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1 Lesson 1: Development and Piaget's development theory(1)

1.1 Development

1. Human performances change as a function of age.
2. Differences between *development* and *growth*
   - ~~Growth~~: phycal and continuious changes
   - **Development**: internal, quanlitative, discrete, cognitive changes
3. Life-span development
   - Dramatic developments: 0-15
   - Developmental changes occur throughout life.

1.2 Nativism vs. Empricism

1. Nativism: There are in some forms of knowledge which innate.
2. Empricism: Mind is iat cpmpletely blank state with no knowledge.

1.3 Nativism

1. Hartsoeker(1695)'s Preformation theory All parts of orgaism exist in the germ cell
2. Rader et al. (1980) (Visual cliff test, cf. fig.1): A baby has never experienced falling still stops at the Cliff Edge.
3. Meltzoff and Moore (1977) (Facial imitation, cf. fig.2): A baby hasn't seen a mirror can monitor their own facial expression.
4. Cross-modality matching(cf. fig.3): Babies know which pacifier in the painting is the one in their mouth by shapes
5. Birds/chimpanzees imprinting after hatching/birth (Nature and Nurture): Genetic abilities need external stimulations to start.

1.4 Piaget's developmental stages

1. 0-2: Sensorimotor stage(see 1.5)
2. 2-7: Pre-operational stage(see 1.6)
3. 7-11: Concrete operational stage(see 2.1)
4. 11-: Formal operational stage(see 2.2)

1.5 Sensorimotor Period

1. Learning by trials, errors and repetition.
2. Schematic combinations form more monplex schemata.
3. Thinking is doing, doing is thing.
4. 0.5-1
   - Search for a hidden object in the last position where it was seen.
   - Can only keep track of changes which can be seen.
   - Ignorance of object performance. Out of sight, out of mind.
   - An experiment as the example(Object left under the cloth, cf. fig.4)
5. At the end of sensorimotor period:
   - Knowing the defferences between self and others
   - Starting experiments to discover results, etc.

1.6 Preoperational Period

1. Symbolic function starts: e.g., rows of bricks as train.
2. Starts to understand the state of things.
3. **Doesn't understand** the principles that cause changes.
   - Mistaken conversation of quantity
   - Mistaken conversation of length & numbers, etc.
4. Egocentrism: Lack of awareness of others' perspectives.
5. Animism: Everything has some kind of consciousness
   Is the car sick?
6. Realism: Reality as they see it (such as experiences in dreams) is absolute.
7. Artificialism: Natural phenomena are created by human.
   Is the battery out? to a died animal

1.7 Schema, Assimilation, accommodation

1. A **Schema** describes both the mental and physcal actions involved in understanding and knowing. **Schemata** include the process of obtauning that knowledge.
2. **Assimilation**: Taking in new imformation into our already existing schemata
3. **Accommodation**: Changing or altering our existing schemata in light of new imformation

4. Examples for definitions:
   - Schema A: Fish = in the water; move by flipping fins
   - Assimilation: A chark is a fish
   - Assimilation: A dolphin is a fish
   - Accommodation: Having learned dolphin is mammals, change to Schema B. Schema B: Underwater with fin include mammals.

2 Lesson 2: Piaget's development theory(2) and arguments

2.1 Concrete operational and concrete operational period

1. Change
   - Logical thoughts emerge.
   - Can arrage sticks $A < B < C$
   - Can't infer transitivity: $A < C$ from $A < B$ and $B < C$
2. Concrete operations
   - Elimination of Egocentrism, aquisition of concervation.
   - Seriation - the ability to sort objects in an order according to size, shape, etc.
   - Classification - the ability to name and identify objects by their characteristics.
   - Reversibility - The child understands that numbers or objects can be changed, then returned to their initial state.
   - Can solve problems that apply to actual concrete objects.

2.2 Formal operational and formal operational stage

1. Change
   - Think in abstraction, reason logically and draw conclusions from imformation available.
   - Understand 'love', shades of gray, logical proofs, and value.
   - apply logical FORM to arbitrary contents
2. Formal oreprations
   - Between John loves Mary and Mary loves John
   - Contens vary, but the same formalities hold.
   - Formal operations are abilities to detect the same abstract structures.
   - Problems in logically equivalent structures may be handled, once an instance is learned.

2.3 Hypothesis-deduction

1. What defines a pendulum's cycle period? Pendulum length? Weight?
2. Concrete operationals change multiple hypotheses at once.
3. Formal oreprations change one hypothesis ast one time.

