

Contents

The 42nd Annual Meeting of the Jean Piaget Society

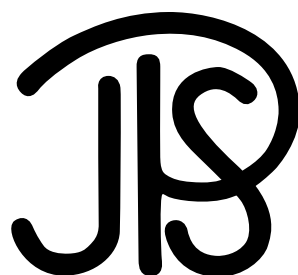
Rethinking Cognitive Development

Toronto, Canada, 31 May–2 June 2012

Program Organizers: Philip David Zelazo & Stephanie M Carlson (University of Minnesota)

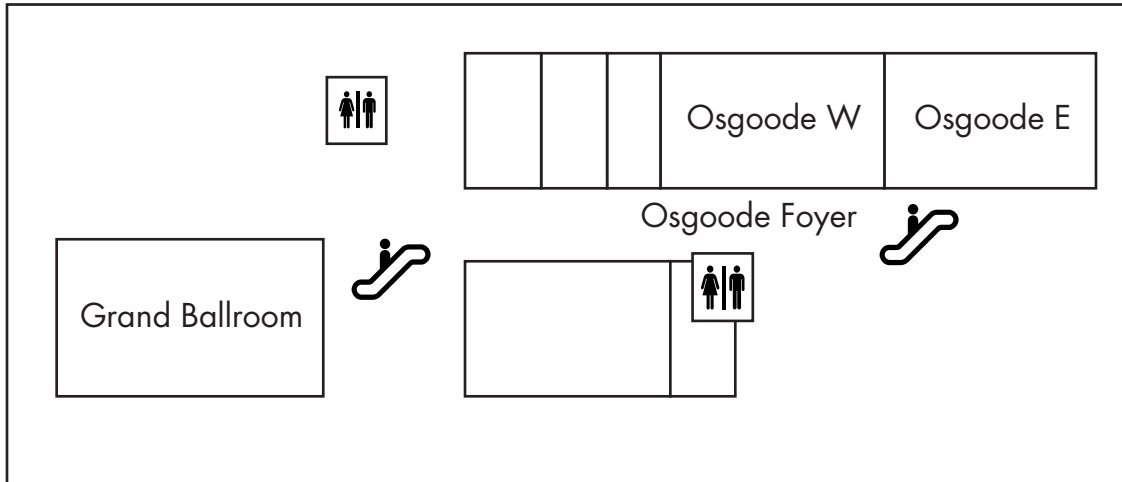
Table of Contents

Hotel Floor Plan.....	2
Program at a glance	3
Overview: Thursday, May 31	4
Overview: Friday, June 1.....	5
Overview: Saturday, June 2.....	6
Thursday, A.M. Sessions.....	7
Thursday, P.M. Sessions.....	14
Friday, A.M. Sessions	38
Friday, P.M. Sessions.....	48
Saturday, A.M. Sessions.....	72
Saturday, P.M. Sessions.....	81
Participant Directory	104
Acknowledgements.....	117
JPS Officers & Board Members.....	118
Want to organize an Annual Meeting?	119
<i>Cognitive Development</i> — Special Issues.....	120
About JPS 2013 —Social Development: Current Trends and Perspectives	121
JPS DVD Series — The Growing Mind: A Piagetian View of Childhood.....	122

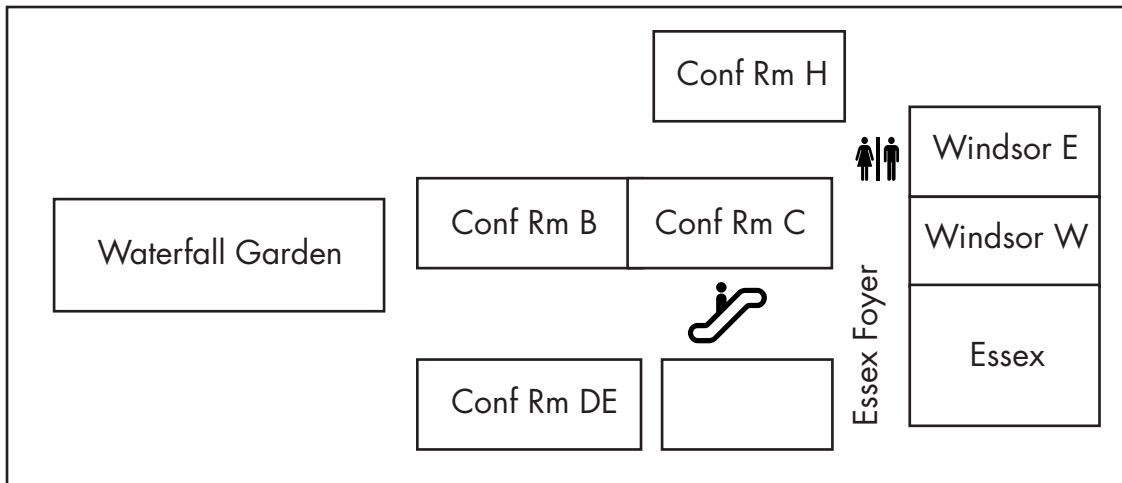


Hotel Floor Plan

Lower Concourse



Mezzanine



Program at a glance

THURSDAY	Osgoode E	Essex	Conf B	Conf C	Windsor W	Windsor E	Conf DE
9:00-9:15	Opening						
9:15-10:30	PL01						
10:30-10:45	break						
10:45-12:15		IS01	SY01	SY02	SY03	PS01	PS02
12:15-1:30	Lunch (ESR—Emerging Scholars Roundtables—Conference Room H)						
1:30-2:45	PL02						
2:45-3:00	break						
3:00-4:30		IS02	SY04	SY05	SY06	PS03	DS01
4:30-4:45	break						
4:45-6:00		SY07	SY08	SY09	SY10	PS04	PS05
6:00-6:15	break						
6:15-6:45	PT01 Poster Session 1 (Osgoode West)						
7:00-7:30	PT02 Poster Session 2 (Osgoode West)						
6:30-7:30	REC1 President's Reception (Osgoode Ballroom)						
FRIDAY	Osgoode E	Essex	Conf B	Conf C	Windsor W	Windsor E	Conf DE
8:00-9:00			RT01				
9:00-10:30		SY11	SY12	SY13	SY14	PS06	PS07
10:30-10:45	break						
10:45-12:00	PL03						
12:00-1:15	Lunch (Annual Members Meeting 12:00-12:30 – Osgoode East)						
1:15-2:45		IS03	SY15	SY16	SY17	PS08	DS02
2:45-3:00	break						
3:00-4:15	PL04						
4:15-4:30	break						
4:30-5:45		SY18	SY19	SY20	PS09	PS10	DS03
5:45-6:00	break						
6:00-6:30	PT03 Poster Session 3 (Osgoode West)						
6:45-7:15	PT04 Poster Session 4 (Osgoode West)						
6:30-7:30	REC2 Emerging Scholars Reception (Osgoode Ballroom)						
7:45-10:30	Returning Emerging Scholars Dinner						
SATURDAY	Osgoode E	Essex	Conf B	Conf C	Windsor W	Windsor E	Conf DE
8:00-9:00			RT02				
9:00-10:30		IS04	SY21	SY22	SY23	PS11	PS12
10:30-10:45	break						
10:45-12:00	PL05						
12:00-1:30	Lunch (Board of Directors Meeting – Quarter Deck)						
1:30-2:45		SY24	SY25	PS13	PS14	PS15	PS16
2:45-3:00	break						
3:00-4:30		IS05	PS17	PS18	PS19	PS20	DS04
4:30-4:45	break						
4:45-5:45	Closing Panel Discussion—Osgoode East						

Program Overview—Thursday

Time	ID	Location	Event
9:00-9:15	OR	Osgoode E	Opening Remarks: JPS President, Phil Zelazo
9:15-10:30	PL01	Osgoode E	Plenary Session 1: Willis F Overton Relationism and relational developmental systems: A paradigm for the emergent, epigenetic, embodied, enacted, extended, embedded, encultured, mind
10:30-10:45	break		
10:45-12:15	IS01	Essex	Invited Session 1: Adele Diamond (organizer) Diverse methods of facilitating cognitive development
	SY01	Conf Rm B	Symposium 1: Constance Milbrath (organizer) Aesthetic distance and engagement in the arts
	SY02	Conf Rm C	Symposium 2: Mark Bickhard (organizer) Theoretical issues in development
	SY03	Windsor W	Symposium 3: Sherri C Widen (organizer) The effect of context on emotion judgments: From preschool to adulthood
	PS01	Windsor E	Paper Session 1
	PS02	Conf Rm DE	Paper Session 2
12:15-1:30	lunch		
	ESR	Conf Rm H	Emerging Scholars Roundtable
1:30-2:45	PL02	Osgoode E	Plenary 2: Richard Davidson Order and disorder in the developing emotional brain
2:45-3:00	break		
3:00-4:30	IS02	Essex	Invited Symposium 2: Jacquelynne Eccles: Mindfulness in Education
	SY04	Conf Rm B	Symposium 4: Deconstructing the person-culture dichotomy: A psychological and sociological case study of youth suicide
	SY05	Conf Rm C	Symposium 5: Different routes to moral development: perceptions of self and others
	SY06	Windsor W	Symposium 6: Examining the truth about false-belief: New methods for explaining development between infancy and later childhood
	PS03	Windsor E	Paper Session 3: Language and Gestural Development
	DS01	Conf Rm DE	Discussion Session 1: Are developmental stages descriptively necessary? An open constructivist discussion
4:30-4:45	break		
4:45-6:00	SY07	Essex	Symposium 7: Morality, socialization, and culture
	SY08	Conf Rm B	Symposium 8: Identity as a lens of understanding development and changes of science teachers' subject-specific selves
	SY09	Conf Rm C	Symposium 9: Re-thinking infants' understanding of others' attention: From gestures to false belief
	SY10	Windsor W	Symposium 10: Re-thinking micro-development: Epistemological and theoretical considerations
	PS04	Windsor E	Paper Session 4: Education
	PS05	Conf Rm DE	Paper Session 5: Executive Function I
6:00-6:15	break		
6:15-6:45	PT01	Osgoode W	Poster Session 1
7:00-7:30	PT02	Osgoode W	Poster Session 2
6:30-7:30	REC1	Osgoode W	President's Reception

Program Overview—Friday

Time	ID	Location	Event
8:00-9:00	RT01	Conf Rm B	Round Table Session 1
9:00-10:30	SY11	Essex	Symposium 11: Rethinking cognitive development according to Rudolf Steiner
	SY12	Conf Rm B	Symposium 12: The complex relationship between judging, feeling and acting
	SY13	Conf Rm C	Symposium 13: Reaching the limits of the modern synthesis: Integrating development and evolution in developmental psychology
	SY14	Windsor W	Symposium 14: The role of executive function in rethinking cognitive development
	PS06	Windsor E	Paper Session 6: Science Education
	PS07	Conf Rm DE	Paper Session 7: Social Interaction, Agency, and Autonomy
10:30-10:45	break		
10:45-12:00	PL03	Osgoode E	Plenary Session 3: Carol Lee Understanding the ecologies of human learning and the challenge for education science
12:00-1:15	Lunch	Osgoode E	Member's Meeting
1:15-2:45	IS03	Essex	Invited Symposium 3: Patricia Greenfield: Social change and human development: A theory and supporting data from around the world
	SY15	Conf Rm B	Symposium 15: Analysis of performance patterns on executive function tasks: Evidence of different profiles in cognitive development
	SY16	Conf Rm C	Symposium 16: Critical exploration in early pre-service teacher education—transformations in thinking about teaching
	SY17	Windsor W	Symposium 17: Representations, concepts and flexibility
	PS08	Windsor E	Paper Session 8: Morality I
	DS02	Conf Rm DE	Discussion Session 2: Developing interest: Research results and questions
2:45-3:00	break		
3:00-4:15	PL04	Osgoode E	Plenary Session 4: Linda Smith The sensory-motor dynamics of early word learning
4:15-4:30	break		
4:30-5:45	SY18	Essex	Symposium 18: Exploring space – experiencing development: Seminar participants respond to space, Piaget, Euclid and each other
	SY19	Conf Rm B	Symposium 19: Measuring children's understanding of scientific concepts using Skill Theory
	SY20	Conf Rm C	Symposium 20: Do you control your actions? Or did your brain make you do it? Toward a non-reductive account of human agency
	PS09	Windsor W	Paper Session 9: Executive Function II
	PS10	Windsor E	Paper Session 10: Early Social Development
	DS03	Conf Rm DE	Discussion Session 3: Reconceptualizing cognitive development: Should cultural knowledge domains be part of the discussion?
5:45-6:00	break		
6:00-6:30	PT03	Osgoode W	Poster Session 3
6:45-7:15	PT04	Osgoode W	Poster Session 4
6:30-7:30	REC2	Osgoode W	Emerging Scholars Reception

Program Overview—Saturday

Time	ID	Location	Event
8:00-9:00	RT02	Conf Rm C	Round Table Session 2
9:00-10:30	IS04	Essex	Invited Session 4: Thomas Shultz (chair) Computational approaches to development
	SY21	Conf Rm B	Symposium 21: Theory and application generated by the Model of Hierarchical Complexity
	SY22	Conf Rm C	Symposium 22: Dialogue methods for studying preschoolers, learning community and culture
	SY23	Windsor W	Symposium 23: Adolescents use cognitive dimensions of narrating to interact in developing environments
	PS11	Windsor E	Paper Session 11: Morality II
	PS12	Conf Rm DE	Paper Session 12: Judgment, Reasoning, and Problem Solving
10:30-10:45	break		
10:45-12:00	PL05	Osgoode E	Plenary Session 5: Annette Karmiloff-Smith From Piaget's Constructivism to Neuroconstructivism
12:00-1:30	Lunch		
1:30-2:45	SY24	Essex	Symposium 24: The development of early childcare practice and professionals in the context of risk and societal transition
	SY25	Conf Rm B	Symposium 25: Translating Piaget
	PS13	Conf Rm C	Paper Session 13: Narrative, Play, Discourse, and Development
	PS14	Windsor W	Paper Session 14: Neuroscience
	PS15	Windsor E	Paper Session 15: Dynamic Systems Theory
	PS16	Conf Rm DE	Paper Session 16: Self, Identity, and Health
2:45-3:00	break		
3:00-4:30	IS05	Essex	Invited Symposium 5: John Spencer (chair) From complex insights to complex systems: Rethinking how development happens
	PS17	Conf Rm B	Paper Session 17: Theory of Mind
	PS18	Conf Rm C	Paper Session 18: Piagetian Theory
	PS19	Windsor W	Paper Session 19: Play and Art
	PS20	Windsor E	Paper Session 20: Atypical development
	DS04	Conf Rm DE	Discussion Session 4: Piaget's developmental epistemology as a complex system theory: An open interdisciplinary debate
4:30-4:45	break		
4:45-5:45	DISC	Osgoode E	Closing Discussion Panel

Thursday—A.M.

8:30-5:00	Registration	Conference Desk
8:30-5:00	Book Display.....	Osgoode West
9:00-9:15	OR Opening Remarks	Osgoode East
	Philip David Zelazo (JPS President)	
9:15-10:30	PL01 Plenary Session 1	Osgoode East

Relationism and relational developmental systems: A paradigm for the emergent, epigenetic, embodied, enacted, extended, embedded, encultured, mind

Willis F Overton (Temple University)

There has been a progressive movement in the study of mind and its development from conceptions involving relatively context free aggregates of static mechanisms to conceptions involving highly contextualized systems of dynamic processes. This is the movement from early computational and connectionist models to models of mind that feature the 7 Es (Emergent, Epigenetic, Embodied, Enacted, Extended, Embedded, Encultured). Like any broad research program (Lakatos, 1976), or research tradition (Laudan) these models are themselves conceptually framed by abstract, hierarchically ordered, metatheoretical principles, which ground, integrate, and sustain the models as well as the specific theories and research methods entailed by the models. In this presentation I will discuss two metatheoretical levels—Relational Metatheory—Relationism and Relational Developmental Systems—that frame the 7 Es.

10:30-10:45 break

10:45-12:15 IS01 Invited Session 1..... Essex

Diverse methods of facilitating cognitive development

Organizer/Discussant: Adele Diamond (University of British Columbia)

Three quite dissimilar programs will be covered that all share the belief that the different parts of the human being are fundamentally interrelated, and that, therefore, activities that address the whole child (including emotional, social, physical, and cognitive needs) should be the most successful at improving any individual aspect. The three programs involve (a) youth orchestra (Garage Music, in Montreal, closely akin to the El Sistema Orchestra program in Venezuela), (b) traditional martial arts (specifically tae kwon do), and (c) youth circus (specifically CircEsteem in Chicago, IL; CircKids in Vancouver, BC; & Circus Harmony in St. Louis, MO). Each of these activities address children's emotional, social, physical and cognitive needs. They (a) challenge and improve executive functions and other cognitive skills, (b) provide youths opportunities to feel happy, proud, and confident, (c) address youths' social needs for belonging to a community where each is an important part of the whole, and (d) help young bodies develop physically. What nourishes the human spirit, it turns out, may also best for executive functions and academic outcomes.

Thursday—A.M.

Youth circus improves executive functions, academics, physical fitness and skills, as well as social and emotional well-being

Jacqueline Davis (University of British Columbia)

Taekwondo as an intervention to promote cognitive development in children

Kimberley D Lakes (University of California, Irvine)

The musical note of community social pediatrics for impoverished children

Helène Sioui Trudel (Foundation for the Advancement of Social Pediatrics)

10:45-12:15 SY01 Symposium Session 1Conference Room B

Aesthetic distance and engagement in the arts

Organizer: Constance Milbrath (University of British Columbia)

This symposium is grounded in a theory of aesthetics that argues artists and their audiences shift between an engaged “willing suspension of disbelief” and a detached “aesthetic distance” as complementary facets of the complete aesthetic process. The engaged attitude involves the spontaneous and expressive vision that creative people project onto their preferred medium both in the selection of subject matter and in the use of form. However, the uniqueness of this vision must be balanced by an ability to stand back and critically evaluate the unfolding work so that subject matter and form (i.e., style) are coherently related and accessible to an informed audience. This symposium will focus on visual arts and poetry as exemplars of aesthetic processes in adult and child artists. In the first presentation, Constance Milbrath will explore the development of an aesthetic stance by Paleolithic artists who produced the sophisticated (i.e., planned) murals of the early cave paintings. The second presentation, by Michelle Hilscher examines contemporary poets who, as performance artists participating in “slam” competitions, combine spontaneity balanced with technical skill whereas writing involves greater separation between intentional action and spontaneously inspired behavior. Kayla Ten Eycke, the third presenter, will contrast drawings produced by children with autism and typically developing children to demonstrate the rudiments and differences in the abilities of these children to become involved in the aesthetic process when composing a drawing. Gerald Cupchik will consider the broader implications of balancing “image bound” and “rule bound” approaches to art in relation to the roots of aesthetics, social communication and cognitive processing, providing a theoretical summation for the previous presentations.

Paleolithic Artist: The development of an art form

Constance Milbrath (University of British Columbia)

Different blends of purpose and spontaneity distinguish poetry writing from poetry performance

Michelle Hilscher (University of Toronto)

Autistic and typical drawing: Differences in aesthetic processes during childhood

Kayla Ten Eycke (University of Victoria)

Rule- and image-guided shaping of artistic activity

Thursday—A.M.

Gerald Cupchik (University of Toronto)

10:45-12:15 SY02 Symposium Session 2Conference Room B

Theoretical issues in development

Organizer: Mark H Bickhard (Lehigh University)

In contemporary developmental psychology, theoretical considerations are still dominated by neo-Machian notions that theory “grows” out of data. Consequently, explicit foci on theory per se are rare — especially conceptual and metaphysical considerations. In this symposium, we address several issues of developmental theory and conceptual framework that have been relatively unappreciated and undeveloped within the field.

The first paper, *Piaget’s Action-Based Approach to Representation: Promise and Pitfalls*, suggests that largely unrecognized theoretical issues underlie contemporary controversies over the emergence of representation in infancy. A passive, casual theory of representation is contrasted with an active, action-based theory of representation. As an example of the latter type of theory, Piaget’s theory of representation is presented and analyzed, discussing both its strengths and weaknesses.

In the second paper, *The Cartesian Synthesis in Cognitive Developmental Theory*, it is argued that psychology, including developmental psychology is still caught in a vestigial, but nevertheless incapacitating, heritage that can be traced back to Descartes. The relational tradition is offered as an alternative model.

In *Emergent Complexity in Developmental Psychology* it is argued that failure to take emergence into account makes it impossible to model developmental complexity — and the complexity of development. One major consequence is the tendency to ascribe complexities discovered to their being innate to the system.

In the last paper, *Development and Central Nervous System Dynamics*, the central nervous system is shown to be an intrinsically dynamic system, on multiple levels and scales. Consideration of some of the properties of these dynamics yields a(n outline of a) model of the dynamics of learning and development.

Piaget’s action-based approach to representation: Promise and pitfalls

Ulrich Müller (University of Victoria)

The Cartesian synthesis in cognitive developmental theory

Thomas R Bidell (Independent Scholar)

Emergent complexity in developmental psychology

Jedediah WP Allen (Lehigh University)

Development and central nervous system dynamics

Mark H Bickhard (Lehigh University)

10:45-12:15 SY03 Symposium Session 3Windsor West

The effect of context on emotion judgments: From preschool to adulthood

Organizer: Sherri C Widen (Boston College)

When asked to judge the emotional meaning of something, we do so quickly and seemingly effortlessly, but what is the basis of this process? On one perspective, emotion cues, such as facial expressions, are easily interpreted signals, with the context in which they are presented contributing little to our interpreta-

Thursday—A.M.

tions; the implication is that facial expressions should be interpreted in the same way each time. On another perspective, emotion cues are interpreted in relation to other available cues; the implication is that emotion cues – including facial expressions – can be interpreted differently in different contexts. Our studies support the latter. Using three different methods, we show that children and adults rely on the surrounding context to interpret different kinds of emotion cues. (1) Preschoolers use the process of elimination to match a novel label with a novel facial expression in a choice-from-array task and can also use this process to learn the name of facial expressions. (2) Children and adults label the disgust face as disgusted only when it is preceded by an angry face, indicating that facial expressions are interpreted relative to one another. (3) What makes creatures scary for children varies with age: Young children focus on whether the creature can be controlled, older children focus on whether the creature is real or imaginary. These studies demonstrate that children and adults do not treat facial expressions or emotion stories as isolated events, but actively interpret these emotion cues in terms of the context in which they are presented.

Children use the process of elimination to ‘recognize’ emotional expressions

Nicole L Nelson (Brock University)

What emotion does the “facial expression of disgust” express?

Sherri C Widen (Boston College)

Joseph T Pochedly (Boston College)

James A Russell (Boston College)

Children’s attribution of fear to real versus imaginary, and controllable versus uncontrollable, creatures

Mary H Kayyal (Boston College)

Sherri C Widen (Boston College)

James A Russell (Boston College)

10:45-12:15 PS01 Paper Session 1 Windsor East

Epistemology

Chair: Yeh Hsueh (University of Memphis)

Contributions of cognitive linguistics to the study of conceptual change in science

Tamer G Amin (Lebanese American University)

A large body of research on science learning has focused on conceptual change, that aspect of learning that involves the transformation from naïve to scientific conceptual structures. This research includes the following key aspects: characterizing naïve concepts and their origins, characterizing scientific concepts and how they resemble or differ from naïve precursors, understanding the process of transformation, and drawing implications for instruction. While language is an ever-present medium through which research on conceptual change is conducted it is rarely studied as a medium of conceptualization and conceptual transformation per se. Cognitive linguistics is a branch of linguistics that has as its central goal the characterization of how linguistic elements are associated with vast collections of conceptual construal options. In addition, it examines how language is used to guide mappings between conceptual resources resulting in emergent conceptualizations during linguistic production and comprehension. Recently, some empirical and theoretical studies have drawn from cognitive linguistics in an effort to understand various aspects of conceptual change in science. This paper synthesizes this work, identifies its main contributions to date and proposes productive directions for future contributions of cognitive linguistics to the study of conceptual change.

Thursday—A.M.

Dynamic structuralism: A principled pairing of structural and narrative research methods

Susan Jean Mayer (Brandeis University)

A principled pairing of structural and narrative-based research methods allows educational researchers to study the structural features that characterize developmentally appropriate learning environments without neglecting the distinctive contextual features that always also characterize any social system. Such a pairing is particularly valuable for comparative classroom research as classroom practice must be structured to promote learning, yet must also remain responsive to the needs and inclinations of specific learners. In alternating their attention between reliable and significant pedagogical patterns and the mitigating influences of situated classroom realities, researchers are compelled to consider complex transactions between, for example, dimensions of learning that have traditionally been deemed sociological or psychological, the intersections of which interested Piaget. Were Piaget still with us, his theorizing regarding these two conceptually distinct yet, in practical terms, inextricably bound dimensions of concern would have grown considerably more sophisticated based, in part, on the findings of ethnographic and other narrative research forms. Such studies have helped to demonstrate that social scientists can no longer theorize psychological or sociological structures either in isolation or in universal terms but rather must reference context and, in doing so, an array of non-focal structural and contextual influences.

Back to the roots: Toward an experimental epistemology in social sciences founded in psychogenetic method

Carmen Patricia Rosas-Colín (CINVESTAV-IPN)

Luis Mauricio Rodríguez-Salazar (CIECAS-IPN)

Joel Angel Bravo Anduaga (CIECAS-IPN)

By back to the roots we mean to return to Piaget's Epistemology not as a psychological or pedagogical proposal as it have been considered. We discuss Piaget's epistemological goals as well as the origin and development of his psychogenetic method in order to characterized new methods for an experimental epistemology. In the past two Annual Meetings of The Jean Piaget Society, we present our theoretical approach. Now we want to present our methodological approach founded on the framework of his Genetic Epistemology. We propose a psycho-social genetic method for an epistemology of Mathematical Education and a co-evolutive analysis for an epistemology of International Relations. Each one is a method for internal epistemologies that can provide useful elements for a derived epistemology that can link epistemological aspects for Social Sciences as a whole (internal epistemology is a matter for discussion with the scientific community of each discipline, while derived epistemology is a matter for discussion with all disciplines). We present preliminary empirical results.

Biology and The Gricean Urn

Ray Jennings (Simon Fraser University)

The property of being linguistic is an evolved biophysical property of populations of human organisms. Every linguistic act, whether of speech, gesture, contortion, or latterly of inscription is a physical intervention with physical effects, some typically upon the brains of other human organisms. That being the case, the onus of justification of justification would appear to lie upon those who would theorize about language in any idiom other than a biological one. Of course the study of language is itself a biological, in fact a linguistic phenomenon. So the present state of language studies is no doubt to be explained along biological lines. But it behoves anyone suggesting an unfamiliar approach, however a priori plausible, to say how it will go. This task of persuasion we take up in the first portion of this paper. We then must say something about specific consequences for developmental psychology of taking up a biological approach. Special attention is given to unexceptionable conversational descriptions of

Thursday—A.M.

phenomena that, while extremely useful in the doing of science, must not be confused with an underlying metatheory. Cognitive-functional linguistics, where ‘function’ is cached out as communicative function (as it is in Tomasello, 2000; 2005; 2008), is an example.

The power of action: From personal to interpersonal body space

Corrado Sinigaglia (State University of Milan)

Over the last few years more and more studies have been devoted to find out the neural and cognitive processes underpinning basic social phenomena such as sharing and joining actions in development as well as in everyday adult life. However, little research has directly explored whether and to what extent object perception in social contexts, far from being a private business of single perceivers, it could tell us something about the mechanisms underlying the primary ways in which we interact with others. The talk aims to tackle this issue by investigating how a social context might shape the perception of object affordances. To get this point, I shall show that affordance relation is dependent not only on one’s own actual reaching space but also on the reaching space of another individual. This dependence, I shall argue, can be accounted for appealing to an interpersonal bodily space representation allowing one to map others’ space onto her action space. Such interpersonal bodily space representation, I shall conclude, provides us with a plausible and unitary account of the crucial building blocks for basic social interactions, shedding new light on the processes that ground our primary identification with others and our connectedness to them.

10:45-12:15 PS02 Paper Session 2.....Conference Room DE

Number and Mathematical Development

Chair: Geoffrey Saxe (University of California, Berkeley)

Number conservation and class inclusion rely on the same ability to inhibit misleading strategies

Grégoire Borst (University Paris Descartes)

Nicolas Poirrel (University Paris Descartes)

Arlette Pineau (University Paris Descartes)

Olivier Houdé (University Paris Descartes)

In this study, we investigated whether success in number-conservation and class-inclusion tasks relies on a general ability to inhibit misleading strategies. Two groups of 10-year-old children performed inter-task priming between computerized versions of class-inclusion and number-conservation Piaget-like tasks. The experimental design was such that in one group of participants, the class-inclusion task served as a prime and the number-conservation task as a probe and vice versa in the other group. Children’s response times were shorter in the class-inclusion task when performed after the number-conservation task and shorter in the number conservation task when performed after the class-inclusion task than in control prime-probe sequences in which the primes did not require the inhibition of a misleading strategy. A control experiment revealed that these inter-task priming effects did not simply reflect that class inclusion and number conservation rely on the reversibility of concrete operations as Piaget would have hypothesized. Taken together the results provide additional evidence that cognitive development is rooted in both the acquisition of knowledge of incremental complexity and on inhibitory control efficiency. Critically, the present finding suggests that this ability is not domain- or strategy-specific.

Thursday—A.M.

Longitudinal development of counting understanding in kindergarten and primary grade children

Ana Escudero (Universidad Complutense de Madrid)
Purificación Rodríguez (Universidad Complutense de Madrid)
M^º Oliva Lago (Universidad Complutense de Madrid)
Ileana Enesco (Universidad Complutense de Madrid)
Cristina Dopico (Universidad Complutense de Madrid)
Irene Solbes (Universidad Complutense de Madrid)

Children's discrimination between logical (essential counting features) rules and conventional (non-essential) rules can be taken as a good indicator of their comprehension of counting. Although previous research has proved that children's difficulties in recognizing the optional nature of conventional counting rules remained even in primary school, the vast majority of these studies were based on cross-sectional data. Indeed, several authors have emphasized the need of longitudinal studies to shed light on the developmental changes in children's ability to differentiate logical from conventional rules and to establish which kinds of conventional rules are discarded later. To answer these questions, we carried out a 3-year longitudinal study where 24 Spanish children - aged 5-6-year-olds (Time 1), 6-7-year-olds (Time 2) and 7-8-year-olds (Time 3) - had to judge the correctness of different types of countings. Our computer-presented detection task included three kinds of trials: Standard-correct counts, errors, and pseudo-errors (with or without statements of the cardinal value of the sets). Children were always requested to justify their responses. Our results showed that children's performance improved substantially with age in errors and pseudoerrors followed by the cardinal value of the set, while it hardly changed in pseudoerrors without the statement of the cardinal value. Conventional rules of spatial and temporal adjacency had a strong influence during all three times.

How many, how much: The role of quantity processes in learning mathematics

Carla Sowinski (Carleton University)
Jo-Anne LeFevre (Carleton University)
Deepthi Kamawar (Carleton University)
Sheri-Lynn Skwarchuk (University of Winnipeg)
Jeffrey Bisanz (University of Alberta)
Brenda Smith-Chant (Trent University)

In the present study we explored the role of basic quantity competencies as predictors of more complex numerical outcomes. Children in Grades 2 and 3 (N = 153) completed three basic quantity tasks: numerical magnitude comparison, subitizing and counting. Children also completed complex numerical outcomes—number line performance, arithmetic fluency, arithmetic calculation, and numeration. We hypothesized that the basic quantity tasks would differentially predict the complex numerical outcomes over and above control variables (gender, grade, processing speed, spatial attention and IQ); this hypothesis was supported by our results. Magnitude comparison uniquely predicted performance on the number line task, arithmetic fluency, arithmetic calculation, and numeration. Subitizing uniquely predicted performance on the number line task and arithmetic fluency. Counting latency uniquely predicted arithmetic fluency, numeration and reading. Thus, magnitude comparison, subitizing and counting skills seem to be important precursors to mathematical competencies. The findings will be discussed in the context of the Pathways model (LeFevre et al., 2010), which posits that quantitative, linguistic, and attentional skills act as independent precursors to numeracy acquisition.

