Teaching Children with Autism to be Thinkers vs. Responders:

A Cognitive Enhancement to Behavioral Approaches

Lepak LLC

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My Personal Motto:

Every Student Can Learn.

It is our job as educators to learn how they learn and teach them to be learners.

Unprepared

Dr. Graeme Harper

Oakland University

Alpha Lambda Delta

Memorization vs. Thinking

- # Memorize:
  - To learn something so well that you are able to remember it perfectly.-Webster
    - Does this promote thinking?
    - Can this information generalize?
    - Does this information predict success?

- # Resilience:
  - The ability of a substance to spring back into shape, elasticity.
  - The capacity to recover quickly from difficulties, toughness.-Webster
    - Are the students we work with flexible?
    - How can we help them develop pliability?
    - Can we utilize memorized skills and make them malleable?

Thinking

- ## Thinking:
  - Using thought or rational judgment; intelligent
  - The process of using one's mind to consider or reason something.—Webster

- ## Applied Behavioral Analysis (ABA):
  - "Is the process of systematically applying interventions based upon the principles of learning theory to improve socially significant behaviors to a meaningful degree, and to demonstrate that the interventions employed are responsible for the improvement in behavior"- 1968 Baer, Wolf, & Risley

What does this have to do with our Teaching?

- Generalization
- Adaptation
- Creativity
- New Thinking
- Problem Solving

What skills do students need?

- Organization
  - Matching
  - Sequencing/sorting
  - Rote Memorization
- Knowing/realizing errors
- Trying to repair when errors occurs
- Modeling
- Adaptation

Why do the kids we treat want to memorize?

- Don't have to think
- Don't know to think
- Reinforcement given for rote answers
- Feel nervous when made to think and change
- Fear of errors
- Knowing correct- fact based
- Increases confidence

Can everything in life be memorized?

What is the main errors for students with high functioning autism?

How can we teach "thinking"?

- Allow errors
- Observe thinking
- Wait
- Question
- Reinforce attempt vs. correctness
- Mediate student's internal struggles
- Mediate when student "blocks"

What is Mediated Learning?

- Mediated Learning Experience (MLE):
  - Mediated Learning Experience refers to the way in which stimuli experienced in the environment are transformed by a mediating agent, usually a parent, teacher, sibling, or other intentioned person in the life of the learner. The mediating agent, guided by intention, culture, and emotional investment, selects, enhances, focuses, and otherwise organizes the world of stimuli for the learner, according to a clear intention and goals for that learner's enhanced and effective functioning.—Raphael S. Feuerstien 2006

Key Features of Mediation

- Intention:
  - The clinician has specific intention and maintains that intention even through distraction.
  - The answer is never given by the clinician
  - The clinician's job is to continually rephrase, reorganize, offer analogies, say if….is true…then…this must be true also?
  - What is your goal?
  - What will you earn?
  - Will what your doing achieve your goal?

Practicing Mediation

- Close Mediation:
  - Giving the student choices:
    - Only done if necessary
    - Make sure that you change the order of the choices.
- Distant Mediation:
  - Utilize Comparisons
  - If...then..
  - Challenge their thinking

Blocking

- Thinking stops
- Nervousness increases
- Behavior becomes repetitive
- Same errors are repeated over and over again
- Not changing and trying a new approach
- Giving up
- Changing Topic
- Justification

Building New Strategies

- Open-mindedness

- Trying different approaches

- Fill your toolbox

- Connect with your student

- Reinforce the positive

- Ignore the behaviors you don't want

Why don't we utilize Mediation?

- Initially takes a lot more time to get through tasks.

- Clinician/Teacher needs to be able to question and guide vs. give answers

- Challenging to Therapist/Teachers

- More difficult to teach thinkers than memorizers

Why Mediate?

- Provides the student with systematic learning
- Models "self-questioning"
- Allows reflection: past, future, present
- Teaches that there are more choices to solve a problem
- Increases students ability to organize information
- Develops intrinsic motivation: Child driven "ah-ha"

Memorization is necessary

- Some things need to be memorized
  - Math
  - Language structure-Syntax
  - Definitions
  - Spelling
  - Storing New Knowledge
  - Sequencing
    - Tying shoes, bathroom, bedtime, bath time, food prep

Memorization can stifle thinking if it is done without "big picture" thinking

- Comparisons
- Contrast
- Predicting
- Making Judgments
- Logic
- Inference
- If…then…

What do we need to do to promote "Thinking"?

- Have lots of tools in your tool box

- Observe your student

- Wait---even when it hurts us

- Allow them to error

- Help slow them down

- Emotional support

- Model- utilizing similar material if possible

Purpose

- Provide Scientific Research
- Explore others thinking
- Give you more tools in your "tool box"
- Develop therapist who also are thinkers
- Develop therapy that promotes thinkers
- Provide organization and structure
- Intentionality

Problem:

Student becomes violent when irritated.

Mediation

- Utilizing the picture---
  - How's the boy feeling?
  - What choices does the boy have?
  - What will happen with each choice?
  - How will the boy feel in scenario A, B, C?
  - How do you want to feel?
  - What choices are available to you?

Mediation Continues

- I usually hand draw situations:
  - I like to utilize photos of other people first prior to discussing a personal incident.
  - I like to utilize the student's responses to direct my intentionality.
  - My goal is to guide the student so that he/she comes up with their own ideas.
  - They own the "ah-ha" moment.
  - Very Powerful

Demonstration:

- Angry
- Sad
- Frustrated
- Silly
- Loud Voice
- Too Close—Personal Space
- Touching Others

What about our Less Verbal Kids?

- Mediation can begin and needs to begin at the non-verbal level.

- I like to start at the matching level.

- I like to start at the reinforcement level.

- Give the child the "ah-ha"!

- Let them clap for their success prior to you clapping!

A Cognitive/Behavioral-Neurological Approach to Treating the Speech and Language Disorders Associated With Autism

- Correction Procedures

- Mediation

- Vygotsky ZPD (Zone of Proximal Development)

- Lepak Neuro-Cognitive/Behavioral Map

  (Lepak NCB-Map)

Speech and Language Therapy and Autism

– Autism has been a difficult disorder for the Speech and Language Pathologist to treat

- Behavioral Research on the treatment of Autism has overshadowed speech and language approaches

- Speech and Language Pathologists are not always versed in the various behaviors other than the speech and language deficits that occur in Autism

- Speech and Language Pathologists typically treat in a small therapy room. The approach being discussed today can not only happen at a table

Overview of Therapy Techniques and Philosophies

- Applied Behavioral Analysis (ABA)

- Applied Verbal Behavior (AVB)

- Feuerstein Instrumental Enrichment (FIE)

FIE/ABA/AVB

- FIE/Mediated Learning: Feuerstein
  - S-O-H-O-H-R
  - Piaget

- ABA/AVB: Skinner
  - Discrimitive Stimulus-Response-Reinforcement

Correction Procedure

- **Cognitive Techniques**
  - Teaching the child to analyze their own responses.
  - Child driven self-correction
  - Child driven self-recognition of correct vs. incorrect responses.
  - Builds intrinsic motivation
  - Builds intrinsic drive to learn
  - Child driven, clinician mediated

- **Behavioral Techniques**
  - No-No-Prompt
  - Errorless Learning
  - Distraction Trials
  - Clinician directed
  - Child makes changes when clinician responds that they need to.
  - Child looks at clinician to know if their answer is correct vs. incorrect
  - Clinician driven to child driven

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- Links to Language
- Miller Method

Overview of Therapy Techniques and Philosophies

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- Links to Language
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- Floor Time
- Sensory Integration
- Linda-Mood-Bell
- Relationship Development Intervention (RDI)
- Theory of Mind
- Articulation/Oral Motor
- AAC/PECS
- Social Thinking