2.4 Piaget's contributions

1. Formulation of the stages of development of **LOGIC**
2. Deviations from Piaget's stages occur when pragmatic use of logical thought comes into play.
3. The basic framework remains useful and predictive of infant development.

2.5 Attacks against Piaget and extension of Piaget(ToM in)

1. Certain cognitive operations earlier than Piaget described.
2. Different usage of the than *more* between children and adults.
3. Misunderstood conversations occured.
4. Egocentrism is not correct: Children may take others' perspectives earliear than Piaget postulated.
5. Theory of mind(ToM): The ability to understand others' feeling(Development)
   - Premack and Woodruff (1978) : chimpanzees "deceive" others in their group.
     Animals which understand others' purposes, intentions, beliefs, beliefs, thoughts, preferences, etc. prossess others' theory of mind.
   - Wimmer (1983) : False-belief task(Sally Anne test) Where will Anne will look up first when chocolate hidden in an unknown place? Children under 4 didn't keep the same blief with Anne.
   - Babies process rudimentary form of ToM.
   - ToM extends Piaget in regarding babies as active knowledge-seeker.
   - ToM tries to overcome Piaget by recognizaing babies' ability to assess others' intentions
6. Development through **modeling**
   - Modeling refers to learning by mimicry.
   - TVs and videos can serve as a model
   - Observer needn't EXCUTE the action.
   - Bandura's observational learning(Bobo doll experiment): Children learn violent actions by observation Children can learn spontanceously without rewards($_{\text{observational}}$ learning_)
7. Other example researches(Against):
   - Gelman (1978) : The Child's Understanding of Number(cf. fig.5)
   - WASON and KOSVINER (1966) : Wason selection task(cf. fig.6)
   - Sayeki(1980): Elementary schooler's solution(fg. fig.7)
   - Flavell et al. (1981) noted 4-year-olds' recognition that a person beyond the playing card watches another picture.
   - Shatz and Gelman (1973): 4-year-olds use simpler words when talking to 2-year-olds

3 Lesson 3: Morality

3.1 Zone of proximal development(ZPD)

1. Zone of the closest, most immediate psychological development
2. What a learner can do(3 layers):
   - Learner cannot do(out)
   - Zone of proximal development(learner can do with guidance)
   - Learner can do unaided(inner)
3. Children at the same age may have different ZPD's
   - Teachers can give children experiences within their ZPD. thereby boost learning beyond

3.2 Moral development

The gradual development of an individials concept of right or wrong - conscious, religious values, social attitudes and certain behavior.

3.3 Kohlberg's(1958) theory

1. A stage theory(Lawrence Kohlberg's stages of moral development):
   Everyone goes through the stages sequentially without skipping any stage.
2. Stage maturation does not occur automatically:
   Movement occurs when a person cotices inadequacies in his or her present way of coping with a given moral dilemma.
3. People cannnot understand moral reasoning more than one stage ahead of their own.
4. A stage X child can understand $X+1$ arguments but not beyond that.
5. The Heinz Dilemma: Should Heinz steal unaffordable drugs which is the only way to save his wife's life
   (He can't get enough loan and the druggist will never lower the price).
6. **Stages** (The representation see fig.8)
   - Stage 1(2-4): Obedience and Punishment(cf. 3.4)
   - Stage 2(4-7): Naive Egotistical(cf. 3.5)
   - Stage 3(7-10): "Good boy-Good girl" Orientation((cf. 3.6)
   - Stage 4(10-12): Law & Social Order(cf. 3.7)
   - Stage 5(Teens): Legalistic Social Contract(cf. 3.8)
   - Stage 6(Adult): Universal Ethical Principles(cf. 3.9)

3.4 Stage 1: Obedience and Punishment

1. **Rules** are fixed and absolute.
2. **Obey rules** to avoid **punishment**.

3. Moral judgements are depends on what ispunished.
4. Obey **superior authority** and allow the authority makes rules.

3.5 Stage 2: Naive Egotistical

1. Children account for individual points of view and judge actions based on how they serve individial needs.
2. Motivated by "an eyr for an eye".
3. Belives in equal sharing regardless of needs.
4. The end justifies the means.

3.6 Stage 3: "Good boy-Good girl" Orientation

1. Emphasis on conformity, being "nice"
2. Consider on how choices influence **relationships**. Peer approval is essential.
3. Feel **intensions** are as important as deeds and expects others to accept it in place of deeds.
4. Begin to think from others' perspectives.

3.7 Stage 4: Law & Social Order

1. Focus on maintaining law.
2. Following the **rules**, doing ones' **duty**.
3. Respect and obey **authority** without question.
4. Supports the **rights of majority** without concern about the minority.
5. About **80%** does not progress past **Stage 4**.