Thursday—P.M.

The development of discrete numerical comparison in 2- to 4-year-old children

Pierina Cheung (University of Waterloo)

Mathieu Le Corre (University of Waterloo)

This study examined discrete numerical comparison in 2- to 4-year-old children. Research with pre-linguistic infants have shown that when shown small sets (< 4 elements), they represent individual elements using parallel individuation representations, and when shown large sets (> 4 elements), they represent the approximate number using analog magnitude representations. Surprisingly, recent studies have shown that preschoolers fail to show which of two sets contains more elements until they have learned some number word meanings (e.g., Brannon & Van de Walle, 2000; Le Corre & Carey, 2007). However, previous studies did not analyze performance on small and large sets separately. Thus, the current study asked whether preschooler's failure in comparing sets depended on the number of elements in sets. We tested 134 2- to 4-year-old children in two between-subject conditions: small set and large set comparisons. Children were asked to choose the set that had more, and we analyzed children's performance based on their number word knowledge. We found that children were better at comparing small sets than large sets, suggesting that children may engage in different representational mechanisms in numerical comparison. Implications for the role of the two pre-linguistic set representations in discrete comparison were discussed.

Body of knowledge: Rethinking mathematical concepts as signified embodied procedures

Dragan Trninic (University of California, Berkeley)

Dor Abrahamson (University of California, Berkeley)

We present a novel theoretical framework for articulating the relation between performance and understanding across the disciplines. The framework, which intersects embodiment and sociocultural theory, hinges on juxtaposing epistemological assumptions and pedagogical practices in explicitly embodied disciplines (e.g., dance) with those in implicitly embodied disciplines (e.g., mathematics). Researchers of mathematics learning have viewed physical performance as an unrefined precursor to understanding en route to its abstraction as conceptual structures. In contrast, the explicitly embodied domains view understanding as emerging in, through, about, and for performance. We develop the framework in the context of an empirical design-based research project investigating the emergence of conceptual mathematical understanding from perceptuomotor interaction strategy. As such, we propose two complementary constructs. An embodied artifact is a rehearsed physical performance serving as a resource for prospective coping with a particular class of situations through coupling with the world. A conceptual performance is a disciplinarily signified embodied artifact that serves as a notion's grounding referent. Such an approach may dissolve the barrier between procedures and concepts, performance and understanding: instead of emphasizing procedural fluency and conceptual understanding as separate aspects of disciplinary competence, we hone the constructs' distinctions along semiotic lines and outline somatic-to-semiotic learning trajectories.

12:15-1:30

Lunch

12:15-1:30 ESR

Emerging Scholars Roundtables Conference Room H

Mentor Roundtables for Emerging Scholars

The Jean Piaget Society Emerging Scholars Committee is hosting a series of roundtable discussions between new scholars (graduate students, post docs, or pre-tenured faculty) together with more senior scholars. A total of five working spaces (6 students per table) will be facilitated by senior scholars with expertise in the following areas:

Thursday—P.M.

1. Work/Family balance (Facilitator: Na'ilah Nasir University of California, Berkeley)
2. Finding sources of financial support and grant writing (Facilitator: Susan Rivera, UC Davis)
3. The why and how of networking (Facilitator: Michael Chandler, University of British Columbia)
4. Finding a job or a post-doc (Facilitator: Bryan Sokol, Saint Louis University)
5. The art of writing and publishing (Facilitator: Nancy Budwig, Clark University)

Space is limited. To register for this session, please contact Ayelet Lahat (alahat@umd.edu)

1:30-2:45 PLO2 Plenary Session 2 Osgoode East

Order and disorder in the developing emotional brain

Richard Davidson (University of Wisconsin - Madison)

Individual differences in emotional reactivity and emotion regulation are pronounced and they account for substantial variation in developmental outcome and in predicting vulnerability and resilience in the face of challenge. The neural substrates and biobehavioral correlates of such developmental individual differences will be described. This work will form the backdrop for a consideration of how these emotional styles might be shaped through training. Recent initiatives that are focused on training mindfulness and kindness in children and adolescents will be described and early evidence on the impact of such training on behavior and brain function will be presented. The talk will underscore the need for a serious national research effort that is focused on cultivating social and emotional skills in children to foster the development of healthy minds.

2:45-3:00 break

3:00-4:30 IS02 Invited Session 2 Essex

Mindfulness in Education

Organizer: Jacquelynne S Eccles (University of Michigan)

Mindfulness is conceived to be a particular way of paying attention, originating from an ancient and deeply rooted system of contemplative practice. In secular terms, it has been translated as a non-judgmental and receptive awareness of meeting present moment to moment experience. Over the last 30 years, there has been extensive research on training programs designed to cultivate mindfulness in adults, particularly in clinical health-related populations. Results from these mindfulness training (MT) programs have largely shown positive effects on reducing stress, and improving mental health, and in studies with normative samples, changes have been noted on laboratory attentional tasks and brain activity and structures associated with emotion regulation, empathy, and decision-making.

The positive benefits of MT on emotional well-being and cognition have important implications for the profession of teaching, education and development of children. Systematic investigation of mindfulness in educational settings is only just beginning. In this symposium, we describe the theoretical foundations, development and evaluation findings based on several randomized control pilot trials designed to investigate the feasibility and efficacy of a specific MT program (SMART-in-Education). The SMART (Stress Management and Relaxation Techniques) program is a fully manualized instructional curriculum representing much of the components and practices typically included in MT programs, as well as additional content focused on emotion theory and regulation, forgiveness, kindness and compassion.

Thursday—P.M.

The studies we will present were conducted in three different cities in the US and Canada. MT instructor teams, program formats (e.g. weekly, biweekly), educational contexts (special educators, public school teachers, parents) and implementation time of the year (in session vs summer, afternoon vs evening) varied across the studies. Common to each were a core set of standardized, self-report measures collected at pre-post and follow-up intervals. Each study will highlight its unique contribution. Qualitative observations and case studies will be presented to suggest pathways of influence and directions for future research.

Preliminary results of SMART provide robust evidence of program feasibility and efficacy on a host of psychological well-being indices for parents of children with special needs, school teachers, and special education personnel. These findings lay the groundwork for replication and extension to a richer array of observational, biological, behavioral and self-report measures. Key to this work will be an assessment of how and when MT affects observable behavior in family and classroom settings and what effects, if any, such changes have on children's cognitive, social and emotional development. Discussion will focus on consideration of these next steps for understanding and studying the impact of MT in institutional settings like schools or social groups like families.

Mindfulness in education: Attending to the lifelong development of educators, parents and students

Robert W Roeser (Portland State University)

Singular and joint effects of mindfulness-based education programs for teachers and their students: feasibility and preliminary outcomes

Kimberly A Schonert-Reichl (University of British Columbia)

Studying the impact of Mindfulness Training with educators and parents of children with special needs

Rita Benn (University of Michigan)

Mindfulness training outcomes for special education teachers

Tom Akiva (University of Michigan)

Mindfulness effects for parents of children with special needs

Sari Arel (University of Michigan)

Next steps

Jacquelynne S Eccles (University of Michigan)

3:00-4:30 SY04 Symposium Session 4.....Conference Room B

Deconstructing the person-culture dichotomy: A psychological and sociological case study of youth suicide

Organizer: Michael J Chandler (University of British Columbia)

Organizer: Daniel Dagenais (Université Concordia)

Just over 100 years ago Émile Durkheim published his now classic monograph on the sociological determinants of suicide, setting in train what has become a perennial interdisciplinary debate. Until Durkheim, suicides, along with a whole raft of other seemingly willful behaviors, were standardly imagined to have all of their roots in the darkest recesses of individual hearts and minds. Instead, for Durkheim, suicides, like much else, were taken to be "social facts" best explained with reference to the socio-cultural environments in which they occurred. To do otherwise—to rely instead upon this or that private, individualistic, psychodynamic accounting system—was to commit what subsequent generations of anthropologists

Thursday—P.M.

and sociologists have come to term “the psychologist’s fallacy.” Not to be outdone, psychologists have countered such “sociological imperialism,” branding as instances of the “ecology fallacy,” all looping, macro-genetic tendencies to blindly aggregate everything in sight.

What is principally wrong with all such ‘tattle-tale’ debates is that they participate in the same pernicious, Cartesian-like tendency to dichotomize everything—minds are held to be distinct from bodies, causes are meant to keep their distance from effects, and individuals, as distinct from cultures, are rudely kept apart.

The real challenge is to find some alternative counter-synthesis, some better ‘embodied,’ more ‘relational’ solution that aims to dissolve the traditional dichotomy between persons and cultures. This is, of course, too ambitious. Instead, as psychologists and sociologists whose current programs of research focus upon the common object of youth suicide, we hope to address Durkheim’s original problem—how to account for the empirical fact that, of late, the rates at which youth suicide occurs has shifted quite dramatically, and almost always for the worse. The programs of psychological research to be discussed, first by Chandler and then Lalonde, concern the wildly disparate suicide rates that characterize Canada’s First Nation youth. The key point to be made in these presentations is that young persons in some Indigenous communities, but not others, suffer epidemic-like levels of suicides. The second half of this 4-part sequence will then be taken over by two sociologists. First by Tremblay and then Dagenais, who will discuss related empirical findings, this time not about Indigenous youth, but, rather, young persons, principally from the province of Quebec. All of this is intended to move toward a different way of thinking about persons and their environments that better escapes the usual, artificial, either-or constraints of outmoded person-society dichotomies.

Youth suicide and how to commit the ‘psychologist’s fallacy’ and get away with it

Michael J Chandler (University of British Columbia)

What every good grandmother would tell you: Promoting culture saves lives

Christopher E Lalonde (University of Victoria)

The historical transformation of the suicide regime: A comparative analysis

André Tremblay (University of Ottawa)

Youth suicide as a contemporary coming of age pathology

Daniel Dagenais (Université Concordia)

3:00-4:30 SY05 Symposium Session 5 Conference Room C

Different routes to moral development: perceptions of self and others

Organizer: Ella Daniel (University of Toronto)

The symposium investigates moral development, and mechanisms by which the individual’s perceptions of the self or the other influence moral development. Different measures of moral development were employed, including values, behavioral standards, moral emotions and prosocial development. Different stages of the process were under focus, with age ranging between young childhood and young adulthood. Together, the variety and multiplicity of the concept of moral development is exemplified.

In addition to describing the broadness of the moral development concept, all presentations in the symposium look for the mechanisms that underlie it. Subjective perceptions of the self, the others and the situation were common mechanisms found in all studies. The first presentation, by Julia Vinik and Joan E. Grusec, investigates perceptions how children across cultures acquire values from their parents in various

Thursday—P.M.

domains of socialization, including disciplinary and non disciplinary contexts. The second presentation, by Maayan Davidov, examines how children's perceptions of parents' disciplinary efforts moderates the effects of the discipline strategy on socialization outcomes. The third presentation, by Ella Daniel and Ariel Knafo, investigates the relations between value differentiation, the disparity in value importance across life contexts, and well being among several cultural groups. The fourth presentation, by Sophia F. Ongley, looks into the role of positively and negatively valenced moral emotions as predictors of sharing behavior, as well as the moderating role of sympathy in these relations.

Overall, the current combination of presentations offers new insights into processes of moral development, describing what is common among them, as well as what distinguishes between them. The specific presentations are described below.

Children's acquisition of values within the family: Beyond misbehavior and discipline

Julia Vinik (University of Toronto)

Joan E Grusec (University of Toronto)

Children's perceptions of parents' discipline strategies and their role in the socialization process

Maayan Davidov (Hebrew University of Jerusalem)

Value differentiation and adolescent well-being in four cultural groups

Ella Daniel (University of Toronto)

Ariel Knafo (Hebrew University of Jerusalem)

The role of positively and negatively valenced moral emotions and sympathy in children's sharing behavior

Sophia F Ongley (University of Toronto)

3:00-4:30 SY06 Symposium Session 6.....Windsor West

Examining the truth about false-belief: New methods for explaining development between infancy and later childhood

Organizer: Valerie San Juan (University of Toronto)

Despite a recent wealth of evidence suggesting that an awareness of false-beliefs may emerge during infancy, it is still unclear how young children develop from a level of understanding that is initially limited to indirect forms of assessment (e.g., violation-of-expectation or anticipatory eye gaze paradigms). Moreover, if performance on different modes of assessment (i.e., spontaneous vs. elicited) requires the use of distinct levels of cognitive processing, then it is necessary to establish a developmental framework that would account for children's varying response patterns across different measures. The purpose of this symposium is to begin consolidating evidence from divergent methods of false-belief assessment and identify processes of development that may account for qualitative changes in children's epistemic understanding between infancy and later childhood.

To explain the distinctions between children's false belief reasoning at different ages, Surtees and Apperly will provide evidence for separate systems of processing: (a) low-level, automatic system(s) evident in infancy; (b) a controlled higher-level system that develops later. Specifically, they will present data from both direct and indirect measures of assessment to demonstrate how a low-level system may be limited by higher-order distinctions in perspective taking. Similarly, Low and Watts will discuss how children's anticipatory looks on indirect assessments of false-belief may be limited by contexts of belief induction. To address the factors that may be necessary for the development of false-belief processing, San Juan and Astington will present research using a novel training paradigm to demonstrate the unique

Thursday—P.M.

role of epistemic language in the explication of belief representations. Finally, Benson, Sabbagh, and Kuhlmeier will provide evidence from divergent methodologies and populations (neurophysiological, cross-cultural and clinical) to demonstrate that the development of executive functions may be necessary, but is not sufficient, to produce improvements in false-belief reasoning.

The presenters in this symposium are all new investigators who implement innovative methods to examine an issue that is currently at the forefront of social cognitive research—i.e., the consolidation of both infant and preschool data on false-belief development.

The Level-1/Level-2 distinction as a signature limit on efficient perspective-taking

Andrew Surtees (Université Catholique de Louvain)

Ian Apperly (University of Birmingham)

False-belief anticipations about object identity is a signature limit of preschoolers' implicit minimal theory of mind system

Jason Low (Victoria University of Wellington)

Joseph Watts (Victoria University of Wellington)

Learning to "think" about beliefs: The role of mental verb exposure in the explication of epistemic representations

Valerie San Juan (University of Toronto)

Janet Astington (University of Toronto)

Preschoolers' false belief failures are not simply executive failures

Jeannette Benson (Queen's University)

Mark Sabbagh (Queen's University)

Valerie Kuhlmeier (Queen's University)

3:00-4:30 PS03 Paper Session 3..... Windsor East

Language and Gestural Development

Chair: Nancy Budwig (Clark University)

Do children differentiate between pantomime and co-speech gesture?

Elena Nicoladis (University of Alberta)

Previous studies have shown that children's pantomimes become less concrete in their representative form between three and five years of age, as measured by a decrease in the use of body-part-as-object, like an index finger to represent a toothbrush (e.g., O'Reilly, 1995). The present study tests whether the same is true of children's co-speech gestures. Gestures might follow the same developmental pattern because gestures are thought to emerge from simulated action (Hostetter & Alibali, 2010). Alternatively, gestures accompany speech and children might rely on conventional words to convey part of their meaning. Three- to five-year olds were asked to pantomime the actions associated with 20 objects and tell narratives that included those same 20 objects. Narratives are often used to elicit gestures. The results showed that the children used fewer body-part-as-objects in their pantomimes as they got older, but the use of body-part-as-objects in their co-speech gestures was rare and did not change by age. These results suggest that children treat co-speech gesture as more abstract than pantomime, perhaps because they rely simultaneously on both the speech and the gesture in creating their representations. That is, the function of gestures in children's representations is to complement the speech.

Thursday—P.M.

Micro-analysing access to linguistic culture – examples from congenital deafblindness

Flemming Ask Larsen (University of Copenhagen)

In the (sensorially) normal population a high degree of cognitive disability is required to prevent language development, but in the population of people with severe developmental disability as a result of congenital deafblindness (cdb) it seems to be the other way around: No matter how well you may be equipped cognitively, you will not develop language skills beyond primitive symbolic gestures. The main access to the world for the person with cdb is via bodily-tactile interaction. Just as we need a thorough analysis of the dynamic parameters of social interaction in order to be able to translate them into bodily-tactile interactions, we need a thorough analysis of the dynamic parameters of access to linguistic culture, in order for us to fit these parameters into the narrow pathway of the bodily-tactile modality. A model and a method for micro-analysing how people with cdb gain access to linguistic culture will be presented. When we analyse ongoing bodily-tactile social interaction in this manner, and compare it to an activity analysis and a content analysis, we get insight in how specific aspects of different activity types are dynamically linked to specific aspects of language use, and how this is mediated in the interaction.

Revisiting speech and gesture as an index of the simultaneous activation of two language systems

Ivelisse M Burgo (Northeastern Illinois University)

Laura Quiros (Northeastern Illinois University)

R Breckinridge Church (Northeastern Illinois University)

S Mahootian (Northeastern Illinois University)

The simultaneous activation of two language systems in bilinguals has been hypothesized in the literature but little evidence has been put forth to support this hypothesis. Two studies explore whether two systems of language are simultaneously activated for bilinguals during the process of speaking. A total of 88 subjects: (1) Monolingual English speakers (ML), (2) Bilingual Spanish-English speakers who learned English early in life (BLE) and (3) Bilingual Spanish-English speakers who learned English late in life (BLL) participated. We hypothesized that the BLEs (who have been practiced in both Spanish and English since early in life) were more likely to activate two language systems simultaneously than either the MLs (because they have only one system at their disposal, English) or BLLs (who are primarily activating their primary language system, Spanish).

Using a cognitive load paradigm requiring subjects to perform 2 tasks simultaneously (narrating a story and remembering a list of numbers), we examined three pieces of evidence supporting the notion that bilinguals who learned English early in life simultaneously activate their two language systems during speaking. We found that Bilingual Early English Learners: (1) showed less preference for one language system over the other, (2) produced more speech-gesture mismatches and (3) exhibited greater cognitive load compared to the other two language groups suggesting that these types of bilinguals are likely to be activating two languages simultaneously when speaking.

How exclusive is mutual exclusivity? The development of translation equivalents in bilingual children

Elizabeth A Woods (University of Houston)

Hanako Yoshida (University of Houston)

The bilingual environment provides a unique way of examining how children learn multiple labels for a single concept. As a result of this experience, bilingual children often learn translation equivalents (TE) – labels for the same concept in two languages. However, this learning of multiple labels for a single item

Thursday—P.M.

is inconsistent with the Mutual Exclusivity (ME) principle¹ in which children assume an object has only one label. This raises the question of how bilingual children learn multiple labels. Although the presence of TE in bilinguals' vocabularies is well established, the extent of TE is still unclear. In addition, even less is known about how bilinguals learn TE at various ages and in various linguistic contexts. The present study addresses this by examining how bilingual children learn TE across development and lexical category. Results revealed that children had TE for 37 % of their total vocabulary. However, the extent of TE varied across development and lexical category. This suggests that bilingual children's early word learning is not limited to the one object-one label constraint and that bilingual word learning may be occurring in a domain specific manner dependent on the participant's age and type of linguistic information to be learned.

3:00-4:30 PS04 Paper Session 4..... El Dorado

Education

Chair: Susan Mayer (Brandeis University)

Expert and novice teachers' teaching of English literature

Cynthia Waugh (University of Toronto)

Michel Ferrari (University of Toronto)

Greg Allen (University of Toronto)

Anda Petro (University of Toronto)

In this study, 15 Expert English teachers and 15 Novice Teachers described how they would teach three literary texts to senior high school students. Participants also answered questionnaires designed to assess wisdom and satisfaction with life. Using a Grounded Theory Method, transcripts of interviews were coded and frequencies of responses tabulated. Experts showed significantly greater purpose in life than did novices. There were no differences found on wisdom measures between the groups nor were differences found in life satisfaction, alienation, or general well-being. Experts tended to use a more facilitative approach in their teaching whereby they implemented supportive strategies to assist students with understanding challenging texts. This was in comparison to novices who tended to be more directive in their approach to teaching and who also communicated more discomfort and uncertainty about the texts.

Self reflections of early childhood educators on their teaching and learning, beliefs and practices

Brandy Dewar (Brock University)

Jennifer Servos (Brock University)

Sandra Bosacki (Brock University)

This study examines early childhood educators' perceptions of young children's gendered identity/orientation and social behaviours in early childhood education (ECE). Bandura (1986) considered self-reflection the most uniquely human capability, for through this form of self-referent thought people evaluate and alter their own thinking and behavior. This ongoing study involves telephone interviews with 12 participants who were asked questions on their teaching policies and practices regarding diversity and difference. They were also asked how their own thoughts and beliefs about gender orientation and gender identity impact their teaching methods about diversity and difference. Preliminary findings from content analysis suggest self-reflection and reflective practice is plays a significant role in EC educators' teaching/learning experiences. Although this study is to learn about gender identity/orientation and social behaviours in an ECE setting, participants are also learning about themselves and their schooling environment in the process. The results of this study will provide early childhood educators with informa-

Thursday—P.M.

tion regarding their own teaching and learning beliefs and practices. Purpose: This study investigates the role self-reflection plays in early childhood educators' teaching and learning beliefs and practices regarding children's gendered social behaviors in the early childhood classroom.

Intellectual agency in science: The inherent role of affect

Lama Jaber (Tufts University)

David Hammer (Tufts University)

Research on learning in science has studied students' engagement in disciplinary practices, including students' agency (Scardamalia & Bereiter, 1991, 2006). Here we highlight affective dynamics inherent in that notion of agency: Students as agents in disciplinary practices feel their own needs to raise questions, suggest explanations, confirm and verify ideas, and reconcile inconsistencies. In other words, while there is often discussion in education community regarding students' motivation to learn science (e.g. because it is useful to them), it is essential to appreciate how science itself involves motivation. This, we suggest, means that part of conceptualizing, recognizing, and cultivating the beginnings of science in children's thinking involves attention to their affect. We illustrate the substantive role of affect in a classroom episode of fourth graders discussing clouds. It begins when a student expresses her puzzlement over others' ideas about how a cloud holds water. When the conversation does not address her puzzlement, she insists, with greater affective intensity, and in this way initiates and sustains the class's considering the coherence of their accounts. This was a local emergence of disciplinary motivation, and part of what science education should accomplish is stabilizing such motivation over time.

Discovery reconceived: Product before process

Dor Abrahamson (University of California, Berkeley)

Motivated by the question, "What exactly about a mathematical concept should students discover, when they study it via discovery learning?", I present and demonstrate an interpretation of discovery pedagogy that attempts to sustain its ideology yet address its criticism. My approach hinges on decoupling the solution-procedure process (applying analytic algorithm to a situation under inquiry) from its resultant product (material displays or multimodal utterance, e.g., inscriptions, that experts interpret as bearing meanings pertaining to properties, relations, patterns, or structures in the situation). Whereas theories of learning often focus on process as the site of discovery, I propose to focus instead on product. Specifically, I view student discovery of mathematical concepts as guided heuristic-semiotic alignment of the product of mathematical analysis process with informal inference from naively seeing situations. I support my thesis with analyses of two vignettes, in which perception-driven design for intensive quantities was implemented as follows: (1) elicit students' perceptual judgment for a property of a situation created specifically so that the judgment agree with accepted theory; (2) guide students through enacting the analytic process for determining this property; and (3) help students see that the product of this process agrees with, and perhaps amplifies, the original judgment.

3:00-4:30 DS01 Discussion Session 1Conference Room DE

Are developmental stages descriptively necessary? An open constructivist discussion

Bob Louisell (St. Cloud State University)

Thomas R Bidell (independent scholar)

Juan Pascual-Leone (York University)

Abel Ulloa-Hernandez (Universidad de Guanajuato)

Since Baldwin, scholars have articulated stages of development. From the time that Piaget's writings concerning stages were published, educators and psychologists have shown an especially strong interest

Thursday—P.M.

in them. Misconceptions about the applications of Piaget’s stages abound—for example, the idea that there is a specific age of acquisition for particular stages or the idea that Piaget’s stages are general and context free. However, despite misinterpretations of stages, insights about developmental phenomena have the potential to provide important guidance for teachers.

Neo-Piagetians have identified parallel stages and attempted to improve upon Piaget’s original stages. But many developmental psychologists have abandoned concepts of stages while accepting Piagetian contributions to constructivist theory. Others argue that stages are dynamic structures but that they represent qualitative changes that have been constructed—not a pre-determined abstraction. Others say that a dialectical constructivist approach can explain the transition from one stage to another—something Piaget never did adequately. Others have critiqued specific substages (e.g., the substage during which object permanence is constructed) or periods of development by conducting experiments which claim to show that children achieve particular schemes, structures, or concepts earlier than Piaget’s stages would predict. Still others say that, while there may not be stages of a general nature, there may be stages specific to particular domains.

Some critics of Piaget’s stages argue that “children should perform at precisely the same logical stage on each task they encounter, regardless of the situational context or the content domain...” But this ignores the relationship of thought to content knowledge, and an individual’s performance varies widely according to a range of variables.

Do stages exist in child development? If so, what is their nature? What are the implications of stages for educators? Does class inclusion play the important role in the understanding of numeric place-value and multiplication that so many scholars have claimed? Do younger children approach hands-on science problems—for example, solving Piaget’s pendulums task—differently than older children or adolescents? Are there descriptive characteristics that can be attributed to their reasoning according to stages?

This discussion session will deal with these and similar issues. It will consist of two parts. First, a panel of discussants will articulate their ideas related to the topic in brief presentations. Second, audience participants will pose questions and share comments on any of the issues which have been mentioned.

4:30-4:45 break

4:45-6:00 SY07 Symposium Session 7Osgoode East

Morality, socialization, and culture

Organizer: Michaela Gummerum, (University of Plymouth)

Research on the development of morality is often concerned with identifying the factors and conditions that facilitate or hinder children’s acquisition of moral cognitions, behaviors, values, and emotions. This symposium will discuss how children develop a sense of right and wrong in their interactions with two important socialization agents, namely their parents and peers. Furthermore, we will examine whether children’s moral development in family and peer contexts differs across cultures and historical times.

The first paper examines whether democratic family and school environments contribute positively to the psychological well-being of 12- to 18-year old adolescents from urban and rural China. While this question has been investigated in Western society, studies in more traditional and collectivistic cultures are rather sparse. Across both urban and rural settings, perceptions of families and schools as more democratic were associated with greater well-being and lower levels of depression and anxiety. Older adolescents and participants from urban settings exhibited higher support for children’s rights. Overall,

Thursday—P.M.

the findings reveal that democratic family and school environments are psychologically beneficial also for non-Western adolescents.

The second paper investigates the role of authoritative parenting on the development of moral reasoning, sympathy, moral emotion attribution, and prosocial behavior in a longitudinal study of Swiss 7- to 9-year-old children. While authoritative parenting directly predicted children's sympathy and moral reasoning, mother-reported sympathy mediated the relationship between authoritative parenting and moral emotion attribution and prosocial behavior. Thus, sympathy might play an important role as an affective link between authoritative parenting and prosocial moral development in middle childhood.

Socio-economic development have led to changes in family structures and increasing westernization in China. The third paper examines the effect of these social changes on Chinese children's and adolescents' moral decision-making in the family context. Two cohorts of 7- and 9-year-old children and 12- and 15-year-old adolescents were interviewed about a moral dilemma situation in the family in 1990 and 2008. Participants, and especially early adolescents, interviewed in 2008 were more likely to reject traditional Chinese family values and view relationships as based on emotional bonds than participants interviewed in 1990.

The fourth paper investigates whether cultural changes influence the development of socio-moral reasoning children and adolescents from a western and an Asian society. Seven-, 9-, 12-, and 15-year-old Icelandic and Chinese participants were interviewed in 1990 and 2008 about a socio-moral friendship dilemma. Icelandic participants interviewed in 2008 showed few and unsystematic differences to those interviewed in 1990. In 2008 Chinese participants became more similar to Icelandic participants and placed more importance on selfish and contractual concerns than Chinese participants interviewed in 1990.

Thursday—P.M.

Does democracy in the family and school promote adolescents' psychological well-being?: Findings from urban and rural China

Sharon To (University of Toronto)

Charles C Helwig (University of Toronto)

Shaogang Yang (Guangdong University of Foreign Studies)

The role of authoritative parenting on children's moral development

Tina Malti (University of Toronto)

Nancy Eisenberg (Arizona State University)

Hyunji Kim (University of Toronto)

Marlis Buchmann (University of Zurich)

Social change and Chinese children's and adolescents' moral decision-making in family relationships

Michaela Gummerum (University of Plymouth)

Liqi Zhu (Chinese Academy of Sciences)

Monika Keller (Max Planck Institute for Human Development)

Fu-Xi Fang (Chinese Academy of Sciences)

Reasoning about responsibilities in close relationships: A cross-cultural cohort replication study

Monika Keller (Max Planck Institute for Human Development)

Hrafnhildur Ragnarsdottir (University of Iceland)

Fu-Xi Fang (Chinese Academy of Sciences)

Wolfgang Edelstein (Max Planck Institute for Human Development)

4:45-6:00 SY08 Symposium Session 8.....Conference Room B

Identity as a lens of understanding development and changes of science teachers' subject-specific selves

Organizer: Martina Nieswandt (University of Massachusetts Amherst)

Discussant: K Ann Renninger (Swarthmore College)

Research on teacher beliefs stresses that teacher candidates' and beginning teachers' teaching is guided by their own schooling, and which is often in contrast to reform-based teaching approaches. Experienced and veteran teachers are similarly resistant to changes of their teaching practices and this despite a wider array of teaching experiences. Research has demonstrated a close relationship between teacher beliefs about teaching and their teaching practices, and emphasized the difficulties of modifying beliefs. The latter implies not only that emphasizing teacher beliefs is inadequate for teacher training and professional development aiming towards changes of teaching practice, but also that an approach focusing on teaching practice and outcomes seems too limited to explain why teachers are reluctant to change. In contrast, an identity approach allows exploring the intersection between a person's personal history and individual psychology (e.g., perceptions of self as a teacher, tensions between professional role expectations and self-perceptions as a teacher) as well as the person's history and community of practices.

This symposium presents three purposefully selected studies addressing various aspects of professional identity development among elementary preservice teachers, K-8 and secondary science teachers using either Wenger's identity framework or a role identity framework. Shanahan and Gustafson's group case study explores the way in which five female elementary preservice teachers' science teacher identity,

Thursday—P.M.

subject matter knowledge, self-efficacy and pedagogical content knowledge interacted as they moved towards becoming science specialists and certified teachers. – Barrett’s qualitative case study describes a new physics teacher’s (Samuel) learning trajectory in his first years of teaching. Samuel wished to introduce social justice issues into his 11th grade physics course despite his more experienced colleagues disapproval of his approach. The question to be explored is to what extent his emerging identity as a physics teacher explains his determination. – Nieswandt’s study explores how a group of K-8 teachers’ (n=17) understanding of self as a teacher developed and changed throughout a 3-year masters program emphasizing physical science and involvement in authentic science research.

The session’s discussant Ann Renninger and the following discussion with presenters and the audience will focus on three major questions:

1. What aspects support the development of a professional identity (e.g., context – teacher preparation or professional development program; personal beliefs; school culture)?
2. How do we measure teachers’ identity development?
3. Does an identity framework provide sufficient explanations for teachers’ resistance to change?