Single-Channel Processing

- In my experience, children with Autism tend to learn a lot of information when the clinician is only working on one input channel (i.e. auditory, visual, proprioception, tactile, smell, taste, vestibular)
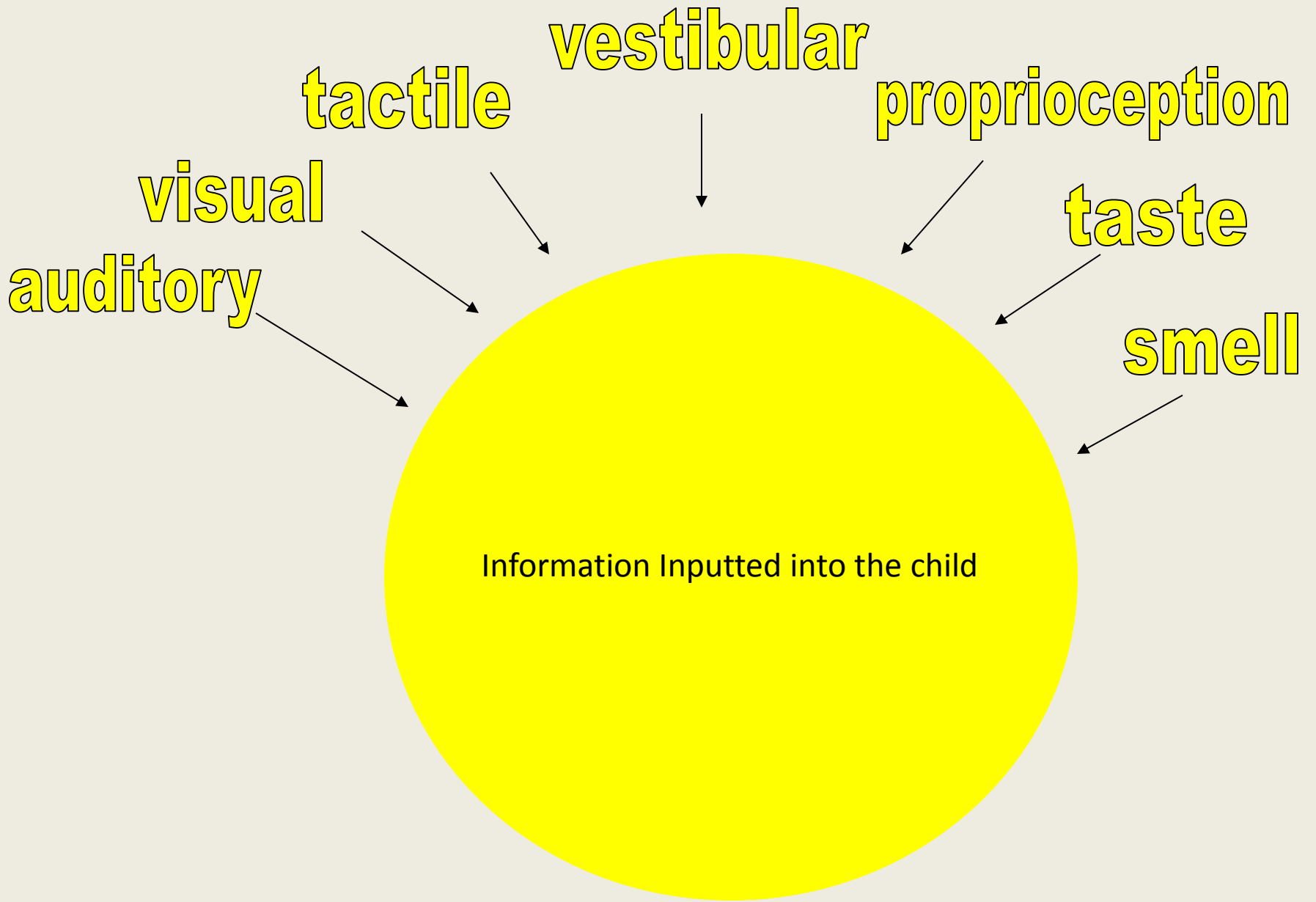
Lepak Neuro-Cognitive Clinical Map
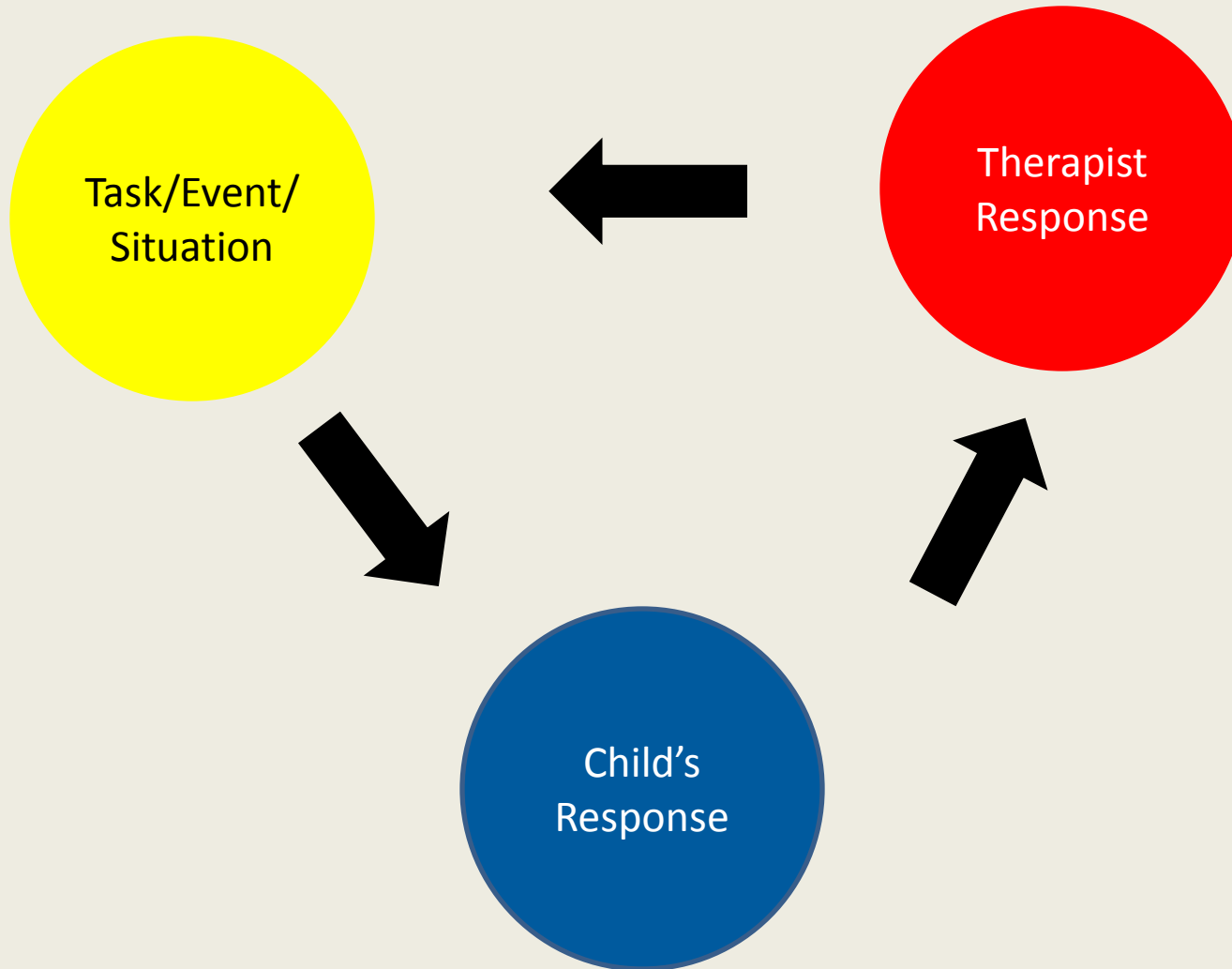
How Do We Evaluate What We Are Presenting To The Child?

