations about their pupils' self-esteem. The aim was to see, firstly, if there are any differences on the self-esteem levels between children with language difficulties attending the mainstream schools and those attending the special school; and secondly whether their teachers' evaluations match with theirs. **Design:** An independent samples design was used. **Methods:** A total of 33 children (21 boys and 12 girls) with their teachers participated in the experiment. Of these children 18 were attending mainstream schools and 15 were in a special school. Self-esteem and locus of control in children was assessed through the B/G-Steem Scale and teachers were assessed through a questionnaire designed by the researcher. **Results:** The descriptive statistics and the non-parametric chi-square test were used to analyse the data and test the hypotheses. The findings showed no gender differences on self-esteem and locus of control levels among children with language difficulties attending the mainstream schools or among those attending the special school. Additionally, no differences were found on the self-esteem and locus of control levels between mainstream school pupils and special school pupils. However, teachers' evaluations about their pupils' self-esteem did not seem to match with the pupils' perceptions of themselves. More precisely, teachers tended to slightly underestimate their pupils' self-esteem. **Conclusion:** The results have obvious implications for primary education and pedagogy.

19. Conditions for interpretation and construction of co-ordinate dimensions by young children

W LIDSTER & G BREMNER, Dept of Psychology, Fylde College, Lancaster University

Recent work indicates that young children are capable of using Euclidian co-ordinate reference systems. However, much less is known about children's ability to construct spatial cues to indicate the location of an object. The current set of studies investigates the ability of children aged three to four years to locate a hidden object by co-ordinating information provided by markers in orthogonal dimensions (Interpretation Task) and to correctly position orthogonally orientated markers to indicate the location of a hidden object

(Construction Task). Three-year-olds' performance was superior on the Construction Task, with most children performing significantly above chance. Performance on the Interpretation Task improved when followed by the Construction Task, indicating positive transfer between tasks. The second study investigated the effect of dimensionality. In the Construction Task performance was superior on the 2D task than the 3D version. Overall performance was again poorer on the Interpretation Task, with little difference in performance between 3D and 2D versions. The final study showed that children who received perceptual support in the pre-test introduction performed better than the control group, and that this advantage was still present three months later. Superior performance on the apparently more complex Construction Task was surprising. However, it is possible that the child's engagement in the activity of construction may have made the task principles more transparent, enhancing performance in the process. These findings have important implications for the current thinking in the field of spatial cognitive development and regarding the age at which and manner in which children are introduced to problems involving use of dimensional co-ordination.

20. Reeling in the 'net': children's use of symbols to navigate the worldwide web

J MACKAY, Dept of Psychology, University of Reading

A recent boom in internet-related research has addressed various issues, particularly its use as a resource for information and learning. However, no research to date has examined navigation around the world wide web by children. As use of the internet becomes ever more important in the home, in the workplace and increasingly in the school environment, this poster reports two studies which looked at navigational performance around three web sites by 15 normally developing children (Study 1) and 15 children with learning disorders (Study 2). Mean age for both groups was 12.2 years. A PC running Microsoft Internet Explorer 4.04 displayed each site together with auditory instructions fed from a minidisk player. Each participant was asked to follow the instructions and navigate around each site as quickly as possible. Each web site used a different form of navigation (pictures, letters or words) and incorporated a timing mechanism to measure the performance. The results were examined using analysis of variance. Normally developing children found the letter site significantly easier to navigate than the word and picture sites; the picture site was the most difficult to negotiate. The letter site was also significantly easier than the other two, for children with learning disorders, but this group found the word site most difficult to navigate. This study therefore suggests that both groups appeared to benefit from letters as a navigation tool for internet web pages as opposed to words or pictures. Implications for web design aimed at children are discussed.

21. Developing instruments to measure the effects of alcohol advertising on children

A NASH, K PINE & D MESSER, Dept of Psychology, University of Hertfordshire

Objective: To develop reliable and valid instruments for measuring the influence of televised alcohol advertising on pre-adolescent children. **Design:** The development and administering of self-completed questionnaires to 41 9- and 10-year-olds was carried out to test materials not previously used with this age group, to assess their reliability and validity and as a pilot for a future longitudinal study. **Method:** Data were collected to assess a number of variables predicted to affect children's responsiveness to alcohol advertisements. Multiple regression will assess the effect of advertising in the creation of positive alcohol expectancies, which have been found to predict future patterns of alcohol behaviour/consumption. Instruments have also been adapted and developed to assess self-esteem and environmental factors (i.e. family/peer attitudes and behaviour) as other possible contributory variables. The measures included: (a) TV Viewing

Habits questionnaire; (b) Self-esteem questionnaires (adapted from Harter, 1972); (c) TV advertisement recognition task; (d) Alcohol Expectancy Questionnaires (AEQ and CEOA). **Results:** The self-esteem (b) and alcohol expectancy questionnaires (d) have been subjected to reliability and validity checks, both convergent and discriminant, using Cronbach's alpha. The correlation between the alternative forms of questionnaires has been assessed and found to be positive. The suitability of measures (a) and (c) for use with children as young as nine years is confirmed by the data. **Conclusions:** The preliminary findings identify instruments that can be reliably used with children as young as nine years old.

22. Analogical reasoning: Facilitator of map use by four- to seven-year-old children

J NOCK & B PLESTER, University of Coventry School of Health and Social Sciences, Psychology Subject Group

The present study aimed to demonstrate that children who are able to reason by analogy are more likely to be able to interpret map material than those who cannot reason by analogy. The spatial relations shown in a representation must be mapped across feature correspondences onto the referent space, in a manner that corresponds to Gentner's Structure Mapping. A correlational design was used to explore the relationship between analogical reasoning ability and map reading ability. Age and sex were also considered in secondary comparative analyses. 40 four- to seven-year-old children from the same primary school took part. A picture sequencing task using classical analogies based on causal relations was used to test analogical reasoning. A five-point route through the school playground was marked on a map and each child was asked to use the map to follow the route in order to test map reading ability. Multiple regressions and Pearson's correlations indicated that there are significant links between analogical reasoning ability and map use. The relationship was stronger in the younger age-group, and stronger for boys than girls in both age-groups. The findings have consequences for the age and manner in which children are required to carry out map work, and for the use of instructional analogies in teaching and learning.

23. The development of measurement between four and 11 years: Units of length

Y REYNOLDS, Institute of Education, University of London

This research investigates one aspect of children's understanding of units in length measurement. In a variant of Piaget's 'towers' task, 55 children between four and 11 years of age were shown a picture story in which a character fails to take into account both size and number of discrete units in measuring the height of an object. Structured interviews investigated whether the children understood the inverse relation between size and number, and could apply this principle in the context of related tasks. A further series of tasks investigated whether the nine- to 11-year-olds in the sample applied similar reasoning when scaled measuring instruments were involved. The inverse relation as a property of arbitrary units appeared to be in some circumstances easier for children to understand than had been proposed in previous studies, while in other circumstances it presented difficulties. Work is in progress to identify, the source of these difficulties and determine any wider implications for the understanding of standard units. While some investigators of the ability to measure have postulated specific developmental sequences of logical competences as prerequisites, others have considered that such competences themselves depend on general cognitive capacities such as that of working memory. Still others have considered that task characteristics are the determining factor in measurement competence. This study considers children's developing understanding of the standard unit of length in the context of these approaches.