3.8 Stage 5: Legalistic Social Contract

1. Accept different values, opinions and beliefs of others.
2. Believe in the greatest amount of good for greatest number of peaple.
3. Believe in **consensus** rather than in majority rule.
4. Changing the law is possible but only through the system.

3.9 Stage 6: Universal Ethical Principles

1. Internalize universal ethical principles of Justice enven if they may conflict with laws and rules.
2. Accept higher moral principles than common rules and customs.
3. Willing to accept **consequences for disobedience**.
4. Believe the **dignity of humanity** is sacred and that all humans have value.

3.10 Criticisms of Kohlberg

1. Gilligan(1995): Kohlberg overlooks the gender differences.
   - Girls are more likely to base their explanations on "caring" and "personal relationship"
   - Boys are on "justice" and "equality"
2. Woolfolk(1993): Moral reasoning does not necessarily lead moral behavior.
   - Morality differs from actual actions.

3.11 Eisenberg's theory

1. Eisenberg Dilemma:
   Should Bob help(when his benefits conflicts with helping others)?
2. Eisenberg Stages:
   - Level 1: **Hedonistic Self-focused orientation**:
     Concearned with **self-oriented consequence** rather than moral considerations.
   - Level 2: **Needs-oriented orientation**:
     Concearned for the physical, matrial, and psychological needs of others even if they conflict with ones' own.
   - Level 3: **Approval and interpersonal orientation / stereotyped orientation**:
     Stereotyped images of good and had persons and behaviors and considerations of others' approval
   - Level 4a: **Self-reflective empathic orientation**:
     The individuals' judgements include evidence of self-reflective sympathetic responding.
     Concern with the **guilt** or **positive affect** for the consequences of her/his actions.
   - Level 4b: **Transitional**:
     The individuals' justifications for helping or not in-volve internalized norms and duties.
   - Level 5: **Strongly internalized stage**:
     Justifications for helping or not are based on **internalized values** and **responsibilities**.
     The desire to maintain individual and societal contractual obligations or improve the society.

4 Lesson 4: Autism

- A lifelong, non-progressive neurological disorder
- Typically appears before 3 years old
- **AUTISM** means a developmental disability significantly affecting verbal and non-verbal communication and social interaction
- An autistic 6-year-old:
  No responce using words.
  No eye contacts for being spoken to.

4.1 Autistic Spectrum Disordeer and Infant Precursors

- About 1.5% of the population. Boy:Girl = 5:1
- Girls often show severe intellectual disorder.
- No clear border between Austism & "Nomal". Needed supports differ depending on characteristics & intellegence.
- Use M-CHAT(see 4.3 to detect over 1.5 years old.

(ASD):

1. **Isolationists**: Little interests in others.
2. **Passitives**: Respond only when contacted by others.
3. **Proactives**: Reach others and speak to regardless of response.
4. **Exaggerators**: Polite to the extent to irritate others.
5. **Delayed Language**
6. **Persistence**
7. **Human Relationship Troubles**
8. **Intellectual disorders**

(Infant Precursors)

1. Not tuned into people.
2. Not preferentially interested in **faces**
3. Don't prefer **human speech**
4. No joint attention: social referensing proto-declarative pointing

4.2 Passion for orders(Other ASD)

1. Obsessed with mechanisms.
2. Enjoy disassembling clockworks
3. Love Rubik's Cube, disentanglement puzzles, Sudoku.
4. Often enjoy train (photos, timetables, etc. Individuals differ)
   - Trains are strict rule-followers
   - Never deviate from the railway
   - Timetables represent logical solutions for needs such as train connections
5. Insistence on **sameness** and resistance to **changes** make them Bach lovers and Mozart haters

4.3 M-CHAT(see fig.9 and fig.10)

- Modifief CHecklist for Autism in Toddlers
- Developed by Feorgia State University researchers(Robins et al., 2001)
- Applicable for 1.5 years old and up
- Diagnostic if the child scores 3 or more HITs.

4.4 ToM and Autism(important)

- **ToM** and **False-belief task(a.k.a Sally-Anne test)** see 2.5.
  3-year-olds fail in false-belief task. Why?
  1. Difficulty to grasp that the world can be one way and the mind can be another
  2. inhibitory Demands:
     - Hard to reporting what is known to be true
     - Can't control inhibitory: can't say "sun" when shown a moon
- Role of experience in **ToM**
  1. Conversations about **mental states**
  2. **Mothors' mental-state talk** (more talk, earlier use of mental-state terms)
  3. Number of **siblings** (more siblings, earlier success on false-belief tasks)
- ToM defisits in Autism
  1. Failure to **understand communicative intentions**
  2. Poverty of **mental state language**
  3. Failure to **understand false belief**
  4. Inability to **create meaningful mentalistic sequences**
     A task of Mechanical/Behavioral/Mentalistic sequence reconstruction (see fig.11)
- ToM Hypothesis for Autism
  1. Baron-Cohen(1995): **Impairments** of joint attention and social referencing among autistics result from a failure to develop a ToM
  2. Cohen-Rottenberg(2009): Is ToM causing Autism, or Autism causing ToM, or is there a common cause?