Task/Event/
Situation

Building the Outer Circle

visual

auditory

tactile

vestibular

proprioception

taste

smell

Information Inputted into the child

Auditory

- They tend to understand or receptively retrieve objects placed right in front of them, but not necessarily scan a room and get that desired object on command (i.e. auditory + vestibular)
- They tend to hear and then repeat rather than follow the direction or comment on what was said (i.e. auditory + visual)

Visual

- The children we treat tend to be able to match identical objects, but not necessarily receptively identify

- They have greater difficulty matching while moving in space

- Follow a visual schedule, but their language does not always follow what they are doing

- Can climb, jump, touch body parts, but not necessarily when given an auditory command to do so

Tactile

- They tend to hold an object, but not necessarily talk about what they are holding
- Perseverate on the feeling of something, but not necessarily to acquire new information
- They tend to touch objects, but not to acquire adjectives (i.e. soft, rough, big, smooth etc.)
- They tend to mouth objects

Vestibular

- They inconsistently move and retrieve objects of desire on their own command, but not necessarily when given the same auditory command
- They tend to swing, jump, slide etc., but not necessarily talk about what they are doing even when they have the language skills
- They tend to either float from one object to another or perseverate on one thing

# Combining the Single-Channel processes of the Outer Circle

- Beginning to build the Outer Circle:
  - We begin building the Inner Circle when we have 2 or more areas of the Outer Circle that are at 70% accuracy.
  - This can occur with any 2 modalities on the Outer Circle
  - This is done early to decrease the child's desire to just memorize the task vs. learn the concept.
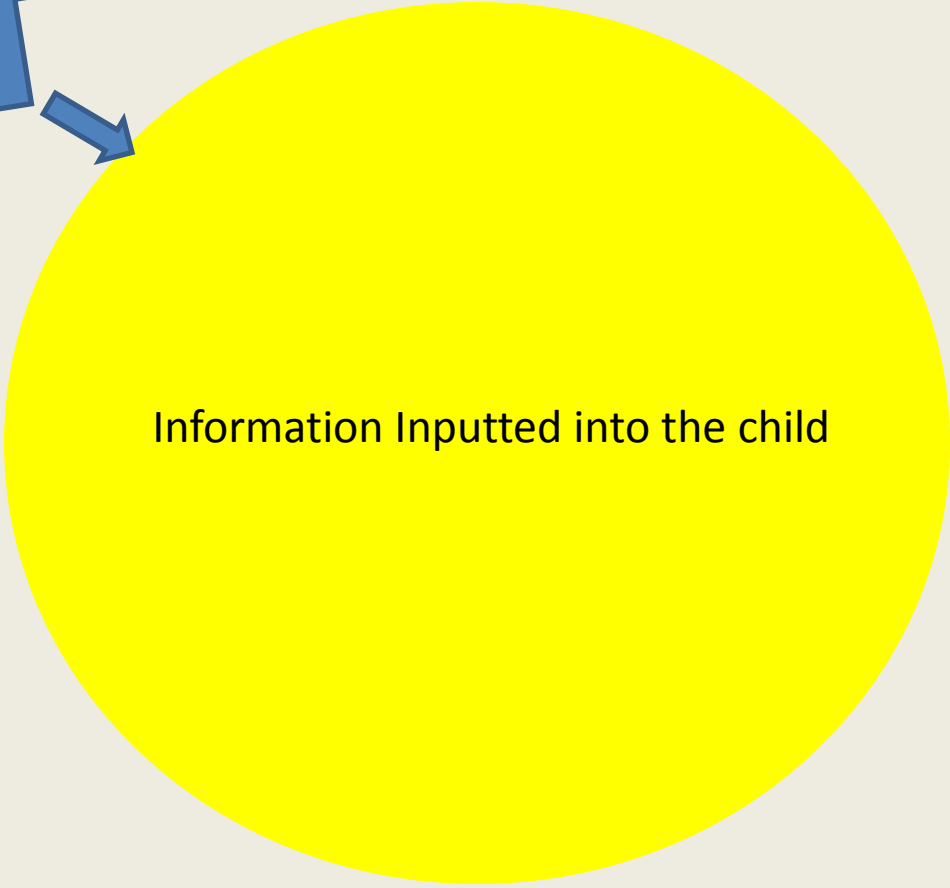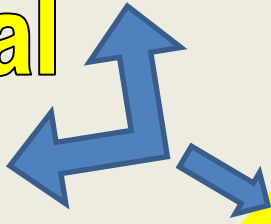
vestibular

tactile
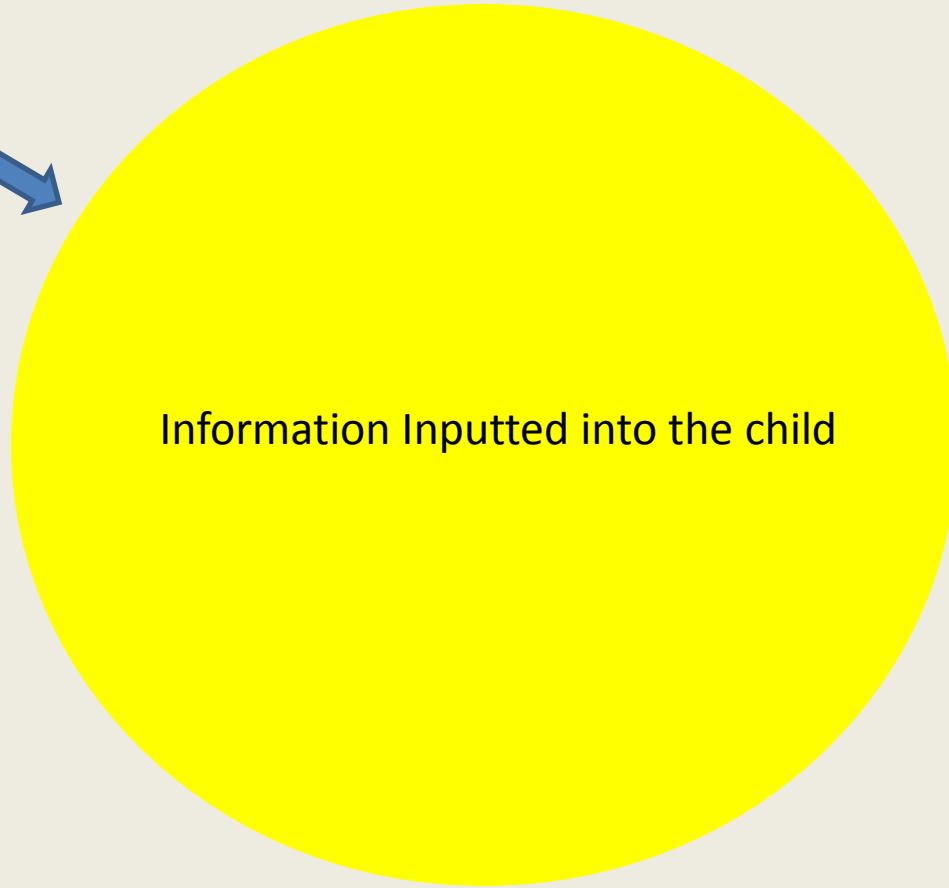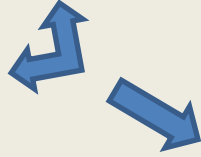
visual

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Information Inputted into the child