24. Children's understanding of secrets

J ROSS & M BLADES, Dept of Psychology, University of Sheffield

Previous research indicates that children can distinguish good secrets from bad secrets from six years old. In the present study more than 130 children aged five to ten years old were presented with stories about good and bad secrets. They were then interviewed as to whether the secrets should be disclosed and the consequences of such disclosures. A significant amount of the children were able to distinguish good secrets from bad as shown in their responses, but their understanding of disclosure and associated consequences differed with age. The implications for children's court testimony and child protection are discussed.

25. School type, sex, confidence and stereotypes: Effects on mathematical achievement

A SARKAR & B PLESTER, University of Coventry School of Health and Social Sciences, Psychology Subject Group

The aim of this research was to see the effects of sex and school type on mathematical achievement, confidence, gender attitudes towards maths and other school subject stereotypes and 11-plus maths and English results. This research examined the view that males have an inherent advantage in mathematical achievement by asking if factors such as type of school attended, confidence, gender stereotypes, and the implications of maths as a male domain may also contribute to observed gender differences in mathematical achievement. A multifactorial design was used, with between groups factors of school type: single-sex boys, single-sex girls, and mixed secondary schools, all with selective admission; and sex of child. Eleven-plus maths and English results, confidence in mathematics, gender attitudes towards maths and other school subject stereotypes were also measured, and correlated with scores on a mathematics test. The children were 11 to 12 years old and were from the top mathematics sets. Two-way ANOVA found boys outscored girls on the present maths test and confidence regardless of school type. Girls reported more gender stereotyping towards maths and other school subjects. Single-sex schools scored higher on present maths problems and confidence. Girls attending the single-sex school were less gender stereotypical than girls attending the mixed school; no parallel was found for boys. Both sexes scored lower on the maths problems at the mixed school compared to the single-sex schools. These measured factors appear to interact with sex in yielding the view that boys excel in maths.

26. A survey of the social functions of the lecture process in HE

T SHELTON & J KING, Applied Psychology Unit, Liverpool John Moores University

Recent economic and academic challenges to HE seem to have been mirrored by renewed criticism of the use of lectures in HE establishments. However, critics of the lecture method in HE often assume that the lecture is a 'stand-alone unit' and that learning occurs only during the lecture. In contrast, the lecture may serve to provide a valuable forum in which students can meet and share information. This research investigates whether lectures provide a social and educational function by contributing to the development of a sense of identity and ownership of their education amongst students. This poster reports on the early stages of this ongoing research. For this preliminary report, the results of student focus groups on the factors underpinning student attendance at lectures are fully reported and discussed. These data have now been collated with items from a review of contemporary research on lectures to form a Beta questionnaire distributed to a sample of North West (n=1000) HE students during Spring/Summer 2001. The early results of this research are reported and discussed. The data from the Beta questionnaire is subjected to a detailed factor analysis and data reduction techniques will reduce the number of questionnaire

items. The remaining items form the Alpha questionnaire to be used in the final stage of the research (2002) which will be an extensive survey of the lecture process covering a wide range of subjects in various universities in the North West of England. This poster reports the initial results of this ongoing research in which the extended assessment of the lecture process should lead to useful insights into the nature of the lecture process and a more fully informed debate on the efficiency of teaching methods in higher education.

27. Social facilitation of children with autism's performance on executive tasks

K SHIMMON, Dept of Psychology, University of Lancaster

Twenty-four high-functioning children with autism, 18 with moderate learning disabilities and 21 typically developing pre-schoolers (matched with the autistic group for verbal comprehension) participated in a battery of executive function and theory of mind tests. Half of the children from each group received training on a task incorporating a number of 'executive' components: the Tower of London (ToL). Following Appleton and Reddy (1996) training involved systematic instruction, verbal prompting and feedback on multiple ToL trials with graded difficulty. Skill transfer in the post-training phase was examined in the Tower of Hanoi (Shallice, 1982), the dimensional change card-sort (Zelazo, Frye and Rapus, 1996) and the 'Sally-Anne' unexpected transfer task (Baron-Cohen, Leslie and Frith, 1985). The findings revealed significant improvement through training for both the children with autism and the pre-schoolers, despite increasingly difficult problems. No such improvement was observed for the children with moderate learning disabilities. Post-test assessment demonstrated that success through training did generalise to the Tower of Hanoi problem, a task similar in structure and task demands. Improvement in the ToL did not, however, relate to subsequent performance on the card-sort or the 'Sally-Anne' task. Improvement through Vygotskian scaffolding methods appears to be successful with children with autism, but is limited to tasks involving identical components of executive function, (i.e. working memory and inhibitory control) rather than extending (as one would hope) to dissimilar executive measures.

28. Narratives of the life span: Important areas, choices and perceived influences

SHU SHU, P K SMITH & H BLUMBERG, Dept of Psychology, Goldsmiths College

Objectives: To discover the areas of life which people consider most important; what has influenced their choices within these areas; and [here] focus on the salience of Education. Design: Self-perceptions of people from a variety of ages and backgrounds; n=c.200 obtained so far from England; n=c.200 from China being gathered in April/early May. **Method:** A questionnaire (with a combination of open-ended and structured responses) was piloted; the final version includes: important life areas (checklist); choices and decisions (open-ended) including at what age the choices were made; positive and negative influences (open-ended). The questionnaire has been given out in various settings and through visitors to a dedicated website, <http://homepages.gold.ac.uk/lifechoices>. **Results:** The most important life areas were rated as: (1) parents; (2) friendships; and (3) education. Also highly rated were relations with partner, siblings, social life/interpersonal relations and health. There were some significant differences by age, gender, and ethnicity (on analysis of variance), but none for the importance of Education. A content analysis was made of important choices or decisions; for education, main areas are Choice of school/ Choice of College or University/ other Learning or course opportunities. Analyses are underway of influences on choices, and will be augmented by the data from China to be gathered in April/May. **Conclusions:** Education is seen as an important life area by the great majority of respondents, irrespective of age, sex and ethnicity – the main area of importance and choice apart

from those centering on relationships, and the health area. Influences on choices, and England-China comparisons, are illustrated.

29. If I can tell you how I do it, I can do it right: seven- to eight-year-olds talk about maths

G SLATER & B PLESTER, University of Coventry School of Health and Social Sciences, Psychology Subject Group

The present research aims to investigate the relationship between ability to solve computational and verbal mathematical problems, and ability to explain finding the solutions. It was hypothesised that there would be a positive association between standard of communication in a task converting word problems into computations and accuracy of solutions. It was also hypothesised that there would be a positive association between standard of communication in the conversion task and computation score. Twenty-three seven- and eight-year-olds from a state primary school participated in the correlational design. The children were given a math paper containing five computational questions followed by 15 problem solving questions aimed at their age group. Subjects were given 20 minutes to answer as many questions as they could and were asked to work individually and in silence. Subsequent conversion task interviews consisted of asking the children to convert each of the word problems into a computational question. Interviews were conducted individually and children were graded on their ability to communicate their answer. Results showed a significant positive correlation between communication standard and problem solving score and a significant positive correlation between communication standard and computation score. This leads us to question whether it is communication that drives maths ability or whether it is the other way round. Either way the results have large educational implications as they highlight the importance of language in mathematical development.