4.5 Autistics in the classroom and suggested language use

1. Have troubles with first-time activities
2. Notable gaps between interests and lack of them.
3. Serious need for scheduled routines.
4. Often fight peers for minor reasons.
5. Failures to obey "don't" order.

(Suggested language use)

1. Request actions: *Tide it up.*
   Return them to the original places
2. Request one thing at one time
3. Use affirmative voice: *Walk in the school* rather than *No rush*
4. Call the child's name first and wait for the responses.

5 Lesson 5: Then understanding of Number

5.1 Three, Division, Decimal, Fraction

four stages(difficulty) of knowing numbers: **Three**, **Division**, **Decimal**, **Fraction**.

5.1.1 Fuukida(2003): Difficulty of Knowing **Three**

1. Subitizing: Younger than 1 year infants visually grasp quantities up until **3**.
2. They **SEE** the **difference** between **1 and 3**.
3. Understanding 3 is the **basis**.
4. Once the grasp $3 < 4$, they learn integers smoothly.

5.1.2 Imai(2007): Division

1. For infants, **Number**, **Quantity**, and **Integer** are the same.
2. As the grade progresses, understanding becoms increasingly complex.
   e.g., **Zero**, **Numbers** increase toward infinity, between 2 adjacent integers exist continuous infinite numbers.
3. From **finger counting** to **abstraction**.
4. At school, they understand that numbers are **infinitely continuous**.
5. Achievement of a new recognition requires abandonment if an old one.
6. **Division** is the first **toughness** in algebra.

5.1.3 Fractions

1. Pupils try to make sense of fractions inrelation to what they can handle:
   3/4 as 3 books out of 4 on the shelf.
2. The biggest challenge lies in knowing that the numerator and the demoninator share a common characteristic.
   - Sort the fractions task(Yoshida, 1991):
     Correct rate increases with the grades growing, **L** and **S** dicrease.
   - Rule **L**: The one with larger number is bigger:
     $\frac{2}{7} > \frac{2}{5} > \frac{2}{3}$
   - Rule **S**: The one with smaller number is bigger:
     $\frac{5}{7} > \frac{4}{7} > \frac{2}{7}$
3. Why fractions are tough?
   - **Hard** to understand that **1 as a whole means** the same between, e.g., 7/22 and 2/9.
   - **Dissociation** between the understandings of **Sign** and **Quantity**.
   - **Lack** of effective **curricula** to integrate S & Q.
4. Possible Intervention
   - *Which is larger, 5/6 and 6/8?* and Divide the class into 2 groups.
   - Each pupil receives a tape of 5cm, 10cm, and 1m.

- Persuade the pupils that they need to compare between the same lengths.
- Compare 5/6 and 6/8 between the same lengths.

5.2 The principal counting principles(Gelman and Gallistel, 1978)

The folloing 5 principles govern and define counting. Every child must acquire these principles.

The **first 3** is about HOW to count. The last 2 is about WHAT to count One-to-one matching of 6 objecte task. The success rate increases with age.

1. The **one-one** principle:
   Acquisition of numbers preservation and the action of counting agree.
   If an item is not assigned a number or is assigned more than 1 number, the counting fails.
2. The **stable-order** principle:
   The list of words used must be in a fixed and repeatable order.
   A child who repeatedly counts a three-item set as 2, 1, 3 does not have grasped the principle.
3. The cardinal Principle:
   Some children *Only report the numbers in the order.*
   Under the one-one and stable-order principles, the **number** allocated to the **final object** in a set indicates the **total amount**.
4. The abstraction principle:
   The principles 1 to 3 applies to any collection of objects, whether tangible or not.
   Guarantees the equivalence between *three wheet bunbles* and *three lambs.*
5. The **order-irrelevance** principle:
   Knowing that the **order** in which s/he starts counting is **irrelevant**.
   It does not matter where the counting starts, as long as every item is counted only once.

5.3 Knowing situated number

5.3.1 Grownups solving sentence problem

1. *There are six times as many students as professors.*
   The common anwser: 6P = S.
2. *There are six times as many professors as students.*
   The common anwser: 6P = S.