K-8 science teacher or general educator? Teachers’ identity development during a physical science master program

Martina Nieswandt (University of Massachusetts Amherst)

Covert innovation: Relating emerging teacher identity to the courage to teach differently

Sarah Barrett (York University)

Exploring the factors of change in pre-service teachers identities as science specialists

Marie-Claire Shanahan (University of Alberta)

Brenda Gustafson (University of Alberta)

4:45-6:00 SY09 Symposium Session 9..... Conference Room C

Re-thinking infants’ understanding of others’ attention: From gestures to false belief

Organizer: Jeremy Carpendale (Simon Fraser University)

How infants develop an understanding of others’ attention has been of interest in a number of areas. Two aspects of this development focused on in this symposium are pointing gestures and infant false belief understanding. In spite of the general agreement on the importance of pointing gestures there is still disagreement on how such gestures develop. The authors of the first paper discuss theories of pointing and present selected diary observations in arguing for a view of pointing according to which infants first use the hand configuration as a non social orienting response that becomes social as infants learn the meaning their action has for others in various social situations. The study of pointing in infancy has been deeply influenced by the distinction between pointing used to direct attention versus to make requests. Rather than just classifying some of the functions of pointing gestures, this distinction has now been re-interpreted as a classification of the two presumed motivations thought to underlie different pointing gestures. The authors of the second paper critically evaluate this approach and suggest that understanding how pointing develops requires studying infants during their first year. Selected entries of parental diaries of infant communicative development are reported and the authors interpret these observations as consistent with the view that various functions of pointing are differentiated through social interaction. The authors of the third paper evaluate the evidence and claims regarding infants’ understanding of others’ false beliefs. They construct a developmental model premised on the idea that early social cognition

Thursday—P.M.

occurs predominantly within shared dyadic and triadic social contexts. The authors draw upon their studies of the infant false belief task and theoretical analyses to propose a model that predicts developmental changes over the first two years. They suggest that evidence of infant “false belief” understanding can be best explained within a social relational framework.

Do Infants “point for themselves”?

Jeremy Carpendale (Simon Fraser University)

Viktoria Kettner (Simon Fraser University)

Katie Cutbill (Simon Fraser University)

Ailidh Carpendale (Simon Fraser University)

The many functions of pointing: Differentiating protodeclarative and protoimperative points

Tyler Wereha (Simon Fraser University)

Becky Stewart (Simon Fraser University)

Rethinking infant social-cognitive development: How should we interpret infant “false belief” effects?

James Stack (Lancaster University)

Charlie Lewis (Lancaster University)

4:45-6:00 SY10 Symposium Session 10.....Windsor West

Re-thinking micro-development: Epistemological and theoretical considerations

Organizer: Thomas R Bidell (Independent Scholar)

Organizer: Thomas Thiel (Universität Potsdam)

During the last twenty years or so, interest in microgenetic research has grown and quite a number of new studies labeled “microgenetic” or “micro-developmental” have appeared. However, many such studies have not made explicit either their epistemological or theoretical commitments with regard to what microgenesis or micro-development is and thus what specifically developmental phenomena they are trying to study. Typically these studies define their object of analysis as “change” which takes place over “short periods of time.” This generic definition leaves open the question of what changes and why – questions that can really only be addressed within the context of a specific theoretical and epistemological framework.

A case in point is Siegler’s “Overlapping Waves” model of the microgenesis which describes short-term successions of behavior patterns which partially overlap in time. While the description of changing patterns of behavior is certainly important and fundamental to our understanding of any type of development, the mere description of behavior patterns simply begs any number of deeper questions such as why certain behaviors develop before others, why certain behaviors remain “overlapping,” why unsuccessful behaviors are retained when more successful ones appear, and why some behaviors never precede others, to name a few. These questions have traditionally been associated with theories of development as opposed to theories of behavioral change. Traditional developmental theories offer epistemological and theoretical accounts of underlying cognitive structural or conceptual changes to account for observed changes in behavior. And, in doing so, traditional microgenetic approaches of Werner, Piaget and Vygotsky make commitments to subjectivity or human agency as a crucial element in the mechanisms of development.

The purpose of the present symposium is to re-think microgenetic research in terms of the epistemological and theoretical commitments, implicit or explicit, entailed in different approaches.

Thursday—P.M.

Presentation 1 will cover the beginnings of aktual-genetic and microgenetic research in the Second Leipzig School of Psychology with particular attention to Genetic Ganzheitspsychologie ~ the general theory that guided arguably first Aktualgenese studies. Wundt's First School of Leipzig and Werner's earliest Microgenetic studies will be addressed and possible directions for a Genetic Ganzheitspsychologie guided micro-developmental methodology suggested.

Presentation 2 reviews micro-developmental research in the Wernerian, Piagetian, Vygotskian and Strategy -Learning traditions comparing epistemological and theoretical commitments.

Presentation 3 provides an example of epistemologically informed microgenetic research based on Piaget's constructivist model of subject-object differentiation with video excerpts for illustration.

Genetic Ganzheitspsychologie and the birth of Microgenesis

Rainer Diriwaechter (California Lutheran University)

Micro-developmental Research: What Micro-develops?

Thomas R Bidell (Independent Scholar)

Piaget's theory of reflecting abstraction as a tool for analyzing micro-development

Thomas Thiel (Universität Potsdam)

4:45-6:00 PS04 Paper Session 4..... Windsor East

Education

Chair: Susan Mayer (Brandeis University)

Expert and novice teachers' teaching of English literature

Cynthia Waugh (University of Toronto)

Michel Ferrari (University of Toronto)

Greg Allen (University of Toronto)

Anda Petro (University of Toronto)

In this study, 15 Expert English teachers and 15 Novice Teachers described how they would teach three literary texts to senior high school students. Participants also answered questionnaires designed to assess wisdom and satisfaction with life. Using a Grounded Theory Method, transcripts of interviews were coded and frequencies of responses tabulated. Experts showed significantly greater purpose in life than did novices. There were no differences found on wisdom measures between the groups nor were differences found in life satisfaction, alienation, or general well-being. Experts tended to use a more facilitative approach in their teaching whereby they implemented supportive strategies to assist students with understanding challenging texts. This was in comparison to novices who tended to be more directive in their approach to teaching and who also communicated more discomfort and uncertainty about the texts.

Self reflections of early childhood educators on their teaching and learning, beliefs and practices

Brandy Dewar (Brock University)

Jennifer Servos (Brock University)

Sandra Bosacki (Brock University)

This study examines early childhood educators' perceptions of young children's gendered identity/ orientation and social behaviours in early childhood education (ECE). Bandura (1986) considered self-reflection the most uniquely human capability, for through this form of self-referent thought people evaluate and alter their own thinking and behavior. This ongoing study involves telephone interviews with

Thursday—P.M.

12 participants who were asked questions on their teaching policies and practices regarding diversity and difference. They were also asked how their own thoughts and beliefs about gender orientation and gender identity impact their teaching methods about diversity and difference. Preliminary findings from content analysis suggest self-reflection and reflective practice is plays a significant role in EC educators' teaching/learning experiences. Although this study is to learn about gender identity/orientation and social behaviours in an ECE setting, participants are also learning about themselves and their schooling environment in the process. The results of this study will provide early childhood educators with information regarding their own teaching and learning beliefs and practices. Purpose: This study investigates the role self-reflection plays in early childhood educators' teaching and learning beliefs and practices regarding children's gendered social behaviorus in the early childhood classroom.

Intellectual agency in science: The inherent role of affect

Lama Jaber (Tufts University)

David Hammer (Tufts University)

Research on learning in science has studied students' engagement in disciplinary practices, including students' agency (Scardamalia & Bereiter, 1991, 2006). Here we highlight affective dynamics inherent in that notion of agency: Students as agents in disciplinary practices feel their own needs to raise questions, suggest explanations, confirm and verify ideas, and reconcile inconsistencies. In other words, while there is often discussion in education community regarding students' motivation to learn science (e.g. because it is useful to them), it is essential to appreciate how science itself involves motivation. This, we suggest, means that part of conceptualizing, recognizing, and cultivating the beginnings of science in children's thinking involves attention to their affect. We illustrate the substantive role of affect in a classroom episode of fourth graders discussing clouds. It begins when a student expresses her puzzlement over others' ideas about how a cloud holds water. When the conversation does not address her puzzlement, she insists, with greater affective intensity, and in this way initiates and sustains the class's considering the coherence of their accounts. This was a local emergence of disciplinary motivation, and part of what science education should accomplish is stabilizing such motivation over time.

Discovery reconceived: Product before process

Dor Abrahamson (University of California, Berkeley)

Motivated by the question, "What exactly about a mathematical concept should students discover, when they study it via discovery learning?", I present and demonstrate an interpretation of discovery pedagogy that attempts to sustain its ideology yet address its criticism. My approach hinges on decoupling the solution-procedure process (applying analytic algorithm to a situation under inquiry) from its resultant product (material displays or multimodal utterance, e.g., inscriptions, that experts interpret as bearing meanings pertaining to properties, relations, patterns, or structures in the situation). Whereas theories of learning often focus on process as the site of discovery, I propose to focus instead on product. Specifically, I view student discovery of mathematical concepts as guided heuristic-semiotic alignment of the product of mathematical analysis process with informal inference from naively seeing situations. I support my thesis with analyses of two vignettes, in which perception-driven design for intensive quantities was implemented as follows: (1) elicit students' perceptual judgment for a property of a situation created specifically so that the judgment agree with accepted theory; (2) guide students through enacting the analytic process for determining this property; and (3) help students see that the product of this process agrees with, and perhaps amplifies, the original judgment.

Executive Function I

Chair: Ulrich Mueller (University of Victoria)

Executive functions development and playing games

Ana Lucia Petty (University of São Paulo)

Maria Thereza Coelho de Souza (University of São Paulo)

The aim of this paper is to discuss executive functions and playing games, considering Piaget's work (1964) and the neuropsychological framework (Barkley, 1997, 2002; Cypel, 2007). Two questions guide the discussion: what are the intersections between playing games and the development of executive functions? Can we stimulate children with learning disabilities to build up skills related to executive functioning in a context of games and problem solving situations? For the last 22 years, researchers from the Institute of Psychology, University of Sao Paulo have been studying children, proposing situations in which they play games with rules, solve problems and interact with others (Macedo, Petty & Passos, 1997, 2000, 2005; Souza, Petty et al., 2002). Groups of children from 7 to 11 years old are supervised by professionals who challenge them to develop reasoning and autonomy, which also contribute to develop executive functions. The main point of the project is not to become a good player, but build up skills to surpass difficulties, such as attention, organization and planning. Participants who were engaged, and didn't have serious neurological damages in brain functioning, really became students with better resources to deal with school challenges and developed more adequate attitudes.

Higher-order Theory of Mind and executive functions in school-age children

Nathalie Angeard (Université Paris Descartes)

Johanna Calderon (Université Paris Descartes)

Alexandra Linder (Université Paris Descartes)

Several studies have highlighted the importance of inhibitory control and working memory as key elements to the emergence and expression of Theory of Mind (ToM) in the preschool years (Carlson et al., 2001; Calderon et al., 2010). However, as noted by Miller (2009), few attempts have been made to examine the role of Executive Functions (EF) in second-order reasoning. According to the protracted course of the prefrontal cortex maturation, the present study aimed to explore the link between second-order false belief and EF in school-age children. Forty-five children, divided in three age groups (6-; 8- and 10-year-olds), underwent three tests of EF (inhibitory control, working memory and mental flexibility) and two false-belief tasks (change of location and second-order false belief). Our results highlight (1) a progressive improvement of working memory, inhibitory control and mental flexibility from 6 to 10 years with a dramatic change in second order belief task between 6 and 8 year-olds and (2) significant correlations between second-order reasoning and EF measures. Contribution of each executive component on second-order false-belief score is discussed according to the unity-but-diversity view of EF (Miyake et al., 2000), the progressive specialization within prefrontal region during childhood (Durstun et al., 2006) and the common neural networks involved in TOM and EF (Rothmeir et al., 2011).

Talk me through it: How preschoolers' use of language aids planning on the Tower of Hanoi

Michael R Miller (Vanderbilt University)

In early childhood, planning provides a basis for organizational skills that are useful for future school performance (Perez & Gauvain, 2009). However, research shows that preschoolers' planning abilities are limited because they often fail to consider task demands, are inefficient at self-monitoring, and are unlikely to use strategies to their advantage (Gardner & Rogoff, 1990). The present study examined

Thursday—P.M.

whether preschoolers could improve their planning skills on the Tower of Hanoi (ToH) through the use of language. Forty-five children between the ages of 4 and 6 years were administered a pretest, 3 micro-genetic sessions, and a posttest. Multilevel models were used to analyze the data at the between- and within-person levels. Results indicated that preschoolers' use of language was independently related to individual improvements in ToH performance over time. Moreover, preschoolers' improvements in ToH performance were not reducible to age-related increases, inhibitory control demands, working memory, short-term memory, or verbal ability. Overall, the present study demonstrated that language use is an important predictor of understanding individual changes in planning performance during the preschool years. These findings have important implications in terms of improving preschoolers' executive function skills and preparing children for early academic success.

Stress coping in Singaporean kindergarten children

Li Qu (Nanyang Technological University)

Li Wu (Nanyang Technological University)

Wing Fong Cheong (Nanyang Technological University)

Chiew Leng Chan (Nanyang Technological University)

Yuzheng Luo (Nanyang Technological University)

Yan-Yi lanthe Leong (Nanyang Technological University)

The current study investigated what factors are associated with effective coping strategies in kindergarten children. Eighty-one Singaporean children (M age = 67.3 months, SD = 5.2, Range: 54 – 81; 42 girls) participated in the study. Children were interviewed on challenging events and coping strategies (Deans & Frydenberg, 2010). Additionally, children were given a vocabulary test (PPVT), two theory of mind tasks (Belief Emotion and Content False Beliefs), two executive function tasks (Flexible Item Selection Test and Day/Night Stroop), and an emotion regulation task (Disappointing Gift). Adapted from Band and Weisz's (1988) coping framework, children's coping strategies were classified to active, harmony control, and passivity. Results have shown that the children who were advanced in verbal ability and those who showed negative expressions after receiving a disappointing gift tended to use active coping strategy, whereas the children who were advanced in theory of mind tended to use harmony control strategy. Additionally, children's emotion regulation was correlated with their executive function and theory of mind. These findings indicate that kindergarten children's coping ability is associated with their development of language, emotion regulation, theory of mind, and executive function.

6:00-6:15 break

6:15-6:45 PT01 Poster Session 1 Osgoode West

Poster Session 1

Posters in this session should be mounted Thursday morning to allow viewing during the day. Authors will be present during the evening poster session (6:15–6:45). Posters should be removed at the end of the session (6:45).

1. Making decisions about now and later: Development of future-oriented self-control

Julie Longard (Dalhousie University)

Nancy M Garon (Mount Allison University)

Susan E Bryson (IWK Health Centre)

Thursday—P.M.

2. *Self and other-perspective-taking and prosocial behavior as predictors for young children's fractional understanding in social and non-social contexts*
Jennifer Vonk (Oakland University)
Julie Cwikla (University of Southern Mississippi)
Stephanie E Jett (University of Southern Mississippi)
Theodore Tomeny (University of Southern Mississippi)
3. *The influence of empathy on sharing and envy in children*
Amanda Williams (Dalhousie University)
Chris Moore (Dalhousie University)
4. *Learning how to learn: How do parents of diverse backgrounds in Hawai'i think preschoolers should learn about the world around them?*
Ashley Morris (University of Hawai'i at Manoa)
Brandy Frazier (University of Hawai'i at Manoa)
5. *When less knowledge can help: A Dynamic Neural Field model of word learning for non-solid substances*
Sarah Kucker (University of Iowa)
Larissa K Samuelson (University of Iowa)
John P Spencer (University of Iowa)
6. *The influence of intelligence on moral reasoning in adolescents*
Vincent Labelle-Chiasson (University of Montreal)
Evelyn Vera-Estay (University of Montreal)
Julian J Dooley (Edith Cowan University)
7. *Cognitive and motor control in 5-year-old children: A micro-genetic study*
Claudia M Roebers (University of Bern)
8. *Games and favorable attitudes towards development*
Ana Lucia Petty (University of São Paulo)
Camila Folquitto (University of São Paulo)
Mariana Garbarino (University of São Paulo)
9. *The development of embodied cognition: The evocation of action representations by objects in children*
Lesley Baker (University of Victoria)
Jamie Bartfai (University of Victoria)
Ulrich Mueller (University of Victoria)
Michael Masson (University of Victoria)
Daniel Bub (University of Victoria)
10. *Can a 'what' be held morally responsible? – young adults' conceptions of a humanoid robot that causes harm*
Peter H Kahn, Jr. (University of Washington)
Takayuki Kanda (Intelligent Robotics and Communication Laboratories)
Hiroshi Ishiguro (Osaka University)
Brian T Gill (Seattle Pacific University)
Jolina H Ruckert (University of Washington)

Thursday—P.M.

Solace Shen (University of Washington)
Heather E Gary (University of Washington)
Aimee L Reichert (University of Washington)
Nathan G Freier (Microsoft)
Rachel L Severson (Western Washington University)

11. *The role of stimulus novelty in children's inflexible dimensional shift*

Gelareh Jowkar-Baniani (University of Toronto)
Mark A Schmuckler (University of Toronto)

12. *Motor, mental, language, emotional, and social development in very young children undergoing treatment for Non-CNS cancers*

Marc H Bornstein (National Institute of Child Health and Human Development)

13. *Systems and cascades in cognitive development and academic achievement*

Marc H Bornstein (National Institute of Child Health and Human Development)

14. *Adolescent self-regulation is predicted by an early frontal ERP component associated with disattending*

Christine L Lackner (Brock University)
Diane L Santesso (Brock University)
Jane Dywan (Brock University)
Terrance J Wade (Brock University)
Sidney J Segalowitz (Brock University)

15. *Preschoolers' narrative production and comprehension: How much do they really know?*

Lisa Connor (Lehigh University)
Ageliki Nicolopoulou (Lehigh University)
Aline de Sa (Lehigh University)
Andrea Nuschke (Lehigh University)

16. *Differences in theory of mind and pretend play associations in children with and without specific language impairment*

Melanie Stich (University Koblenz-Landau)
Carla Johnson (University of Toronto)

17. *The effect of genre on kindergarten teachers' bookreading styles*

Deborah Bergman Deitcher (City University of New York)
Helen Johnson (City University of New York)

18. *The role of executive functions and negative emotionality in children's adaption to school*

Regula Neuenschwander (University of Bern)
Marianne Röthlisberger (University of Bern)
Patrizia Cimeli (University of Bern)

19. *The role-play experience activates primary school children's mindreading in a communication task*

Fumikazu Furumi (Kyoto University)

20. *Pitting structure against function: The relative importance of affordances and functional identity for problem solving*

Sarah Bidmead (Florida Atlantic University)

Thursday—P.M.

Marissa Greif (Florida Atlantic University)

21. *Children's perception of religiosity*

Sara Jaffer (University of Toronto Scarborough)

Gelareh Jowkar-Baniani (University of Toronto Scarborough)

Mark A Schmuckler (University of Toronto Scarborough)

22. *The development of children's implicit racial attitudes*

Amanda Williams (York University)

Jennifer Steele (York University)

Stefania Durnate (York University)

23. *Cognitive development in the period of transition from proto-words to social language*

Tadashi Koyama (KobeGakuin University)

24. *The development of social perspective taking in contexts of social justice: How do adolescents perceive social group differences?*

Richard Rubenstein (University of Toronto)

Mary Louise Arnold (University of Toronto)

25. *Poster withdrawn*

26. *Measuring adult experiences of youth-adult partnerships*

Heather Ramey (Humber Institute for Learning and Advanced Technologies)

Linda Rose-Krasnor (Brock University)

27. *An assessment of the visual-proprioceptive integration threshold in children*

Mark Jaime (Dalhousie University)

Julie Longard (Dalhousie University)

Chris Moore (Dalhousie University)

28. *Using mimicry to increase pro-social behavior in preschoolers*

Charlene Parker (Dalhousie University)

Petra Hauf (St. Francis Xavier University)

29. *Impact of age and pubertal development on moral reasoning in adolescence*

Evelyn Vera-Estay (University of Montreal)

Miriam Beauchamp (University of Montreal)

7:00-7:30 PT02 Poster Session 2 Osgoode West

Poster Session 2

Posters in this session should be mounted at the end of Poster Session 1 (6:45). Authors will be present during the evening poster session (7:00–7:30). Posters may remain mounted after the session to allow viewing the following morning. Posters should be removed during the lunch break on Friday.

1. *Children prefer to acquire knowledge from speakers that provide sufficient information*

Randall L Gillis (University of Waterloo)

Elizabeth S Nilsen (University of Waterloo)

2. *Exploring narrative themes in children's writings and drawings: A longitudinal study of relations between symbolic systems*

Peter B Pufall (Smith College)

Thursday—P.M.

Christina Nelson (Smith College)

Katharine Wilson (Smith College)

Emma Coleman (Smith College)

3. *Children's emotional responses to moral transgressions: a comparison of self-reported emotion and facial expression*

Nick Hobson (University of Toronto Mississauga)

Tina Malti (University of Toronto Mississauga)

4. *Nuances in parenting and implications for intentional self-regulation and self-efficacy*

Jingtong Pan (Tufts University)

Jonathan F Zaff (Tufts University)

Keren Elkayam (Tufts University)

5. *Inferential functioning in toddlers in a problem solving task*

Elda Cerchiaro (Universidad del Magdalena)

Rebeca Puche (Universidad del Valle)

6. *Composition skills of children with ADHD: A computer-based intervention study to improve consideration of the reader's perspective*

Jayne Herman (University of Toronto)

Joan Peskin (University of Toronto)

Valerie San Juan (University of Toronto)

7. *Patterns of sibling imitation in early childhood*

Joanna Rosciszewska (Concordia University)

Brynheld Martinez (University of Rhode Island)

Nina Howe (Concordia University)

Hildy Ross (University of Waterloo)

8. *Employing information-based rewards to sustain preschoolers' intrinsic drive to learn*

Aubry Alvarez (Northwestern University)

Amy Booth (Northwestern University)

9. *Theory of mind and mental attentional capacity*

Keely Owens-Jaffray (Trent University)

Nancie Im-Bolter (Trent University)

10. *Sibling teaching of math concepts in early childhood: The role of contexts and goals*

Emmanuelle Adrien (Concordia University)

Stephanie Peccia (Concordia University)

Helena P Osana (Concordia University)

11. *Symmetry and asymmetry of power in sibling conflict*

Shireen Abuhatum (Concordia University)

12. *Perspective taking abilities in 4, 5, and 6 year olds: Can children understand ToM concepts embedded in books earlier than traditional ToM tasks show?*

Lindsay Hough (Lehigh University)

Ageliki Nicolopoulou (Lehigh University)

Thursday—P.M.

13. *The role of motor experience in cognitive development: Challenges and insights from atypical development*
 - Liliana Alvarez (University of Alberta)
 - Albert Cook (University of Alberta)
 - Kim Adams (University of Alberta)
14. *Is future thinking a distinct skill? Relations between future thinking, theory of mind, and executive function in preschoolers*
 - Laura Hanson (University of Ottawa)
 - Cristina Atance (University of Ottawa)
 - Sarah Paluck (University of Ottawa)
15. *Happy or sad: Priming basic emotions influences prosocial behavior in infants*
 - Whitney E Waugh (University of Pittsburgh)
 - Alyssa M Marchitelli (University of Pittsburgh)
 - Jesse Drummond (University of Pittsburgh)
 - Emma Satlof-Bedrick (University of Pittsburgh)
 - Celia Brownell (University of Pittsburgh)
16. *“Games Workshops” and psychopedagogical intervention on children with learning difficulties*
 - Shiderlene Vieira de Almeida (Instituto Nacional de Pós-Graduação e Eventos Acadêmicos)
 - Mara Lúcia Cordeiro (Instituto de Pesquisa Pelé Pequeno Príncipe)
 - Antonio Carlos Farias (Instituto de Pesquisa Pelé Pequeno Príncipe)
 - Maria Tereza Costa (Instituto de Pesquisa Pelé Pequeno Príncipe)
 - Leandra Felícia Martins (Instituto de Pesquisa Pelé Pequeno Príncipe)
17. *The role of caring in supporting teachers’ attention and responsiveness to the substance of students’ scientific thinking*
 - Jennifer Richards (University of Maryland)
 - Nancy Tseng (University of Maryland)
 - David Hammer (Tufts University)
 - Andrew Elby (University of Maryland)
18. *Using representational gestures to teach monolingual and bilingual children math*
 - Diana Hernandez (Northeastern Illinois University)
 - Theodora Koumoutsakis (Northeastern Illinois University)
 - Jennifer Ross (Northeastern Illinois University)
 - Michael D Weinstein (Northeastern Illinois University)
 - Ruth B Church (Northeastern Illinois University)
 - Saba Ayman-Nolley (Northeastern Illinois University)
19. *The role of fussing in infant communication*
 - Viktoria A Kettner (Simon Fraser University)
 - Jeremy I M Carpendale (Simon Fraser University)
20. *Parental scaffolding and children’s everyday helping*
 - Stuart I Hammond (University of Pittsburgh)

Thursday—P.M.

21. *A developmental study of regret and relief and their impact on the willingness to reconsider a choice*
Marianne Habib (Université Paris Descartes)
Grégoire Borst (Université Paris Descartes)
22. *The effects of labeling and nonverbal stimuli on children's cognitive flexibility on the dimensional change card sorting (DCCS) task*
Hsiao-Han Ma (Tzu Chi University)
Chi-Tai Huang (Chengchi University)
23. *Cognitive processing in avoidance false belief tasks - an eye-tracking study*
Susanne Grassmann (University of Groningen)
Bart Geurts (University of Nijmegen)
Paula Rubio-Fernández (University College London)
24. *Poster withdrawn*
25. *Executive functions and their differential contribution to sustained attention in 5-10 year old children*
Sarah Loher (Universität Bern)
26. *Development and evaluation of instructivist and constructivist approaches to early science teaching in Nanjing kindergartens*
Zhang Jun (University of Hong Kong)
27. *Promoting healthy development: Teacher beliefs and practices related to the health of children in their classrooms*
Helen L Johnson (City University of New York)
Leigh McCallen (The Graduate Center, CUNY)
Danielle Guttman (The Graduate Center, CUNY)
Rachel Esch (The Graduate Center, CUNY)
Rachel Feigenbaum (The Graduate Center, CUNY)
Patrick B Johnson (Dowling College)
28. *The effects of gesture and instruction style on learning and verbal imitation*
Christine Cusack (Northeastern Illinois University)

6:30-7:30 REC1 President's Reception.....Osgoode Ballroom

President's Reception

All conference attendees are invited to join us as Willis F Overton is presented the Jean Piaget Society Lifetime Achievement Award. This award is presented in acknowledgement of a distinguished body of scientific work that has, over a lifetime career, contributed significantly to our understanding of cognitive development, and in acknowledgement of major and continuing contributions made to the growth and success of the Jean Piaget Society. Following the brief award presentation, there will be plenty of time for mingling with old friends and new acquaintances. Appetizers will be served and a cash bar will be available.

Round Table Session 1

Kindergarten children's conception of historical temporal time

Meir Muller (University of South Carolina)

The purpose of this presentation is to describe the ways in which kindergarten children employ Piaget's three types of knowledge in constructing understanding of temporal time (exploring children's understanding of "a long time ago"). Data were collected from 16 kindergarten children at an independent Jewish elementary school about their experiences surrounding the study of the Jewish holiday of Passover. Data were collected through field notes, audiotaping, still photographs, children's concept webs, and semi-clinical interviews. The data were analyzed using domains and taxonomies. The greatest contribution of this study is likely the specificity with which it conveys the children's ability to use logico-mathematical knowledge. Analysis of responses found 11 ways in which children approached the topic using logico-mathematical thinking. A common finding of the study supports that when the topic of the children's study is contextualized in their lives the children's abilities to exhibit higher reasoning skills are stronger than would typically be predicted. An explanation of why a contextualized topic of study leads to adaptations of mental structures that enhances the children's ability to use logico-mathematical thinking will be discussed. Finally applications for the practicing educator will be described.

Children mastery of tool use by its function

Afra Hafny Noer (Universitas Padjadjaran)

Children learn to conquer her environment by learning social rules, including using tools. Everyday children surrounded by various tools and have to learn how to use tools appropriately. Toddler and children learn their environment through imitate adult models. How toddler and children use and operate tool according to its function and regards to the adult's model action. Observation is the main tools of this study. Child was asked to complete two different tasks and choose one tool from several tools provide, while an adult, as a model, complete the same task with the 'right' tool and 'false' tools in front of them. Children decision to use one tool instead of others and children decision-making processes were noted as the data. Two groups of eight 2-3 year old and eleven 4-5 year old were involved in this study. There is no significant different between this two age groups, both of this age-group only imitate adults action when using the suitable tools as its function. It is conclude that children aware of function of the tools and will not imitate adult action that is not suitable with tools function.

Rethinking slum's infants cognitive development

Julio Cesar Ossa (Universidad del Valle)

Mariela Orozco-Hormaza (Universidad del Valle)

Theoretical and methodological conceptions that understand infants' cognitive development as a changing process were used to analyze data from a longitudinal assessment study of infants' cognitive development. 110 infants from 0 – 12 months of age, who live in slums of Colombian cities, distributed in four groups – 0-3 (29), 3-6 (29), 6-9 (27), 9-12 months (25) – were tested during four months using two sub-scales of the Ordinal scales of psychological development (Uzgiris Hunt, 1975): development of visual pursuit and object permanence and development of operational causality. In order to investigate change, the microgenetic method was adopted, and concepts as variability and transition were used (Flynn & Siegler, 2007). Modifications in the application of the two sub-scales and in the methods of analysis allow us to present three types of performance patterns: mastering, exploratory and non-mastering. Markow's chains were used to identify transition patterns of infants' action programs through

Friday—A.M.

five trials and four applications and trends in the types of action programs, for each situation, in the four applications, for each age group. The variability of infants' patterns and the tendency over time to present mastering performance enables us to refute the idea of impaired cognitive development caused by poverty.

900-10:30 SY11 Symposium Session 11 Essex

Rethinking cognitive development according to Rudolf Steiner

Organizer: Marcelo da Veiga (Alanus University)

Organizer: Tania Stoltz (Federal University of Paraná)

Discussant: Marcelo da Veiga (Alanus University)

Discussant: Jost Schieren (Alanus University)

Waldorf Pedagogy is nowadays acknowledged as one of the most effective initiatives of reform pedagogy. Although it has a well-developed practice, there is a multitude of misunderstandings of its epistemological background. This epistemology of the curriculum is based principally on work by Goethe and Schiller, precursors to a broader view of science. Scientific advances especially in regard to relativism and quantum mechanics show that nature cannot be understood as solid material only but as energy that is in dynamic movement. In this sense, limits that we observe in the objects around us really are the results of limitations in our perception. Reality takes the form of the instruments that we use to measure it. If we constrain our cognition to the rational or to the perceptual domain, it is this reduced form of reality that we will have at our disposal. However, there is no theoretical model that encompasses all of reality -reality is always broader than a given model. It is much more complex than our thinking capacity and depends on our co-participation. The different theories of cognitive development can be seen as representative of our thinking development in a specific period of time and space. In the new Copenhagen explanation the knowledge that results from the employment of specific scientific tools is a true knowledge but always in relation to the use of these tools and in a space-time context. Thus, our cognitive constructions are telling us about a reality but this reality is bigger than our construction and is interactive. This understanding brings us to the question about different consciousness levels in cognitive development. We find the need of thinking about cognitive development in a broader view and beyond the material and visible reality although supported in science. This symposium aims to discuss aspects of Steiner's cognitive theory and the extent to which they are reflected in recent advances in science. In Steiner's theory this development consists of an access to deeper levels of consciousness and expresses itself in an ethic individualism where the individual logic is in harmony with the universal logic and has its starting point in the development of what Steiner calls intuitive thinking. The first study discusses the epistemic phenomenological theory underlying Waldorf education. The second deals with the Waldorf concept of learning and its relation to other constructivist theories. The third study works with self-centredness and altruistic tendencies in a sample of 521 adolescents from Waldorf and non-Waldorf schools. The fourth study analyzes childhood autobiographies as a tool to understand child development. Finally, the last paper presents a case study that discusses the possibility of development of experiential thinking in teacher training.

Friday—A.M.