30. Applying developmental theories to foster social interaction and pragmatic language in young children with significant Communication Difficulties

C SMITH, Specialist Educational Psychologist, Isle of Wight & M FLUCK, Dept of Psychology, University of Portsmouth

Objective: This study was designed to evaluate an approach to intervention using graded participation in shared social game formats to promote levels of social interaction and pragmatic language development in three- to five-year-olds with significant delays and deviance in interaction and language development. **Design:** Twenty three- to five-year-olds participated in an evaluation study employing both a cross-sectional and longitudinal design. Matched control and intervention groups were used, and a within subject comparison was also made between baseline and intervention phases for each participant. **Methods:** Measurements were made of changes during the baseline and intervention phases. A comparison was made between changes in levels of participation in games and pragmatic language abilities in each phase. During the baseline period all children attended a nursery and received individual speech and language therapy. The Intervention period involved systematic dyadic game playing, designed to develop shared visual attention and action with early verbal skills. **Results:** The levels of increased participation in games and scores on pragmatic language measures were significantly greater for the intervention group/phase than that for the control group/phase. **Conclusion:** The results indicate that the development of social interaction and pragmatic language skills can be promoted more effectively through (re)constructing the interpersonal framework of pre-linguistic communicative development than through conventional intervention focussing more directly on language production per se together with unstructured (but adult supported) experience in nursery settings.

31. Children's conceptions of impairments: A domain-specific cognition perspective

L SMITH & J WILLIAMS, Faculty of Education, University of Edinburgh

Recent theoretical and practical research on children's cognitive development has shown even pre-school children hold intuitive ideas relating to the physical, social and biological worlds. As such, this paper investigates the ways in which typically developing children conceptualise the causes of different impairments from a domain-specific perspective. Children ($n=77$) in each of four age groups, (four to years, six to seven years, nine to 10 years and 11 to 12 years) were interviewed to explore their ideas about the causes of physical (minor: missing thumb; major: wheelchair-bound), sensory (visual and hearing loss), learning disabilities (non-specific and Down syndrome) and emotional/behavioural difficulties (attention deficit hyperactivity disorder and lack of social skills). Significant age differences were found in causal explanations, perceived controllability and perceived chronicity of impairments. Developmental changes were also observed in children's ability to differentiate responses on the basis of disability type. Findings are discussed in terms of recent research on children's domain-specific knowledge, particularly the shift in causal understandings from naive biology to social/psychological thinking. The results also provide valuable information for establishing educational interventions to instruct children about disability.

32. The roles of labels and the generic noun phrase: Category learning in two-year-olds

S STOKES & G SCHAFFER, Dept of Psychology, University of Reading

Objectives: The hypothesis that two-year-old children's acquisition of 'kind' category concepts was aided by maternally supplied labels and generic noun phrases was tested. **Design:** A mixed design was used, with 'type of material used in training', as the between subjects factor, and 'category' with three levels, as the within subjects factor. The dependent variable was 'gain in correct categorisation' of tested exemplar pictures. **Methods:** 50 participant mother-infant pairs (infants aged 24 months) were recruited for two experiments, and a third experiment is planned. Participant mothers were contacted by telephone, using records held by the Child Development Group at Reading University. Specially prepared booklets, containing pictures and matching 'novel' poem were used in training. Each booklet contained pictorial exemplars from three 'kind' categories, which were labelled and described using either: category defining, generic noun phrase content (tests), or non-generic, non-category defining content (controls). Input was maternally supplied, in a four-day training schedule. Infants were pre-tested using 'naming' and a 'match to sample task', on 24 (experiment 1) and 21 (experiment 2) category exemplar pictures for existing knowledge, and re-tested on the same material, post training. **Results:** The 'gain in correctly categorised exemplars', pre-vs-post training for both groups was calculated. The data were then subjected to analysis of variance statistical procedures, for between (training) and within (category) participant differences. **Conclusions:** Research findings suggest children are sensitive to both labels and the generic noun phrase.

33. Young peoples' attitudes to authority and the relationship with educational achievement

A ST. JAMES, Dept of Psychology, University College Worcester

The negative relationship between attainment in secondary school and involvement in delinquent or anti-social activities is well established. Furthermore, both delinquency and poor educational attainment are associated with negative attitudes to institutional authority. These links have commonly been interpreted as reflecting the impact of educational failure on both attitudes and conduct. The present study takes the first steps in exploring an alternative

interpretation in which orientations to institutional authority are cause rather than consequence in the relationship with attainment. One-hundred-and-sixty boys completed measures of their attitudes to formal authority at the start of their secondary education and again 18 months later. Their scores were compared with their attainments in various subjects (English, Maths, etc.) at the end of their first year and their performance in cognitive tests administered at the end of their first term at secondary school. Analyses indicated as predicted that attitudes at time 1 had a stronger influence on attainment than did the latter on attitudes at time 2. Furthermore, although attainments were strongly related to cognitive scores, attitudes were not. And attitudes at time 1 predicted variance in subsequent attainment over and above that predicted by cognitive scores. Further work has confirmed the lack of relationship between attitudes and measures of verbal IQ, and is now testing the interpretation with larger samples spanning the transition from primary to secondary school.

34. Stanley Squirrel gets lost: map training with a story for four-year-olds

R TIMMONS & B PLESTER, University of Coventry School of Health and Social Sciences, Psychology Subject Group

The primary objective was to determine whether training, in the form of hearing a wayfinding story before taking a novel walk, would increase four-year-olds' ability to represent the walk accurately by drawing a map. It was hypothesised that the mean score achieved by participants who heard the wayfinding story before the walk would be significantly higher than the mean map score of participants who heard a story with no reference to wayfinding. A between-groups design was used with 24 four-year-old participants from a Reception Class, who were randomly assigned to the two conditions. One group was read a story that referred to the wayfinding strategies of a squirrel on a novel walk. One group was read a story that made no reference to wayfinding strategies. Two-way ANOVA (age by condition) showed that participants given training achieved on average higher map scores than participants who received no such training. It was also found that children nearer the age of five, achieved on average higher map scores than children nearer the age of four. Results suggest that stories are an important and influential technique in education, and that children as young as four are capable of drawing meaningful maps, and can benefit significantly from training embedding wayfinding strategies in a story. Results also provide support for various studies that claim that involving children in stories allows them to draw analogies between the story and their real life experiences.

35. The sensitivity of the left cradling bias to infant age

B TODD, Psychology Group in the School of Cognitive and Computing Sciences, University of Sussex

Previous research has established that women exhibit a bias to carry and cradle infants on the left, rather than the right, side of the body (Salk, 1960; De Chateau, Holmberg & Wimberg, 1978). The percentage of mothers holding their infants on the left varies, among different studies, from approximately 60–85 per cent and tends to be higher when babies are newborn, though little attention has been paid to the strength of the bias in relation to infant age. This contribution reports a longitudinal study of 24 primiparous mothers who were observed in an experimental situation at four different time points; when babies were aged 0–1 week, 4–5 weeks, 8–9 weeks and 12–13 weeks. An ANOVA conducted on the mean duration of holding infants to each side showed that a highly significant bias to the left was present at the first three time points but by the fourth time point the difference was not significant. The reduction in the left-cradling bias, which occurred when infants were aged over 12 weeks, is discussed in relation to proposed explanations of the bias in terms of infant head-turning preference (e.g. Bundy, 1979), maternal expression of emotion and maternal

control of infant emotion (Reissland, 1999).