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Information Inputted into the child

vestibular

tactile

visual

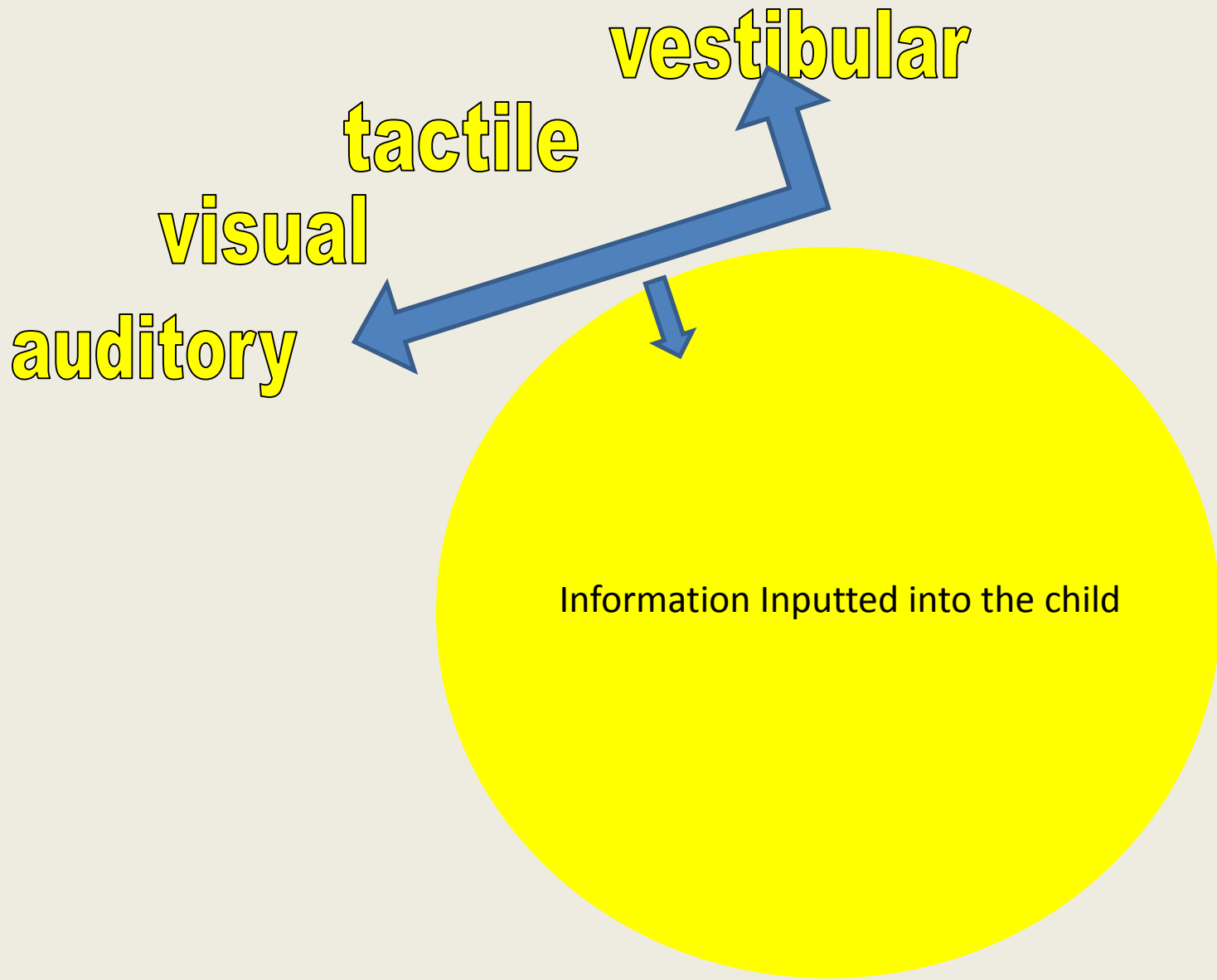auditory

Information Inputted into the child

vestibular

tactile

visual
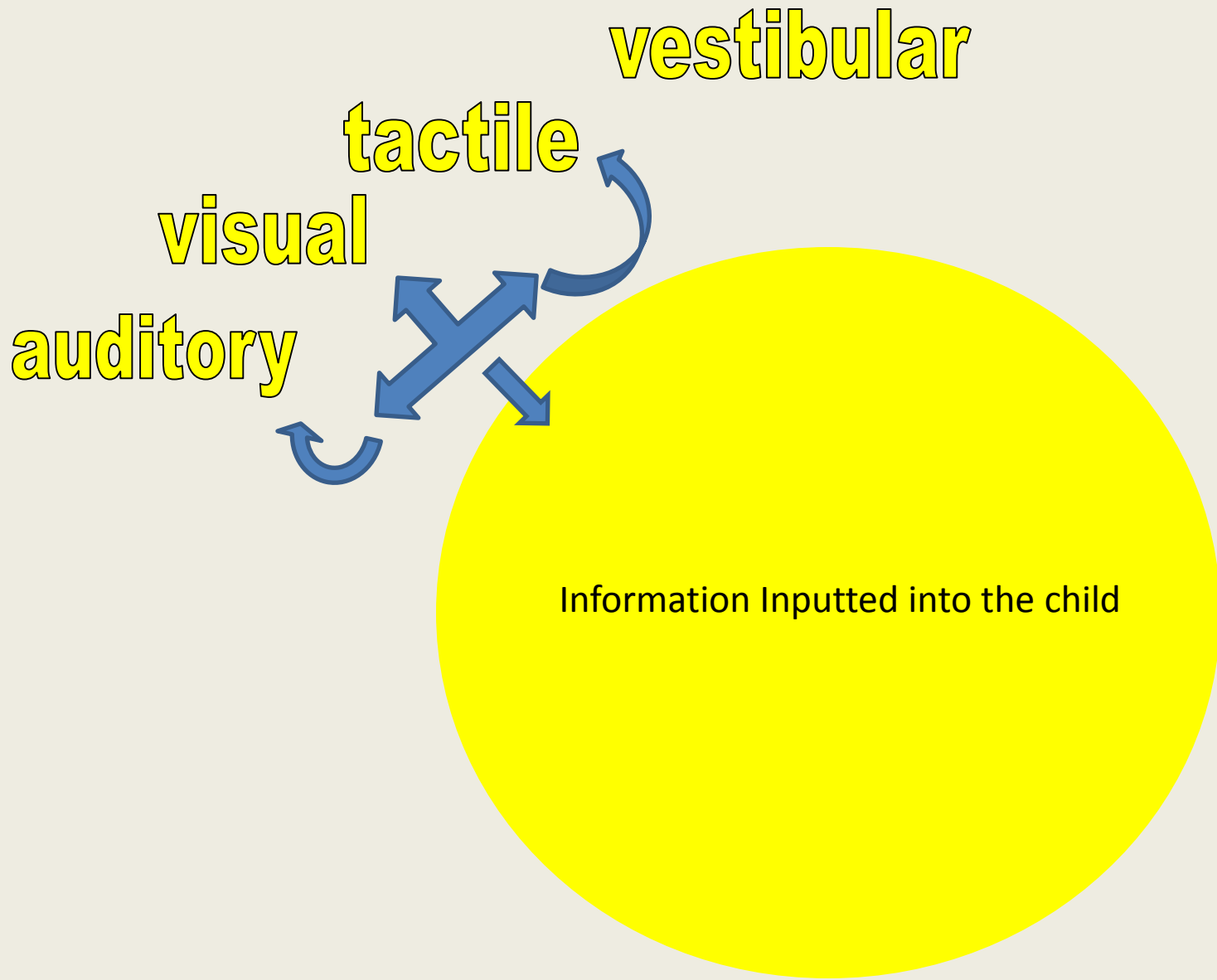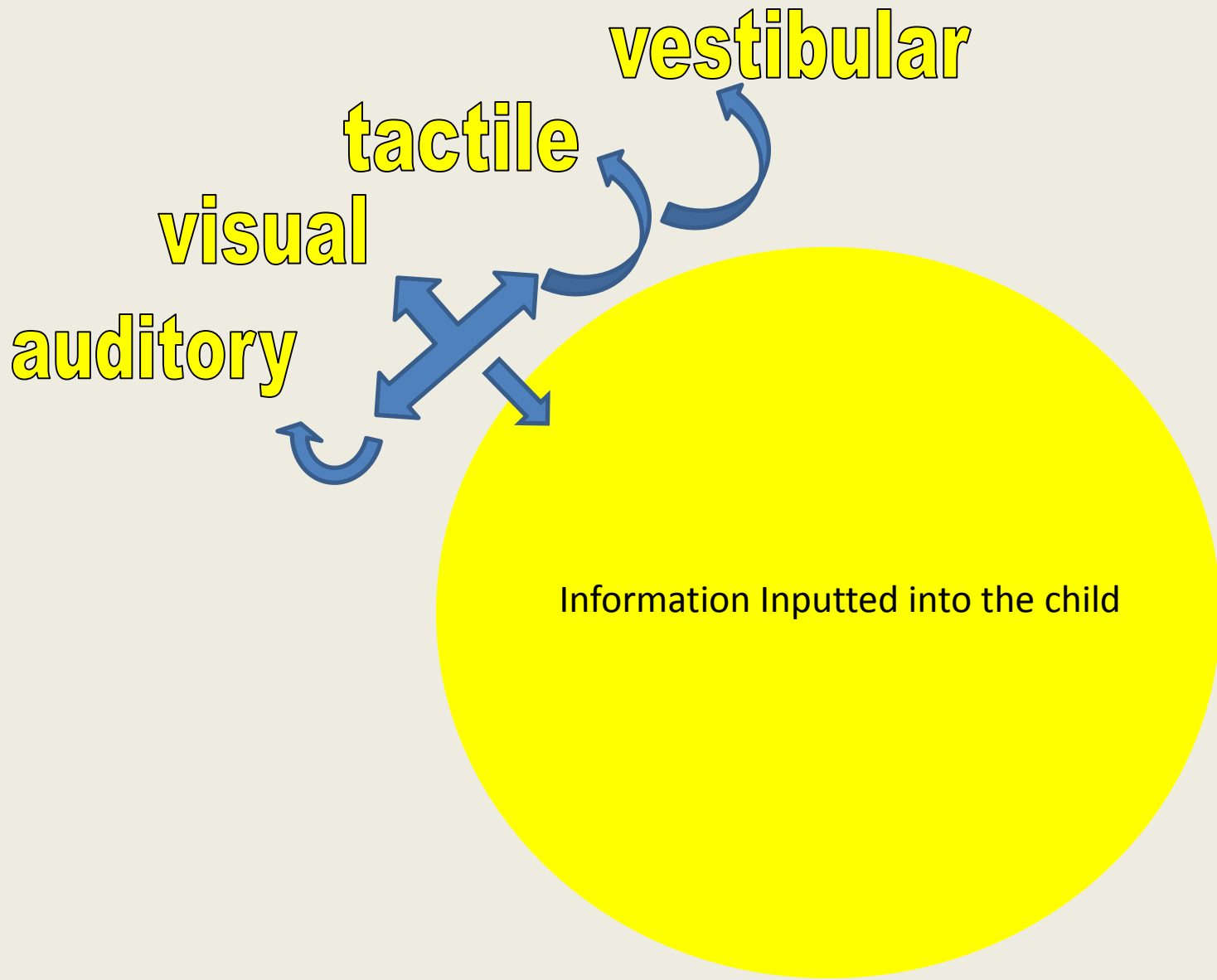
auditory