Rudolf Steiner's epistemological approach and its consequences for Waldorf education
Marcelo da Veiga (Alanus University)

The cognitive concept of learning in Waldorf education
Jost Schieren (Alanus University)

Self-centredness in adolescents: An empirical study of students of Steiner schools, Christian academic high schools, and public schools
Axel Föller-Mancini (University of Witten/Herdecke)
Peter Heusser (University of Witten/Herdecke)
Arndt Büssing (University of Witten/Herdecke)

Childhood autobiographies as a tool to understanding child development
Charlotte Heinritz (Alanus University)

The possibility of developing experiential thinking in teacher training
Ulrich Weger (University of Kent)
Tania Stoltz (Federal University of Paraná)

9:00-10:30 SY12 Symposium Session 12Conference Room B

The complex relationship between judging, feeling and acting

Organizer: Maria Thereza Coelho de Souza (Universidade de São Paulo)

Organizer: Luciana Maria Caetano (Universidade Estadual de Maringá)

Discussant: Larry Nucci (University of California – Berkeley)

Using Piaget's affirmation that moral is the intersection between intelligence and affectivity as its basis, this symposium has as its main objective to discuss how feelings and judgments present themselves during different development moments, and how they are related in contexts in which DUTY is present. Taking Piaget's theorizing into account, the equation would assume this formulation he himself presented: 'To judge and to feel in order to act'. His thesis is that there would have a correspondence between affectivity and intelligence all through the development from birth unto adult life. As for actions of a moral nature, these too would be regulated by feelings and judgments, by reason and affectivity, therefore no strictly affective or strictly cognitive action can exist. Therefore, in the DUTY sphere, thinking, feeling and acting are intrinsically connected, and as unavoidable elements of moral action they present implications both for psychology and education. In order to contextualize the proposed subject, the paper titled "The complex relation between judging, feeling and acting: a Piagetian approach" (De Souza) approaches different psychogenetic perspectives to present different modes of conceiving the relations between feelings, judgments, and thoughts, from different mediations between individuals and the environment. The main objective is to discuss how feelings and judgments are present in different moments, and how they may be related to one another in situations in which duty is at stake. The second paper (Caetano) presents the results of a research about 164 teachers' moral educative conceptions that investigated the thoughts, feelings and judgments of these teachers about their educative relationships they establish with their students. The third paper (Ferminiano) presents data about "tweens" day-to-day economy and their usage of money. The subject of education and economic socialization is presented in this paper as a very contemporary model of thinking, feeling and acting, exploring the concepts of consumption and economic psychology. The last paper (Dell'Agli) presents a study that analyses will as an affective regulator in children with learning difficulties. For Piaget the cognitive dimension is characterized by the appearance of reversibility of thought and in the affective dimension by the will which he defined as a system that functions as a regulations' regulator.

Friday—A.M.

The complex relation between judging, feeling and acting: A Piagetian approach

Maria Thereza Coelho De Souza (Universidade de São Paulo)

Teachers' moral educative conceptions

Luciana Maria Caetano (Universidade Estadual de Maringá)

Education and economical socialization

Maria A Belintane Fermiano (Universidade de Campinas)

Will as an affective regulator in children with learning difficulties

Betânia Alves Veiga Dell`Agli (Universidade de Campinas)

9:00-10:30 SY13 Symposium Session 13 Conference Room C

Reaching the limits of the modern synthesis: Integrating development and evolution in developmental psychology

Organizer: Tyler J Wereha (Simon Fraser University)

The ultimate goal of early social cognitive development research is to explain the causal origins of what are taken to be uniquely human capacities for understanding the mind in the first year of life. Researchers investigating joint attention and false belief understanding are often interested in both the ontogeny and phylogeny of these capacities in humans as well as in other ape species. Unfortunately, these explanations might be limited due to the evolutionary framework used. When the neo-Darwinian modern synthesis (the meshing of Darwinian selectionism and Mendelian genetics) was formed by population geneticists, reliable development was simply assumed in order to simplify the modeling of traits. Essentially, the modern synthesis ignores the very developmental processes that give rise to the capacities psychologists wish to explain.

The purpose of this symposium is to discuss the integration of development and evolution and the implications for understanding the development of psychological capacities. Recent developmental systems views of evolution and discoveries in evolutionary developmental biology ("evo-devo") call into the question the coherence of removing development from evolution. Accordingly, more biologists and psychologists see evolution and development as two sides of the same coin. Fortunately, the limits of the modern synthesis and the need for more complex developmental evolutionary models have increasingly been recognized in psychology (e.g. Finlay, 2007; Gottlieb, 2007; Griffiths, 2007; Lewkowicz, 2011, Lickliter, 2008, 2009; Lickliter & Honeycutt, 2003; Moore, 2008; Ploegar, van der Maas, & Raijmakers, 2008; Racine, Wereha, & Leavens, in press; Spencer, Blumberg, McMurray, Robinson, Samuelson, & Tomblin, 2009; Wereha & Racine 2009a, b).

The speakers in this symposium will focus on various aspects of the problem of integrating development and evolution. This involves: providing the historical context to understand the current issues, including the fact that this is more a reintegration of development and evolution; addressing what evolutionary explanations entail; the limits of evolutionary explanations and the neo-Darwinian modern synthesis; the current popularity of nativistic explanations in social cognitive development research and their relation to a non-developmental evolutionary model; the need to focus on developmental process rather than simply developmental origins; and integrating the findings of epigenetics to take the dynamics of development seriously.

Friday—A.M.

Core knowledge, evolution, and development

David S Moore (Pitzer College)

Evolution, neo-Darwinism, and social cognitive development

Tyler J Wereha (Simon Fraser University)

Timothy P Racine (Simon Fraser University)

Avoiding the trap of extraordinary claims in developmental studies: A focus on process not origins

David J Lewkowicz (Florida Atlantic University)

Development as explanation: Exploring the dynamics of development and evolution

Robert Lickliter (Florida International University)

9:00-10:30 SY14 Symposium Session 14.....Windsor West

The role of executive function in rethinking cognitive development

Organizer: Lucy Cragg (University of Nottingham)

Organizer: Charlie Lewis (Lancaster University)

Discussant: Ulrich Mueller (University of Victoria)

Increasingly research on children's cognitive skills has implicated the role of domain-general skills under the banner of executive function. The skills of working memory, attentional flexibility, inhibitory control and planning correlate with each other and also with more domain-specific abilities like false belief. This symposium reflects upon the place of executive processes within current theory, by making a close methodological analysis of individual and collective skills. Paper 1 examines the nature of a single executive process, inhibitory control, in order to reveal the complexities of just one component of the executive system. They model different processes involved in different settings and test them in two types of procedure - response-given and open tasks. Their work shows 3-5 year old children perform very differently in these two types of task, thus indicating that we must understand different types of inhibition and prepotency, before we can begin to grasp the nature of each part of the executive system. Paper 2 considers how well measures of executive function tap the underlying constructs which they supposedly assess. Two issues are central. First, it explores a feature of work on executive skills that was very apparent in the 1990s, concerning how we measure executive skills, but which is less apparent in recent developmental work. It tailors Item Response Theory approaches to fit the data from different tasks to show that trial-by-trial analysis gives a better approximation of the data than simple aggregation of scores. Secondly, the analyses show that the order in which tests are presented has a clear influence on how related tasks are performed a week later. These results identify the complexities of measuring constructs like executive function. Paper 3 explores the relationship between executive function and other cognitive domains, investigating developmental trajectories of executive control over visual and motor systems in middle childhood. In light of differing developmental trajectories it proposes that development of executive function is best viewed as a change in the interaction between top-down and bottom-up processes and addresses how this fits with recent work on brain development.

Friday—A.M.

How are inhibitory demands created in two types of developmental task?

Andrew Simpson (University of Essex)
Kevin Riggs (University of Hull)
Daniel Carroll (University of Sheffield)
Sarah Beck (University of Birmingham)
Ian Apperly (University of Birmingham)

Rethinking tests of cognitive development: How should we measure and model executive function?

Charlie Lewis (Lancaster University)
Jiayi Liu (Lancaster University)
Karen Shimmon (Lancaster University)
Brian Francis (Lancaster University)

Executive function across cognitive domains

Lucy Cragg (University of Nottingham)

9:00-10:30 PS06 Paper Session 6..... Windsor East

Science Education

Chair: Susan L Golbeck (Rutgers, The State University of New Jersey)

The predictive power of fine-motor skills for academic achievement: A longitudinal study with kindergarten children

Claudia M Roebbers (University of Bern)
Marianne Röthlisberger University of Bern)
Patrizia Cimeli (University of Bern)
Regula Neuenschwander (University of Bern)
Katja Jäger (University of Bern)

In a longitudinal study including 179 kindergarten children, measures of fine-motor skills, non-verbal IQ, socio-economic background, and executive functioning (task of updating, verbal fluency, switching, and inhibition) were assessed. One year later, when children were in first grade, their academic achievement in terms of mathematics and literacy (reading and writing) was quantified and the predictive value of fine-motor skills for academic outcomes was investigated. Fine-motor skills were not only found to be highly stable over time, they were also found to be predictive for school achievement in general, and for mathematics and literacy alike. However, when non-verbal IQ and executive functioning were included into the step-wise regression analysis, the predictive power of fine-motor skills was negligible. Results will be discussed in terms of the assumed underlying processes that contribute to the substantial association between earlier fine-motor skills and later academic achievement.

Where does the energy of a balsa airplane come from? Using a learning progression to bring energy education to elementary school

Lindsey Evans (Clark University)
Marianne Wiser (Clark University)

Energy is enormously important in science and our everyday lives. Yet it is a great challenge for middle and high school students. We believe that a learning progression approach could alleviate those difficulties because it allows teaching about energy theoretically yet meaningfully from elementary school on. Our learning progression starts with young children's existing ideas and hypothesizes a succession

Friday—A.M.

of reconceptualizations that would give them a progressively more general and scientific grasp on the nature of energy and the important energy principles—conservation, transfer, and dissipation.

We will present findings from two studies:

1. Interviews with 3-5th graders about a variety of ideas about energy (i.e., what kind of things have energy, the relation of heat to kinetic energy, elastic energy) which informed the learning progression; and
2. “Teaching interviews” which investigated how students made meaning of lessons aimed at fostering the reconceptualizations specified in the learning progression.

The results are encouraging. E.g., most 3rd graders responded well to scaffolding and were able, within two lessons, to discuss the stored potential energy in a twisted rubber band in relation to the movement of the plane it powered. This suggests that energy can be learned at a theoretically meaningful level early on in schooling.

Developing epistemological understanding across scientific and social domains

Kalypso Iordanou (Neapolis University Pafos)

This study examines the effect of an intervention based on argumentation on the development of students’ epistemological understanding in the physical science and social science domains. Forty sixth graders (20 in the science and 20 in the social condition) participated in computer-supported dialogic activities over 13 sessions, while 18 other sixth graders served in a control (non-intervention) condition. Experimental students were randomly assigned to one of two conditions: (a) the social condition or (b) the science condition. The two intervention conditions were identical except for the topic (Homeschool or Dinosaurs’ extinction). Students’ epistemological understanding was assessed through individual interviews based on a social science scenario and a physical science scenario, questions about the source of knowledge, and a paper-and-pencil instrument (Kuhn, Cheney & Weinstock, 2000). Evaluativist positions became more prevalent at the final assessment, compared with the initial assessment, but only in the domain of the intervention condition. In addition, differences were identified across knowledge domains regarding the question about the source of knowledge. Results show that an intervention based on argumentation activities is a promising pathway for the development of epistemological understanding.

Examining children’s understanding of direction through the use of gears

Hebbah El-Moslimany (Rutgers, The State University of New Jersey)

Susan L Golbeck (Rutgers, The State University of New Jersey)

Children learn through their interactions with the physical world, and scaffolding provided by the social world (Vygotsky, 1978). These interactions begin at birth and understanding of physical objects is evident quite early. While the foundations for understanding the movement of objects emerges during infancy problems in the three dimensional real world presents many challenges for the young thinker. In the current study, a task was created using gears on a board to explore children’s understanding of causality of movement (or direction of movement). It has been shown that some elementary aged children think adjacent gears move in the same direction, we wondered when children begin to understand that adjacent gears actually move in an opposite direction? Prior to understanding these patterns of movement children were expected to be able to duplicate the arrangement of gears in a static situation. It was also expected that children would benefit from simple guiding questions from an adult. Such questions were expected to serve as a scaffold.

Friday—A.M.

Opening up the STEM Pipeline: What young adolescents think about engineering

Sybillyn Jennings (Russell Sage College)

Julie Guay McIntyre (Russell Sage College)

When are girls and boys open to considering engineering as a future career, and which aspects of engineering fit with their sense of self? What young adolescents think about engineering depends upon how you ask the question and when you ask it. Past surveys have questioned high school and college students. This pre-post study focused on girls and boys in late childhood and early adolescence (197 fifth- and eighth-grade students) to determine how their orientation to engineering may lead them to reject or to consider the possibility of engineering in their future. We used different elicitation prompts to better understand what young adolescents thought, examining what they knew about engineering, their sense of efficacy in regard to engineering, and what did and did not appeal to them about this field. Participants in the experimental group who watched a 10-min video showing adolescents learning from engineers how to purify water ("Clean Water," www.discoverengineering.org) identified positive aspects of engineering in their written responses. "Helping," a concept that connects agency and communion, was recognized as an aspect of engineering on two measures. Significantly, girls more than boys, wrote about "helpfulness," and fifth-grade girls were more open to considering engineering than eighth-grade girls.

9:00-10:30 PS07 Paper Session 7Conference Room DE

Social Interaction, Agency, and Autonomy

Chair: Tobias Krettenauer (Wilfred Laurier University)

Pathways to parental knowledge in middle childhood

Leon Kuczynski (University of Guelph)

Izabella Wojciechowska (University of Guelph)

Anna Dawczyk (University of Guelph)

Robyn Pitman (University of Guelph)

Parental knowledge of children's thoughts and activities is associated with positive and protective outcomes. Stattin and Kerr (2000) found that children's self-disclosure was a better predictor of parents' knowledge than monitoring. However, how parents gain knowledge of their children's out of sight behavior remains unanswered. The purpose of this study was to provide a comprehensive description of the processes underlying parents' acquisition of knowledge during middle childhood and early adolescence. We were interested in 1) parents' strategies for gaining knowledge and 2) appraisals and attitudes towards their child's out of sight activities and information management. Five major themes, conceptualized as pathways to parental knowledge, were found. These pathways were identified as relational, autonomy supporting, child voluntary disclosure, observational, and external control. The findings broaden the understanding of the ways that parents gain knowledge beyond the external control conception of monitoring. In particular, indirect approaches such as the relational and autonomy pathways have not been previously explored but are consistent with theories that consider child agency and relational contexts. The analyses of parental appraisals of children's out of sight behaviour and information management indicated three themes, comfort with ambiguity, realistic/ambivalence regarding partial knowledge and discomfort with ambiguity.

Friday—A.M.

Parents' experience of contradictions while parenting during middle childhood

Anna Dawczyk (University of Guelph)

Leon Kuczynski (University of Guelph)

This study explored the phenomenon of contradiction as a process of change in parent-child interactions during middle childhood. Parents constantly experience contradictions because children's development may lead to new or surprising situations that fail to fit parents' current ways of thinking about their children. According to the dialectical perspective of transactional processes, contradictions provide opportunities for creating new meanings that instigate qualitative change (Kuczynski & Parkin, 2007; Valsiner, 2006). Forty families with children aged 9-13 participated in open-ended interviews that were subjected to thematic analysis. Five types of contradiction were identified: ambiguity, ambivalence, parent-child conflict, expectancy violations, and intrapersonal opposing ideas. Contradictions were frequently accompanied by emotions including surprise, sadness, anxiety, stress, and anger that were interpreted as signs of dialectical tensions. The source of contradictions were found to emerge from within the parent or externally from the of children's behaviour. Parents processed or managed contradictions using several strategies: description, information gathering, and action. Analyses of the outcomes of episodes of contradiction found that very few were fully resolved, indicating that development is a continuous process. Contradictions allow for opportunities to create new meanings that temporarily resolve contradictions and set individuals into new trajectories for interactions.

Attaining transformational impact: A youth systems approach to youth development research and program design

Jonathan Zaff (Tufts University)

Elizabeth Pufall (Tufts University)

Emily S Lin (Tufts University)

Jen Elise Prescott (Tufts University)

This paper offers an applied expression of developmental systems theory (Lerner, 2002) and other relational theories (Overton, 2010); what we term youth systems. We argue that youth systems are viable strategies for addressing the low, stagnant graduation rates in the United States (Heckman & LaFontaine, 2007) and that public policies and programs should attend to this framework. Recently, youth systems in the form of youth-focused community collaborations arose in several urban communities across the United States with the intention of improving graduation rates among youth. To further the knowledge on how youth systems develop and their impact, we are conducting a three-year longitudinal study examining four community collaborations (Somerville, MA, Boston, MA, East Durham, NC, and New Orleans, LA). Drawing upon our research in these communities, in this paper we will provide a definitional discussion of a youth system, a theoretical analysis of why a youth systems approach is most valid for promoting positive youth development, short case studies of youth systems in practice derived from research we are conducting, and next steps for research for better understanding how youth systems develop.

Friday—A.M.

Balanced knowledge: Exploring symmetrical and asymmetrical relationships in a service-learning partnership

Bryan Sokol (Saint Louis University)
Megan McCall (Saint Louis University)
Janet Kuebli (Saint Louis University)
Anna Sandidge (Saint Louis University)
Kelly McErnerney (Saint Louis University)

Service-learning is a powerful educational tool that has the potential to transform students, institutions, and communities. The transformation, however, depends on the quality of relationships that emerge between the stakeholders of the service-learning partnership. We present a pilot-study of a peer-mentoring literacy program, Readers 2 Leaders, that grows out of a conceptual framework attempting to reverse the power asymmetries that emerge between “givers” and “receivers” in service relationships.

Parental judgments about early temperament and social attachment

Teresa Blicharski (Université de Toulouse le Mirail)
Monya Bouteria (Université de Toulouse le Mirail)
Géraldine Bouchet (Université de Toulouse le Mirail)
Sylvie Duthu (Université de Toulouse le Mirail)
Sylvie Bourdet Loubère (Université de Toulouse le Mirail)

Contemporary attachment theory argues that parents unconsciously transmit to their offspring patterns of attachment bonds similar to what they had learned as children (Bretherton, 2000). Parents’ knowledge of the child derives from a history of intimate interpersonal interaction as a privileged social partner. Parent’s emerging conceptions of child dispositions influence their participation as social partners and shape the child’s psychosocial adaptation. Home visits were realized with 74 families of children aged between 24 and 36 months. Both parents completed a Quality of attachment questionnaire (Waters & Deane, 1985) and the Infant Characteristics Questionnaire (Bates et al., 1999). We employed a descriptive typological approach to compare parental representations of attachment and temperament characteristics. Correlations between attachment and temperament dimensions were calculated separately for parents as a function of perceived attachment and temperament style. Findings are analyzed in terms of congruence of mother and father representations of child adaptation. Understanding consensual construction of parental judgments and assessing the impact of such convergent representations on development of child self-regulation and child autonomy will furnish a theoretical bridge between socially constructed attachment relationships and emerging personality characteristics during early childhood.

10:30-10:45 break

10:45-12:00 PLO3 Plenary Session 3Osgoode East

Understanding the ecologies of human learning and the challenge for education science

Carol Lee (Northwestern University)

Drawing from current work in human development, neuroscience, cognition, cultural psychology and studies of biological systems, this presentation argues for a dynamic view of human learning and development, rooted in both human biology and culture. The presentation further examines how such an integrated framework for understanding human learning and development can inform work in education in both formal and informal settings. This framework incorporates three big orienting ideas drawn from

Friday—P.M.

across these fields: (1) the intertwining of culture and biology in human development, (2) adaptation through multiple pathways, and (3) interdependence across levels of context.

12:00-1:15 Lunch

12:00-12:30 MEM Annual Members Meeting.....Osgoode East

Annual Members Meeting — all are welcome to attend

Agenda

1. Opening Remarks — Philip David Zelazo, President
2. Approval of minutes of the 2011 Annual Members Meeting
3. Financial Report
Cynthia Lightfoot, Treasurer
Stephanie Carlson, VP Program Arrangements and Funding Support
4. President's Annual Report—Philip David Zelazo, President
Special Announcements:
 - Recipients of the Peter Pufall Travel Awards
 - Donated film series now available (Keith Alward)
5. Local Arrangements Report—Stacy Espinet, Coordinator of Local Arrangements
6. JPS 2013 update: Ulrich Mueller, VP Meeting Planning
7. New Business

1:15-2:45 IS03 Invited Session 3.....Essex

Social change and human development: A theory and supporting data from around the world

Organizer: Patricia M Greenfield (UCLA)

Each presentation will use Greenfield's (2009) Theory of Social Change and Human Development as a framework to examine the relationship between global patterns of sociodemographic change, cultural change, and human development in different communities, countries, and continents.

Friday—P.M.

Changing conceptions of gender roles and cross-sex relations in Mexico: A natural experiment on the impact of high school

Adriana M Manago (University of Michigan)

Cultural change in the United States: Effects of the Great Recession on high school students' values and behaviors

Jean Twenge (San Diego State University)

Ramya Sastry (San Diego State University)

Feeding infants and children in Burma and the United States: Cultural concepts, cultural practices, and social change

Seinenu M Thein (UCLA)

Patricia M Greenfield (UCLA)

Child sleeping arrangements and shifting cultural values in Japan

Mina Shimizu (Pennsylvania State University)

Heejung Park (UCLA)

1:15-2:45 SY15 Symposium Session 15.....Conference Room B

Analysis of performance patterns on executive function tasks: Evidence of different profiles in cognitive development

Organizer: Klara Marton (The Graduate Center of CUNY)

Discussant: Naomi Eichorn (The Graduate Center of CUNY)

We present four studies that move beyond basic measurements of executive function (EF) by analyzing performance patterns on EF tasks. Our tasks include classic measures of inhibition, such as the Dimensional Change Card Sort (DCCS) and Stop Signal Task, as well as novel tasks with controlled manipulations targeting discrete contributions of specific EF processes. Through our analyses, we compare performance profiles in typically developing children and children with speech-language disorders. Our specific aims were to: (1) examine how traditional measures of inhibition compare with each other; (2) identify specific performance measures that reflect individual differences; and (3) compare performance profiles of children differing in age and speech-language status.

Experimental tasks varied but all targeted specific EF components and analyzed performance patterns using approaches designed to identify subtle differences. In Paper 1, we present data from preschoolers with and without stuttering disorders who completed a computer-based version of the DCCS. Results revealed certain differences in performance that appeared to be related to age (e.g., lack of asymmetrical switch cost) and some differences related to clinical status (e.g., slow automatization of learned responses and perseverative errors). In Paper 2, we describe results for school-age children with and without specific language impairment (SLI) on several traditional inhibition tasks. Our findings showed different performance profiles for the two groups, although these differences depended on the specific form of inhibition represented by each task. Our third paper focuses on an original on-line information processing battery with controlled manipulations to measure contributions of inhibition and attention control in children with SLI and in age- and language-matched controls. We present results from two subtests. The first targeted ability to process repeated items in the context of distracting stimuli, the second targeted ability to process stimuli in conflict situations where previous targets became distractors. We observed subtle differences in performance patterns, with certain differences (e.g., response time in conflict situation) related to age, but other differences (e.g., number of repetitions required for strong

Friday—P.M.

WM representation, extent of switch cost) related to language status. In our final study, we used the same participants and stimuli described in Paper 3, but focused on performance monitoring in conflict situations and following errors. As in the previous studies, performance patterns distinguished the groups, with language-impaired children showing no RT increase when encountering conflict or after inaccurate responses, suggesting less efficient ability to detect conflict and monitor performance.

Friday—P.M.

Patterns of inhibition control in preschool children with and without fluency disorders

Naomi Eichorn (The Graduate Center of CUNY)

Inhibition control in children with and without specific language impairment (SLI)

Klara Marton (The Graduate Center of CUNY)

Luca Campanelli (The Graduate Center of CUNY)

Jessica Scheuer (The Graduate Center of CUNY)

Jungmee Yoon (The Graduate Center of CUNY)

Avoidance of interference in children with and without specific language impairment (SLI)

Klara Marton (The Graduate Center of CUNY)

Luca Campanelli (The Graduate Center of CUNY)

Naomi Eichorn (The Graduate Center of CUNY)

Patterns of information monitoring in school-age children with and without SLI

Jessica Scheuer (The Graduate Center of CUNY)

Jungmee Yoon (The Graduate Center of CUNY)

1:15-2:45 SY16 Symposium Session 16..... Conference Room C

Critical exploration in early pre-service teacher education—transformations in thinking about teaching

Organizer: Mary Kay Delaney (Meredith College)

Organizer: Susan Mayer (Brandeis University)

Discussant: Susan Mayer (Brandeis University)

This symposium focuses on the emerging work about the potential for critical explorations (Duckworth 1996, 2001; Inhelder 1974) to provide windows into pre-service teachers' existent and evolving ideas about teaching and learning and to immerse pre-service teachers in the complexity of teaching and learning from the beginning of a program. A collection of stories about the process of Critical Explorations in teacher education, the symposium includes the perspectives of professors seeking as teachers to understand pre-service teachers' incipient ideas about teaching and learning and pre-service teachers' frustrating struggles with and joyful discoveries related to understanding their particular students' understandings. Often pre-service teachers begin teacher education with popular images of teaching and learning. These images are often static and one-dimensional with teachers as heroes and heroines who rescue students. Many beginning pre-service teachers understand teaching as telling, learning as listening, and content knowledge as unproblematic.

Once engaged in Critical Exploration projects, pre-service teachers struggle to listen, to make sense of the learner's understandings, to ask questions that compel, to design experiences that engage. In the process, the pre-service teachers begin to question previously held notions and their understandings open up—resulting in more complex, rich understandings of teaching, learning, curriculum, content knowledge, and human potential. Their reflections on the dramatic shifts in their organizing conceptual schemes provide insights into the role of experience within adult cognitive development. By telling the stories of some of these changes in thinking about teaching and learning, these papers describe the unique contribution of and potential for Critical Explorations in teacher education. Each work draws from and builds on the work of Duckworth, who has extensively explored and theorized the adaptation of Genevan research method to pedagogical purposes (1996, 2001). The first paper describes the role of Critical

Friday—P.M.

Explorations in a general pedagogy course and effects on pre-service teachers' understanding of teaching. The second paper describes a Critical Exploration project about a 5-year old's ideas about temperature and heat and the pre-service teacher's changes in understandings; the third paper describes a pre-service teacher's evolution as she and a 6-year old learner explored why leaves changed color; and the fourth paper describes and analyzes the experience of Elementary school student-teachers in a Social Studies methods course organized around a multiple part assignment which requires that these student-teachers try to coordinate the complex set of skills, knowledge, and dispositions that we refer to as Critical Exploration.

Two-level critical explorations: tracing changing ideas about teaching and learning among pre-service teachers

Mary Kay Delaney (Meredith College)

What makes leaves change color? A critical exploration

Beth Cockman-Wood (Meredith College)

The role of experience in a young learner's understanding of concepts related to heat

Hayden Miller (Meredith College)

Coordinating critical explorations in elementary social studies

William Shorr (Independent Scholar)

1:15-2:45 SY17 Symposium Session 17Windsor West

Representations, concepts and flexibility

Organizer: Daniel Carrol (University of Sheffield)

Organizer: Lucy Cragg, (University of Nottingham)

Discussant: Charlie Lewis (Lancaster University)

The ability to flexibly adapt behaviour to changing task situations undergoes significant development during childhood, with a noticeable shift in ability at 3-4 years. This is often measured by children's ability to sort objects by different criteria, typically colour and shape. The required responses for different task situations are thought to be contained in representations known as task or goal sets, which contain the 'task rules', (e.g. if red, do x, if blue do y). Developmental improvements in flexibility are often attributed to a change in the way task rules are represented or to the relative strength of task representations. The papers in this symposium use novel methods to explore the nature of task representations and the impact this has on children's cognitive flexibility, influenced by research on selective attention, flexibility and categorization in both children and adults. Paper 1 considers precursors to cognitive flexibility, investigating the relationship between selective attention and rule switching. Without selective attention demands, 2-year-olds could switch successfully. When both were combined however, 2-year-olds performed at chance level, 3-year-olds perseverated on the initial rule, and 4-year-olds switched successfully. Findings are discussed in relation both to the early emerging skills that contribute to the development of CF, as well as to the likely crucial role played by goal representation. Paper 2 explores the influence of the number of different items to be sorted on children's cognitive flexibility. When the task rule changed on a trial-by-trial-basis, 4- to 11-year-olds performed significantly better with a large set size of items than a small set size. Explanations are considered either in terms of changes in representations or simple low-level priming effects. Finally, Paper 3 investigates the relationship between cognitive flexibility and conceptual development by comparing preschoolers ability to sort either based on their perceptual features or category membership. Results pointed to a strong asymmetry in accuracy switch costs, with conceptual costs being markedly higher than perceptual costs across 3- to 5-year-olds. This pattern of perseverative errors

Friday—P.M.

suggests that processing of perceptual information remains more robust than processing of conceptual information at least until five years of age.

Precursors to cognitive flexibility: Rule switching in two-year-olds

Daniel Carrol (University of Sheffield)

Emma Blakey (University of Sheffield)

Vlad Onetiu (University of Sheffield)

Stephanie Weyh (University of Erfurt)

Representations or priming? Understanding set-size effects on cognitive flexibility

Lucy Cragg, (University of Nottingham)

What does perseveration tell us about conceptual development?

Anna Fisher (Carnegie Mellon University)

1:15-2:45 PS08 Paper Session 8..... Windsor East

Morality I

Chair: Larry Nucci (University of California, Berkeley)

A multi-dimensional approach to the study of moral reasoning development in adolescents

Miriam H Beauchamp (University of Montreal)

Julian J Dooley (Edith Cowan University)

Adequate socio-moral reasoning (SMR) capacities are critical when considering appropriate courses of social action. Socio-emotional aspects of SMR are related to both positive (e.g., prosocial) and negative (e.g., aggression) social behaviour (Malti et al., 2009, 2010); however, it is unclear how SMR relates to other cognitive skills when considered in a multi-functional approach. Further, the assessment of SMR has sometimes been limited by the introduction of cognitive confounds (Dooley et al., 2010). A novel task (So-Moral) was used to examine the relationship between SMR, IQ, theory of mind, empathy, and antisocial traits. Adolescents ($n=98$, $M=14.5$, $SD=2.6$ years) were assessed on 16 self-referential visual moral dilemma vignettes and their answers were coded according to a developmental scale (So-Mature). They also completed a battery of cognitive and social measures. The results indicate that the So-Moral task is moderately associated with non-verbal abilities, but not reducible to intelligence. Positive correlations were found between theory of mind, empathy and moral maturity and the relative contribution of these socio-cognitive functions is discussed. Aggressive traits were negatively correlated with moral maturity suggesting that poor SMR may be a risk factor for maladaptive behaviour in adolescence, while prosocial traits may serve a protective function.

The good, the bad, and the family: Children's views of autonomy, interdependence, rights, and instrumentalism in traditional Africa

Kathryn Day (University of California, Berkeley)

This paper examines the interplay between African children's and adolescents' views on independence, agency, rights, and social traditions in remote rural villages. Their Zulu culture has maintained strong values of family interdependencies; now, schooling has brought social change. In a study of conceptions of the right to literacy in rural Africa with participants from ten to twenty-one years of age, it was found, in hypothetical conflicts with parental authority, that many children and adolescents would choose to subordinate their right to learn to obeying their parents, even though all of them thought that it would be wrong for their parents to forbid them to learn; that they hold autonomous feelings of duty

Friday—P.M.

towards their families, but also legitimize parental expectations about children which cast the latter as instruments; that they search for ways to coordinate their values and behavior so that they can uphold traditional social hierarchies while asserting their rights; and that they sometimes cast their rights in the context of increasing their capacities for service to others. These social interactions do not fit the model of collectivism in which individuals simply assume their roles; nor are respect and obedience always interpreted in the same light.