36. Prevention of anxiety and depression symptoms in primary school children: Preliminary results from a universal school-based trial

P BARRATT, C TURNER & L HEALY, Mt Gravatt Campus, Griffith University, Queensland, Australia

Objectives: This study sought to evaluate a universal school-based CBT programme for prevention of anxiety and depression in children. Two primary aims were identified: (1) to examine the preventive effects of the intervention on participants functioning at post-intervention and 12-month follow-up, in comparison to a usual care (standard curriculum) with monitoring condition; and (2) to compare the effectiveness of teachers versus trained psychologists as group leaders. **Design:** The study employed a mixed factorial repeated-measures design. Participants were randomly assigned to conditions, with schools (rather than individuals) being the unit of random assignment. **Method:** 489 children (10–12 years) were assigned to one of three intervention conditions: a psychologist-led preventive intervention, a teacher-led preventive intervention, or a usual care with monitoring condition. The intervention offered was the Friends for Children programme, a manualised 12-session cognitive-behavioural programme. **Results:** Data were analysed for both statistical and clinical significance. Mixed factorial repeated-measures MANOVA revealed that participants in both intervention conditions reported fewer symptoms of anxiety and depression at post-intervention and at 12-month follow-up than participants in the usual care condition. Chi-square tests for clinical significance revealed that the intervention was successful in reducing the number of students reporting clinical levels of pathology. **Conclusions:** These results suggest that Friends for Children is an effective preventive intervention or childhood anxiety and depression, that can be successfully delivered to a school-based population and integrated into the classroom curriculum.

37. Does interacting with parents help children to establish intersubjectivity with peers?

A WALKER & R HILL, Neuroscience Research Institute, Aston University Birmingham.

Objective: Evidence suggests that the way in which intersubjectivity is established is related to both the child's age and the partner's status. In order to examine whether interaction with an adult can enhance the ability of young children to construct intersubjectivity when interacting with a peer this study compares the ability of child dyads before and after carrying out a similar joint communication task with their mothers. **Design and method:** 24 children aged four to five years completed a map task. The task required one child to describe a route marked on a map to another child who had to draw the route on to a similar map. Neither child could see their partner's map. One week later half the dyads completed a second version of the task. The remaining 12 children completed the task with their mothers. After a week's delay all the children completed a third version in their original peer dyads. **Results:** Using two-way mixed ANOVAs the results indicated that although the amount of intersubjectivity established between mother and child dyads was significantly greater than the amount established between peer dyads, the two experiences produced very similar results in terms of immediate improvements in the children's ability to establish intersubjectivity. **Conclusion:** Although a larger study is required before any final conclusions can be drawn the results suggest that young children are capable of verbally establishing intersubjectivity and that this ability can be enhanced through experience, with interaction with a same-aged peer being just as beneficial as interaction with an adult.

38. Language impairment in excluded children

N YUILL, School of Cognitive and Computing Sciences, University of Sussex & K RIPLEY, Brighton and Hove Educational Psychology Services

Previous research shows a high incidence of behaviour problems in children with language impairment. However, there is little knowledge of the existence and nature of language impairment

in children with behaviour problems: are any difficulties specifically linguistic, are receptive or expressive problems more associated with behaviour problems, and does the relation differ with age? Twenty boys aged nine to 16 years with behaviour problems who had been permanently excluded from school and 20 comparison boys without behaviour problems were given measures of non-verbal ability, receptive and expressive language skills and auditory working memory, and teacher behaviour ratings. Preliminary results

show that the excluded group were similar to the comparison group in nonverbal and receptive language skills but were markedly lower on expressive skills. Comparison and excluded boys differed more in auditory working memory in the younger group whereas expressive skill differences were more important in the older group. Patterns of skills discrepancies are analysed and discussed in relation to models of language-behaviour relations and policy implications for school inclusion.

Psychobiology Section

Annual Scientific Meeting of the Psychobiology Section, Langdale, 12–14 September 2001.

Why diencephalic pathology causes amnesia

J AGGLETON, Cardiff University

Objectives: Bilateral damage in medial diencephalon can induce anterograde amnesia but the mechanism is unknown. The present study examined whether anterior thalamic pathology disrupts medial temporal processing. **Design:** The effects of bilateral anterior thalamic lesions in rats on the activity of the immediate early gene *c-fos* were mapped in limbic regions implicated in memory processes. **Methods:** Three groups of rats ($n=21$), one with bilateral anterior thalamic lesions (ATx), were trained to run down the arms of a radial maze for food. One control group was trained in Room A while the remaining controls and the ATx group were trained in a different room (Room B). On the final test all animals were tested in Room A, then processed for Fos production. **Results:** The retrosplenial cortex showed the greatest loss of Fos activity following anterior thalamic lesions. This included an almost complete cessation of activity in layer II. Less marked Fos decreases were found in other regions, including the hippocampal formation. The ATx lesions did not produce a hypoactivity in the parahippocampal cortices or in primary sensory cortical areas. **Conclusions:** The study reveals two related ways that anterior thalamic pathology might disrupt processes involved in memory. The first is through hippocampal dysfunction, the second is through retrosplenial dysfunction. The hippocampus has long been linked with amnesia, while recent imaging studies now point to an involvement of the retrosplenial cortex in episodic memory. The retrosplenial dysfunction may involve 'cryptic pathology' in the cingulate cortex.

Salivary S-IgA: A relevant marker of immune function in psychobiological research?

A CLOW, University of Westminster

Purpose: To review the evidence that the level of sIgA measured in saliva is a valuable variable in psychobiological research. **Background:** The ease with which saliva can be sampled from human subjects has facilitated the measurement of the secretory antibody immunoglobulin A: S-IgA, as an index of immune system activity. In some respects salivary levels of this antibody are considered to represent functional activity of Immunoglobulin defence of the common mucosal immune system. **Key Points:** Salivary S-IgA can be measured in large-scale between-subject studies. In one such epidemiological study of approximately 2,500 people, who each provided a single saliva sample, we have shown that S-IgA is directly or indirectly predictive of the incidence of malaise symptoms, respiratory symptoms, gender, age, social class, smoking status, season of measurement and general state of happiness. In a smaller study of about 35 people we have shown that secretion of S-IgA shows a marked diurnal pattern being highest immediately upon awakening to fall rapidly and remain relatively stable throughout the rest of the day. Although there was considerable between-subject variation in secretion of S-IgA we found marked within-subject stability across the two, consecutive measurement days. Although people can be

characterised by their S-IgA secretion it is also subject to marked and very rapid modulation by psychological challenge. We have demonstrated that pleasurable and arousing stimuli can increase whereas negative 'stressful' emotional stimuli can suppress secretion of this antibody. **Conclusions:** Measurement of salivary S-IgA is of value as a predictor of general well being in large-scale between-subject studies as well as differentiating individual differences in responsiveness to acute psychological challenge studies.