Information Inputted into the child

Proprioceptive

- They tend to be able to perform cognitive activities such as matching, sorting, receptive skills while sitting, but not necessarily when moving (i.e. on platform swing)
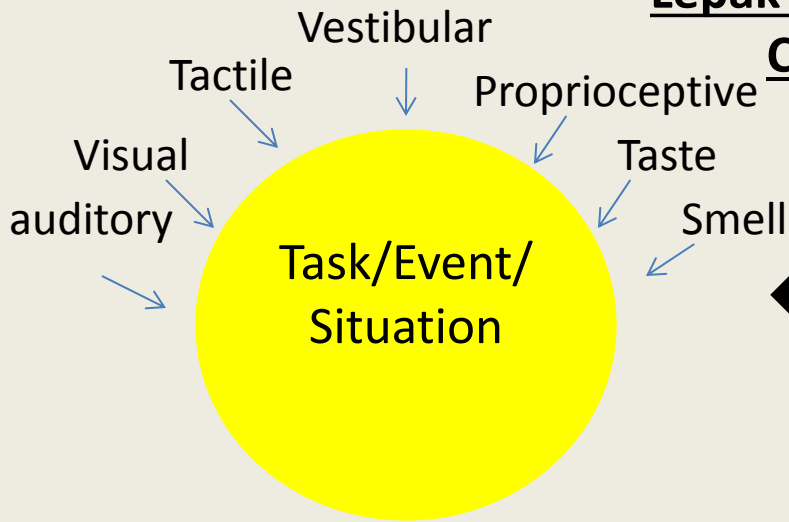
Taste

- Can receptively and expressively identify food, but not necessarily by the taste of that food
- May taste/mouth everything, but not necessarily receptively or expressively identify those items

Smell

- Can receptively identify and expressively identify common foods/shampoo/perfumes etc., but not necessarily from their distinctive smells

- May smell everything, but not necessarily receptively or expressively identify what they are smelling

Lepak Neuro-Cognitive Clinical Map

Vestibular

Tactile

Proprioceptive

Visual

Taste

auditory

Smell

Task/Event/ Situation

What Correction Procedure am I using? Why?

Therapist Response

What areas am I combining?

Child's Response

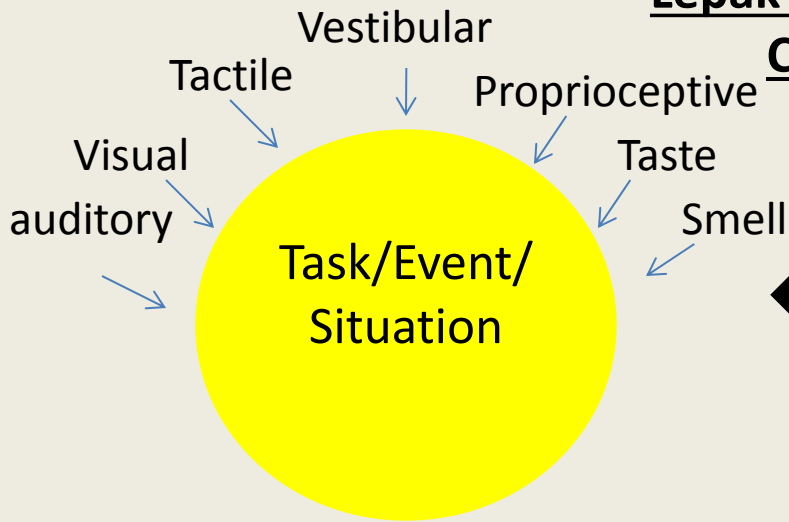How did the Child Respond?

Child's
Response

Child's Response

- Utilize ABA/AVB approaches to beginning concepts
- Teaching a "YES/NO" Response to begin Mediation
- Using "Errorful" learning
- Building an "Intrinsic Need" for accuracy and success
- Allowing the child to see what happens when they make mistakes
- This prepares the child to begin to develop the Inner Circle
  - Deductive Reasoning
  - Natural Consequences
  - Trial and Error

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Task/Event/Situation

What Correction Procedure am I using? Why?

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Child's Response

How did the Child Respond?