Relations between distributive decisions and facial recognition of emotions in children of 5 to 9 years old: Cognitive development and neuroanatomical integration

Juan José Giraldo-Huertas (Universidad de la Sabana)

Maria Fernanda Quiroz-Padilla (Universidad de la Sabana)

Recent studies suggest the need to keep searching for a relationship between emotional identification skills (i.e., empathy) and distributive decisions on goods between two or more individuals. In addition to behavioral analysis, recognition of a social brain allows a more detailed into evolutionary basis of skills for cooperation and other prosocial behaviors. Therefore, is possible a search for evidence of a possible link between skills of emotional identification and distributive behavior in experimental situations, through integration of cognitive and neuroanatomical explanation in cognitive neuroscience. The analysis of results on facial recognition of emotions (FRE) and distribution of items (stickers of happy faces) depending on the age of the participants, report a tendency that indicates a better performance on the task of FRE and stickers increased delivery at higher age. Regarding gender, there were no significant differences in performance or facial recognition of emotions, or the distribution of stickers. These results suggest a relationship between age, FRE and prosocial distributive behaviors, which allows a special discussion on neuroanatomical explanation of processes of socialization and neurological development in children.

Children and adolescents' moral evaluation of cyberbullying events: A cross-cultural comparison between a North American and a Latin American sample

Carlos Gomez-Garibello (McGill University)

Sylvanna Vargas (McGill University)

Shaheen Shariff (McGill University)

Victoria Talwar (McGill University)

There has been increased concern about how new technologies affect social relationships among children and adolescents. Particularly, cyberbullying is of significant interest to many researchers around the world. Nevertheless, there is limited evidence in the field exploring how children and adolescents evaluate these events and what type of online situations they classify as "bullying". Similarly, few studies have compared how cultural context can affect children and adolescents' perceptions of cyberbullying. The current study examined children and adolescents' moral evaluations of cyberbullying events and other online situations. Furthermore, the study aimed to understand which aspects of online events children consider crucial to classifying a bullying episode. The influence of cultural context was also analyzed, both in regards to children's perceptions of cyberbullying and their mechanisms of moral disengagement. Findings suggest that regardless of personal experience with cyberbullying, children and adolescents tend to evaluate cyberbullying events as serious and more negative, particularly in regards to situations displaying power imbalances or lying behaviour. Moreover, results indicate that girls are more severe in evaluating cyberbullying events than boys. Results from this study could be influential in educating prevention and intervention programs.

Friday—P.M.

How do immigrant youth learn to resolve conflicts with their U.S. born peers via text-messages?

Luka Lucic (Pratt Institute)

Building upon recent work that defines development as a continuous process of sense-making situated within a cultural and historical context (Nelson, 1997; Nelson & Daiute, 1997; Daiute & Lucic, 2010; Bruner & Haste, 2011, Lucic, forthcoming) this paper explores how immigrant youth growing up in New York City gradually learn to resolve conflicts and enact affect in narratives aimed at making sense of technologically mediated interpersonal interactions with their U.S. born peers. Forty-four youth (ages 15-19) who participated in this study were involved in a quasi-experimental research condition which engaged them in the process of sense-making through writing and crafting projective narratives toward a vignette depicting text-message mediated interpersonal interactions. Extending on prior socio-linguistic and developmental research (Labov & Waletzky, 1997; Daiute & Nelson, 1997) answers to three questions relating to the vignette are analyzed to highlight enactment of emotions and conflict resolution by immigrant youth in interactions with their U.S. born peers. Data show that significantly higher use of emotions by U.S. born youth gradually scaffolds the use of emotions by immigrant youth who, over time, learn to enact emotions in order to relate and resolve conflicts in bi-cultural interactions.

1:15-2:45 DS02 Discussion Session 2Conference Room DE

Developing interest: Research results and questions

Organizer: K Ann Renninger (Swarthmore College)

Participants:

Jacquelynne S Eccles (University of Michigan)

Barbara Schneider (Michigan State University)

Alanna Epstein (University of Michigan)

Judith Harackiewicz (University of Wisconsin)

Chris Rozek (University of Wisconsin)

Chris Hulleman (James Madison University)

Janet Hyde (University of Wisconsin)

Christopher Y Tibbetts (University of Wisconsin)

Suzanne Hidi (University of Toronto)

Interest has repeatedly been found to affect learning, and to significantly influence attention, goal setting, and self-regulation (Hidi & Renninger, 2006; see Harackiewicz et al., 2008). As Dewey (1913) suggested, when interest is present, effort follows. Despite powerful evidence linking interest to learning, however, the processes that underlie the development of interest are not well understood. The relation between person and environment appears to be critical (e.g., Eccles & Midgley, 1989; Renninger, Hidi, & Krapp, 1992). The potential for interest is described as being in the person, and the content and the environment define the direction and development of interest (Renninger & Hidi, 2011). A complication is that interest can develop, but it can also fall off, go dormant, or disappear altogether (Bergin, 1999).

In this discussion session, we consider current thinking about how to enable triggered interest to develop: what data suggest about the roles of knowledge and value, external structures, and rewards as supports for developing interest. Four presentations will provide the basis for participant and audience discussion. The first presentation will describe findings from an investigation into the roles of families, schools, and prior experience in the development of both interests and broader subjective task value. The second presentation will report on an experimental study of a multi-pronged intervention to promote utility value for mathematics and science courses for high school students, suggesting that a relatively modest inter-

Friday—P.M.

vention with parents can influence their teens to develop interest and make informed course selections. The third presentation will describe a quasi-experimental study of undergraduate students' interest for summer research in a STEM laboratory that points to the importance of encouraging learners with less-developed interest to revisit more general conceptualizations as a support for interest development. The final presentation will summarize findings from neuroscience relevant to the role of rewards in interest development. Findings from this work suggest that in earlier phases of interest, support to engage may require rewards, whereas in later phases of interest, seeking behaviors could be said to provide their own rewards.

Each presentation will include a description of how interest is conceptualized and operationalized, the role of individual difference in the development of interest, and the participant's suggestions for future research on how and why interest develops and deepens. Participants will exchange papers prior to the session and be ready to think with the audience about their relation. The session organizer will facilitate discussion.

3:00-4:15 PLO4 Plenary Session 4 Osgoode East

The sensory-motor dynamics of early word learning

Linda Smith (Indiana University)

The visual world is cluttered with many targets and many distractions. Yet very young children readily learn object names from the co-occurrences of hearing spoken names with such cluttered scenes. Mapping an as-yet unlearned name to the right referent requires selecting and stabilizing attention on attention on the intended referent in the scene. This talk will present new evidence on how young learners solve these problems through an embodied attentional system that involves hands, heads, and eyes. More specifically, the talk will present evidence from dynamically dense and multimodal measures that show: (1) how toddlers through their own hand, head and eye movements select and stabilize visual attention on a selected target; (2) how toddlers' sensorimotor activities significantly reduce visual clutter and competition in the visual field, and in so doing support word learning; and (3) how parents and toddler form a complex system of dynamically coupled hand, head, and eye movements so as to achieve tightly coordinated visual attention.

4:30-5:45 SY18 Symposium Session 18 Essex

Exploring space – experiencing development: Seminar participants respond to space, Piaget, Euclid and each other

Organizer: Elizabeth Cavicchi (MIT)

Discussant: Eleanor Duckworth (Harvard Graduate School of Education)

Observing his infants when a toy disappeared from view, Piaget discerned how their explorative actions in going after it were involved in developing their understanding of space. This symposium documents a similar process for adult learners, where understanding develops as they participate in explorative activities with space and each other. Piaget's findings about development and his clinical method underlie the pedagogy of "critical exploration in the classroom" that Eleanor Duckworth developed. During critical explorations, learners are encouraged to explore subject matter by their own curiosity and resourcefulness, like Piaget's baby. Teacher and learners facilitate individual and collective processes of developing understanding, with the attendant confusions, doubts, reversals, and realizations. Curriculum emerges through spontaneous interactions among participants with complex phenomena, materials or problems. Experienced teachers trust – and recurrently observe – that learners uncover foundational relationships

Friday—P.M.

characteristic of the subject matter and build understandings that are personally meaningful and collectively shared.

Space, as learners encounter it directly, along with assigned readings from Euclid, Aristarchus, Galileo, Piaget, Einstein and others, figures as the theme for the semester-long university seminar in critical exploration that is the basis of these presentations. Yan Yang describes how students' close reading of Piaget on his infants' development of object permanence provided grounding for actual hiding games with a real baby whom they invited to class! Mackenzie Hird, Brian McCarthy, and Zengxu Yang demonstrate geometric arguments they developed in response to Euclid by exploratory iterations that echo David Hawkins' 1965 essay "Messing About in Science". Combining fun with the rigor of becoming their own "Euclidean Police", they constructed large-scale geometrical figures outside. Inspired by these experiences, they created an educational video: "Playball: The House that Euclid Built", where Euclid comes to life, empowering a baseball team! Houman Harouni and Amanda Pillsbury relate how personal observations of the moon evoked uncertainty and curiosity from students about what goes on in the sky. Seeking to envision spatial relations between distant objects and themselves on earth, students moved a ball earth, moon, and their bodies around a spotlight sun in the darkroom, collaborated in diagramming their ideas on the blackboard, then went outdoors to observe again. Together with these students, instructor Elizabeth Cavicchi reflects on participants' mutual trust, synergistic development of understandings of space and each other, and aspirations for making exploration accessible to others through learning and teaching. Seminar participants describe their experience as transforming their relationships with space and the world.

Friday—P.M.

Critical exploration with space as a seminar experience

Elizabeth Cavicchi (MIT)

Reading Piaget; playing with baby; noticing our confusions and developments

Yan Yang (Harvard Graduate School of Education)

Messing about with Euclid

Mackenzie Hird (MIT)

Brian McCarthy (MIT)

Zengxu Yang (Tufts University)

Looking for the moon outdoors; indoor explorations of its spatial relations with observers

Houman Harouni (Harvard Graduate School of Education)

Amanda Pillsbury (Harvard Graduate School of Education)

Developing in relation with space, each other, learning and teaching

Amanda Pillsbury (Harvard Graduate School of Education)

Elizabeth Cavicchi (MIT)

Houman Harouni (Harvard Graduate School of Education)

Mackenzie Hird (MIT)

Brian McCarthy (MIT)

Yan Yang (Harvard Graduate School of Education)

Zengxu Yang (Tufts University)

4:30-5:45 SY19 Symposium Session 19.....Conference Room B

Measuring children's understanding of scientific concepts using Skill Theory

Organizer: Henderien Steenbeek (University of Groningen)

Organizer: Steffie van der Steen (University of Groningen)

Discussant: Marc Schwartz (University of Texas)

Standardized test scores and grades may not always be accurate indicators of an individual's change in understanding. This symposium presents a fairly new, micro-developmental approach to study the development of children's understanding within the domain of science. The collective goal of the presented studies is to obtain a deeper knowledge of how the developmental process of children's understanding of scientific concepts takes place, using diverse research designs.

In the first talk of this symposium, Rappolt-Schlichtmann and Daley discuss the overall potential of an universally designed web-based science notebook on supporting the development of students' concepts of magnetism and electricity, and a micro-developmental approach to explore the impact of the notebook's contextual support. In the second talk, Doucerain and Schwartz provide an in-depth analysis of the development of six 8th grade students' understanding of conservation of matter. In the third talk Van Der Steen, Steenbeek, and Van Geert discuss differences and similarities between students with emotional/behavioral disorders (EBD) and non-disabled students (ND) in light of an ongoing longitudinal study of children's understanding of air pressure and gravity.

All three studies used a coding system to characterize children's level of understanding based on Skill Theory (Fischer, 1980; Fischer & Bidell, 2006). According to this theory, skills can be divided into three tiers (sensorimotor, representational and abstract). Within each tier, three separate levels can be distin-

Friday—P.M.

guished, which are hierarchically built on one another. Skill Theory has a central role in this symposium, because it enables researchers to zoom in on the building blocks of students' understanding.

In addition, all studies examined the role of contextual support in understanding, both in a material (e.g. web-based science notebooks and hands-on tasks) and social (e.g. scaffolding) form. Moreover, the symposium will also address (individual) differences: between a control and treatment group (study 1), between students with different grade averages (study 2), and between typically developing children and children with emotional/behavioral disorders of different ages (study 3).

An expert in the field of science education and micro-developmental skill analysis (Schwartz) will lead the discussion, in which the ways of coding understanding, individual differences, developmental variability, as well as the role of support in teaching science could be addressed.

Contextual support in universally designed digital learning environments: efficacy in inquiry science, mechanisms in concept development

Gabrielle Rappolt-Schlichtmann (Center for Applied Special Technology)

Samantha Daley (Center for Applied Special Technology)

Characterizing changes in understanding of scientific concepts: A micro-developmental approach

Marina Doucerain (Concordia University)

Marc Schwartz (University of Texas)

Children's understanding of scientific concepts: Combining a micro-developmental approach with a longitudinal study

Steffie van der Steen (University of Groningen)

Henderien Steenbeek (University of Groningen)

Paul van Geert (University of Groningen)

4:30-5:45 SY20 Symposium Session 20..... Conference Room C

Do "you" control your actions? Or did your brain make you do it? Toward a non-reductive account of human agency

Organizer: Michael F Mascolo (Merrimack College)

Discussant: Bryan Sokol (Saint Louis University)

Discussant: Stuart I Hammond (University of Pittsburgh)

The concept of the active individual is central to many accounts of development. To say that individuals are active in development implies that persons operate as agents: we experience ourselves as having the capacity to exert control over our thoughts, feelings and actions. But what does it mean to exert conscious control over our behavior? What does it mean to be an agent? Contemporary psychological scientists, neuroscientists and philosophers have long since rejected a dualistic perspective on the nature of psychological functioning. Human psychological functioning is understood to be a thoroughly materialist process, one that operates within the medium of the body. However, rejection of the Cartesian mind/body distinction has not alleviated the tensions that motivate dualistic thinking. On the one hand, even a cursory examination of current thinking reveals that we often weave – however tacitly – some version of a homunculus (an inner, uncaused causer; an internal executive) into an otherwise materialist model of psychological functioning. For example, theorists often speak of controlled versus automatic processes, self-regulation or the capacity for executive control over action. In so doing, the concept of "control" is assumed (or simply bracketed) but not clearly articulated. On the other hand, recent work on the

Friday—P.M.

centrality of fast-acting unconscious, automatic and emotional processing has been taken to undermine the notion of human agency altogether. In this symposium, we start with a short introduction to perennial problems in understanding human agency. Thereafter, we consider proposals for understanding what it means to be a conscious agent in a materialist account of human action. Are humans conscious agents? If so, in what sense? How does such agency operate? If humans are not agents, how do we explain our ubiquitous and unshakable sense that “we” exert control over our thoughts, feelings and actions? Is our sense of agency simply illusory? As the issues explored are complex, we intend to allow at least ½ hour for our two co-discussants to lead an interactive discussion among panelists and attendees. It is our hope that discussion will focus not only on issues directly raised by panelists, but also on the socio-moral implications of adopting one or another understanding of human agency. Further, in our attempt to exorcise the magical conception of an unmoved mover from materialist accounts of human agency, it is our hope that symposium attendees will keep us honest: Are we, as panelists, harboring any “magical” assumptions of our own? If so, how do we move forward?

Perennial problems of consciousness and agency: The Magical Mystery Tour

Jaimie Kwiecien (Merrimack College)

Michael F Mascolo (Merrimack College)

The Role of control in a science of conscious agency: Efficient cause, regulation, and self-sustainment

J Scott Jordan (Illinois State University)

“I” am an emergent, mediated higher-order control loop, and “me” too!”

Michael F Mascolo (Merrimack College)

Jaimie Kwiecien (Merrimack College)

4:30-5:45 PS09 Paper Session 9.....Windsor West

Executive Function II

Chair: Charlie Lewis (Lancaster University)

The use and effectiveness of semantic grouping strategies in 6- to 12-year-old children is mediated by working memory capacity

Tamara Schleepen (Maastricht University)

Lisa Jonkman (Maastricht University)

Grouping to-be-remembered information in memory (e.g. on semantic category) can be helpful to remember a large amount of material so that it can be easily recalled. In adults, the ability to apply such semantic grouping strategies has been shown to depend on working memory capacity (WMC) (Rosen & Engle, 1997). To investigate semantic strategy use-WMC relations in children, two sort-recall tasks (one without and one with a grouping prompt) were administered to 6-12-year-old-children. The use and effectiveness of semantic grouping strategies in both conditions was investigated across age and the role of WMC herein was examined. This was done by 1) performing a mediation analysis that examined whether WMC is a significant mediating factor in the relation between semantic strategy use and recall and 2) testing whether children who successfully used the semantic grouping strategy had higher WMC compared to children who did not do this. Regarding development, only 8-9 and 10-12-year-olds were able to successfully use the semantic grouping strategy (the former only after prompting), while strategy use was absent in 6-7-year-olds. Importantly, both the mediation and strategy subgroup analysis showed that also in children the ability to successfully encode and retrieve information on semantic category depends on WMC.

Friday—P.M.

Conceptual knowledge and the development of cognitive control in early childhood

Sabine Doebel (University of Minnesota)

Philip David Zelazo (University of Minnesota)

This paper discusses empirical research investigating possible links between young children's conceptual knowledge and the emergence of cognitive control. We discuss relevant findings from our meta-analysis of studies involving the Dimensional Change Card Sort (DCCS), a widely used measure of cognitive control in early childhood. We specifically focus on the finding that the way the stimuli are labeled matters for performance. We then discuss experimental work undertaken to confirm and extend these findings, the results of which indicate that directing children's attention to the relevant concepts facilitates performance in a bottom-up fashion, and suggest that part of what develops may be the ability to utilize and manipulate conceptual content in the service of cognitive control. Lastly, we present research investigating whether priming relevant conceptual frameworks facilitates cognitive control. Taken together, this research represents a first step in exploring potential links between the conceptual knowledge that children acquire in early childhood and the cognitive processes that develop during the same period. It is well known that developmental change in cognitive control correlates with maturation of prefrontal cortex, and this research has the potential to provide new insight into this relation by revealing a role for experience.

Do preschoolers form abstract or stimulus specific representations of sorting rules in the Dimensional Change Card Sorting (DCCS) task?

Bianca van Bers (University of Amsterdam)

Maartje Raijmakers (University of Amsterdam)

In this project the representation of the sorting rules in the Dimensional Change Card Sorting (DCCS) task is studied. All children performed a standard DCCS task and a generalization task. In the generalization task children have to sort two bivalent test cards repeatedly on two stacks marked by target cards according to one dimension of the stimuli. In the generalization phase of the task these sorting rules need to be generalized to stimuli with changed values on one or both dimensions. In the first condition values of the relevant sorting dimension change in the generalization phase. In the second condition values of the irrelevant dimension change, and in the third condition values of both dimensions change. Almost all children in the three conditions show high performance, which suggests that the representation of the sorting rules is at the level of dimensions. Performance in the relevant change condition is significantly better than performance in the other two conditions. Reaction time scores confirm these results. A small group of children appears to be distracted by changes in the values of the irrelevant dimension. No significant difference in generalization task performance is found between children that switch and persevere on the DCCS task.

Executive function as an interaction-dominant process

Jason R Anastas (University of Connecticut)

James A Dixon (University of Connecticut)

Traditional theories of psychology define executive function as an insular, encapsulated process, which controls the rest of the cognitive system. An alternative hypothesis suggests that executive function arises from the multiplicative interactions among temporal scales of activity within the system. In the current study, we examine a simple executive-function task, card sorting, for evidence of multiplicative interactions. Seventeen pre-school aged participants completed a card-sorting task while wearing a motion tracker on their sorting hand. The time series of participant hand fluctuations were submitted to iterated amplitude adjusted Fourier transformation (Ihlen & Vereijken, 2010), a surrogate data analysis technique

Friday—P.M.

that destroys multiplicative interactions while preserving the general structure of the processes that produced the time series. As multifractal structure has been used to understand multiplicative interactions in the past, we submitted the original time series and each of the surrogates to multifractal analysis. We found that the multifractal spectrum widths of the surrogate series, where shuffling has intentionally destroyed multiplicative interactions, differed significantly from the original series, where multiplicative interactions have been preserved. These results suggest that executive function arises from the interactions among temporal scales of activity within the system, rather than as the result of a master subsystem.

4:30-5:45 SY22 Symposium Session 22..... Amador

Cultural approaches to talking science: How classroom discourse can position students as scientific thinkers

Organizer: Ellice A Forman (University of Pittsburgh)

Organizer: Randi Engle (University of California, Berkeley)

Discussant: James Greeno (University of Pittsburgh)

Intellectual movements within the field of science education are changing our notions of what it means to be a successful student. In the past, successful science students were asked to remember vast amounts of vocabulary and to follow the correct laboratory procedures. This approach to science education has been criticized by many educators as fostering a distorted sense of the nature of science to students. Often what is (unintentionally) communicated is that scientific knowledge consists of conclusions or that doing science involves tedious exercises in demonstrating those conclusions. In addition, students are positioned as passive recipients of knowledge from authoritative sources (the teacher and textbook).

In our initial attempts to position students as active learners, we focused on students' conceptual development or their use of the scientific method to reason about the logic of experiments. In the most recent phase, educational theorists and innovators have been engaging students in practices aligned with those of scientists such as argumentation, inscription, and modeling. The presenters in this symposium adopt this latter practice-based approach to conceptualizing learning in science classrooms. By employing sociocultural learning theories and sociolinguistic analyses of classroom transcripts, we have been exploring the complex social and intellectual dynamics that occur in these classroom settings. Our aim is to document how expert teachers foster authentic scientific practices in their classroom and how they and their students engage with the concepts, tasks, and tools of designed environments to create scientific communities in the classroom.

Engaging in the discourse of science has the potential to change classroom authority structures and students' accountability to each other and to the discipline. It also may foster a genuine appreciation for the power of scientific inquiry. Nevertheless, communities of scientific practice, focused on argumentation, inscription and modeling, are not easily achieved in a classroom setting. The presenters in this symposium have been studying classrooms in which the teachers position their students as co-investigators of scientific phenomena and partners in developing and critiquing model-based arguments. We believe that detailed case study analyses of classroom discourse in these settings can help us better understand the adaptive pedagogical expertise of effective teachers as well as the learning processes of students as they participate in productive disciplinary engagement.

Possible worlds, possible meanings: Working language in the science classroom

Beth Warren (TERC)

Friday—P.M.

Ann Rosebery (TERC)

Authoring storylines during a biology classroom lesson

Ellice Forman (University of Pittsburgh)

Linda Deafenbaugh (University of Pittsburgh)

Barbara Barnhart (University of Pittsburgh)

Michelle Cheyne (University of Pittsburgh)

Activity structures, positionalities and discourse: Two students' participation across two years of school

Lindsay Cornelius (University of Washington)

Leslie Herrenkohl (University of Washington)

4:30-5:45 PS10 Paper Session 10..... Windsor East

Early Social Development

Chair: Jeremy Carpendale (Simon Fraser University)

Does ontogenetic ritualization explain early communicative gestures in human infants?

Paula Marentette (University of Alberta)

Elena Nicoladis (University of Alberta)

Clark (1978) argued that children's earliest gestures, i.e., intentional and communicative hand movements, emerge from having participated in actions; for example, the give-me gesture could come from a child's reaching toward an object and a parent's interpretation of that reach as a request for that object. This dyadic process is referred to as ontogenetic ritualization. The purpose of this study was to assess the extent to which ontogenetic ritualization explains the development of early gestures, in particular the transfer gesture pick-me-up, compared to that of the early conventional gestures wave and clap. This descriptive study followed four infants longitudinally from 6.5 months to 11.5 months. Gestures emerging from ontogenetic ritualization should show gradual emergence from functional action sequence to communicative request, be unidirectional, dyad-specific, have high individual variation in form, and occur in a limited range of contexts (Call & Tomasello 1997). Our results did not provide unambiguous evidence for ontogenetic ritualization as the origin of the pick-me up gesture. In favour of ontogenetic ritualization, this gesture was clearly unidirectional. Factors against ritualization include its use with multiple dyads across multiple contexts. We discuss a number of reasons why we may have found no clear evidence for ontogenetic ritualization in the present study.

Anticipating being picked up: joint coordination in 3 month-olds

Vasudevi Reddy (University of Portsmouth)

Gabriela Markova (Academy of Sciences of the Czech Republic)

Sebastian Wallot (Aarhus University)

While there is a sizeable literature on infants' anticipatory postural adjustments to independent actions (e.g., reaching, standing and walking), little research has attempted to explore infants' anticipatory adjustment to inter-dependent actions (i.e., of others' infant-directed actions). However, from birth infants are lifted, cradled, examined, fed, burped, etc., many times a day. Importantly, anticipating others' actions towards us requires some awareness of their goal-directedness and thus allows for the fluent performance of joint actions. In the present study we explored anticipatory adjustments to one of the most common infant experiences of adult actions – being picked up. Twenty one 3-month-old infants were filmed in the laboratory, lying on a pressure sensitive mat. Mothers were asked to 'chat' with their

Friday—P.M.

infants before picking them up. We analysed infant behavior in three phases of maternal behavior— pre-approach, approach to contact, and contact to lift. The majority of infants showed clear anticipatory responses and specific body adjustments, in either the approach phase or the contact phase prior to the actual lift. Common adjustments included extension and stiffening of the legs, outward movement of the arms and sideways-turning of the head. This has implications for theorizing the emergence of goal awareness and coordination of actions.

Falsehoods and false belief: The early emergence of lie-telling in 2 and a half-year-old children

Shanna Mary Williams (McGill University)

Laura Penalosa (McGill University)

Victoria Talwar (McGill University)

Lie-telling typically emerges between 3 and 4 years of age, although some researchers have observed deceptive abilities in children under the age of 3 (Hala, Chandler & Fritz, 1991; Newton, Reddy, & Bull, 2000). These researchers have argued that a child's emerging deceptive ability is aided through a rudimentary false belief understanding. Despite naturalistic observations of children's lie-telling before the age of 3, little research, to date, has examine young children's spontaneous lie-telling within an ecologically valid experimental paradigm. The current study directly measured children's ($M_{age} = 2.7$, $SD = 0.3$) spontaneous lie-telling abilities using a modified temptation resistance paradigm (TRP). The TRP is designed to elicit lie-telling behaviours to conceal a transgression (i.e., peeking at a toy when an adult has left the room). To measure false belief children ($N = 44$) participated in the Smarties Appearance-Reality Task (Perner, Leekman & Wimmer, 1987). Results reveal that some children are able to produce lies under 3 years of age. Children who did tell lies within the TRP were also more likely to pass the Smarties Appearance-Reality Task. Results will be discussed in terms of the developmental implications of lie-telling.

Over-interpreting over-imitation: Imitation learning always involves a broader type of situation with both cognitive and motivational aspects

Jedediah WP Allen (Lehigh University)

Mark H Bickhard (Lehigh University)

A current debate amongst imitation researchers concerns the underlying reason why children copy the causally unnecessary actions of an adult when learning about novel artifacts (i.e., over-imitate). On the one side, researchers have argued for a cognitive explanation: that children automatically encode all of the adult's intentional actions as being causally relevant for achieving their goals (Lyons, et al., 2007, 2011; McGuigan, et al., 2007). On the other side, researchers have argued for a motivational explanation: that children understand the adult's demonstration to be an opportunity for social play (Neilsen 2006; Uzgiris, 1981). From the current perspective, all imitation involves both cognitive and motivational aspects that are themselves relative to the broader social situation.

Friday—P.M.

4:30-5:45 DS03 Discussion Session 3Conference Room DE

Reconceptualizing cognitive development: Should cultural knowledge domains be part of the discussion?

Organizer: David Henry Feldman (Tufts University)

Participants

Willis F Overton (Temple University)

Juan Pascual-Leone (York University)

Geoffrey Saxe (University of California, Berkeley)

Although the cultural context of cognitive development has become an important part of the field, the specific bodies of knowledge and skill that are mastered in a culture have received relatively little attention as objects of cognitive developmental research. This Discussion Session focuses on the question of the possible importance of the study of bodies of knowledge, skill and practice as cognitive developmental entities. In a previous session, three domains (ballet, computer science, science education) were studied using cognitive developmental constructs (transitions, beginnings, necessity). In this year's session, additional domains have been added (logic, arithmetic), while one of the original domains (ballet) has been retained for further study. Asking the same question across domains rather than different questions for each domain is the main methodological difference in the two studies. Conceptual, methodological, and theoretical questions related to cultural knowledge domains will also be explored. Specifically, the session will discuss how to conceptualize cultural knowledge domains as objects of study, differentiating between and among different types of domains; how to produce a theory of cultural knowledge domains without falling prey to the pitfalls of prior world views while recognizing their existence as humanly created, dynamic and evolving entities; and, how to judge the heuristic value and potential limitations of using cognitive developmental frameworks as a guide to the study of cultural knowledge domains. A more distant goal is to construct a viable Cultural Genetic Epistemology that was envisioned but not fully realized by Piaget and Inhelder. The premise of the work described here is that a reconceptualized field of Cognitive Development requires that cultural knowledge domains must be one of the central features of the field along with existing biological, individual, social, cultural and historical vectors of cognitive developmental change.

5:45-6:00 break

6:00-6:30 PT03 Poster Session 3 Osgoode West

Poster Session 3

Posters in this session should be mounted Friday morning to allow viewing during the day. Authors will be present during the evening poster session (6:15–6:45). Posters should be removed at the end of the session (6:45).

1. The development of prospective memory: The effects of cue focality and difficulty of the ongoing task. An executive account

Agnes Blaye (Aix Marseille Université)

Fabrice Guillaume (Aix Marseille Université)

Mireille Lecacheur (Aix Marseille Université)

Patrick Lemaire (Aix Marseille Université)

Friday—P.M.

2. *Sibling teaching and internal state language during naturalistic conversations during early childhood*
Nina Howe (Concordia University)
Sandra Della Porta (Concordia University)
Brittany Scott (Concordia University)
Hildy Ross (University of Waterloo)
3. *Young children's reasoning about social norms*
Lili Ma (Ryerson University)
Kyla McDonald (Ryerson University)
Fei Xu (University of California, Berkeley)
4. *Tolerance of loss: A key to adaptive decision-making under ambiguity? A developmental study using the Soochow Gambling Task*
Ania Aïte (Universities of Paris Descartes & Caen)
Mathieu Cassotti (Université Paris Descartes)
5. *Narratives foster more complex language during mother-toddler book sharing*
Angela Nyhout (University of Waterloo)
Daniela K O'Neill (University of Waterloo)
6. *A short-term longitudinal study of naturalistic sibling teaching of math concepts during early childhood*
Stephanie Peccia (Concordia University)
Emmanuelle Adrien (Concordia University)
Helena P Osana (Concordia University)
7. *New light for an old flame: Another look at process of cooperation in children with ASD*
Valentina Fantasia (University of Portsmouth)
Giovanni Valeri (Children Hospital Bambino Gesù)
8. *Charity begins at home: The association of shifting and sharing in preschoolers*
Nancy Garon (Mount Allison University)
Emily Floyd (Mount Allison University)
Ashley Steeves (Mount Allison University)
9. *I know who's telling a lie: Adult's ability to detect deceptive statements of children*
Justine Thacker (McGill University)
Christine Saykaly (McGill University)
Mary P Morris (McGill University)
10. *Cognition that cares: About the influence of young's children "supernatural" thinking in adolescents' affect towards them*
Virginia A Periss (Florida Atlantic University)
Carlos Hernández-Blasi (Universitat Jaume I)
David F Bjorklund (Florida Atlantic University)
11. *Social dominance and strategies of resource control in a sample of Spanish adolescents*
Francisco A Lozano (Universitat Jaume I)
Carlos Hernández-Blasi (Universitat Jaume I)

Friday—P.M.