The Psychobiology of the awakening cortisol response

F HUCKLEBRIDGE, P EVANS, S EDWARDS & A CLOW, Psychophysiology and Stress Research Group, University of Westminster

Purpose: To examine the cortisol response to awakening as a component of hypothalamic-pituitary-adrenal activity. **Background:** The circadian cortisol cycle is marked by a pronounced stimulation of secretory activity in association with awakening from nocturnal sleep. The psychobiology of this aspect of cortisol secretory activity is explored. **Key Points:** The response is a trait characteristic showing reasonable intraindividual stability across days and weeks. It is however influenced by perceived stress and burnout. Overall levels of cortisol produced over 45 minutes in the awakening response (Area under the cortisol curve, AUC) are representative of cortisol secretory activity over the remainder of the diurnal cycle. The response as such, calculated as a mean increase from first awakening level (MnInc) is however independent of underlying secretory activity. The response calculated as AUC or MnInc is subject to genetic factors with fairly high heritability estimates. Stimulatory input from the hypothalamic suprachiasmatic nucleus is thought to contribute to the response. Habitual early awakers show a more pronounced response than late awakers. Manipulation of suprachiasmatic nucleus activity by exposure to light, immediately upon awakening amplifies the awakening cortisol response. This pathway cannot be triggered by light exposure later in the diurnal cycle. This extra-pituitary second signal is thought to be mediated via a direct multisynaptic neuronal pathway to the adrenal cortex. **Conclusions:** The cortisol awakening response is an important component of the diurnal cortisol cycle subject to an extra-pituitary stimulatory pathway. The physiological role of the response is uncertain although it may be important in immunomodulation.

An investigation into the acute nootropic effects of hypericum perforatum (St John's Wort) in healthy human volunteers

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Objectives: Hypericum perforatum L. (St. John's Wort) is a complex herb that has been used for centuries for its putative medicinal properties, and has current therapeutic relevance as a treatment of mild to moderate depression. Recently, two studies in rodents have suggested that hypericum may also have memory enhancing effects. This

study aimed to examine whether acute administration of standardised hypericum extract could exert a nootropic effect in normal human subjects. **Design:** The study employed a double blind, crossover, repeated-measures design. **Methods:** Twelve healthy young subjects completed a number of tasks from the Cognitive Drug Research (CDR) battery, following administration of placebo, 900mg and 1800mg hypericum (Blackmore's Hyperiforte). **Results:** Only two significant effects were identified. Firstly, an impairment was seen in the accuracy of identifying new stimuli, on the Numeric Working Memory task, in the 1800mg dose compared to placebo. Secondly, after identifying a significant interaction of condition and time, planned comparisons showed an impairment to accuracy of identifying original stimuli on the Delayed Picture Recognition task, in the 1800mg dose compared to placebo.

Factors associated with delay in attending hospital following a heart attack

R E O'CARROLL, K B SMITH, N. GRUBB, K FOX & G MASTERTON, University of St Andrews and Edinburgh Royal Infirmary.

Objectives: The present study assessed possible psychological factors that might be implicated in delayed presentation following a myocardial infarction (MI). **Design:** A between-group comparison of prompt attenders (less than 4 hours between first symptoms and hospital attendance) versus delayers was conducted. In addition, a regression analysis was run on clinical and psychological measures against delay. **Methods:** Seventy-two consecutive patients who had experienced a confirmed MI were interviewed in hospital and completed a clinical interview and various psychological measures including cardiac denial, threat, locus of control, neuroticism and mood. **Results:** Those patients who believed they were experiencing a heart attack attended more promptly. Those who delayed scored particularly highly on health locus of control (chance). **Conclusion:** The belief that one is experiencing an MI is associated with prompt attendance. The belief that health outcomes are largely due to chance factors is associated with delayed presentation. This delay could prove fatal. Modification of such beliefs may reduce response times and thus, increase survival rates.

Testosterone and cognitive function in men: A double-blind, placebo-controlled, cross-over study

D B O'CONNOR, J ARCHER & F C W WU, University of Leeds, University of Central Lancashire, University of Manchester

Objectives: Recently O'Connor *et al.* (2001) demonstrated activation effects of testosterone enanthate (TE) on cognitive functioning in normal eugonadal men. Specifically, supraphysiological doses of TE were found to have a differential effect, inhibiting spatial abilities while improving verbal fluency. These data suggested i) that an optimum level of testosterone (T) may be required for the normal expression of spatial abilities in men and ii) the relationship between T and spatial ability may be a non-linear, inverted U relationship. That is, increasing T levels do not necessarily lead to an amplification of male typed

characteristics. Informed by these data, the aim of the present study was to investigate further the activational properties of a long-acting T preparation, testosterone undecanoate (TU) on aspects of cognitive function. **Design:** A double-blind, placebo-controlled, cross-over design was employed in this study. **Methods:** Thirty healthy young men were randomised into one of two treatment groups. 1a) active phase – receiving 1 x 1000 mg of TU i.m. (to raise T levels into the supraphysiological range for 8 weeks), b) washout phase (no application) – 8 weeks followed by c) placebo phase – receiving 1 x 1000 mg of castor oil i.m. (T vehicle) – 8 weeks. 2a) placebo phase – 1 x 1000 mg of castor oil i.m. – 8 weeks b) washout phase (no application) – 8 weeks followed by 2c) active phase – receiving 1 x 1000 mg of TU i.m. – 8 weeks. Both groups underwent a battery of neuropsychological tests (Block Design Test, Grooved Pegboard, Trail-Making Test, Controlled Oral Word Association Test (COWAT), Rey Auditory-Verbal Learning Test, Digit Span, Digit Symbol) at baseline and at week 4 of both active and placebo phases. **Results and Discussion:** The results are presented and discussed with reference to the proposed nonlinear, inverted U relationship between T and spatial ability. These findings may be relevant for T replacement therapy and hormonal male contraception.

Memory impairment following in-hospital cardiac arrest

S O'REILLY, N GRUBB, K A A FOX & R E O'CARROLL, University of St Andrews
Introduction: It has been shown that cerebral hypoxia as a result of cardiac arrest leaves significant numbers of cardiac arrest survivors with moderate or severe levels of memory impairment after the event. It has been suggested that the degree of impairment may be related to the duration of the arrest. **Aim:** The present study assessed the prevalence and severity of memory dysfunction in survivors of in-hospital cardiac arrest survivors who typically have shorter arrest durations than out-of-hospital arrest survivors. **Method:** 33 survivors of in-hospital cardiac arrest, 35 out-of-hospital arrest survivors and 35 MI survivors underwent cognitive assessment, which included the Rivermead Behavioural Memory Test (RBMT). **Results:** 24% of in-hospital, and 38% of out-of-hospital arrest survivors sustained significant memory damage following their arrest. There was no significant difference between these groups in either prevalence or severity of impairment. However significantly greater numbers of both cardiac arrest groups performed significantly worse than the MI group on the memory assessment. **Conclusion:** Whilst the impact of arrest duration on subsequent memory performance is not confirmed, it appears that arresting in-hospital rather than out-of-hospital provides no benefit in terms of memory impairment for survivors. Similar numbers of in-hospital arrest survivors are left with similar degrees of memory impairment as out-of-hospital cardiac arrest survivors.