Single-Channel Processing

- The children we treat are comfortable being single-channel processers

- They must have a "need" otherwise why change, and even if there is change why use it

Multi-channel Processing

- Systematically teaching the areas of input to work together so that the skills can be brought to the Inner Circle and perform higher order thinking activities such as reasoning, problem solving, predicting, deduction, and the ability to inference
  - This step must be done as they are learning to multi-channel process
  - It should not be done separately. We could be at risk of memorization vs. thinking

Approach to Developing a Single-Channel Processor into a Multi-Channel Processor

- Develop each area separately to get a very small base
  - Auditory: Develop a small receptive vocab (10-20 nouns/verbs)---Watch for generalization
  - Visually: Develop matching, sorting, sequencing, gross motor imitation at purely a visual level (2-5 of each)—Watch for rote memory

Approach Continued

- Combine Auditory and Visual channels as soon as possible to achieve integration, or organization of these two stimuli
  - Do high order functions with the auditory and visual channel
- Tactile: Identify known objects by touch not just by sight
- Combine Auditory, Visual, and Tactile
  - Do high order function tasks with auditory, visual and tactile

Approach Continued

– Vestibular: Use the known nouns/verbs, gross motor imitations etc. while moving throughout their house, clinic, gym, school etc.

  • Remember higher order function tasks

– Proprioception: Do known activities where the child is going to be receiving additional incoming information (i.e. in a ball pit, while doing an obstacle course, "Miller Square" etc.)

  • Remember higher order function tasks

Approach Continued

- Taste and Smell: After the child receptively identifies his/her desired food items. Teach them to identify by taste or smell
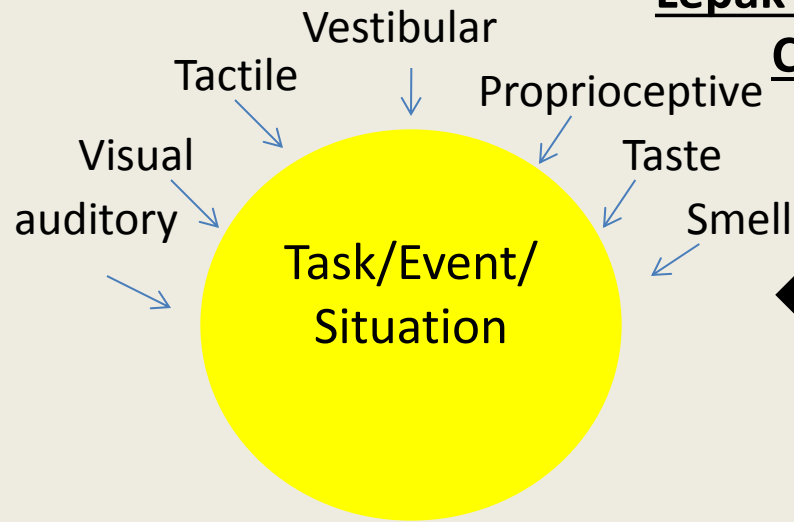 - Remember higher order function tasks

Approach Continued

- Integrating all of the areas
- Knowing when to integrate:
  - Integrate prior to the task becoming a rote or memorized response
  - Integrate slowly one input modality at a time
  - Integrate systematically-What does this child need to do to be successful in the everyday world

Approach Continued

- Be careful not to over develop and splinter out an area
  - Sometimes when the child is successful in one area we as clinician's tend to stick to that area because we are reinforced by their "progress"
  - Once a skill is over learned or "therapized" it is difficult to connect to other areas because the child wants to rely on rote memory rather than integrate

Lepak Neuro-Cognitive Clinical Map

Vestibular

Tactile

Proprioceptive

Visual

auditory

Taste

Smell

Task/Event/ Situation

What Correction Procedure am I using? Why?

Therapist Response

What areas am I combining?

Did I start working on the Inner Circle?
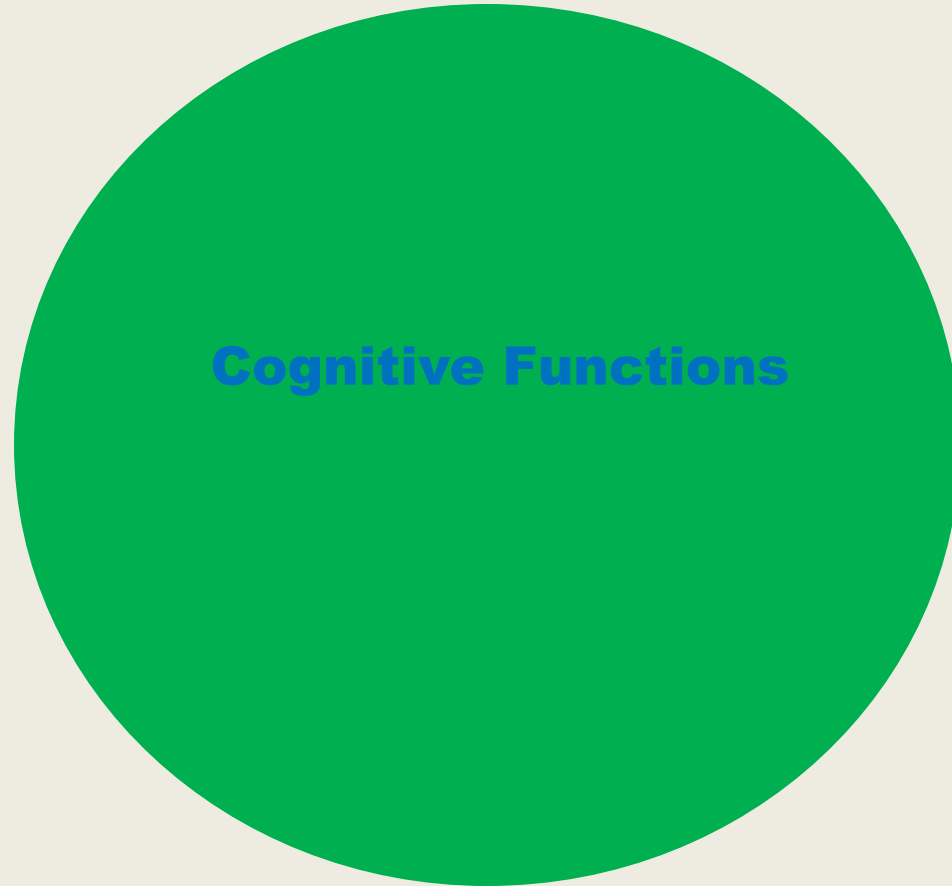
Child's Response

How did the Child Respond?

Can We Train The Mind To….

- Process single-channel input
- Organize the information that is processed with the other channels of input
- Perform higher order of thinking
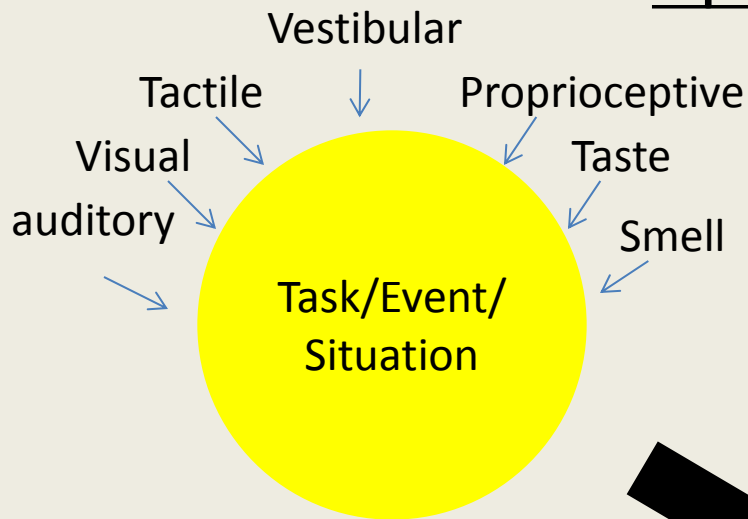- Execute this thought into our language

The Inner Circle

- Cognitive Functions
- Cognition
- Inference
- Predicting
- Reasoning
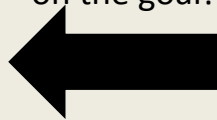- Logical Induction
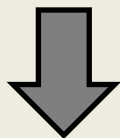- Logical Deduction

Building the Inner Circle

Cognitive Functions

Lepak Neuro-Cognitive Clinical Map

Vestibular

Tactile

Proprioceptive

Visual

Taste

auditory

Smell

Task/Event/ Situation

What Correction Procedure am I using? Why?