12. *The processing of eye gaze-object relation during live face-to-face interaction: an ERPs study*
Tiziana Aureli (University D'Annunzio of Chieti-Pescara)
Laura Angelici (University D'Annunzio of Chieti-Pescara)
Annalisa Grazia (University D'Annunzio of Chieti-Pescara)
Filippo Zappasodi (University D'Annunzio of Chieti-Pescara)
13. *ELL prereaders' recognition and explanations of scripts*
Joyce Mak (University of Toronto)
Esther Geva (University of Toronto)
14. *Mutual attention and infant motor activity during mother infant interaction*
Torben Christensen (University of Copenhagen)
15. *Visual realism and working memory in children with and without autism*
Kayla Ten Eycke (University of Victoria)
16. *Engaging in block play*
Joanne Lee (Wilfrid Laurier University)
Donna Kotsopoulos (Wilfrid Laurier University)
Joanna Zambrzycka (Wilfrid Laurier University)
17. *The development and neural basis of rule-guided behavior*
Donaya Hongwanishkul (University of Minnesota)
Jason M Cowell (University of Minnesota)
Nhi Thai (University of Minnesota)
Philip David Zelazo (University of Minnesota)
18. *Comparing older and younger sibling teaching during naturalistic home observations in early childhood*
Sandra Della Porta (Concordia University)
Brittany Scott (Concordia University)
19. *Developmental differences in children's identifications and moral evaluations of truth and lie-telling scenarios*
Miriam Kirmayer (McGill University)
Cindy Arruda (McGill University)
20. *Informational helping and delay gratification in children between 4 and 6 years old: Modeling and genre differences*
Natalia Ariza (Universidad de la Sabana)
Juanita Chávez (Universidad de la Sabana)
Diana Sánchez (Universidad de la Sabana)
Fernanda Vega (Universidad de la Sabana)
21. *Influence of majority social judgment on children's moral choices*
Silvia Guerrero (Universidad de Castilla-La Mancha)
Laura Elenbaas (University of Maryland, College Park)
Ileana Enesco (Universidad Complutense de Madrid)
Melanie Killen (University of Maryland, College Park)

Friday—P.M.

22. *Cognitive planning and everyday practices: A case study*
Lilian Patricia Rodríguez-Burgos (Universidad de La Sabana)
Jennifer Rodríguez Castro (Universidad de La Sabana)
23. *The development of moral pride in children*
Sophia F Ongley (University of Toronto)
24. *Possible selves of sexual majority and minority youth: Links to depression*
Matteo Peretti (Concordia University)
Holly E Recchia (Concordia University)
Alexa Martin-Storey (University of Texas at Austin)
25. *"I wanted to punch her in the nose and watch her cry": Children's and adolescents' descriptions of desiring and seeking revenge*
Holly E Recchia (Concordia University)
Cecilia Wainryb (University of Utah)
Monisha Pasupathi (University of Utah)
Melina Babin-Molina (Concordia University)
Sarah Leddin (Concordia University)
26. *Written feedback and elementary school teachers*
Caterina Almendral (The Graduate Center, CUNY)
27. *Learning the order of things: How children develop an adult-like quantifier scale*
Amanda Pogue (University of Waterloo)
Adel Jalabi (University of Waterloo)
Mathieu Le Corre (University of Waterloo)
28. *One in a million: How children acquire the syntax of multipliers*
Meghan Dale (University of Waterloo)
Mathieu Le Corre (University of Waterloo)

6:45-7:15 PT04 Poster Session 4 Osgoode West

Poster Session 4

Posters in this session should be mounted at the end of Poster Session 3 (6:45). Authors will be present during the evening poster session (7:00–7:30). Posters may remain mounted after the session to allow viewing the following morning. Posters should be removed during the lunch break on Saturday.

1. *The contribution of information processes to intelligence in elementary school children*
Annik Voelke (University of Bern)
Stefan Troche (University of Bern)
Thomas Rammsayer (University of Bern)
2. *Siblings' use of negotiation and semantic tying strategies in the construction of shared meaning during pretend play*
Jamie Leach (Concordia University)
Ryan Persram (Concordia University)
Joanna Rosciszewska (Concordia University)
Ganie DeHart (State University of New York at Geneseo)

Friday—P.M.

3. *Motor acts and communicative gestures from 9 to 18 months of age in imperative and declarative context*
Tiziana Aureli (University D'Annunzio of Chieti-Pescara)
Paola Perucchini (University Roma Tre)
Jana M Iverson (University of Pittsburgh)
4. *Developing a profile of children who are overweight: relationships between temperament, eating behavior, executive function and BMI*
Danielle Beck (Simpson University)
Josh Harrod (University of Minnesota)
5. *Promoting non-white pregnant mothers' willingness to volunteer their child for developmental research: Recruitment recommendations*
Nicole Sugden (Ryerson University)
Kristina Safar (Ryerson University)
Margaret Moulson (Ryerson University)
6. *Poster withdrawn*
7. *Theory of mind across the lifespan: A study of the development of empathy in counseling professionals and students*
Alexandra G Stratyner (Seton Hall University)
Lauren J Myers (Lafayette College)
8. *"Hey, that's mine!" Conflict strategies used by 4- and 5-year-olds when disagreements occur with a peer or a sibling*
Carly Prusky (University of Toronto)
Michael Perlman (University of Toronto)
9. *Knowledge across time*
Alyssa Louw (University of Ottawa)
Cristina Atance (University of Ottawa)
10. *Executive function in children with autism: Delay vs. deficit on the less is more task*
Josh Harrod (University of Minnesota)
Jessica Hobson (University College London)
Stephanie M Carlson (University of Minnesota)
11. *Flexibility in preschoolers' delay of gratification decisions*
Wendy S C Lee (University of Minnesota)
Stephanie M Carlson (University of Minnesota)
12. *Fraction problem solving: Mental attention and executive functions as developmental factors*
Cheryl Lee (York University)
Janice Johnson (York University)
13. *1-year-olds' object offers in response to communicative gestures and a non-communicative reach*
Gudmundur Thorgrímsson (Max Planck Institute for Psycholinguistics)
Ulf Liszkowski (Max Planck Institute for Psycholinguistics)

Friday—P.M.

14. *Emotional behavior in sociocultural and intercultural competence when learning a foreign language*
 - Arelly Ivonne López Soto (Universidad Nacional Autónoma de México)
 - Gerónimo Salomón Caballero Castellanos (Instituto Politécnico Nacional - CIECAS)
15. *Neurodevelopmental correlates of language and theory of mind in children with autism spectrum disorders*
 - Annie S Li (Queen's University)
 - Mark A Sabbagh (Queen's University)
 - Elizabeth A Kelley (Queen's University)
16. *Gesture's benefit for instruction: Attention coordination or embodied cognition?*
 - Jolanta Bem (Northeastern Illinois University)
 - Steven Andrew Jacobs (University of Chicago)
 - Susan Goldin-Meadow (University of Chicago)
 - Susan Levine (University of Chicago)
 - Martha Wagner Alibali (University of Wisconsin - Madison)
 - Mitchell Nathan (University of Wisconsin - Madison)
17. *The role of gesture in retention and perception of legal closing arguments*
 - Jackie Schwartz (Northeastern Illinois University)
 - Steven Andrew Jacobs (University of Chicago)
 - Susan Goldin-Meadow (University of Chicago)
 - Adam Benforado (Drexel University)
 - Christopher Bennett (Northeastern Illinois University)
18. *Inroads to argumentative discourse through a secondary multi-genre writing project*
 - Mildred M Joyner (UNLV)
 - Lisa D Bendixen (UNLV)
19. *Practical classroom applications of the integrative model of personal epistemology development*
 - Lisa D Bendixen (UNLV)
 - Deanna C Rule (UNLV)
20. *Medicine wheel early learning center: A follow-up of previously enrolled adolescents*
 - Mike Boyes (University of Calgary)
 - Hania Kubas (University of Calgary)
 - Dustin Kupila (University of Calgary)
21. *Building culture and supporting early identity development among preschool aboriginal children: Culture as a part of preschool practice*
 - Mike Boyes (University of Calgary)
 - Erika Gomez (University of Calgary)
22. *Understanding children's concept of friendship across developmental challenges: an examination through their drawings*
 - Saba Ayman-Nolley (Northeastern Illinois University)
 - Brittany Cain (Northeastern Illinois University)
 - Elizabeth Gordon (Northeastern Illinois University)

Friday—P.M.

23. *What is the relation between performance-based measures of EF and parental reports of adaptive behavior and maladaptive behavior?*

Sarah Hutchison (University of Victoria)
 Emily Gardiner (Simon Fraser University)
 Kim Kerns (University of Victoria)
 Grace Iarocci (Simon Fraser University)

24. *Developmental characteristics of preschool children’s future-oriented thinking and social behavioral understanding*

Yutaka Fujita (Kumamoto University)

25. *Changing conceptions of leadership among 3rd grade students: results of a diversity awareness intervention*

Megan McCall (Saint Louis University)
 Mary Herbst (Saint Louis University)
 Kelly McErnerney (Saint Louis University)
 Gerold Watson (Saint Louis University)
 Amber Overton (Saint Louis University)
 Bryan Sokol (Saint Louis University)

26. *Development of the conception of time and ADHD*

Camila Tarif Ferreira Folquitto (University of São Paulo)
 Maria Thereza Coelho de Souza (University of São Paulo)

27. *Gender effects in the social construction of self image*

Johana Sotin (Université Bordeaux)
 Nahéma Bettayeb (Université Bordeaux)
 Judith Rousse (Université Bordeaux)
 F Francis Strayer (Université Bordeaux)

28. *The role of executive function in children’s language comprehension and production*

Malathi Thothathiri (Swarthmore College)
 Rachel Crane (Swarthmore College)

6:30-7:30 REC2 Emerging Scholars Reception Osgoode West

Emerging Scholars Reception

Please join us for a special reception to recognize the contribution of new and emerging scholars (pre-tenure faculty, post-docs, and graduate students) from across the many participating countries who are attending this year’s meeting. We will also take a moment to announce the recipients of this year’s Peter Pufall Travel Awards. Following the brief award presentation, there will be plenty of time for mingling with old friends and new acquaintances. Appetizers will be served and a cash bar will be available.

7:45-10:00 Returning Emerging Scholars Dinner..... TBD

Returning Emerging Scholars Dinner

The JPS Emerging Scholars Committee invites returning emerging scholars presenting at this year’s meeting to join their peers—and some special guests—for an informal dinner on Friday evening at 7:45pm. This is an opportunity to meet other returning students, postdocs, early career scholars, and network with

Saturday—A.M.

some of the society's senior scholars. This event requires registration. For more details and registration please contact Matthew Gingo (gingo@berkeley.edu) or Jeremy Burman (jburman@yorku.ca).

8:00-9:00 RT02 Roundtable Session 2Conference Room B

Round Table Session 2

Chair: Thomas Bidell (Independent Scholar)

Mindful-Based Stress Reduction as a method for improving attention and self-regulation in children with FASD

Lesley Baker (University of Victoria)

Colette Smart (University of Victoria)

The main objective of this presentation is to discuss an upcoming research project that will examine whether children with Fetal Alcohol Spectrum Disorders (FASD) can benefit from participating in an adapted Mindfulness-Based Stress Reduction (MBSR) program in the areas of self-regulation, mood and attention. Mindfulness meditation is a practice that cultivates an open and accepting awareness of the present moment. Evidence suggests that mindfulness training can enhance cognitive and behavioural functioning in children and adults. Furthermore, research indicates that mindfulness training has been shown to be effective for enhancing psychological functioning in children with cognitive impairment (e.g., ADHD). Given the high prevalence of Fetal Alcohol Spectrum Disorder (FASD) and its adverse effects on development, there is a need for empirically-supported interventions for children and adolescents affected by this disorder.

The importance of affectivity during the learning of gifted students: A contribution from Piaget

Fernanda Hellen Ribeiro Piske (Federal University of Paraná)

Tania Stoltz (Federal University of Paraná)

This research aimed to investigate the affective development of gifted students in the educational environment. Many studies (Silverman, 1993; Schuler, 2000; Alencar, 2007; and others) emphasize the precarious formation of teachers to work with inclusion of gifted students, this can be one of the reasons of lack of affective adjustment and exclusion at school. In consonance with this research is the theory of Piaget (1954) that emphasizes the importance of affective development related to the functioning of intelligence. The method of this research was based on studies of authors of giftedness area and studies of Piaget. The conclusion showed that the affective aspect has a constant influence in the human development and in case of gifted teenagers it is important to count to the supply of teachers specialized in giftedness that know how to deal with alterity and the differences at school. According to Piaget (2000) the right to education is the right that each individual has to develop himself and change his own reality to effective and useful realizations. The educational attendance is a right of gifted students and should be given for them continuously, so that these teenagers can overcome their affective, social and cognitive needs.

Good teasing development in 11 and 39 month girls

Jacqueline Benavides Delgado (Universidad de los Andes)

The objective of this study was to analyze the emergence of production of good teasing in two children: 11 month and 39 month girls. Study was based on the methodology of parents as informants, with a longitudinal naturalistic observation design. The mothers observed and wrote a diary or her child's good teasing behavior, along 4 month. The results showed how good teasing emerge in 7 categories, and highlight the importance of play as an element from which emerge simplest and most sophisticated ways

Saturday—A.M.

of good teasing. Similarly, this study challenges of Theory of Mind (ToM) development by the analysis of the cognitive demands of the ways of good teasing and the ability to understand the beliefs and even the false beliefs of others. These results provide a fundamental way to study the development of the ability to understand the mental states of others and the knowledge about developing a sense of humor in children.

Examining the role of language in the development of executive function

Emanuela Yeung (University of Victoria)

The goal of this presentation is to outline the plan for a research study that examines the role of the semantic and syntactic aspects of language on the development of executive function (EF). Developmental changes in children's EF skills have been well documented (Zelazo & Müller, 2011), however, much less is known about how the processes that are involved guide these changes. One area of research has examined the development of language as a possible mechanism contributing to the development of EF (Müller et al., 2009). These studies have largely focused on the semantic aspects of language through the use of labels, and none have examined the contribution of one important aspect of language, namely syntax, to the development of EF. There is reason to believe that mastery of syntax may also contribute to the development of EF. Specifically, according to the Cognitive Complexity and Control theory (Zelazo et al., 2003), the development of EF is guided by a child's ability to represent increasingly complex "if-then" rules. Rule complexity is related to an increase in the number of hierarchically embedded clauses, and therefore an increase in the syntactic complexity of a rule. Thus, it would be expected that the ability to process more complex syntactic rules facilitates the development of EF.

9:00-10:30 IS04 Invited Session 4..... Essex

Computational approaches to development

Organizer: Thomas Shultz (McGill University)

Computational modeling implements developmental theory in a precise manner, allowing generation, explanation, integration, and prediction of phenomena. The three most prominent modeling approaches to psychological development (neural networks, dynamic systems, and Bayesian) are each well represented in this symposium.

Connectionist networks represent knowledge sub-symbolically by activation patterns on neuronal units. They process information by passing activation signals from one layer of units to another via synaptic connection weights. Working memory is implemented by momentary patterns of activation across the units in a network and long term memory by connection weights that are adjusted more slowly during learning. Neural learning algorithms adjust connection weights, sometimes with a rule that makes weights proportional to the product of the activation of the sending and receiving units. The classical approach to analogy emphasizes structured representations and structure mapping. Instead, Denis Mareschal sees analogy as deriving from relational priming. He implements this in a neural network in which relations are represented as transformations between states. Network performance covers several developmental phenomena, illustrating how a complex cognitive skill emerges from priming.

Dynamic systems consist of a set of quantitative variables that change continually, concurrently, and interdependently over time, corresponding to differential equations. They can be understood in geometric terms as changes of position in a space of possible system states. John Spencer and Sammy Perone probe the development of working and long-term memory in the first year. Their simulations show that key aspects of developmental change can be captured by Hebbian learning in a system that auto-

Saturday—A.M.

mously explores the visual world. This suggests that new cognitive abilities emerge in the first year as infants construct their own development via exploratory activity.

A general conclusion emerging from Bayesian modeling is that people optimize their performance in conformity to Bayes' rule that specifies how the posterior conditional probability of a hypothesis being true, given a particular data pattern, is computed from the standardized product of the prior probability of the hypothesis and the likelihood of those data given the truth of the hypothesis. This allows statistical computation over structures to formalize how knowledge is modified by new evidence. Research on epistemic trust typically interprets children's success as evidence that they track others' knowledge. Patrick Shafto presents evidence that 4-year-olds' behavior is better explained by reasoning about both knowledge and intent, and developmental differences between 3 and 4 are consistent with changing abilities to reason about intent, not knowledge.

A connectionist model of analogical completion

Denis Mareschal (University of London)

Constructing development in an autonomous dynamical system: Insights from dynamic field theory

John P Spencer (University of Iowa)

Sammy Perone (University of Iowa)

Epistemic trust: Modeling children's reasoning about others' knowledge and intent

Patrick Shafto (University of Louisville)

9:00-10:30 SY21 Symposium Session 21Conference Room B

Theory and application generated by the Model of Hierarchical Complexity

Organizer: Michael Lampion Commons (Harvard Medical School)

Organizer: Patrice Marie Miller (Harvard Medical School)

Commons and colleagues have proposed the Model of Hierarchical Complexity, as an explanation for what might underlie stage-like performances. The current symposium presents both theory and applications relating to the Model. This model postulates that tasks in a domain occur in a series, from simple to more complex. A more hierarchically complex task results from the coordination of two (or more) tasks from the previous, lower order of complexity. This coordination must be non-arbitrary (that is, it must match reality). The advantage of this model is that the properties of the task, including its complexity, can be separated and treated as independent variables. Task properties such as complexity can then be related to performance, or stage. In the first paper, the Model is compared to other selected stage theories, including those with stage generators and those with post-hoc stage scoring only. This helps to elucidate both some characteristics of these other stage theories and of the Model itself. In the second paper, student narratives, in the form of essays written as part of admissions applications to a graduate counseling program are scored using the model of hierarchical complexity. Various aspects of the scoring, including mean stage level of the statements made in the essays, and distributions of different stages within the essays are related to outcomes in the programs, including grades as a way of validating the Model. In the third paper, we illustrate how the Model can be used to generate a series of tasks ranging in complexity, and then used Rasch analysis to show the relationship between the postulated difficulty of the items and the Rasch Item and person stage scores. The specific application was to student reasoning about bullying. Participants performed at the preoperational through Metasystematic stages on the Student-Bully Problem. The Student-Bully Problem proved to be a useful tool in assessing cognitive developmental stage of performance in reasoning about bullying in school age youth. In the fourth paper, the

Saturday—A.M.

laundry series of problems that this research group has refined is used along with Rasch analysis to show that the Model of Hierarchical Complexity is an ordinal, linear scale. The Rasch score of items followed the same sequence as their order of Hierarchical Complexity. There exist gaps between items of adjacent stages, indicating jumps in difficulty. In addition, a simple linear regression shows that Rasch item scores can be modeled on a linear scale.

How other stage theories fit into the model of hierarchical complexity

Michael Lampert Commons (Harvard Medical School)

Do stages of graduate-school admissions essays predict performance in a master's counseling program?

Patrice Marie Miller (Harvard Medical School)

Darlene Crone Todd (Salem State University)

Rachel Lucas (Salem State University)

Richard Hennigan (Salem State University)

Developmental stage of performance in reasoning about bullying in school age youth

Christopher J Joaquim (Nova Southeastern University)

Do developmental stages have gaps between them when Rasch measured and are the stage a linear function of order of hierarchical complexity?

Eva Yujia Li (Mount Holyoke College)

9:00-10:30 SY22 Symposium Session 22..... Conference Room C

Dialogue methods for studying preschoolers, learning community and culture

Organizer: Yeh Hsueh (University of Memphis)

Organizer: Abel R Hernández-Ulloa (Universidad de Guanajuato)

Leo Tolstoy, a giant of Russian literature, was also an educator with modern ideas. Contrary to some traditional wisdom, he argued that children's learning should start from the complex to the simple, rather than the other way around. Many modern thinkers such as John Dewey, G. H. Mead, and Jean Piaget concurred with this notion. But how to present to children, teachers and researchers themselves the complexity of a subject matter or life itself, remains an open question. It is even a challenge for researchers to develop a research method for understanding this important learning process.

This symposium is to report three different efforts in three different parts of the world to answer the question of how to present the complexity of life and learning to children, teachers, and researchers themselves. The first effort included two related studies that were conducted in a Mexican preschool in which the researchers joined a learning community to facilitate children's learning of citizenship through a multi-level dialogue. One paper describes the research design that used reflective dialogue to take advantage of an evolving storytelling activity in the classroom. The other paper is a followup to the previous one, but specifically describes a microgenetic method the team used to understand the construction of meanings through reflective dialogue.

The second effort was to study the justifications of U.S. kindergarteners with whom the researchers conversed about fairness and rules in order to examine their thought processes. And the third effort was based on a study of preschool in China using the video-cued multivocal ethnography to study cultural change. The video was a tool, not data, for stimulating and mediating a dialogue locally and across regions. In a nutshell, the researchers all resorted to dialogues as a means for engaging the thoughts

Saturday—A.M.

and feelings of participants. One common goal across these studies was to understand and enhance the complexity of learning, and understanding.

A dialogue to construct a method for meaningful storytelling

Sylvia van Dijk (Universidad de Guanajuato)

Luis Jesús Ibarra Manrique (Universidad de Guanajuato)

Anel González Ontiveros (Universidad de Guanajuato)

Finding out new meanings through storytelling: A microgenetic approach to explore and foster reflective dialogue with preschoolers

Abel R Hernández-Ulloa (Universidad de Guanajuato)

Luz María Muñoz de Cote (Universidad de Guanajuato)

Edith Sotomayor (Universidad de Guanajuato)

Child-researcher dialogue and children's justifications of prosocial behaviors

Shannon Audley-Piotrowski (University of Memphis)

Video-cued multivocal method for studying preschool education

Yeh Hsueh (University of Memphis)

9:00-10:30 SY23 Symposium Session 23.....Windsor West

Adolescents use cognitive dimensions of narrating to interact in developing environments

Organizer: Colette Daiute (The Graduate Center, CUNY)

Discussant: Cynthia Lightfoot (Penn State Brandywine)

Developmental researchers have increasingly accepted that narrating is a social process (Bamberg, 2004; Bruner, 1986; Nelson, 1996). On that view, each narrative is an "utterance in a complex chain of communication" (Bakhtin, 1986). With over 20 years of research on the development and use of narrating, we extend theory and method to examine how narrators make sense of multiple diverse environments in lives connecting them with relatively unfamiliar others beyond family, friends, and close community. Prior systematic analyses of the evaluative and referential phases of meaning (Labov & Waletzky, 1997) have shown that adolescents make sophisticated discursive moves to figure out what is going on in their environments and how they fit (Daiute, & Nelson, 1997). It is imperative to examine those moves in greater detail to understand adolescent development as a horizontal process – that is to consider how development is, at least in part, a process of dealing with diversity and how demands in complex lives may advance socio-cognitive processes at any one time in life. Toward that end, the papers in this symposium consider "relational complexity," using discourse genres as socio-cognitive tools for anticipating, connecting with, and critiquing multiple audiences and contexts (Daiute, 2010; 2011). Expressing diverse knowledge in diverse ways when narrating on an issue for diverse audiences is a relatively under-explored developmental capacity. While much prior research has emphasized progress toward coherent representations of knowledge and self, relational complexity appears to be a meta-cognitive capacity that functions in precise ways, in particular with adolescents' uses of narrative and other genres. Beyond perspective-taking, which has, for the most part, been examined as a context-independent incremental achievement, relational complexity assumes that context and audience are embedded in communications. Writers, in particular, must manage this socio-cognitive process even in the absence of actual audiences.

The papers in this symposium advance a theoretical explanation of relational complexity as a horizontal process of development, with four research projects across range of specific challenges, including im-

Saturday—A.M.

migration, indigenous youth, adolescents in a community organization, and inner city youth confronted with vocational education. Our focus on within- and across-person diversities as socio-cognitive functions of narrating address social, political, and cultural environmental demands offers insights about deliberations between narratives determining what is expressed and how. Of course, cognition and affect are integrated in daily activity (Vygotsky, 1978), but fine-grained analyses of these processes offer insights about how narrating plays a role in adolescent development.

Use of causation by youth for making sense of technologically mediated and culturally diverse interpersonal interactions

Luka Luci (Pratt Institute)

Young people exploring diverse perspectives through storytelling in First Nation's cultural education programs

James W Allen (University of Victoria)

Christopher E Lalonde (University of Victoria)

Cognitive management of self-presentation in the self-presentation technology era

Svetlana Jovic (The Graduate Center, CUNY)

Using letter-writing to engage diverse relational perspectives in a vocational education program

Phil Kreniske (The Graduate Center, CUNY)

9:00-10:30 PS11 Paper Session 11 Windsor West

Morality II

Chair: Ayelet Lahat (University of Maryland)

Non-Living and Living? Reframing the ontological distinction based on interactions with personified robots

Heather E Gary (University of Washington)

Peter H Kahn, Jr. (University of Washington)

Children are now coming of age with personified technologies, such as robots, that we believe are reshaping previously established theories about non-living and living things. Drawing on two of our lab's investigations that involve children's, adolescents', and young adults' behavioral interactions with and reasoning about a humanoid robot (Robovie), we highlight new data that needs to be accounted for in the developmental literature. Specifically, children, adolescents, and young adults ascribed to personified robots a unique constellation of attributes – including those that involve mental states, sociality, and in some ways even moral standing and accountability – which does not mirror reasoning about canonical living entities (such as humans or non-human animals), or simple artifacts. Based on this data, we suggest that an ontological category is emerging in the world and through the child's construction of knowledge that has never existed before: namely, a technological entity that is both non-living and living.

The meaning and measurement of children's moral self

Tobias Krettenauer (Wilfrid Laurier University)

Samantha Campbell (Wilfrid Laurier University)

Steve Hertz (Wilfrid Laurier University)

This cross-sectional study investigates the development of children's moral self from 5 to 12 years (N = 131). Conceptually, it is based on the assumption that children engage in spontaneous moral actions on which they built behaviorally oriented self-views about their own moral preferences and aversions.

Saturday—A.M.

Empirically, the study uses the format of a puppet interview as a method that has been successfully employed to tap young children's self-views. Findings show that children's self-view about moral actions are well differentiated from an early age on and do not simply reflect social desirability. Significant age differences emerged in that younger children indicated a high preference for prosocial behavior, whereas older children took a more moderate view. Children's moral self-view predicted moral emotion attributions in hypothetical scenarios. However, this relationship was strongly moderated by age. Overall, the findings indicate that the develop of a moral self is well underway in childhood. At the same, young children's moral selves are not fully functional yet, as they are not fully coordinated with moral emotions. This coordination might be an important developmental achievement of middle childhood and lay the foundation for moral identity formation in adolescence.

Balancing personal choice and public good in the context of mandatory service programs in high schools

Justin McNeil (University of Toronto)

Charles C Helwig (University of Toronto)

Previous research examining youth's conceptions of personal choice balanced against public good has established a developmental trend in which older youth take increasingly complex perspectives in which the needs of the individuals and the needs of the public are taken into account. However, a more rigorous examination of the public good for a purely moral issue is the focus of the present research. In the current study, 69 youth from three age groups (10-11 years, 13-14 years, 17-18 years, $n = 23$) were presented with hypothetical scenarios describing a mandatory service program, in which the amount of choice (student-selected or government-selected activities) and presence of a structured reflection component was varied in an interview. Results indicated that youth are sensitive to the autonomy promoting or restricting nature of the hypothetical programs, and that there was a developmental trend in which older youth were more sensitive to the support and restriction of autonomy than were 10-year-olds. The results also indicated that youth used different forms of reasoning when evaluating a program's effectiveness as a moral teaching tool, in motivating students to help, and in eliciting positive affect. Implications for youths' perceptions of public and personal good are discussed.

Diverse voices: Children's perceptions of spirituality

Kelsey Moore (McGill University)

Sandra L Bosacki (Brock University)

Children ($N = 64$; 6-11 years, 50% male) from different religious and cultural backgrounds were interviewed using open-ended questions concerning their spiritual thoughts, beliefs, and experiences. Additionally, parents completed a demographic questionnaire and reported children's religious affiliation. Regardless of children's religious background, six prominent themes emerged: 1) Positive Feelings when Praying or Thinking about God, 2) God's Location, 3) God Helps, 4) God as a Confidante 5) Soul and Spirit, 6) God is a comforter. Despite diverse faith orientations, children's responses reflected similar conceptualization of God as a listener and helper, and conversations with God served as a source of comfort and elicited feelings of happiness. Discussion involves educational and practical implications of children's spirituality lives within a diverse learning context.

Saturday—A.M.

Children's moral worlds and their experiences with companion animals: Role of psychological language

Sandra Bosacki (Brock University)

Christine Tardif-Williams (Brock University)

Recent research suggests that social cognition may play a role in the connections among children's experience with animal companions and their sense of self-worth during middle childhood. Within the framework of social-cognitive developmental theory, this paper addresses the main question of how moral and emotional language plays a role in children's perceptions their experiences with their animal companions. Specifically, building on theories of animal companion-child relationships and social cognitive behaviour, this study explored 77 children (50 girls; 27 boys) aged 6-12 years during a week of Summer Camp designed to promote positive interactions with companion animals, and which delivered humane education curriculum. To assess self-perceptions, animal-companion relationships, and expression of psychological language, children completed drawings and accompanying narratives of themselves playing with their animal companions. Drawings and transcripts were coded for language and themes representing psychological issues. Preliminary results suggest that children's drawings and narratives differ in some aspects of psychological language, and indicate that psychological language plays a significant role in girls' and boys' animal-companion relationships. Discussion focuses on curricular approaches to build a school culture of kindness, care, and compassion to enhance the social-emotional lives of all students.

9:00-10:30 PS12 Paper Session 12.....Conference Room DE

Judgment, Reasoning, and Problem Solving

Chair: Saba Ayman-Nolley (Northeastern University)

Belief inhibition and bias detection in adolescence: Evidence from memory-probing

Wim De Neys (Université Paris Descartes Sorbonne)

Adult reasoning has been shown to be mediated by the inhibition of intuitive beliefs that are in conflict with logic. In this paper we present a new procedure adopted from classic memory studies to investigate failed belief inhibition in 12 to 18 year old reasoners. After reasoning we directly probed the memory accessibility of beliefs that were cued during syllogistic reasoning with a lexical decision task. Results showed that in all age groups memory access for words associated with misleading beliefs was impaired when the reasoning problem had been solved correctly. This finding provides direct memory-based evidence for the claim that sound reasoning is mediated by a belief inhibition process throughout our development. However, in sharp contrast with adults' performance, memory access was not impaired when younger reasoners failed to solve the syllogisms and were biased by misleading intuitive beliefs. Intriguing implications for the debate on the development of bias detection and human rationality will be discussed.

Probability judgment and conjunction-fallacy inhibition training: Are inhibitory-control transfer effects emotionally-based and contagious?

Sylvain Moutier (Université Paris Descartes)

Using the example of the conjunction fallacy in adult probability judgment, the two-part study reported here is designed a) to examine the relationship between receptivity to metacognitive executive training and emotion-based learning ability indexed by Iowa Gambling Task (IGT) performance, and b) to find whether the newly learned inhibitory control could be transferred to a new task, the Cognitive Reflection Test (CRT), requiring no probabilistic rules. In Part 1, after completing the IGT, participants were trained

Saturday—A.M.

to avoid conjunction bias on a frequency judgment task. The pre- and post-test included French adaptations of the Linda probability judgment task. Results demonstrated a near transfer of the bias inhibition training but also that participants who produced a biased answer despite the experimental training mainly had less emotion-based learning ability in IGT. These findings argue in favour of the capacity of the human brain to overcome reasoning bias when trained under executive programming conditions and as a function of emotional warning sensitivity. In part 2, the near transfer effect was replicated with new group of participants but a far transfer effect was also observed through an improved ability to inhibit other cognitive bias interferences in CRT, claiming here for a high-order inhibitory-control effect.

Fixation effect in creative problem solving: Opposite impacts of example in children and adults

Mathieu Cassotti (University Paris Descartes)

Nicolas Poirel (University Paris Descartes)

Arlette Pineau (University Paris Descartes)

Marine Agogu  (Centre de Gestion Scientifique Mines ParisTech)

Recent study in adult demonstrated that exposure to examples does not systematically constrain originality and can, on the contrary, have a stimulating effect. The introduction of an expansive example (i.e. knowledge that is not spontaneously activated during the task) led participants to propose more original solutions whereas a restrictive example (i.e. external cues reinforcing the common knowledge spontaneously activated during the task) reduced the number and the originality of solutions. The present study aimed to uncover the impact of example on creative problem solving in children and adults. The creative task consisted to design a way to drop a hen's egg from a height of 10 m so that it would not break. Results from twenty eight 10 years old children and fifty five adults revealed that exposure to the same example during a creative task has two opposite effects: adults were constrained in their ability to propose solutions, whereas this ability was enhanced for children. The pedagogical effect of example in children allowed them to reach comparable performances than adults' regarding fluency and even outperformed adults in flexibility.