5.3.2 Six-year olds' calculation differs between situated and abstract number

1. **Q**: *What is 75 plus 26?*
   A: (The last 5 is counted using fingers)
2. **Q**: *How much is 75 cents plus 26 cents?*
   A: *Four 25 cents = 1 dollar, so, a dollar and one cent.*

5.3.3 Coconut vendors'(9-15) math(Nunes et al. 1993)

- **Q**: *1 coconut = 35 Cruzeiro, how much for 10?*
- **A**: *3 for 105, so 3 × 105 + 35.*
- The correct rate differs between tasks:
  Street > Sentence task > Pure calculation

5.3.4 18-year olds' incapable of handling consumption tax(Akatsuka and Toshima, 2013)

- **Task**: *Multiply your birthdate by 100 as the price in the price tag. How much would you pay with the **tax**? How much is 50%?*
- Correct rate when **18 years old**: low.
- Correct rate **after 6 years when they are mons**: high especially on the 50% sale task.

5.4 Solving sentence problem

5.4.1 Steps to attack sentence tasks(Mori et al. 2005)

1. translate the sentences to internal representations.
2. Integrate represented predicates.
3. Plan on the solution that satify the predicates.
4. Excute the plan.

5.4.2 How to simplify descriptions for children? (Iwakura, 2000)

- **A**: YUMIKO had 9 oranges. YUMIKO gave 3 to her sister. Howmany does YUMIKO have now?
  ↓
- **B**: YUMIKO had some pencils. Her brother gave 3 to YUMIKO, and now she has 9. How many did YUMIKO have in the beginning?
- **A** is easier, because the unknow appears as the consequence.
- **C**: REIKO has 8 oranges. REIKO gave 5 oranges to YUMIKO. How many does REIKO have now?
  ↓
- **D**: REIKO has 3 oranges. YUMIKO gave some to REIKO. Now REIKO has 8. How many does YUMIKO gave to REIKO?
- **C** is easier, because the agent of action is fewer.

5.5 *ISM* among pupils(ichikawa, 1993) and Intervening the *ISM*

1. **ResultISM**: I'm ok if I answered correctly by any thinking.
2. **MemorISM**: I need to memorize HOW I answer correctly. Not *WHY*.
3. **QuantitISM**: The longer I study, thebetter my grades are.

Intervention:

1. Encourage to think WHAT they do not understand.
2. Pupil A teaching Pupil B.
3. **Check the understanding** through **diagnostic** questions.
4. Use **analogies** and **diagrams**.
5. Encourage rule generalization.

6 Lesson 6: Language development

6.1 Nature vs Nurture: Main theories of language acquisition

1. 2 paradigms: Nature and Nurture:
   - Nature or **Nativist** perspective: human infants are born with the capacity to learn language.
   - Nurture or **Behaviorist** perspective: language aquisition is a result of imitation and reinforcement.
2. Nature: All is known at birth. Just recalled by environmental stimulatiib.
   Nurture: Nothing is known at birth. The baby mind is "blank slate", environment writes down all the rules.
3. Theories of Language Aquisition
   - **Behaviorism** (Skinner, 1957)
   - **Universal Grammar** (Chomsky, 1965)
   - Semantic/cognitive(Bloom, 1970)
   - Sociolinguistic(Bates, 1976)
   - Interactionist(Bloom and Lahey, 1978)

6.2 Behaviorist, nativist, social interactionist, neurobiological perspective

1. Behaviorist
   (a) Suggests Nurture and Learning consists of 2 basic processes:
      - Classical conditioning
      - _operant conditioning and imitation(see Skinner box)

   (b) **Environmental Stimulation** is everything
   (c) Behaviorism attribute receptive linguistic exposures to association forming,
      - Every time the baby is offered a bottle, the Mon says *bottle*
      - After numerous times, the baby learns that what is a bottle.
2. Nativist
   (a) Humans have innate capacity dedicated to acquiring and using language:
   Language Acquisition Device(LAD). LAD Knows syntax.
   (b) LAD is an instinct or “innate engine” for language acquisition.
   (c) Language in the environment turns innate LAD engine on

(d) **Eating Analogy**: Eating is universal for all human beings.
There must be some principles that govern the commonality in eating.