Maintain Intentionality on the goal!

Therapist Response

What areas am I combining?

Did I start working on the Inner Circle?

Is the child aware if they need to make any changes or if their response is correct?
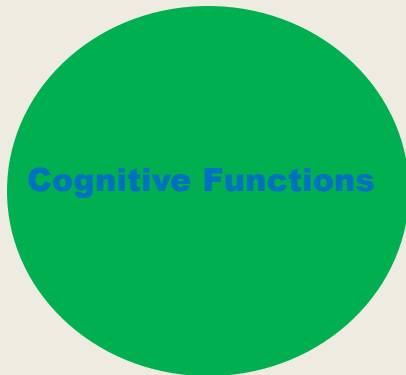
Cognitive Functions

Child's Response

How did the Child Respond?

What do we need to get these skills

- Cognitive Functions
  - Input:

  - Elaboration:

  - Output:

FIE: Input Phase

- Looking clearly at information for detail
- Determining relevance of the detail
- Precise and accurate labeling
- Considering multiple sources of information
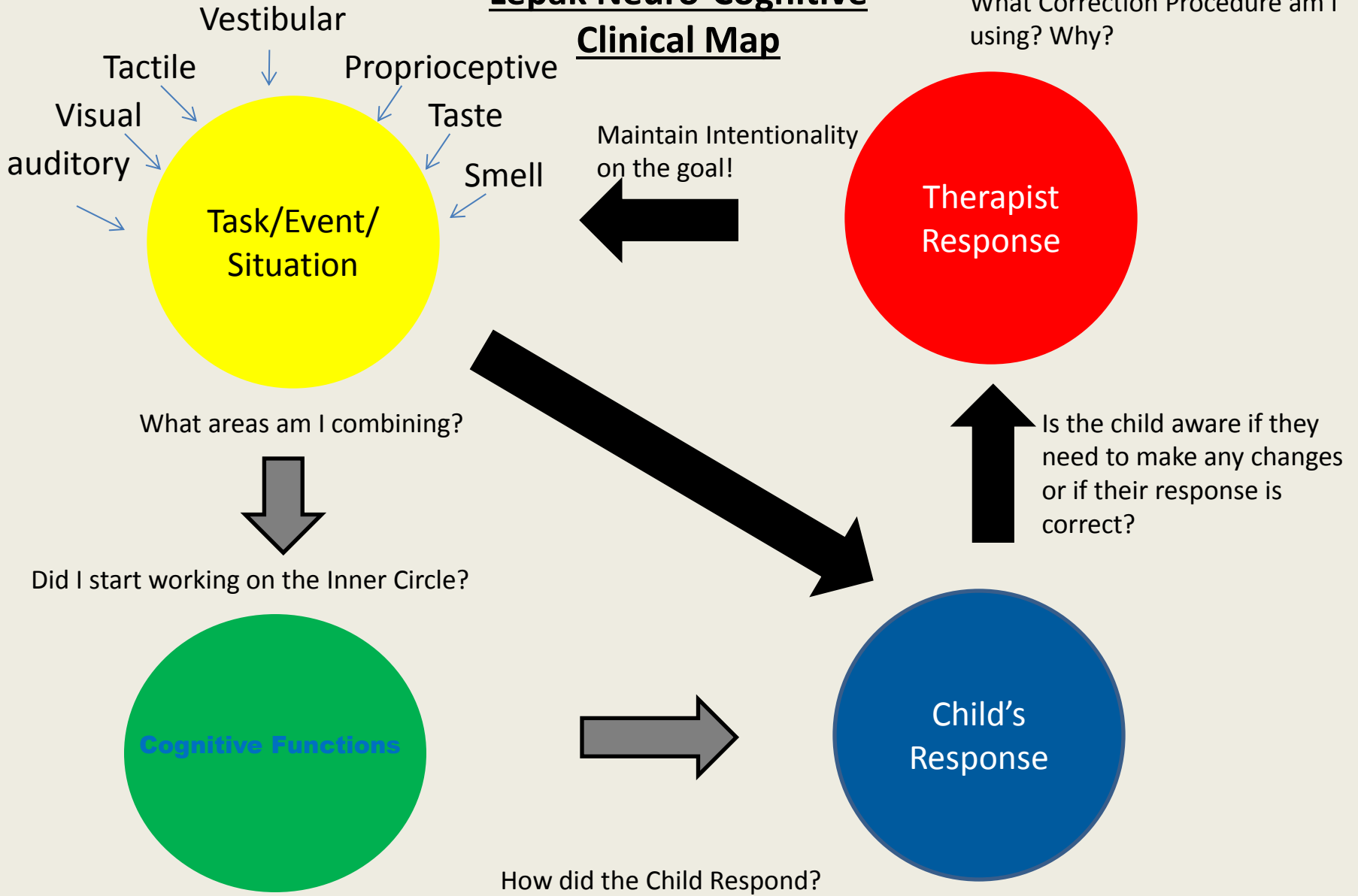- Need for precision, accuracy and completeness

FIE: Elaboration Phase

- Defining the problem
- Selecting relevant information
- Planning
- Learning and storing new knowledge
- Comparative Behavior
- Inferential-Hypothetical Thinking
- Logic
- Summative Behavior

FIE: Output Phase

- Clear and precise language
- Thinking things through before responding
- Staying calm/Not Blocking
- Waiting before responding
- Expressing knowledge with confidence

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Did I start working on the Inner Circle?

Cognitive Functions

Child's Response

How did the Child Respond?

The Multi-Channel Processing/ Cognitive Child Complex Processing

Receptive Language

- Concrete
  - Feature, Function, Class
  - Complex Sentences
  - Negation

- Abstract
  - If/then
  - Process of elimination
  - Why questions

Expressive Language

- Concrete
  - Using descriptive language
  - Sequencing
  - Basic Who and What

- Abstract
  - Inferencing
  - Predicting Outcomes
  - Making Judgments
  - Where, Why, How, When

The Multi-Channel Processing/ Cognitive Child

- Cognitive Functions
  - Input
    - Need for precision
    - Determining relevant information
    - Looking clearly for detail

The Multi-Channel Processing/ Cognitive Child

- Elaboration
  - Learning and storing new Knowledge
  - Selecting relevant information
  - Planning
  - Inferential thinking

The Multi-Channel Processing/ Cognitive Child

- Output
  - Waiting before responding
  - Providing details, specifics, clarification
  - Clear and precise language
  - Interpreting listener response and reactions to modify/amend message