Psychobiological problems in regular ecstasy/MDMA users

A C PARROTT, Dept of Psychology, University of East London
Purpose: to review the psychobiological effects of recreational MDMA or 'Ecstasy'. **Background:** MDMA (3,4-methylenedioxymethamphetamine) or 'Ecstasy' is widely used as a recreational drug, but there are many concerns over its immediate and long-term effects. **Methods and key points:** over the past few years, patterns of MDMA/Ecstasy use have widened, usage has intensified, and there are many indications of tolerance. The acute mood effects are generally very positive, but are followed by depression and lethargy in the days afterwards, due to neurochemical depletion. Laboratory animal research shows that neurotoxicity can occur after just a single dose of MDMA. Serotonergic axon terminal destruction develops reliably after repeated doses, especially under hot environmental conditions, since MDMA impairs hypothalamic temperature control. Drug-free regular Ecstasy/MDMA users show many

biological signs of reduced serotonin functioning (e.g. reduced 5-HIAA), also selective memory deficits and higher cognitive impairments, although basic/simple cognitive functions remain normal. The degree of damage is dose-related, and can be independent of awareness. Numerous psychiatric and psychobiological problems are reported by regular users: depression, psychoticism, phobic anxiety, obsessiveness, reduced appetite, impaired sleep, and reduced sexual interest. Huether's explanatory model for the long-term neural damage is outlined. It explains how heat, exercise, and parallel use of other stimulant drugs (cocaine, amphetamine, nicotine), may be contributing to the neural damage caused by MDMA. **Summary/conclusions:** Ecstasy is not a 'soft' recreational drug, but is psychobiologically very damaging.

ERP correlates of person recognition in a cross-domain repetition priming study

E C PICKERING, S R SCHWAINBERGER, J M KAUFMANN & A M BURTON, University of Glasgow
Objectives: The cognitive mechanisms required in person recognition are a subject of debate. For faces and names, the present experiment compared differences in neural processing between primed and unprimed recognised (famous) and unfamiliar stimuli across domains (face/name) and judgement task (familiarity/nationality decision). **Design:** One hundred and twenty celebrities were identified in a recognisability study, and the faces and names of unfamiliar people were obtained, matched to the famous ones for visual stimulus properties. **Methods:** During three separate priming blocks, participants (n = 18) either performed speeded familiarity decisions (two-choice key presses) for 60 faces, speeded familiarity decisions for 60 names, or speeded nationality decisions for 30 faces. Stimulus duration was 2000 ms throughout. Stimulus prime-test interval was approximately 20 min. At test, participants made familiarity decisions for 240 names (90 unprimed). EEG was recorded from 32 channels and recalculated off-line to average reference. **Results:** Not yet available. **Conclusions:** ERP correlates for long-term cross-domain priming are compared to previous experiments that showed ERP modulations at 500-700 ms post-stimulus when stimuli were repeated within stimulus domain. ERP differences previously shown, which were late compared to perceptual processing components, may reflect the facilitation of person-specific memory retrieval observable behaviourally in long-term repetition priming. This study allows comparison of a repetition condition where behavioural priming is expected to conditions where behavioural priming is not expected to be observable.

Memory bias for sad facial expressions: Does it persist in patients following recovery from a major depressive episode?

N RIDOUT & R E O'CARROLL, University of St Andrews
Objectives: In a recent study we presented a set of emotional facial expressions to clinically depressed patients and healthy controls. They were asked to identify the emotion portrayed by each face. The participants were subsequently given a recognition memory test for these faces. The results revealed that depressed patients demonstrated superior memory for sad, and inferior memory for happy, expressions relative to neutral expressions. Conversely, the controls demonstrated superior memory for happy, and inferior memory for sad, expressions relative to neutral expressions. The aim of the current study was to establish whether the observed memory bias for sad expressions persisted in patients following recovery from a major depressive episode. **Methods:** 9 patients and 12 controls from the original study took part in a follow up study 18 months after the initial test session. Five of the patients were categorised as still depressed and four were identified as recovered. All

participants completed parallel versions of the emotion identification and recognition memory tasks. **Results:** Across both test sessions, depressed patients demonstrated superior memory for sad expressions compared to happy and neutral expressions. Conversely, the controls demonstrated superior memory for happy expressions compared to sad and neutral expressions. The recovered patients demonstrated a non-significant tendency towards superior memory for happy expressions across the two test sessions. **Conclusions:** The results support our earlier findings of a negative bias in depressed individuals memory for emotional facial expressions. However, the results do not allow any firm conclusions to be drawn concerning whether this bias is a state or trait related phenomenon.

A web-based study of self-reports of memory ability in recreational users of 'ecstasy'

J RODGERS, T BUCHANANAN, A B SCHOLEY, T M HEFFERNAN, J LING & A PARROTT, Psychology Depts, Universities of Newcastle, Westminster, Northumbria, Teeside and East London
Objectives: To assess the feasibility of using the world-wide web to collect data on self-reported memory impairment in ecstasy users. **Design:** Between-groups and correlational designs were employed. **Method:** A set of questionnaire measures of memory (prospective and everyday memory failures) were completed over the internet (www.drugresearch.org.uk). The Drug questionnaire assessed the use of other substances as well as MDMA – allowing a regression design to isolate the contribution of those substances to any variance on the cognitive measures. **Results:** Preliminary findings based on a set on 490 participants, 155 of whom were ecstasy users, indicates that there is a clear dissociation between the impact of ecstasy and cannabis on the types of memory failure reported. **Conclusions:** The internet is an ideal medium for such questionnaire-based research as it permits access to large numbers of participants.

Errors in performance testing: A comparison of ethanol and temazepam

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Background: Both ethanol and benzodiazepines increase the risks of road accidents, but the effects of ethanol are more striking relative to observed impairments in psychomotor performance. Previous work has suggested that ethanol may have a greater effect on errors while benzodiazepines may cause greater slowing, but this has not been tested in a direct comparison. **Method:** We compared the effects of ethanol (dose calculated to produce blood concentrations around 80 mg/100 ml) and temazepam (20 and 30 mg) in sixteen healthy volunteers (8 male, aged 20-25 years) in a four period placebo controlled crossover study. Psychomotor function was evaluated using ANOVA to compare the means of two test assessments at approximately 45 and 90 minutes post-dose. **Results:** Two psychomotor maze tasks showed an almost complete dissociation, with ethanol leading to a substantial increase in errors (p<0.01) with little effect on speed, while temazepam slowed performance (p<0.05) with no significant change in accuracy. Other tasks showed a similar pattern, but the dissociation was less complete. Information processing capacity was reduced by a similar amount both for ethanol and 30 mg temazepam (p<0.01). **Conclusions:** The clear tendency for ethanol to lead to faster, more error-prone, behaviour than a similarly-impairing dose of temazepam has clear implications for the relative potential of the two drugs to contribute to accidents. The results are also important in understanding the differential effects of drugs with different mechanisms of action on human performance.

An examination of the cognitive effects of shift-working patterns in nurses

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Objectives: Clinical and anecdotal reports of the negative effects of workplace related fatigue are widely known. These effects are particularly marked in shift workers and workers with unpredictable work patterns. **Design:** The study assessed cognitive function over the course of a whole day on two visits to a test centre. The first visit (pre-shift) was completed on the day prior to the first night shift. The second visit (post-shift) was completed following the end of the third night shift. **Methods:** Thirty-two healthy nurses working night shifts were tested pre-shift and post-shift, to develop a model of fatigue. A selection of tests from the Cognitive Drug Research (CDR) computerised assessment system was used to assess the ability to concentrate, to retrieve items from working and secondary memory, and also motor coordination. Further, subjective ratings of mood were undertaken. Subjects were tested at 08:00 to provide a baseline comparison of

performance pre-shift and post-shift. Further assessments were undertaken at 11:00, 13:00 and 15:00 to test for any changes across the day. **Results:** For the main effect of shift, subjects performed significantly worse post-shift in measures of attention, speed, accuracy of retrieval of items from working memory, and the accuracy of retrieval of items from secondary memory. Subjects post-shift were less calm and content, but subjectively felt more alert. **Conclusion:** It is concluded that shift workers do suffer from decrements in performance, and that these effects impact upon the workers' quality of life and performance at work.