3. Social Interactionist
   (a) Child actively and intentionally **participates** in language learning and the construction of meaning.
   (b) Child's interactions with caretakers, siblings and others' support, shaping and comfirm the child's construction of language.
   (c) Language is **meaningful** and **intentional** even from the earliest interactions.
4. Neurobiological Perspective: Interaction of Nature and Nurture
   (a) Neurological growth of the brain create a blueprint that causes the brain to develop distinct but interdependent systems.
   (b) Neurobiology supports elements of the nativist, behaviorist and social interactionist views of language development.
   (c) Infants are born with key brain areas genetically dedicated to language function.
   (d) Native language acquisition requires that they infants have consistent, frequent opportunities to interact with a persistent caregiver.

6.3 Linguistic Componants and their development

1. **Phonology** - study of sound systems that makes up languages
   (a) What sounds are
   (b) The system of rules for combining and sequencing the sounds.
   (c) **Phoneme**: The smallest unit of sound that signals a change in meaning.
   (d) Early perception of speech sounds:
      - infants can discriminate between some speech sounds as early as **1 month**. (see dada experiments)
      - Infants seem to able to discriminate between phonetic contrasts from many languages.
      - Over time, they lose the ability to discriminate between some contrasts that are not in their languages.
   (e) Early production of speech sounds:
      - 0-3: reflexive vocalizations
      - 3-6: cooing and early consonant-vowel combinations
      - 6-10: repetitive consonant-vowel sounds(da-da)
      - 9-12: conversational babbling
      - 12: first words
   (f) Common articulation errors:
      - Substitutions: th - s
      - Distortions: syllable or sound lateral s
      - Additions: Ballalet
      - Omissions
2. **Morphology** - study of structures within words and the word forming systems.

(a) The study of word formation and rules governing the use of morphemes.

(b) Morphology is language formation

(c) Morpheme: the smallest unit of language which has meaning

(d) Mean Length of Utterance(MLU): measure MLU by counting number of morphemes in each utterace to predict the child language complexity

MLU of *daddy* : 1. *hats* : 2. *baseball* : 2

Brown's stage: 2 year: MLU=1.75; 2.5: 2.25; 3: 2.75; 3.5: 3.5; 4: 4

(e) First grammatical morphemes

- *ing*: present progressive tense
- *in* and *on*
- *-s*: plural
- past tense irrgular verbs
- uncontractible copula
- article *a*
- regular past tense verb
- regular third person verb
- irregular third person verb
- auxiliary
- pronouns
- *-er, -est*:comparative/superlative

3. **Syntax** - Study of rules for forming sentences.

(a) Study of rules of word function(POS) and word order

(b) Syntax is language form(or aset of rules like programming languages)

(c) Syntax Development(forming questions):

- 1 stage: insert *where* and *who* to the beginning:
  Where horse go?
- 2 stage: more complex expression
  Why you smiling? You want eat?
- 3 stage: Inversion of subject and verb
  Will you help me? What did I do?

(d) Syntax Development(forming negatives):

- 1 stage: put *not* and *no* at the beginning
  not teddy bear, no sit here
- 2 stage: *don't* and *can't* appear but still use *no* and *not* before verbs
  he no bite you. I don't want it
- 3 stage: *didn't* and *won't* appear.
  I didn't caught it. she won't go

4. **Semantics** - study of language meaning and logic

(a) Study of meaning system of language.

(b) Language content

(c) Vocabulary development

(d) Concept development

(e) Meaning of words used in combinations

(f) Early semantic relations:

- Nomination(*that doggie*)
- Negation(*no juice*)
- Recurrence(*more cookie*)
- Possesision(*my baby*)
- Attribution(*big ball*)
- Lacative(*cup table*)
- Action-object(*hit ball*)
- Agent-object(*daddy truck*)

(g) Developing Semantics:

- Two-word stage children use their limited vocabulary to refer to a large number of unrelated objects.
- **Overextension**: Overextent the meaning of a word on the basis of similarities of shape, sound, and size.
  ball = *an apple*, *a grape*, *an egg*, etc..
- Followed by a gradual process of **narrowing down**.
- **Antonymous relations** are acquired lare.
- Distinction between *more/less*, *before/after* are acquired far later.