The role of context and epistemic understanding in adolescents' argument evaluations and trust in argument

Michael Weinstock (Ben-Gurion University of the Negev)

Yair Neuman (Ben-Gurion University of the Negev)

Dan Assaf (Ben-Gurion University of the Negev)

Epistemic understanding and argument context have each been found to predict students' identification of argument fallacies. The research presented here examines their relative roles in adolescents' argument evaluation and their trust in argument. Trust that argument interlocutors accept argumentation norms and goals is necessary for rational argumentation to occur. The findings regarding contexts were that trustworthiness cues regarding the interlocutor prompted students to trust in the truthfulness of the protagonist, the source of the information given, and the likelihood that the protagonist would change position given a refutation of a claim's justification even if an argument was fallacious. Students also trusted more in the likelihood of change in a critical discussion rather than a debate argument context. Prompted to accept protagonist's fallacious justification as true, participants were unlikely to find the justification as fallacious. As for epistemology, evaluativists, more than absolutists, trusted that the protagonist would change position given a refutation of a claim's justification. Absolutists distinguish the least between the goals of critical discussion and debate. Participants of all epistemological levels were unlikely to find an argument as fallacious when prompted to accept the fallacious justification as true. Overall, evaluations varied more by context than epistemology.

Saturday—P.M.

Exploring the role of analogico-deductive reasoning in the balance-beam task

John Licato (Rensselaer Polytechnic Institute)

Selmer Bringsjord (Rensselaer Polytechnic Institute)

John E Hummel (University of Illinois)

Piaget's classic experiments enabled, among many other things, identification of the types of reasoning children use in different developmental stages. His work identified both hypothetico-deductive and analogical reasoning as strong indicators of normal development. Although examples of each can be seen early on, consistent application and control of these types of reasoning emerges somewhere between Stages III and IV. Given their importance in the developmental process, it can only help the study of cognitive development to have a deeper understanding of how these types of reasoning are carried out. We focus in this paper on ways in which they interact (we call this ADR, for analogico-deductive reasoning); specifically on the interaction of generation, development, and testing of hypotheses. We present a model and show how it can explain the reasoning processes of a Stage-III subject working on Inhelder and Piaget's (1958) seminal balance-beam task.

10:30-10:45 break

10:45-12:00 PLO5 Plenary Session 5Osgode East

From Piaget's Constructivism to Neuroconstructivism

Annette Karmiloff-Smith (University of London)

The talk will show how taking a developmental perspective doesn't necessarily involve studying children. Indeed, many current infant and child studies are not developmental at all, whereas some adult studies are. Rather, the developmental perspective involves a Piagetian frame of mind, a focus on early roots and change over time. I will distinguish domain-general approaches like Piaget's, from domain-specific approaches like Chomsky's, Spelke's, Butterworth's, and offer a third alternative: a domain-relevant, Neuroconstructivist approach. I will argue that developmental change is critical at all levels of analysis: gene expression, brain structure and function, cognitive processes, overt behaviours and the environment.

12:00-1:30 Lunch (Board of Directors Meeting)

1:30-2:45 SY24 Symposium Session 24Essex

The development of early childcare practice and professionals in the context of risk and societal transition

Organizer: Vera Maria Ramos de Vasconcellos (Universidade do Estado do Rio de Janeiro)

Organizer: Zena Eisenberg (Universidade do Estado do Rio de Janeiro)

Discussant: Tania Mara Sperb (Universidade Federal do Rio Grande do Sul)

In this symposium, we discuss social and cognitive changes by young teachers in relation to their dynamic and multidimensional participation in a rapidly-changing environment. One context of major political, economic, and social change, in some ways characteristic of urban areas globally yet unique in its Brazilian history, structure, and everyday detail, is the favela. The "favelas" – slums outside the official political-economic structure of society – are being pacified, as the police force is entering these high-risk areas in an attempt to minimize trafficking and criminal action. As a result, schools in these areas are changing as well. In order to account for the many children in need of support in these areas, the municipality of Rio decided, in 2007, to open a selection process for unqualified professionals to work

Saturday—P.M.

with very young children in the high-risk areas. In Rio de Janeiro, in particular, there is a large early childhood public education system, encompassing over 200 childcare centers with 45,620 children between 0 and 3 years of age. In that scenario, a number of “teachers” were hired, leading to questions about the appropriate nature of education for teachers and those in their care. The papers in the symposium discuss the views about risk of this first generation of such childcare workers in Brazil. These young adults are undergoing constant changes in different areas of development: social, emotional, and cognitive. The data focus on three teachers from early childhood education in Rio de Janeiro who were followed for three years during their transition from working as a teacher without a contract to being selected to gain professional training and subsequent work in public systems in high-risk areas. Drawing on data gathered from 2007 through 2011, we present conclusions formulated with our co-researchers (and co-authors in the first paper), based on ten (10) bimonthly reflexive sessions and an 11th summary session, as well as a three-hour interview with them. These conclusions are built from methods including participant observation, content analyses, and two types of narrative analysis to learn about the development of this practice and young professionals over time. Based on these analyses, we focus on participants’ meanings of working with children and families within contemporary changes in Rio, the favela neighborhoods, and related educational practices.

Auxiliary agents in daycare: infancy education in Rio de Janeiro

Vera Maria Ramos de Vasconcellos (Universidade do Estado do Rio de Janeiro)

Cássia Cristina Barreto Santos (Creche Municipal Arara Azul)

Luana Monçores de Oliveira (Creche Municipal Engenho da Rainha)

Ivaneide Ferreira Nogueira (Creche Municipal Ladeira dos Funcionários)

Child care centers in high risk areas in Rio de Janeiro: Teachers’ views

Vera Maria Ramos de Vasconcellos (Universidade do Estado do Rio de Janeiro)

Colette Daiute (The Graduate Center, City University of New York)

Zena Eisenberg (Universidade do Estado do Rio de Janeiro)

Narrative analyses of risk in context

Colette Daiute (The Graduate Center, City University of New York)

Zena Eisenberg (Universidade do Estado do Rio de Janeiro)

1:30-2:45 SY25 Symposium Session 25 Conference Room B

Translating Piaget

Organizer: Jeremy T Burman (York University)

Discussant: Eleanor Duckworth (Harvard University)

This symposium, presented by members of the JPS translation committee, discusses issues of contemporary relevance that can be addressed using historical texts, but using texts that are either unknown in English or which are misunderstood in English. This year, we examine two important books and attempt to clarify an important confusion. Eleanor Duckworth, who served as one of Jean Piaget’s translators (his favorite!), will then discuss the issues arising.

The first book, to be reintroduced by Michel Ferrari, is the crucial three-volume tome that laid the foundations for all of the work of the last several decades of Piaget’s life: *Introduction to Genetic Epistemology* (Presses Universitaires de France, 1950). This is routinely mentioned as the gem of the Geneva corpus, but most English readers know of it only indirectly through its impact on later works. Indeed, this is how it has had its greatest influence: it was on the strength of this book that the Rockefeller Foundation provided Piaget with the funds he needed to create the International Center for Genetic Epistemology.

Saturday—P.M.

The second book, to be reintroduced by Robert Campbell, was intended to be the sequel to *Studies in Reflecting Abstraction* (1977/2001). Since his translation of that work clarified many important questions regarding how it is that new cognitive structures are constructed, we asked that he explain how those ideas were extended in the second book: *Studies in Generalization* (Presses Universitaires de France, 1978). This then also lays the foundations for a future discussion of the third book in that trilogy: *Studies in Correspondences* (Presses Universitaires de France, 1980).

Rather than presenting a third book, the final talk—by Jeremy Burman—will attempt to explain and then correct a conceptual confusion shared by all those who read Piaget in translation, resulting from a change in the meaning of “cognitive.” Since an incommensurability between the word’s meanings in English and French alters the implications inferred from the words Piaget used, the talk will also provide a meta-level view of the committee’s major challenge while at the same time laying out some of the challenges faced by those who would attempt to render Genevan texts in English: sometimes, what Piaget and the Genevans said—in translation—is not what they meant.

The importance of Piaget’s three-volume Introduction to Genetic Epistemology

Michel Ferrari (University of Toronto)

The importance of Piaget and Henriques’ book on generalization

Robert L Campbell (Clemson University)

False friends: On the problematic translation of the French ‘cognitive.’

Jeremy T Burman (York University)

1:30-2:45 PS13 Paper Session 13..... Conference Room C

Narrative, Play, Discourse, and Development

Chair: Tamer G Amin (Lebanese American University)

Linguistic diversity and social interaction at the school: Joint activity and discourse in a language support classroom for multilingual children

Neus Rodriguez (Universitat de Girona)

Ignasi Vila (Universitat de Girona)

In this case study, we examine under a sociocultural perspective instructional practice of a teacher in a language support classroom for multilingual children newly arrived from other countries to Catalonia. To do so, we combine dialogue analysis and classroom activity between the teacher and children during 13 class sessions of a school term. This analysis allows us to understand the production of certain interactions that help children to comprehend and produce school language, Catalan. At the molar level describe the different types of activities and forms of organization of joint activity, and microgenetic level identify how to develop different forms of semiotic mediation aimed at generating understanding and producing language code in the different tasks participants share. The results show how the teacher reaches her instructional goals by using different interaction strategies. On the one hand, she organizes the classroom activity using recurrent sequences of physical and symbolic space delimitation, routines, frequent and interspersed rehearsals throughout the development of different tasks and dyads with each of her students. On the other hand, her discourse is featured by strategies such as explicit dialogue, speech in round, sub-dialogues, silences or gap break, emphatic speech, meta-discourse, reformulations and expansions of children’s speech.

Saturday—P.M.

Improving emotional and pro-social competencies through mediated reading: Short term effects of an infantile literature program

Enrique Riquelme (Universidad Católica de Temuco)

Ignacio Montero (Universidad Autónoma de Madrid)

Emotional competencies are considered protective factors against behavioral problems. In the same way, they have been associated with an adequate social and academic development. Early intervention means a greater chance of stability and development of these skills. However there are few programs addressing these aspects and evaluating their effectiveness in the short, medium or long term. Our research goal was to implement an early intervention program to the development of emotional competencies and pro-social behavior based on the mediated reading of infantile literature. Participants were 81 children aged between seven years and half and eight years and nine months, whose conformed two given groups. In order to assess the program impact we implemented a quasi-experimental design with one control group. Both groups -"Mediated reading" and "Traditional reading" - were compared in measures of pro-social behavior, empathy and emotional regulation. The results indicated significant differences in all dimension, with the mediated reading group obtaining the best performance in all evaluated dimensions. The work concludes by analyzing the outcomes and limitations of the implemented program.

Using drama to enhance language acquisition in English language learning kindergarteners

Ann Cale Kruger (Georgia State University)

R Brooke Bays (Skidmore College)

Judy Orton (Georgia State University)

Many children who speak a language other than English do not succeed in American schools. Adequate oral English undergirds achievement in monolingual schools (Carlo et al., 2004). Classroom activities focused on meaning, such as drama, support vocabulary and emergent literacy (Connor et al., 2006). Using a paired cluster randomized control trial design, 6 Title I schools were randomly assigned to treatment or control conditions. Treatment teachers received professional learning in drama-based instructional strategies and collaborated with teaching artists on 13 language arts lessons over a 5-month period. Participants were 184 randomly selected English Language Learning (ELL) kindergarteners (92 girls). The intervention had a significant and positive effect on students' English language acquisition on three measures. Drama techniques enhance language acquisition by giving students an opportunity to engage in the type of social/communicative activities emphasized in child-centered, developmentally appropriate instruction, activities frequently cited as essential to the development of language. The implications for the professional learning of teachers of young children, especially ELL children from low-income backgrounds, are noted.

The development of young children's use of evaluative devices in fictional narratives

Hande Ilgaz (Temple University)

Ageliki Nicolopoulou (Lehigh University)

This paper examines preschoolers' ability to use evaluatives in their spontaneous fictional narratives. Research indicates that the ability to use evaluatives develops after the preschool years, specifically during or after middle childhood (e.g., Bamberg & Damrad-Frye, 1991; Ukrainetz et al., 2005). We argue that the narrative elicitation methods used in previous research have not provided children with culturally meaningful storytelling contexts that encourage children to tell expressively rich and engaging stories. To overcome this limitation, we used a year-long storytelling and story-acting activity. In this activity preschoolers volunteered to dictate stories to their teacher that were later acted out with their peers during group time. We hypothesized that this activity would: a. provide an accurate portrayal of

Saturday—P.M.

the developmental differences in this age range; b. facilitate children's use of evaluatives when continued throughout the school year. We examined the frequency and diversity of evaluative use in stories by 3-, 4-, and 5-year-olds. The results revealed developmental differences in the frequency of evaluatives children used in the beginning of the year, as well as an increase in both the frequency and diversity of evaluatives from the beginning to the end of the school year.

Stories and patterns: The relation between narrative and pattern abstraction in preschoolers

Dana Liebermann Finestone (Hamilton-Wentworth District School Board)

Daniela O'Neill (University of Waterloo)

Clarissa Leung (University of Waterloo)

As story comprehension and patterning skills are often emphasized in preschool and early elementary curricula, the studies presented in this paper examined the relation between three narrative abilities and the higher-order mathematical reasoning skill of pattern abstraction. In Study 1, 5-year-olds' performance on a narrative theme identification task, but not a narrative sequencing task, was related to performance on pattern abstraction task assessing children's ability to abstract out a pattern from a series of objects. Study 2 confirmed the findings of Study 1, with a stronger significant correlation found between 5-year-olds' performance on the narrative theme and pattern abstraction tasks. In addition, a significant relation existed between children's perspective shifting abilities and performance on the pattern abstraction task. Our results underscore the fact that narrative ability is not a unitary construct and highlight the need to carefully consider specific narrative abilities in order to better understand their potential relation to other specific higher-order abilities such as mathematical reasoning.

1:30-2:45 PS14 Paper Session 14..... Windsor West

Neuroscience

Chair: Mark Sabbagh (Queens University)

Predicting substance use in young adults from early childhood temperament and adolescent striatal brain activation

Ayelet Lahat (University of Maryland)

Koraly Pérez-Edgar (The Pennsylvania State University)

Kathryn A Degnan (University of Maryland)

Amanda E Guyer (University of California)

Carl W Lejuez (University of Maryland)

Monique Ernst (National Institutes of Health)

Daniel S Pine (National Institutes of Health)

Nathan A Fox (University of Maryland)

In the present longitudinal study, individuals who have been characterized as behaviorally inhibited during childhood were assessed during adolescence in a monetary incentive delay task while undergoing neuroimaging. These participants were recruited again during young adulthood and completed self-report measures of substance use ($n = 65$). Childhood behavioral inhibition and adolescent striatal activation interacted to predict substance use in young adulthood. Specifically, individuals exhibiting high behavioral inhibition were more likely to report heightened substance use during young adulthood if they exhibited striatal hypersensitivity to incentives during adolescence. These findings are the first to identify markers of risk for substance use by using early childhood temperament and adolescent brain activation.

Saturday—P.M.

Functional MRI study of Piaget's conservation-of-number task in preschool and school-age children: A neo-Piagetian approach.

Olivier Houdé (Paris-Descartes University)

Jean Piaget's theory is a central reference point in the study of logico-mathematical development in children. One of the most famous Piagetian tasks is number conservation. Failures and successes in this task reveal two fundamental stages in children's thinking and judgment, shifting at approximately 7 or 8 years of age from visuospatial intuition to number conservation. In the present study, preschool (non-conservers) and school-age (conservers) children aged 5–6 years and 9–10 years, respectively, were presented with Piaget's conservation-of-number task and monitored by functional magnetic resonance imaging (fMRI). The cognitive change allowing children to access conservation was shown to be related to the neural contribution of a bilateral parietofrontal network involved in numerical and executive functions. These new fMRI results highlight how the behavioral and cognitive stages Piaget formulated in the twentieth century manifest in the brain with age.

A developmental fMRI study on creative idea generation

Sietske W Kleibeuker (Leiden University)

Carsten KW De Dreu (University of Amsterdam)

Dietsje D Jolles (Stanford University)

P Cedric PM Koolschijn (Leiden University)

Eveline A Crone (Leiden University)

Creative idea generation involves both novelty and appropriateness. Therefore it benefits from generating ideas in a disinhibited, random way, as well as from combining categories in a structured way. Prior studies imply importance of lateral prefrontal cortex (PFC), left supramarginal gyrus (SMG), and left angular gyrus (AG) in creative idea generation. In the present fMRI study we aimed to gain more insight into the functions of involved brain regions and development of creative idea generation. Nineteen adults (25-30yrs) and 20 adolescents (15-17yrs) were presented with common objects and instructed to either think of as many a) Ordinary Characteristics (OC) or b) Alternative Uses (AU) during scanning. Participants generated more OC than AU ($p < .001$). Adults generated overall more solutions than adolescents ($p = .01$), indicating that idea generation in general, and not creative idea generation in specific develops throughout mid-adolescence. fMRI whole-brain analyses contrasting AU > OC showed increased activations in left SMG and AG. In addition, divergent idea generation (contrasting AU trials with at least 2 solutions > OC trials with at least 2 solutions) also involved left lateral PFC recruitment. Given that this latter type of thinking required shifting between alternative ideas, it indicates that the PFC might play an important role for flexible creativity.

Imaging age-related changes in cognitive control networks using spatial ICA

J Bruce Morton (University of Western Ontario)

Age-related changes in cognitive control, or the ability to hold attention-guiding rules in mind and inhibit prepotent behaviors, have long been associated with the development of the dorsolateral prefrontal cortex. There is however growing recognition that cognitive control is not localized but involves distributed networks of brain regions that change dramatically between childhood and early adulthood. Characterizing the principles governing the development of these networks and relating these changes to the emergence of cognitive function over time remain fundamental research challenges. The current paper presents spatial ICA as a means of imaging and probing the function of distinct networks over development. ICA is a means of revealing hidden sources underlying a series of observations, such as volumetric timecourses that comprise fMRI datasets. ICA offers several advantages over seed-based meth-

Saturday—P.M.

ods for studying brain networks in that it does not rely on an a priori selection of regions of interest and permits direct functional characterizations of resulting networks. The utility of the technique is illustrated by presenting evidence of age-related changes in functional connectivity of cognitive control networks associated with performance of the Dimensional Change Card Sort task.

1:30-2:45 PS15 Paper Session 15..... Windsor East

Dynamic Systems Theory

Chair: Mark Bickhard (Lehigh University)

Micro-development of inquiry: A case study based on a Dynamic Systems approach to cognitive development

Jairo Montes (Universidad del Valle)

Rebeca Puche (Universidad del Valle)

Marijn van Dijk (University of Groningen)

This proposal consists in a characterization of cognitive functioning change within scientific reasoning, specifically inquiry. Inquiry is understood as the set of procedures aimed, either at confirming or refuting the relevance of certain ideas or action sequences (hypotheses) related to the facts, or to validate criteria for particular situations. The characterization of cognitive functioning change was carried out based on Dynamic Systems Theory. Three computer based tasks were constructed as multivariable problem solving situations concerning moving objects. We present a case study of a girl named Mariana (aged 5;6 years), tested during a period of five months and thirty days. Microgenetic analysis tools were used track change in cognitive functioning over time. A description of the trajectories of change over time, using a state space grid (SSG) technique was used. The patterns within the SSG, allowed to identify the dynamics of change in the form of attractors. This kind of description provide an complex perspective of variability and micro-development. It was found that inquiry is a complex process characterized by a non-cumulative, non-linear development, in which self-organization and emergence are crucial.

Rethinking moral development: Dynamic Systems Theory and the soft-assembly of moral behaviour

Minkang Kim (The University of Sydney)

Derek Sankey (The University of Sydney)

In their seminal work on moral reasoning and judgement, Jean Piaget and Lawrence Kohlberg established a foundational theoretical framework that led to extensive research for more than half a century. However, over the past decade or more it has become clear that, while their work may still provide broad approximations, it is now time to rethink moral development. This paper proposes that Dynamic Systems Theory (DST) is able to provide an alternative, productive metatheory. Central to DST is the claim that development is non-linear, emergent and self-organising and that behaviour is 'softly-assembled'; that it is assembled from multiple interacting components that can be freely combined from moment to moment on the basis of the context, task and developmental history. Moreover, it is claimed that this helps to bridge dichotomous gaps in cognitive development theory, such as nature versus nurture, stability versus change, competence versus performance. This paper focuses on the notion that moral development and behaviour is softly assembled and examines how this can bridge the perplexing gap between moral competence and performance. It also explores the idea that one element in the soft assembly is a predilection to value, which may shed light on the rudiments of morality.

Saturday—P.M.

Development in everyday practices: A Gould and Thelen perspective of development

Juan José Giraldo-Huertas (Universidad de la Sabana)

Lilian Rodríguez (Universidad de la Sabana)

Development is a characteristic of open systems that in human case permits the emergence of new organizational forms, including cognitive and social types. Studying development implies recognizing that the emergence of new forms is the product of the interaction of biological, social and cultural levels. This approach implies the integration of two grand disciplines (evolutionary biology and dynamic development), and resembles two major researchers that leave us a great corpus of evidence and methodology for studying evolutionary development: Stephen Jay Gould and Esther Thelen. The principal aim of this paper is to show a description of a case study in self-generated development by exaptation, which could come in everyday practices that take place within family and analyze the way in which these contribute to the development of cognitive development. Such study is conducted as an idiographic analysis of a Case study: we analyze the phenomenon of development from different perspectives in which many of the everyday practices and experiences that a girl (L.D.) encounters within her family system, and how these occurrences contribute to cognitive development.

The role of embodied robots in the study of social cognition

Joseph Thompson (Simon Fraser University)

Timothy P Racine (Simon Fraser University)

Nehdia Sameen (Simon Fraser University)

Psychologists have heard a recent call for collaboration between developmental psychology and robotics (Scassellati, 2000; Lungarella, Metta, Pfeiffer & Sandini, 2003; Breazeal, Gray & Berlin, 2009; Dominey & Warneken, 2011; Kelley & Cassenti, 2011). The robotic implementation of shared intentionality proposed by Dominey and Warneken (2011) as an illustrative example of how this project can run into trouble. The authors argue that despite the virtues of Dominey's and Warneken's project, their model fails to be embodied in any sense that might be relevant to shared intentionality. The model's instantiation in a robot, the Cooperator, does nothing to contribute to the realization of nested higher order representations, and the robot is situated in an artificial teacher-receiver environment, one where we could never establish whether the group has achieved shared intentionality. Like the classic sandwich model of cognition (Hurley, 1998), it maintains the distinction between perception, cognition, and action (contrary to Brooks' (Brooks, 1999) and Pfeiffer's (Pfeiffer, Bongard and Grand, 2007), relatively uncontroversial, functional understanding of embodiment). It is argued that, by neglecting the logical relationship between embodiment and shared intentionality, Dominey and Warneken are left with a robot from which little of significance to developmental psychology can be inferred.

Situated social robots as a developmental research tool: Issues and prospects at the new frontier

Nehdia Sameen (Simon Fraser University)

Joseph Thompson (Simon Fraser University)

Are robotic models of shared intentionality and social cooperation feasible as a research tool to investigate the development of social cognition, particularly as compared to mere computational simulations? This paper argues that they are, but only insofar as situated embodiment is relevant to a developmental explanation of social cognition. To investigate the viability of situated social robots as an aid in developmental research, we will review ideas that have been proposed regarding the significance of embodiment in the context of social cognition in both infants and robots (Barsalou et al., 2003; Smith & Gasser, 2005; Rao, Shon & Meltzoff, 2007; Breazeal, Gray & Berlin, 2009). Although we concede that the

Saturday—P.M.

notion of robots as embodied knowers has spawned a number of fascinating lines of research (Mataric, 1996; Breazeal, 2002; Lungarella et al., 2003; Fong, Nourbakhsh & Dautenhahn, 2003; Mataric, 2005; Breazeal, Gray & Berlin, 2009; Schlesinger, 2009), it remains an open question whether and how implementations of such embodied mechanisms on robotic platforms will aid the developmental psychologist's project of providing explanations for the emergence of shared intentionality and social cognition in infants and children. In particular, it is not yet obvious how such embodied robotic models can be used to test developmental hypotheses regarding complex socially-coordinated phenomena such as social cooperation.

1:30-2:45 PS16 Paper Session 16..... Conference Room DE

Self, Identity, and Health

Chair: Christopher E Lalonde (University of Victoria)

Health conceptions among overweight adolescents

Rachel Manes (The Graduate Center, CUNY)

Adolescence is a period when diet and exercise patterns become habits which may then be carried through to adulthood. This research analyzed changes in adolescent conceptions of health as they participated in a residential weight loss camp designed to promote their health. While residential weight loss camps have been evaluated in terms of psychosocial or physical outcomes, this is one of the first studies to explore how conceptions of health and change in body mass index (BMI) over the course of the program. Findings indicate that not only did participants lose weight but conceptions of health changed from physical meanings to integrate personal meanings at the end of the camp program. This study extends research and design for obesity by including conceptions of health in addition to physical outcomes and employing a context-sensitive approach that will lead to future research seeking youth perceptions during their participation in health-oriented programs. This new approach to studying how youth activities in daily life relate to process changes in conceptions of health and physical changes in BMI will lead to improvements that increase the effectiveness of these programs and their range of outcomes.

Shifts in intra-individual variability in children's self-understanding

Annerieke Oosterwegel (Utrecht University)

Intra-individual variability has become a popular target for research. One variable in which intra-individual variability has been studied for some time is self-esteem. Rosenberg introduced the concept under the label "barometric self-esteem instability" in relation to identity diffusion in adolescence. Kernis and colleagues showed that self-esteem instability in adults is associated with a range of problematic behavior, suggesting a fragile sense of self, but also correlating with growth. Based on Harter's work on the development of self-understanding, Fischer's Skill Theory, and Dynamic Systems Theory, we conceptualize intra-individual variability in self-esteem as a symptom of transition in self-understanding. This approach implies that intra-individual variability in self-esteem is no longer specific for adolescence or adult psychopathology, but may occur in different phases and under different conditions across the life-span. This approach further implies that both normative and intra-individual changes in variability are feasible. Also, phases of instability can be taken as sensitive periods in the development of self-understanding. So far, we have identified shifts in variability in 4-5 olds and 8-12 year olds, marking the emergence of domain-specific and global self-understanding respectively. Further, our findings suggest a waxing role of idiosyncratic experience as compared to cognitive development from childhood to adolescence.

Saturday—P.M.

Memory, identity and well-being in late adolescence

Emily Sutcliffe Cleveland (California State University, East Bay)

Adolescence is a significant period in the ontogeny of autobiographical memory and personal identity, as memory narratives take on important meaning for the adolescent's sense of self and well-being (McAdams, 2001). We explore relations between memory and identity and well-being in a sample of 47 late-adolescents. Participants completed the Self-defining Relationship Memories Questionnaire (McLean & Thorne, 2003), in which they were asked to describe (in writing) up to five self-defining memories. These memories were then coded for meaning-making (McLean, 2005), autobiographical reasoning (Pasupathi et al., 2006), positive resolution (Pals, 2006), emotional tone (McAdams et al., 2006), internal states language (Bauer et al., 2003), motivation (McAdams et al., 2006), narrative complexity (McAdams et al., 2006), and interest in memory (Cleveland et al., 2007). We explore relations among these memory variables and measures of relationship quality (Experiences in Close Relationships-Revised), depression (Center for Epidemiologic Studies Depression Scale), self-esteem (Rosenberg Self-Esteem Scale) and life-satisfaction (Satisfaction With Life Scale).

The relations between strategies of self-continuity and cultural values in Asian Canadians

Sumin Na (University of Victoria)

Self-continuity pertains to the ability to perceive oneself as continuous across time. Identifying the self as temporally persistent requires a solution to what has been called the paradox of sameness and change; that one must find a solution to explain how personal change exists concurrently with personal sameness (Chandler, Lalonde, Sokol & Hallet, 2003). Chandler and colleagues (2003) have examined two different styles of reasoning of self-continuity. The "Essentialist" style pertains to holding on to an aspect of the self that remains the same over time, whereas in a "Narrativist" style, the individual constructs relational or storied forms of the self that bind together the past and the present self. Analysis of over 400 interviews revealed that most individuals indicated a preference for either the Essentialist or Narrativist response styles. It has been suggested that this preference in response style is dependent on cultural variability (Chandler et al., 2003). This paper will discuss the role of cultural values on the style of self-continuity reasoning, and the strategy more likely used by first-generation Asian Canadians. It is reasoned that Asian Canadians will prefer to use a Narrativist style of reasoning, and results will be discussed in relation to one's level of identification with heritage cultural values, which was measured using a multi-dimensional model of individualism and collectivism (Singelis, Triandis, Bhawuk, & Gelfand, 1995).

2:45-3:00 break

3:00-4:30 IS05 Invited Session 5..... Essex

From complex insights to complex systems: Rethinking how development happens

Organizer: John P Spencer (University of Iowa)

This symposium brings together several of the top researchers who use formal, complex systems approaches to understand how cognition changes over development. The goal is to rethink Piaget's insights in the context of modern, formal theories. The central question is whether these modern tools give us new leverage to understand the mechanisms that underlie changes in thinking over time. The first talk will re-visit associative systems which have often been discounted as too simple to capture developmental change. The message is that association is a powerful mechanism for creating change, even in relatively abstract cognitive tasks. The second talk will examine the emergence of new cognitive abilities in early development, focusing on the critical question of how working memory capacity increases over time.

Saturday—P.M.

The final talk will provide an overview of constructive artificial neural networks that have shed new light on a host of changes in cognitive development. Together, the talks will highlight cutting-edge work using neural process models to understand how development happens, integrating a formal, complex systems perspective with a rigorous approach to studying behavioral development.

Throwing out Lucienne and Laurent with the bathwater: How the development of abstraction via perception and action can emerge from associative systems

Bob McMurray (University of Iowa)

Keith Apfelbaum (University of Iowa)

Larissa Samuelson (University of Iowa)

Capacity in context: Dynamic processes of behavior, memory, and development

Vanessa Simmering (University of Wisconsin—Madison)

Constructive artificial neural-network models for cognitive development

Thomas Shultz (McGill University)

3:00-4:30 PS17 Paper Session 17Conference Room B

Theory of Mind

Chair: Sandra Bosacki (Brock University)

The role of culture in advanced theory of mind: Low-SES versus mid/high-SES children thinking about their reader's mind when composing texts

Joan Peskin (University of Toronto)

Carly Prusky (University of Toronto)

Julie Comay (University of Toronto)

A critical component of literacy is the ability to take one's reader's background knowledge into account when writing a text. This study investigated whether low-SES children at the beginning of elementary school demonstrate delays in representing the epistemic states of their readers. Participants comprised 96 children aged 6 to 7 years, 48 from schools in low-SES neighborhoods and 48 from schools in middle- to upper middle-class neighborhoods (mid/high-SES). To measure the ability to Think of your Reader's Mind (ToRM) participants dictated letters to a knowledge-absent recipient (e.g., about playing in the snow to a child who has never seen snow), and to a knowledge-present recipient (a child in Canada). Participants also received standardized measures of advanced ToM, pragmatic language, and executive function. Results showed no significant differences between participants at mid/high- versus low-SES schools on the ToRM measure, and maternal education also had no relationship to ToRM performance. However, students from mid/high-SES schools scored significantly higher than those from low-SES schools on a Theory of Mind composite, a pragmatic language composite, and a test of working memory. The ToRM measure in the present study appears to be SES- or culture-free and reasons for this will be discussed.

Saturday—P.M.