Individual differences in S-IgA reactivity to acute stress: The effects of health status and personality

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Background: Previous research has assessed S-IgA reactivity in response to a variety of acute and chronic stressors. This paper discusses three experiments assessing the roles of personality and health status as moderators upon S-IgA reactivity to one stressor, the same stressor on consecutive days and cumulative

acute stress. **Method:** All volunteers were healthy undergraduates. Saliva samples were taken immediately before and after exposure to the stressor (multi-tasking battery) of 5 minute duration. A minor health complaints questionnaire (MHCQ) was used to classify volunteers as being in either good or poor health. Experiment One: (N = 60) MHCQ prior to acute stressor. Experiment Two: (N = 49) MHCQ, NEO-FFI and PANAS prior to the same acute stressor 24 hours apart. Experiment Three: (N = 20) MHCQ and PANAS and prior to three acute stressors interspersed with 5 minutes of relaxation. **Results:** In experiments 1 and 2, there was a trend for individuals in poor health to demonstrate reduced post-stress S-IgA reactivity. In experiment 3, poor health individuals demonstrated reduced or down-regulation of S-IgA following the stressor ($t(18) 2.46, p = 0.02$). Individuals in poor health also reported significantly greater negative affectivity ($t(47) -2.52, p = 0.03$) and neuroticism ($t(47) -2.90, p < 0.01$). **Discussion:** Data are presented using the immuno-capacity model. A cyclical process is explained where levels of Ill-health and NA moderate S-IgA reactivity to acute stress. Post-stress S-IgA levels moderate subsequent susceptibility to Ill-health and NA and S-IgA reactivity to subsequent stressors.

Cognitive Psychology Section

17th Annual Conference, University of Essex, 6-8 September 2000.

This additional abstract should be read in conjunction with the Section abstracts published in Proceedings vol. 9 no. 2 (August 2001).

Contrasting sensitivity to phonology in Scottish and French beginning readers

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Children have been shown to be sensitive to the linguistic properties of their native language from

the earliest phases of development. The impact that this may have on the emergence of phonological awareness is of interest in relation to modeling reading acquisition in different languages. The present paper is a comparison of the phonological skills of English and French speaking children. Several linguistic features distinguish the English and French languages. French has clear syllable boundaries, a fixed pattern of lexical stress and a predominance of open syllables. English is ambisyllabic, has a variable pattern of lexical stress and a majority of closed syllables. The children in this cross-sectional study range in age between 4 and 7 years to cover the time immediately before and

after the introduction of formal reading instruction in each country. Awareness of sound is assessed using procedures which manipulate both the degree of awareness required and the unit of sound under investigation (syllable, onset, coda, body, rime and phoneme). The results are related to the differing linguistic properties of English and French and to the influence of literacy instruction which emphasizes letter-sounds.

Centenary Annual Conference

The 2001 Centenary Annual Conference, The Scottish Exhibition and Conference Centre, Glasgow, 28-31 March 2001.

These additional abstracts should be read in conjunction with the Centenary Conference abstracts published in Proceedings vol. 9 no. 2 (August 2001).

The relationship between psychological well-being and ability to laugh

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Objectives: There exists some evidence in support of the relationship between laughter and its positive effect on the immune system, emotions, stress and the social aspects. Previous research concentrates on the effect of laughter, taking no consideration of psychological well-being prior to conducting experiments. The present study examines the relationship between psychological well-being and ability to see humorous stimuli as humorous, and the ability to laugh at humorous stimulus, and whether the location of experiment influenced laughter. **Design/Method:** A correlation experimental design was set up using within group subjects. A sample of 42 participants completed a GHQ-28 to evaluate psychological well-being, then watched four humorous video clips. Each participant evaluated how funny they thought each clip was, and indicated whether they laughed at

each clip. **Results:** It was found that a negative correlation existed between scoring on the GHQ-28 and both ability to perceive humorous stimuli as humorous ($r = -0.363; p = 0.018$) and self-reported laughter ($r = 0.530; p = 0.000$). It was also found that location of experiment made no impact on the results. **Conclusions:** In conclusion it would appear that our ability to perceive humorous stimuli as humorous, and our ability to laugh at humorous stimuli is affected by our p s y c h o l o g i c a l well-being.

Exploring teachers' beliefs about the manner in which children learn and how they can be helped to learn, in the junior classroom

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Teachers can be very focused on trying to understand a reason for a child's lack of academic progress or difficult behaviour or both. This can result in causes located within the child. These causes then become labels and can be negatively perceived. They may not bring positive changes in teacher behaviour towards labelled children but can bring inaction in the face of the inevitable. 'How' questions on the other hand can draw teachers into, for example, looking at pupils' learning styles, exceptions to the pupils' difficult behaviours and different ways of encouraging pupil engagement and motivation. This research was developed in two phases. The first phase, the pilot study, involved interviewing four teachers in

four different schools one from each year in the junior school. They were asked to go through their class register and describe how the manner in which two children learnt was different from a third child. Bipolar constructs were drawn out until no new ones were forthcoming. The constructs were categorised into five aspects of learning; concentration, need for teacher attention, co-operativeness, learning style and language and literacy learning. The strategies most frequently used with each child were also elicited. These items formed the questionnaire (phase 2) for the main study. The outcomes from this research could dramatically affect the way Educational Psychologists work by exposing the areas that teachers need most help with. It could potentially give insight into the aspects of teachers' beliefs and strategy use that lend themselves to EP interventions that could be preventative and developmental and aid pupil progress. Answering the 'how' questions could lead to teachers rethinking their beliefs and strategies by making them explicit and accessible to reasoning. Perhaps it might also reduce the number of requests for statutory assessments if it is used at an early stage of the Code of Practice. It could also have an effect on school league tables if it enables teachers to help pupils to achieve higher rates of progress.

Psychiatric and psychological concepts in understanding psychotic experiences: Some challenges and dilemmas

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The last 10-15 years has seen a rapid increase in psychological approaches into psychotic experiences culminating in the Recent Advances in Understanding Mental Illness and Psychotic Experiences report published by the BPS in 2000 (www.understandingpsychosis.com). These approaches offer an alternative to that of traditional biological psychiatry. However, in this paper I argue that these developments present psychologists with some dilemmas. The ways in which we view psychological phenomena have important consequences: in shaping, for example, the kinds of interventions we offer. I note the dangers of importing psychiatric models as opposed to properly psychological ones. I go on to describe some of the social effects both psychiatric and psychological concepts can have: a focus on pathology and abnormality; the definition of a particular version of normality by socially-sanctioned experts; the development of lifeless 'thin descriptions' of service users; the implication of guilt and blame; the creation of an illusion of explanation; the use of circular and tautologous definitions (and reference is made here to the Government's proposals with regard to 'Dangerous People with Severe Personality Disorders'); and finally, the location of problems in individuals. I conclude by outlining some provisional criteria by which we, as psychologists, might evaluate our theories and concepts not simply by narrow conceptions of reliability but by their social, ethical and political consequences.