5. **Pragmatics** - study of how languages are used and how languages acts.
   (a) Study of rules related to language use in the communicative context/language use.
   (b) Communicative intention.: reason for speaking.
   (c) Presupposition: imformation that must be shared by the speaker and listener so that message can be understood
   (d) Early functions of language:
   - Requesting imformation/action
   - Seeking attention
   - Responding to requests
   - Stating or commenting
   - Protesting
   - Greeting

6.4 Language Benchmarks, early word production, early language use and the acquisition schedule

1. Language Benchmarks(Crais and Roberts, 2004)
   (a) 8-12 month: comprehends a few words in context.
   (b) 12-18: comprehends some words outside of routiens.
   (c) 18-24: comprehends words for absent objects an 2 words for combinations.
   (d) 24-36: comprehends simple sentences supported by context.
2. Early word production(Owens, 2001)

(a) 12 month: first words.
(b) 13-15: 10 words.
(c) 18-20: 50 words
(d) by 6 years old: 2600 words
(e) 18-24: begins to produce 2 word utteraces

3. Early language use(McCormic and Schiefelbusch, 1990)
   (a) 12-24 month: use words to **get attention**, to **get objects** or actions to **protest**.
   (b) 24: can initiate and change a topic of conversation but very dependent on context.
   (c) 3 years old: can use language for a variety of functions.
4. The acquisition schedule
   (a) Children develop language along common schedule
   (b) The biological schedule is related to the maturation of the infants' brain to cope with the linguistic input.
   (c) Children acquire language by identifying the regularities in what is heard and applying those regularities in what they say.

6.5 Teaching language, baby talk, parentese and language in preschool

1. **Baby talk** vs. **parentese**:
   - Baby talk: not human speech and has no meaning.
     oh do do goo dada
   - Parentese: exaggerated, higher-pitched, slowed, sing-song speech allos the baby to see and hear language, connected to a specific event.
     Looook at the baaaaby's toes.
2. The importance of speech and language in preschool
   - Speech/language ability is related to academic success.
   - Speech/language delays or disorders are the earliest indicator of other problems.
   - Children with disabilities have a need for intervention in the area of speech or language.
   - Mody(2013): Sound and Language impairment in Development Difficulties is the highest one

6.6 IQ correlation between marriged couples and the linguistic ability heredity

- IQ level repeats itself across generations
- Heredity determines 75% of language ability.

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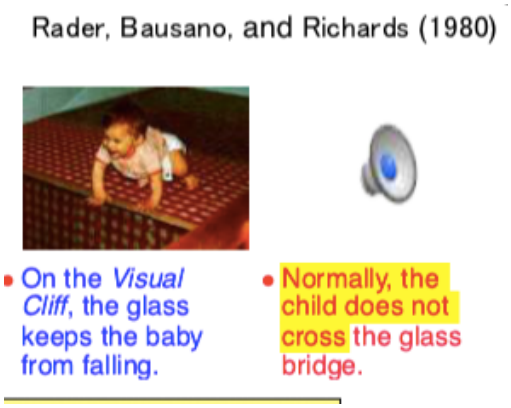