Attribution of false belief in French children: Decalages between tasks and cultural differences

Edy Veneziano (Université Paris Descartes -CNRS, MoDyCo)

Marie H el ene Plumet (Universit e Paris Descartes)

Nathalie Angeard (Universit e Paris Descartes)

Sylvain Moutier (Universit e Paris Descartes)

Theory of Mind (ToM) is usually considered a universal cognitive skill that children progressively master in very similar patterns of age-related changes (Wellman, Cross & Watson, 2001). However, developmental trajectories can be modulated by specific experiential factors and differences could exist in the timing of first acquisitions and in the mastering of different components of ToM. Preliminary data suggested that French children, like children in other countries (e.g., China, Japan, Italy; Liu et al, 2008; Lecce & Hughes, 2010), succeed false belief tasks later than English-speaking children as reported in published literature. Moreover, we also found a decalage between performances in Unexpected Content (UC) and Change of Location (CL) FB tasks, the former being succeeded earlier than the latter. The study reported here aimed to check the validity of these preliminary results, controlling more precisely the instructions and the order of presentation of the two tasks. 160 children, 5 to 8 years, were included in this study, with the order of tasks counterbalanced equally among them. The preliminary results were confirmed. Rate of success on the UC FB task corresponded to that obtained with English-speaking children, while success in CL FB task lagged behind. The discussion will bear on the decalage between the tasks and on the significance of these cultural differences.

Deception and altruistic intentions: Children's reasoning about prosocial lying

Matthew Gingo (University of California, Berkeley)

This research examined children's judgments about the legitimacy of deception and the requirement of honesty in situations where acting honestly was in conflict with acting altruistically. Forty-eight 7- and 9-year-olds were presented with situations in which children of comparable ages lie to peers to achieve altruistic goals, or tell the truth at the expense of an altruistic goal. Age-related variance in evaluations was found for the type of altruistic act. Majorities of both age groups evaluated lying positively when it was intended to prevent physical or psychological harm, however only the 9-year-olds evaluated deception positively when intended for fairness, or to redress unjust exclusion. Moreover, the majority of 9-year-olds negatively evaluated honesty that led to physical or psychological harm, or to unjust exclusion, whereas the majority of 7-year-olds positively evaluated honesty except in the case of physical harm.

From theory of mind to theory of knowledge

Michael Weinstock (Ben-Gurion University of the Negev)

Yonatan Saraabi (Ben-Gurion University of the Negev)

Personal epistemology researchers have posited that developments in the theory of mind (ToM) represent the first steps in epistemological development. With the attainment of ToM at around ages 4-5, children understand that with incorrect information would hold a false belief. Thus, whether one has a false or true belief depends on the correctness of external information. The knower knows objectively, but with incorrect information. Interpretive theory of mind (I-ToM), generally attained around age 7, concerns the understanding that two people having been exposed to identical information might legitimately hold different beliefs. Thus, knowledge is seen as the result of knowers' interpretive acts and not simply a copy of correct or incorrect information (Carpendale & Chandler, 1996; Lalonde & Chandler, 2002). This study investigated whether the attainment of I-ToM appears to coincide with the first move in epistemological development from a realist to a dualist understanding of knowledge and knowing. It was found that

Saturday—P.M.

practically all those I-ToM had dualist epistemology, and that those with I-ToM and dualist epistemologies with some subjectivism were more likely to demonstrate the need for knowledge justification.

Theory of mind development beyond 6 years old: A portrait in Kindergarten, 1st grade and 2nd grade

Julie Mélançon (Université du Québec à Rimouski)

Hélène Ziarko (Université Laval)

How do metarepresentational abilities of Theory of mind (TOM) progress at the beginning of primary school? In a prior longitudinal study, TOM understanding was investigated with 203 French-speaking children from kindergarten to 1st grade. The results obtained from five TOM tasks supported a theory of mind development beyond the age of 6, and highlighted the importance of mastering mental states and manipulate higher-order explicit representations beyond the preschool years. To describe more precisely TOM manifestations in school age, study 2 was designed to examine a wider range of metarepresentational abilities and to extend this investigation to 2nd grade. On the basis of Wellman & Liu (2004) and Miller (2009), more Explicit false belief tasks and Second-order mental states tasks were added to the initial TOM battery and presented to 6, 7 and 8 years old children in a cross sectional study (N=68). The Strange stories test (Happé, 1994; O'Hare, et al., 2009) was also included to examine a wider range of mental states. In this presentation, results of the study 2 will be exposed and compared with the observations of study 1 to describe TOM manifestations at the beginning of schooling, and methodological considerations will be discussed.

3:00-4:30 PS18 Paper Session 18..... Conference Room C

Piagetian Theory

Chair: Jedediah WP Allen (Lehigh University)

Elaborating a brain-mind model of reflective abstraction: Task design for whole number and fraction schemes

Ron Tzur (University of Colorado)

Dietmar Cordes (University of Colorado)

Xiyan Jin (Monash University)

This paper addresses a twofold problem: How may Piaget's key constructs of scheme and reflective abstraction be linked to brain research, and how to design tasks for distinguishing components of whole number and fractional schemes? Accordingly, we first present a mechanism (Reflection on Activity-Effect Relationship) and stages (Participatory, Anticipatory) for explaining how the brain may construct a new mathematical scheme. Then, we describe tasks designed to separate between brain activity during operation used ('>' or '=') and during selection of number type (whole number or unit fraction). We analyze preliminary findings about interaction between sequencing of task components, number type operated on, and reaction time. We suggest that a participatory (prompt-dependent) stage of a scheme—the inverse relation between number and size of unit fractions—may be a cause for the significant impact of instruction on solving fractional tasks.

Piagetian tasks in virtual contexts: An exploratory study with Brazilian children

Claudia Broetto Rossetti (Universidade Federal do Espírito Santo)

Since the 1980's, virtual contexts have been used for the evaluation of cognitive processes. However, the attempts to convert classical Piagetian tasks into games have resulted, almost always, in activities that moved away from the Piagetian theoretical approach. In this research the notions of spatial reasoning

Saturday—P.M.

and combinatorial logic from 15 children aged between eight and 10 years old from a public school in the city of Vitoria, Brazil, were evaluated using two electronic games based on classic Piagetian tests. Each participant played two matches of the games "Trash Zone 3" and "Protocols" and answered two short interviews before and after the matches. In general, participants were able to reach the end of the games with significant reduction of playing time between the two rounds of each game. There were also a great number of errors made during the matches of the game "Protocols", which evaluates combinatorial logic. In the game "Trash Zone 3", the errors were considered less serious. No significant differences between the performance of girls and boys, and not even a consistent variation by age were found. Thus, the type of games used seems appropriate for the analysis of the notions of combinatorial logic and spatial reasoning.

A molecular basis for Piaget's scheme: Some surprising implications

Robert R Traill (Independent Scholar)

Piaget, as epistemologist, studied knowledge-acquisition within the brain, but also within scientific society. Thus we can note his equilibration outlook on scientific method and apply it in seeking a plausible real-matter basis underlying his "scheme" — his abstract element of thought/action. The strictness of real-matter formulae are actually very helpful in narrowing the possibilities; and the provisional conclusions are:

- There must be 1D knowledge-coding independent of the simultaneously-operating synapses!
- This text-like 1D-coding must be "RNA-like" (as considered by Piaget).
- The 1980s rejection of RNA was based on the false premise that such RNA could only act via synapses.
- Such molecular coding would require an alternative intercommunication method — almost certainly short-range Infra-Red (IR).
- Hence mysterious "ultraweak" escaped-emissions known since 1923.
- Myelinated nerve-fibres are the right size and shape to double as coaxial IR-cables!
- The RNA basis neatly explains inherited behavioural traits, but anyhow all traits are seen as subject to mutation-and-selection.
- The huge population of candidate schemes now allows for radical trial-and-error anticipation instead of "tape-recording" — even during conversations, etc.
- Traffic management (a huge task) is possibly the main role for the synaptic system.
- The supposed presence of orderly IR offers solutions to some long-standing enigmas in growth-control theory. See the www.ondwelle.com website.

A mechanistic perspective on conservation task performances

Duc N Tran (University of Houston)

Hanako Yoshida (University of Houston)

Since Piaget introduced the cognitive limits observed in early problem solving, there have been many cognitive tasks used to test early problem solving skills in children. In the present study, we focused on a well-studied Piaget paradigm—Conservation— and cognitive tasks measuring effective attentional skills (Attention Network Test/ANT; Fan et al., 2002) and working memory (Digit Span Task/DST) as a means of exploring its relationship. Further, given considerable research between one's language experience (i.e., bilingualism) and attentional shifting skills and working memory, children from various language backgrounds were considered. A total of 120 children (60 monolinguals and 60 bilinguals) aged 4-, 5-, 6-, and 7- years participated in the present study. Results support the role of attentional control and working memory in the conservation tasks, as well as the developmental changes of the relation. Moreover, differences in performance among the conservation tasks (i.e., number, liquid, mass) imply that differ-

Saturday—P.M.

ent cognitive processes may be involved for each task. In regards to language experience and task performances, bilinguals performed significantly better in the conservation-of-number task, the DST, and the ANT. The current study not only provides a basic mechanistic perspective towards Piaget's classical theories in conservation, but also offers a new outlook towards language and cognitive development.

The conservation of meaning: Constraints and a logic of meanings

Keith R Alward (Independent Scholar)

Meaning is defined by Piaget as the implications of action. This comes from his last major work, *Towards a Logic of Meanings*, (Piaget & Garcia, 1991). A much earlier work, *La Formation du Symbole Chez L'Enfant*, 1946 (later published in English as *Play Dreams and Imitation*, (Piaget, 1962) argued that rational thought and social coordination require the elaboration of a system of signs whose meaning is freed from the idiosyncratic vagaries of motivated symbols as expressed in play, dreams, and imitation, and rather, is anchored in social convention and norms expressed as consensus and agreements. In an earlier paper for the Society, I referred to this state of social and cognitive development as a "conservation of meaning". I suggested that this conservation can be characterized in a problem solving space, as a structuring of constraints. In this paper, I advance this thesis by exploring how this "structuring of constraints" can be formally characterized as a logic of meaning implications which is both intensive and extensive and which corresponds with and extends Piaget's and Inhelder's use of the 16 binary operations and the INCR grouping used to describe formal operational thought.

3:00-4:30 PS19 Paper Session 19.....Windsor West

Play and Art

Chair: Cynthia Lightfoot (Penn State Brandywine)

Gender and player characteristics in video game play

Bruce D Homer (The Graduate Center, CUNY)

Elizabeth Hayward (New York University)

Jan L Plass (New York University)

The present study explores the role of player characteristics on gaming habits and preferences. Specifically, the predictive power of age, gender, and psychological attitudes on time spent playing video games and game preference was explored. Children ages 10 to 15 were given two surveys: a video game habits survey and the BASC-II self-report assessment of personality. Results confirm previous findings of a significant gender difference in both time spent playing video games and game type preference. Across preadolescence, both male and female participants were found to increase in the time spent playing video games with age. Game type preference was predicted by several psychological characteristics of participants. For example, increases in females positive feelings about the self were associated with increased likelihood of electing first person shooters as a favored game type. Increases in males internalizing difficulties were associated with decreased likelihood of electing Mass Multiplayer Online Role Playing Games (MMORPGs). The current findings both confirm previous results with an underrepresented age group while also lending novel insight into the psychological processes that may contribute to video game preference among preadolescents.

Surprise encounters: Illuminating implications for learning through the arts

Sarah May (Tufts University)

Advancing research in learning and development through the arts may shed much needed light on unique ways of knowing that the arts promote. Because the confrontation of novelty and the unexpected

Saturday—P.M.

is an inherent quality in aesthetic and arts experiences, the knowledge and skills developed through engaging surprise may be one such area that the arts are particularly apt to foster. Surprise has been a major focus of research areas in the social sciences, with definitions varying depending on context and theoretical frameworks. The present paper provides a description of research on surprise and its role on interest, exploration, and development, but it advances traditional conceptions of surprise by including current notions of surprise as it relates to the arts and aesthetic experiences. Evidence from the social sciences, education, philosophy, and artists suggests that learning in and through the arts may provide ample opportunities for individuals to experience surprising situations and subsequently engage in unique problem solving strategies that encourage deep learning. Conclusions focus on implications for redefining research in artistic development and learning, and include suggestions for educators and policy makers attempting to promote rich arts learning experiences for children and youth.

Aesthetic Knowledge and Experience: Arts and the Reshaping of the Construct of Cognition

Kathleen A Camara (Tufts University)

With the current emphasis on testing in the U.S., children are being socialized into thinking in terms of correct answers and single solutions to problems. Even “discovery learning” methods and curriculum emanating from the work of Jean Piaget have come to mean discovering what others already know, i.e., learning the canon of knowledge that is considered important to the culture. Children are directed to find the “right” answer to questions, instead of learning about the possibility of several “right” answers. Eisner (2002) warned against the current focus in academic schooling leading to an imagination that is “impoverished.” Greene (1995) has written about the dangers of shaping minds with a focus on a type of learning that emphasizes efficiency, factual knowledge, and what is, instead of what could be. This paper will examine theoretical and empirical work focusing on the inclusion of the arts as essential to the study of cognition and to learning. The study of arts, which stimulate imagination and the notion of possibility, provides students with experiences that enhance the development of mind. Building on the theoretical writings of Greene, Eisner, Feldman, and Gardner, and drawing from empirical studies of learning through the arts (Winner and others), this paper will examine the theoretical and practical foundations of an arts-based perspective in our construction of what is meant by cognition.

Assessing young children’s spatial development through block and Lego® play and its relationship to STEM disciplines

Daniel Ness (Dowling College)

Stephen J Farenga (Dowling College)

Given young children’s strong propensity toward pattern and shape activity during free play (Ginsburg, Pappas, & Seo, 2001; Ginsburg, Lin, Ness, & Seo, 2003), the Space-Geometry-Architecture (SPAGAR) assessment tool (Ness, 2001; Ness & Farenga, 2007) was designed to identify more specific categories in spatial and geometric thinking through constructive activities. Teacher education curricula do not include the study of spatial and geometric thinking—an area that is critical for developing students’ skill sets required in STEM related disciplines. The central premise of the SPAGAR instrument is that it can be used to identify both universal and culturally bound conceptions of space and geometry as well as basic architectural principles among four- to six-year-old children. The purpose of this study is to (a) adapt the research version of the Space-Geometry-Architecture - Research (SPAGAR-R) assessment tool into an accessible version for practitioners (Space-Geometry-Architecture - Practitioners); and (b) establish and evaluate the psychometric properties and practical feasibility of SPAGAR-P. Further, this assessment system supports teachers’ abilities to measure the formative components of spatial thinking and thereby improve standards-based instruction later in STEM related disciplines.

Saturday—P.M.

Scaffolding make-believe play in preschool classroom: A tool for enhance the child's interpersonal problem-solving strategies?

Sarah Landry (Université Laval)

Pierre Pagé (Université Laval)

Caroline Bouchard (Université Laval)

Studies suggest that a child's mature make believe play contributes to the improvement of their executive functions, which includes social competence and their interpersonal problem-solving abilities. Play, which has been successfully used in preschool, allows children to draw on a variety of skills such as planning, negotiation, and problem solving. These skills can be reused later on, not only in play situations, but also in daily life. This study examines how scaffolding make believe play can enhance children's development. We evaluated the social thought characteristics on 72 subjects (43 boys and 23 girls) of five or six years old ($M = 5.22$ years) with multiples tasks. Between the tasks, the experimental group participated in weekly one-hour activities. The 9 activities were designed in accordance with the practices recommended in previous empirical studies and by considering the main social and cognitive knowledge required to adopt the social skill. During this presentation, we will describe the issues and the conceptual framework of the study. We will also present key elements of the play activities. Preliminary results are discussed in terms of make believe play as a tool to enhance social behaviour and the educational implications that support preschool education.

3:00-4:30 PS20 Paper Session 20..... Windsor East

Atypical Development

Chair: Michael R Miller (Vanderbilt University)

Self-understanding of high-functioning autistic adults

Ljiljana Vuletic (University of Toronto)

Michel Ferrari (University of Toronto)

Since the earliest theoretical accounts of autism, it has been postulated that there is something wrong with autistic individuals' self-understanding (Mahler (1952, 1958; Mahler & Furer, 1968). More recently, several authors made similar claims (Baron-Cohen, 1989; Frith, 1989, 2003; Frith & Happé, 1999). Although there is some limited empirical evidence to support this claim (Hobson et al., 2006; Hurlburt et al., 1994; Lee & Hobson, 1998), only one study has specifically explored the self-understanding of autistic adults (Hurlburt et al., 1994). Therefore, in this qualitative study I examined self-understanding of eight high-functioning autistic adults, aged 25 to 63, through in-depth, semi-structured interviews. All participants demonstrated a good level of self-understanding, beyond levels predicted by current theoretical models of autism. Their self-understanding was assessed through participants' self-definitions and meaning-making of their life experiences. In their self-definitions, the participants emphasized their abilities and personality characteristics, rather than their disabilities. For their self-defining memories, as indicators of their meaning-making of life experiences, most participants chose positive experiences related to their personal development.

Autistic children's difficulty with the concept representation in abstract reasoning

Hiroshi Maeda (Komazawa University)

It has been reported that children with autism spectrum disorder (ASD) have difficulty in concept formation and hypothetical thinking. On the other hand, semantic categories are organized normally in children with autism. It was hypothesized that children with ASD have normal concept formation abilities but have some difficulty in concept representation. A single case study was conducted to examine

Saturday—P.M.

this hypothesis. The participant with ASD was interviewed about some concepts to activate concept representation. The tree-construction task which examines semantic distances using 60 terms involving living and non-living things was adopted as a pre- and post- test. Generally, semantic patterns were more elaborate in the post-test than in the pre-test. Analysis of narratives from the participant with ASD in interview phases, revealed elaborate definitions of concepts even in the pre-test phase. Though some of the definitions of concepts resembled animistic causal reasoning (Piaget, 1929), the participant could use his concepts or ideas of causality to categorize the words. These results suggest that even though some of the definitions of concepts were immature, the participant with ASD was able to form concepts normally but may have difficulty representing them.

The Piagetian theory of social exchanges and autism spectrum disorders

Mônica Cola Cariello Brotas Corrêa (Universidade de Vila Velha)

Sávio Silveira de Queiroz (Universidade Federal do Espírito Santo)

Claudia Patrocínio Pedroza Canal (Universidade de Vila Velha)

Researches about joint attention are essential for understanding the autism spectrum disorders and they hold the analysis of the relation between innate schemes and social interaction. This case study aimed at investigating, through microgenetic analysis of a three-hour shot of video records, the social interaction between a three year and nine month old boy, diagnosed with autism spectrum, and his mother. The interaction descriptions were performed based on Piaget Theory of the Social Exchanges. The interactions were classified by categories created for the research. The child presented interactions related to his needs satisfactions (76%), as fetching or moving an object. The mother performed actions related to communication (82%). It was observed that in the mother-child interaction, the mother's social interaction did not end up in a compatible valorization. The satisfaction that is less intensive than the action results in a denial from the mother to the investment in the interaction, what is in agreement with Piaget's Theory. Gesture mediated communication manifestation, look or verbalization were resultant from the social actions executed by the mother. We concluded that the Piaget's Social Exchange Theory provides a conceptual base for the proposition of programs to orient families with children with autism spectrum.

Early sensory deprivation is associated with slower visual habituation in deaf infants

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Among psychologists, there is broad agreement that sensory input is necessary for normal development of basic sensory processes. For example, controlled rearing experiments with animals have consistently found that binocular visual input is required for the development of normal binocular vision. In addition, neuroimaging studies have found that a lack of input in one sense (e.g., audition) leads to cortical reorganization for the intact senses in both animals and humans. However, it is unknown whether sensory input is required for normal development of basic cognitive processes. We utilized a 'natural experiment' in sensory deprivation to investigate whether deaf infants demonstrate similar cognitive ability to hearing infants. Using a visual habituation-oddity paradigm, we found that the deaf infants habituated significantly more slowly to a visual stimulus than the hearing infants. The fact that this difference in a basic cognitive process (i.e., visual habituation) is present during infancy suggests that sensory deprivation (i.e., deafness) affects not only auditory processes, but also domain- and modality-general cognitive processes.

Saturday—P.M.

3:00-4:30 DS04 Discussion Session 4Conference Room DE

Piaget's developmental epistemology as a complex system theory: An open interdisciplinary debate

Organizer: Abel Rubén Hernández-Ulloa (Universidad de Guanajuato)

Organizer: Elias S Nunez (Norwegian University of the Life Sciences)

Participants:

Mark Bickhard (Lehigh University)

Jeremy Trevelyan Burman (York University)

Yeh Hsueh (University of Memphis)

Brian D Cox (Hofstra University)

Rolando Garcia contended that Piagetian epistemology is paradigmatic of the aims and purposes of interdisciplinary methodologies; for it successfully subsumes the dynamical evolution of a complex system, and such a system is our cognition. Different salient aspects of complex systems can be thus instantiated within Piaget's model, such as system boundaries, internal-external interactions, self-regulation, emergence, and so forth. Our session will address various issues relating to these concerns, and shall explore a number of explicit and implicit connections of dynamic complex systems which intersect with key notions of Piaget's model. The main topics to be discussed consist of the following:

Living organisms as dynamic systems

A dynamic system is characterized in terms of the organization of its potential processes (interactive, in the case of an agent), with actual processes taking place within and in accordance with that organization. Learning and development must alter that organization, but, since it is an organization of potentialities — of possible interactive processes — how can such change take place? There must be processes that can set-up, or construct, relevant parts of the overall organization of potentialities as the actual interactions proceed — processes of microgenesis.

Cognition and rational belief revision

Parallels between Piagetian epistemology and abductive reasoning are not only numerous, but also reciprocal. For they both at bottom are concerned, broadly speaking, with a) the construction of necessary knowledge; b) with how the inferential mechanisms for constructing such knowledge develop in humans; c) with the theoretical instruments required to assess what stands for necessary knowledge and d) with how to model inferential tools and —especially— the development of the latter.

Prigogine's thermodynamics and biological processes

Dynamic, complex systems are ubiquitous in the world, but only the interactive kind, that is biologically base are capable of auto-regulating their actions in response to an environment. Through the current organizational stage of their processes, the latter continually develop and sustain such potential interactions as are necessary to meet both internal environmental challenges. For in order to persist and eschew disintegration, they have to maintain stability within their far-from-equilibrium condition. The vast cognitive complexity of living beings in the world (as well as life itself) is said to have in this way emerged.

Gödel's incompleteness theorem: a new mathematical foundation of Piaget's model

In contrast to earlier mechanical, Fregean conceptions of the activities involved in proof-making, Gödel's Dialectica interpretation implies that the necessity of results is constrained by two central factors. First, it can be restricted by the signification of the given symbols, or "bottom-up" activity, and second, by the

Saturday—P.M.

understanding, competence, and insight of the mathematician, or “top-down”. In other words, meaning-implication is projected downward, while meaning-signification is projected up. All proofs thus coexist in a middle realm, between the structures which comprise them (signification-based) and the functions which they possess (implication-based). Piaget’s epistemological model contains these types of elements. Indeed, I submit that both are significantly interrelated — since the “neo-Gödelian” insight (that there exist levels of relative incompleteness) influenced Piaget’s reconstruction of his old theory on new foundations.

4:30-4:45 break

4:45-5:45 DISC Closing Panel Discussion Osgoode East

Panel Discussion: Rethinking Cognitive Development

Chairs: Juan Pascual-Leone and Michael Chandler

Integrative and forward-looking panel discussion involving Plenary Speakers and Chairs of Invited Symposia.

Saturday—P.M.

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- Navigating Cultural Worlds and Negotiating Identities: A Conceptual Model: **Mistry, J.; Wu, J.** (Medford, Mass.)
- Developing Moral Agency through Narrative: **Pasupathi, M.; Wainryb, C.** (Salt Lake City, Utah)
- Snap Judgment? Not So Fast: Thought, Reasoning, and Choice as Psychological Realities: **Turiel, E.** (Berkeley, Calif.)
- The Development of Pointing: From Personal Directedness to Interpersonal Direction: **Carpendale, J.I.M.; Carpendale, A.B.** (Burnaby, B.C.)
- Bilingual Language Acquisition. Where Does the Difference Lie?: **Sebastian-Galles, N.** (Barcelona)
- Identity as Burden or Benefit? Youth, Historical Narrative, and the Legacy of Political Conflict: **Hammack, P.L.** (Santa Cruz, Calif.)
- Distinguishing between Development and Change: Reviving Organismic-Developmental Theory: **Raeff, C.** (Indiana, Pa.)
- Taking Emergence Seriously: The Centrality of Circular Causality for Dynamic Systems Approaches to Development: **Witherington, D.** (Albuquerque, N.M.)

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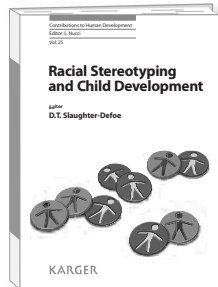
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Saturday—P.M.

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Local Arrangements Committee & Student Volunteers

The Jean Piaget Society would like to thank local arrangements chair Stacey Espinet and the following group of talented student volunteers: Lesley Baker, Maria Paula Chaparro, Sharon Chan, Sarah Hutchison, Jess Jeong, Bonnie Le, Klara Mareckova, Azel Mulagalova, Melissa Pangelinan, Kayla Ten Eycke, Angelita Wong, Aranda Wingsiong, Emanuela Yeung

Conference Program

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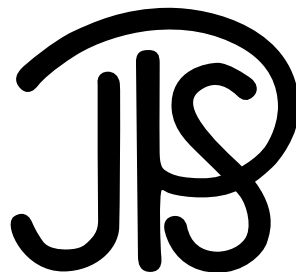
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Want to organize an Annual Meeting?

Submission Guidelines for Program Proposals

The following guidelines are intended to assist prospective organizers in developing program proposals for review by the JPS Board of Directors. The submission process involves two steps. The first is to bring forward a preliminary proposal that provides a rough overview of the intended theme; the second involves a more fully developed plan for the organization of the program, and more detailed information on the invited speakers.

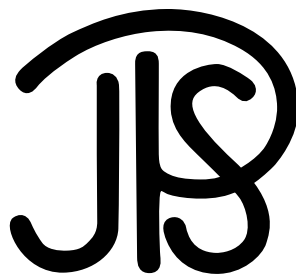
Preliminary proposal

The purpose of the preliminary proposal is to initiate a dialog with the Meeting Planning Committee. The brief overview should include a suggested title, a description of the theme, a statement regarding the relevance and interest of the theme to the JPS membership, and a list of potential invited speakers. If the proposal is believed to merit further development, the prospective organizer(s) will be asked to submit a more fully developed plan.

Full proposal

The full proposal should include the following sections:

1. A 2-3 page statement of the theme, including a description of its relevance to developmental inquiry.
2. A description of the relevance of the theme to the JPS membership.
3. An outline of the invited program, including suggested plenary speakers and invited symposium organizers.
4. A brief biographical sketch of invited speakers.
5. A suggested venue and prospective local arrangements team, if appropriate. (NB: It is not necessary for the program proposal to include a specific venue and local arrangements plan; this component of the program may be coordinated through the Meeting Planning Committee.) For more information, contact the VP, Program Planning: Ulrich Mueller (umueller@uvic.ca).



Cognitive Development — Special Issues

Cognitive Development includes articles dealing with social cognition and development that are of particular interest to JPS members. Deanna Kuhn, the current editor, is also open to theoretical articles that are brief, and interesting. *Cognitive Development* is now accepting electronic submissions. For details, visit: <http://www.elsevier.com/locate/cogdev>

To insure a JPS contribution, the board will select a special issue editor each year to produce one volume.

Guidelines for Annual Special Issue Proposals

The following guidelines are intended to assist prospective guest editors in formulating a proposal and editing an annual special issue of *Cognitive Development*. Proposals for the 2013 and 2014 Special Issues are now invited.

Focus: The special issue should concern a topic central to the interest of the JPS membership. The issue represents the annual contribution of the Society. Theoretical and empirical scholarship will be considered.

Format: Generally we are seeking a series of related articles rather than other formats, though these would be considered if well justified. Proposals based on conference symposia can be submitted.

Process: The potential guest editor should submit a two-three page proposal to the Publications Committee Chair for review by the publications committee and subsequent approval by the JPS Board.

The proposal should include:

- suggested title
- description of the theme
- statement regarding the relevance and interest of the theme to the JPS membership and general readers of *Cognitive Development*
- list of potential invited contributors and brief description of their individual papers (please note that except under unusual circumstances, we expect that guest editors will not author or co-author a paper)
- list of three to four colleagues who could potentially act as an ad hoc review committee, as well as a brief description of their background
- timeline indicating when the guest editor plans to receive the articles, have them reviewed, received and proposed date for when the entire volume would be ready for publication.

Review: All manuscripts will be submitted to the Guest Editor. The Guest Editor will then seek two independent reviews for each manuscript. These external reviews will be returned to the Guest Editor who will then write an action letter to each author. Revisions will be returned to the Guest Editor who will make a decision as to the readiness of the paper for publication. The guest editor will forward the completed Special Issue on to the editor of *Cognitive Development*.

For more information, please contact Katherine Nelson (knelson@gc.cuny.edu)

Social Development: Current Trends and Perspectives

The second of three meetings on Knowledge & Development in the 21st Century

**43rd Annual Meeting Organizers: Elliot Turiel, Cecilia Wainryb, and Na'ilah Nasir
6–8 June 2013 — Chicago, USA**

The meeting of JPS in 2013 is the second in a three-conference sequence (2012: Cognitive Development; 2013: Social Development; 2014: Thought and Language) that explores new ways of conceptualizing human development in light of recent advances in other disciplines (e.g., neuroscience, epigenetics, systems theory, evolutionary theory, cultural analyses, and epistemology, among other fields of inquiry). The organizers draw upon these advances to highlight a relational view of human beings as dynamic and multidimensional, with analytic foci that are simultaneously behavioral and neural, cognitive and emotional, individual and social. The combined aim of the three meetings is to re-think developmental issues across domains from the perspective of contemporary science.

The meeting in 2013 will focus on current trends and perspectives on social development. Contributors will consider questions pertaining to how biology, culture, socialization, economic disadvantage, rationality, and relational-constructive processes contribute to social and emotional development. Questions will be addressed regarding commonalities and divergences in theoretical perspectives on development and social epistemologies.

Plenary speakers will include:

Margaret Beale Spencer (University of Chicago)

Joan Grusec (University of Toronto)

Richard Shweder (University of Chicago)

Stephen Suomi (National Institute of Child Health and Human Development)

Elliot Turiel (University of California – Berkeley)

A Call for Program Proposals will be issued in Fall 2012

For additional information, please see: www.piaget.org

Jean Piaget Society DVD Series

The Growing Mind: A Piagetian View of Children

Produced by Keith Alward

This set of four broadcast-quality, full-color, DVDs covers the cognitive development of children between four and eight years of age in four domains of knowledge, with one DVD devoted to each domain:

The Development of Classification (30 minutes)

The Development of Order Relations: Seriation (28 minutes)

The Development of Quantitative Relations: Conservation (32 minutes)

The Development of Spatial Relations (29 minutes)

Each DVD is narrated and self-contained. Across the four DVDs, interviewers, in conversation with 13 children, reveal Piaget's pre-operational, transitional, and concrete-operational stages. Many of the same children appear in several of the DVDs, permitting analyses of case studies of individual students' thinking across knowledge domains.

The Jean Piaget Society relies on the generous support of our members and affiliates. DVDs in this series are available as a gift with your donation of \$100 for one DVD, or \$300 for the set of four.

A new added benefit to members is a 20% discount on the DVD Growing Mind film series, a valuable addition to course material in undergraduate, pre-service, and graduate courses in cognition and development.

"I have used The Growing Mind series in a course for students who are preparing to teach in elementary schools. It has been an invaluable resource, not only for helping my students understand Piaget's stages of development, but also for illustrating some effective questioning strategies that they can use to assess and promote their own students' understandings of the curricula they teach."

(Paul Ammon, Professor & Director, Developmental Teacher Education Program, UC Berkeley)

For details, visit: www.piaget.org/video