Putting the organisation back into work and organisational psychology

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This paper takes as its starting point the substantial changes currently taking place in organisational and inter-organisational structures, forms and processes, and their implications for work, jobs, employment and employment relations. The paper then uses the lens of organisational change to consider some key implications for theory and for methodology in work and organisational psychology. First, the paper argues that the understanding of behaviour at work will be fundamentally flawed unless attention is paid to the organisational context. Too much research has been conceptualised and reported without reference to context. Yes, the context provides important constraints on and opportunities for the behaviours, experiences and performance of individuals and groups in organisational settings (Mowday and Sutton, 1993; Rousseau and Fried, 2001). Some examples are illustrated and explored in the paper. Second, the scale, scope and pace of organisational change has significant implications for methodology in work and organisational psychology. Some research methods have assumed stable populations, working in permanent jobs, in organisations changing infrequently and episodically. How should research be designed for situations where there is a changing workforce, working in 'relentlessly changing organisations' (Brown & Eisenhardt, 1998)?

The link between dissociation and denominational change in Northern Ireland

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Background: In contemporary psychological nomenclature altered states of consciousness are often referred to as dissociative states. Schumaker (1995) has noted the importance of dissociation to religious beliefs and worship. Recently, many mainstream religions have reduce dissociative triggers and outlets for dissociative functioning during worship. Interestingly most of these have also

experienced a reduction in participation. **Aim:** The aim was to further test the theory that religious traditions that facilitate dissociation during worship would also show the most resistance to members leaving the church. **Method:** Taken from official statistics between 1980-2000, changes in religious denominational affiliation in Northern Irish churches were the source of analysis. **Results:** Among the institutional Churches there has been little change in membership with Roman Catholic membership recording an increase (+4%), and Presbyterian membership remaining static (0%), while Anglican membership has seen a small decrease (-1%). Among the Free Churches patterns of membership have been less consistent. The largest gains have been experienced by the Pentecostal Churches (+93%), New Churches (+38%), Baptist (+9%), and other Churches (+8%). In contrast membership has fallen in both the Methodist (-31%) and Independent (-11%) churches. **Conclusion:** The results demonstrate support from Schumaker's theory with Pentecostal Churches, which are characterised by overt levels of dissociative functioning, reporting the greatest increase in membership.

Early intervention in literacy: The key factors in raising achievement

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Objectives: Throughout the UK in recent years early intervention in literacy has been a central emphasis in education. Raising reading achievement in young children has been one of the Government's key strategic priorities, and considerable additional resources have been allocated to this area. The purpose of this paper was to propose a number of key variables underlying successful early intervention programmes. **Methods:** The main intervention strategies adopted in a series both of completed and of ongoing studies were considered. These studies, mainly quasi-experimental in design, ranged from large sample researches (N = 10,000+) using multiple methods to small-scale studies based on single strategies, including modifying attitudes, values and expectations. In relation to expectations, a preliminary report was given of a study of literacy in nursery and primary schools in which 30 experimentals from a larger intervention sample (N = 565, age range 4 to 5 years) were compared with 30 matched controls, using a new technique, 'declaration', as the independent variable. **Results:** Three principal components were identified as key factors in successful interventions in the early years: (1) resources (extra help in the classroom and additional time devoted to reading); (2) curriculum (a structured phonic approach); (3) attitudinal factors (attitudes, values and expectations regarding achievement in reading). **Conclusions:** Early interventions in literacy which focus on key factors in the areas of resources, curriculum and attitudes are likely to be associated with significant results in raising the reading achievement of children in the early stages of school.

Changing organisations and employees: Challenges for work design research and practice

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Most theories about how to design effective jobs developed out of studies on male production employees in the early to mid twentieth century. Clearly, whilst there are continuities, there are also important differences in the type of jobs and tasks people are expected to do them in today's organisations, as well as the context within which they do them. What does this change mean for work design theory and practice? How do we design jobs for today, and for the future, that are 'good' for both employees and organisations? These are the questions I address in this presentation. First, I describe changes in: the context within which work is carried out (e.g. the growth in service work, globalisation, temporal and geographic

virtuality), the types of tasks that need to be performed (e.g. greater knowledge work), and the workforce available to carry out the task (e.g. more women). I then outline some of the inadequacies of existing work design theories in relation to this change. From this analysis, I identify several important themes for future work design research, such as: the continued importance of investigating job simplification (for example, call centres); the relevance of uncertainty as an antecedent and contingency variable; increased interdependence between tasks and the growth in team working and other forms of lateral integration; enhanced social complexity in the work place; a greater emphasis on cognitive demands and knowledge aspects at work; and the effect of demographic and contractual changes on work design. I conclude with some recommendations about 'where to go from here' to develop work design research and theory so that it can not only keep pace with modern developments in the work place, but can positively shape and influence them.

Expressions of anger and poor emotional control precipitating offending behaviour

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There have been many studies in recent years looking at anger and the expression of anger, utilising varied populations and settings. The present study examines closer the expressions of anger and evidence of poor emotional control displayed by adult male prisoners from descriptions of their thoughts and feeling leading up to, and during the offence they committed. Utilising data collected from semi-structured interviews, a qualitative methodology is employed to consider potential triggers and situational factors which could have contributed to the offence.

Retirement in ballet dancers and their identity construction: A phenomenological study

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Objective: Pre and post-retirement in a life of a ballet dancer can be traumatic, characterised by a sense of loss and mourning which can become problematic for future well-being (Hamilton, 1998). This study aims to consider, from a phenomenological approach, how processes of identity construction and reconstruction will be altered. It draws from dancers existential experience, to illustrate how they have coped in readjusting their life-course. **Background:** The ageing of ballet dancers, as well as other professional athletes has been a fairly neglected topic in gerontology, probably because the discipline's pre-occupation with chronological retirement later in life (Rosenberg, 1968). Social and psychological problems have been ignored in popular knowledge with the exclusion of few who have reached public fame. Where do ballet dancers once they terminated their career go? What do they do? And how well do they approach this new-birth? **Method:** This paper is based on an ongoing study which uses a phenomenological approach to explore how this particular occupational group have experienced ageing and retirement from their profession, and some of the consequences of that experience for meaning and identity in later life. **Conclusion:** A much greater emphasis needs to be addressed to this particular occupational group who we must remember is vulnerable because entering a very demanding profession at an extremely early age. The core of identity which leads psychologically to self-esteem, is not according to sociologist Anthony Giddens (1991) a distinctive trait, or even a collection of traits possessed by the individual. It is the self as reflexively and existentially understood in terms of his/her biography.

Perceptual lateralisation in the processing of pro- and anti-social emotions displayed in chimeric faces

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Using a restricted range of split-field chimeric faces, previous studies suggest the processing of emotional expression is a highly lateralised phenomenon. Two theories have been developed

with regard to the role of cerebral hemispheres play in this process. The 'right hemisphere' hypothesis (e.g. Bryden, 1982) suggests the processing of emotional expression is predominantly a right hemisphere phenomenon. In contrast, the 'valence hypothesis' (e.g. Reuter-Lorenz & Davidson, 1981) proposes that, whilst the right hemisphere plays an important role in processing negative emotions, the left hemisphere has a special role for positive emotions. Using all six human "universal facial expressions" (Ekman & Friesen, 1971) we present evidence that,

superimposed onto a right hemisphere advantage for emotional processing, there is a shift towards the left hemisphere for pro- as opposed to anti-social expression. We propose that facial expressions, which are related to approach for communicative purposes, initiate a greater degree of left hemisphere involvement. As a consequence, we suggest future laterality studies should reconsider facial expressions using a pro-to anti- social dimension.