図 1: Rader et al. (1980): Visual cliff test

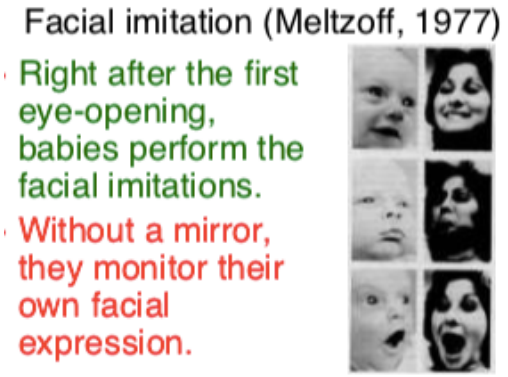

図 2: Meltzoff and Moore (1977): Facial imitation

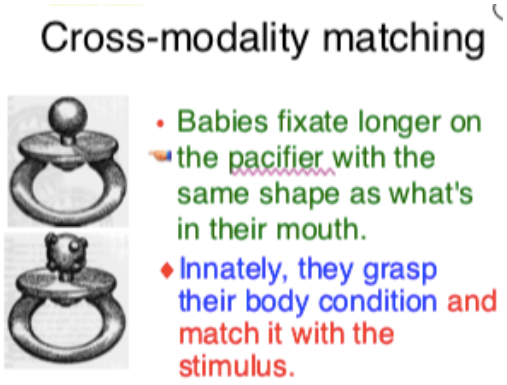

図 3: Cross-modality matching

図 4: Object left under the cloth

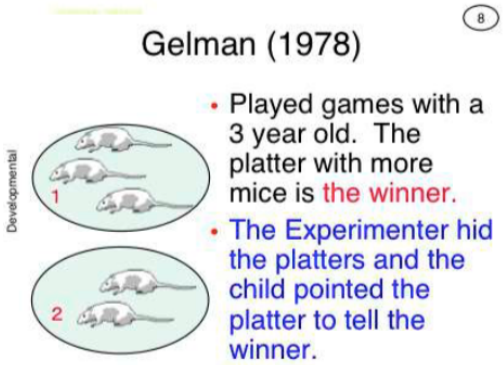

図 5: Gelman (1978): Mouse platter test

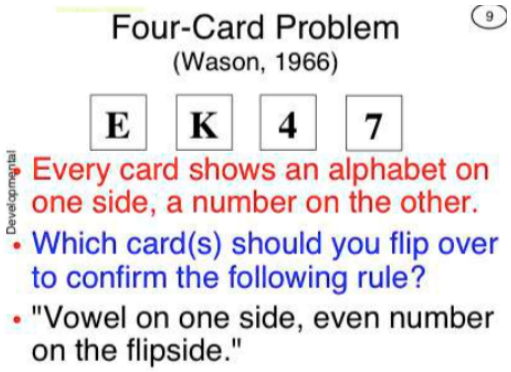

図 6: WASON and KOSVINER (1966): Four-card problem

図 7: Sayeki(1980): Elementary schooler's solution

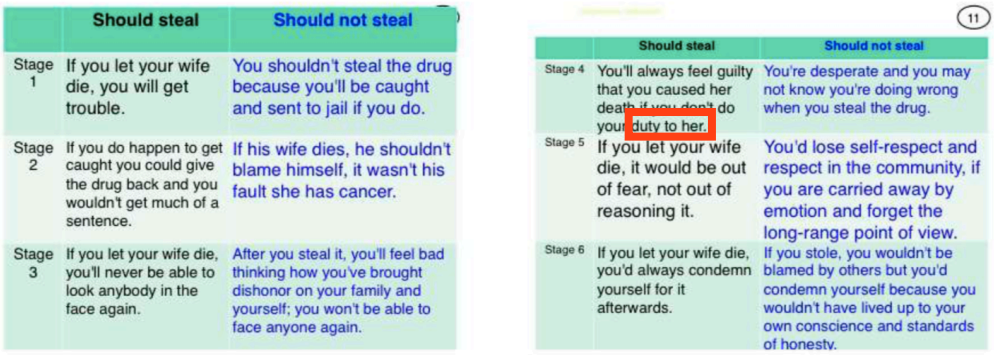

図 8: Representations of Kohlberg's moral developmental stages

図 9: M-CHAT 1

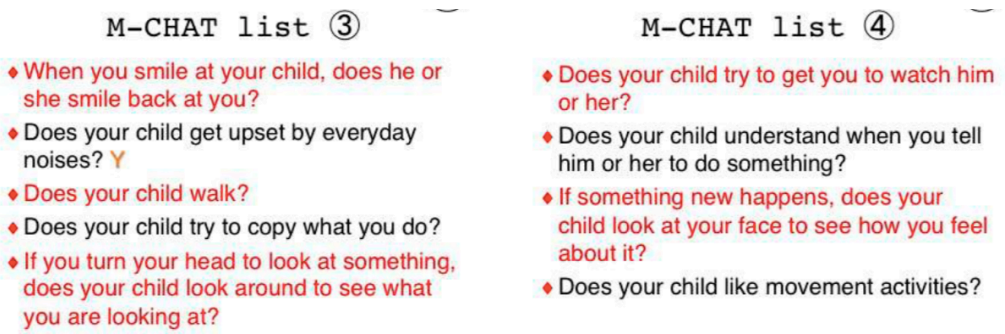

図 10: M-CHAT 2

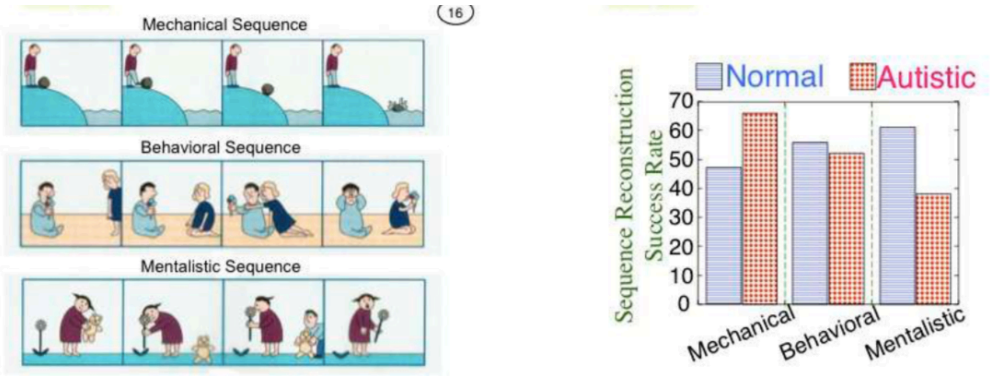

図 11: Menatlistic sequence reconstruction task