The Inner Circle

- Cognitive Functions
- Cognition
- Inference
- Predicting
- Reasoning
- Logical Induction
- Logical Deduction
- ZPD
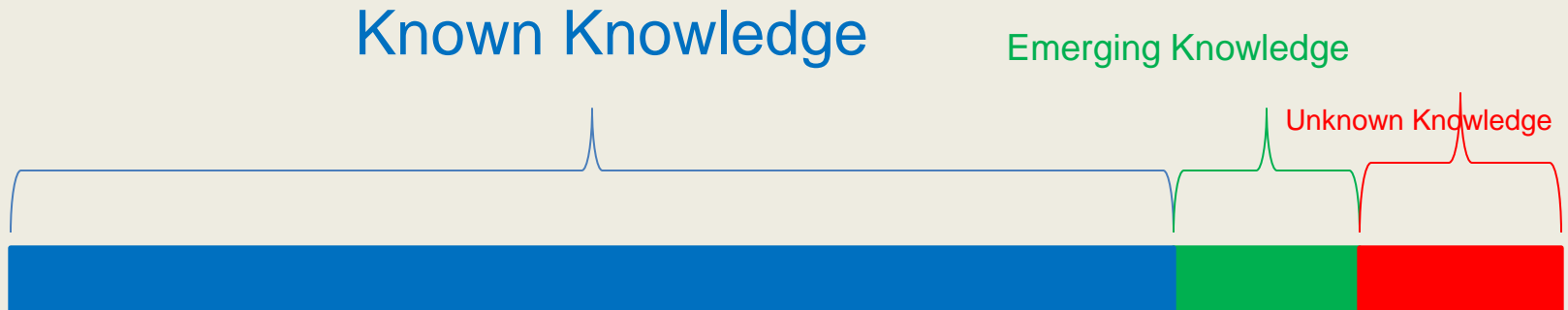- Theory of Mind
- Internalization/Generalization

The Cognitive Child

- The cognitive child has the ability to utilize modalities on both the outer and inner circles

Zone of Proximal Development (ZPD-Vygotsky)

- The ZPD is the zone of which the child has knowledge. Some of this knowledge is emerging in his/her everyday repertoire
- The ZPD is critical because it is the point where we attach new knowledge and bring it into the child's everyday knowledge base
- The ZPD is where great therapy is done and where the child gains his/her greatest accomplishments from coming to therapy
- ZPD is usually compromised during emotional outbursts

ZPD

Theory of Mind (TOM)

Theory of "I"

- The first stage of theory of mind:
  - When a child demonstrates the understanding that the pronoun "I" is relative to the speaker
  - When I say "I" I am referring to myself, but when you say "I" you are referring to yourself
  - The child has an *internal mental idea* that he or she is separate from you

Theory of "ME"

- Knowing and being able to answer questions about what the child:
  - Sees
  - Hears
  - Touches
  - Tastes
  - Smells
  - Feels (external/internal or physical/emotional)

Theory of "YOU"

- Knowing what others are *Thinking* or *Knowing.*
- Putting yourself in other peoples shoes!
- Utilizing past knowledge

Theory of "Them"

- Knowing what a group of people seeing, hearing, touching etc. as to inference, predict, reason, deduct, and problem solve what the group is thinking

Theory of "US"

- Knowing how the group feels about "Me"
- Knowing how "The child" fits into the group
- Knowing if "The Child" is acting appropriate or inappropriate
- Pragmatics
- This takes the use of prior knowledge

Internalization/Generalization

- The ability to learn new knowledge and adapt the knowledge in flexible ways to new concepts, tasks, and environments

- Bridging

- Transcendence

Connecting the Systems

- It is our belief that the input systems need to be connected

- It is also our belief that if we begin young children doing higher order thinking tasks through the use of mediation while they are integrating different modalities we are more likely to be following a pattern of normal development
  - Typical children do not get all the information and then begin to inference, predict, deduct, reason, and solve problems. They do this while they are learning the information. They do this through trial and error

Creating the Adaptable/Flexible Child

- Why Mediation
- Error-full learning
- Self-Evaluative Therapy
- Child-Evaluative Responses
- Increases Child Initiation
- Increases Child Self Correction
- Increases Intrinsic Motivation
- Increases Awareness of "why" we need to learn

Lepak Neuro-Cognitive Clinical Map
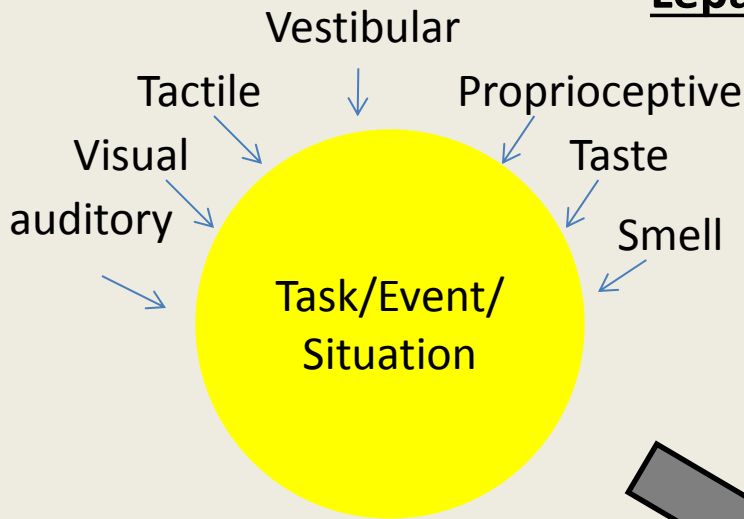
ZPD

Known Knowledge

Emerging Knowledge

Unknown Knowledge

ZPD
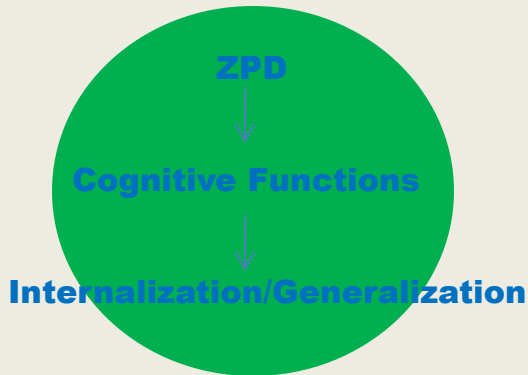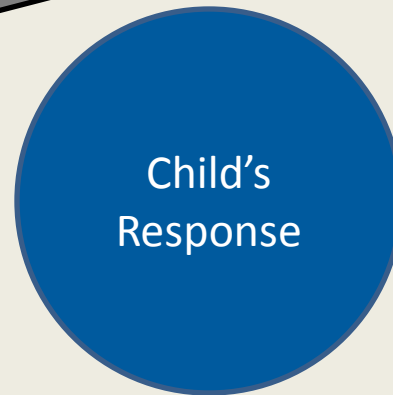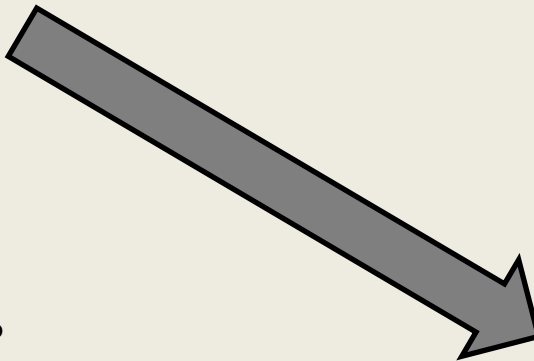
Known Knowledge

Emerging Knowledge

Unknown Knowledge

The Cognitive Child

- ## Outer Circle

  - Visual Modality: matches 3-4 steps with visual memory
  - Auditory Modality: can follow 3-4 step simple and complex auditory directions
  - Tactile Modality: recognizes objects by touch when out of sight
  - Vestibular Modality: Follows 2-3 step directions with movement across locations in small and large environments
  - Proprioceptive Modality: Can perform tasks at the table, in the gym, and in small group situations
  - Taste/smell: Limited experiences due to defensiveness in these areas resulting in a lack of adjectives and vocabulary that are learned through this modality

The Cognitive Child

- Inner Circle works on:
  - "why" questions
  - Reading comprehension
  - Reasoning
  - Inferencing
  - Predicting

The Cognitive Child

– FIE: Cognitive Functions
- Input:
  – Accuracy and Precision
  – Looking at Information for Relevant Detail
  – Precise and Accurate Labeling
- Elaboration:
  – Defining the Problem
  – Logic
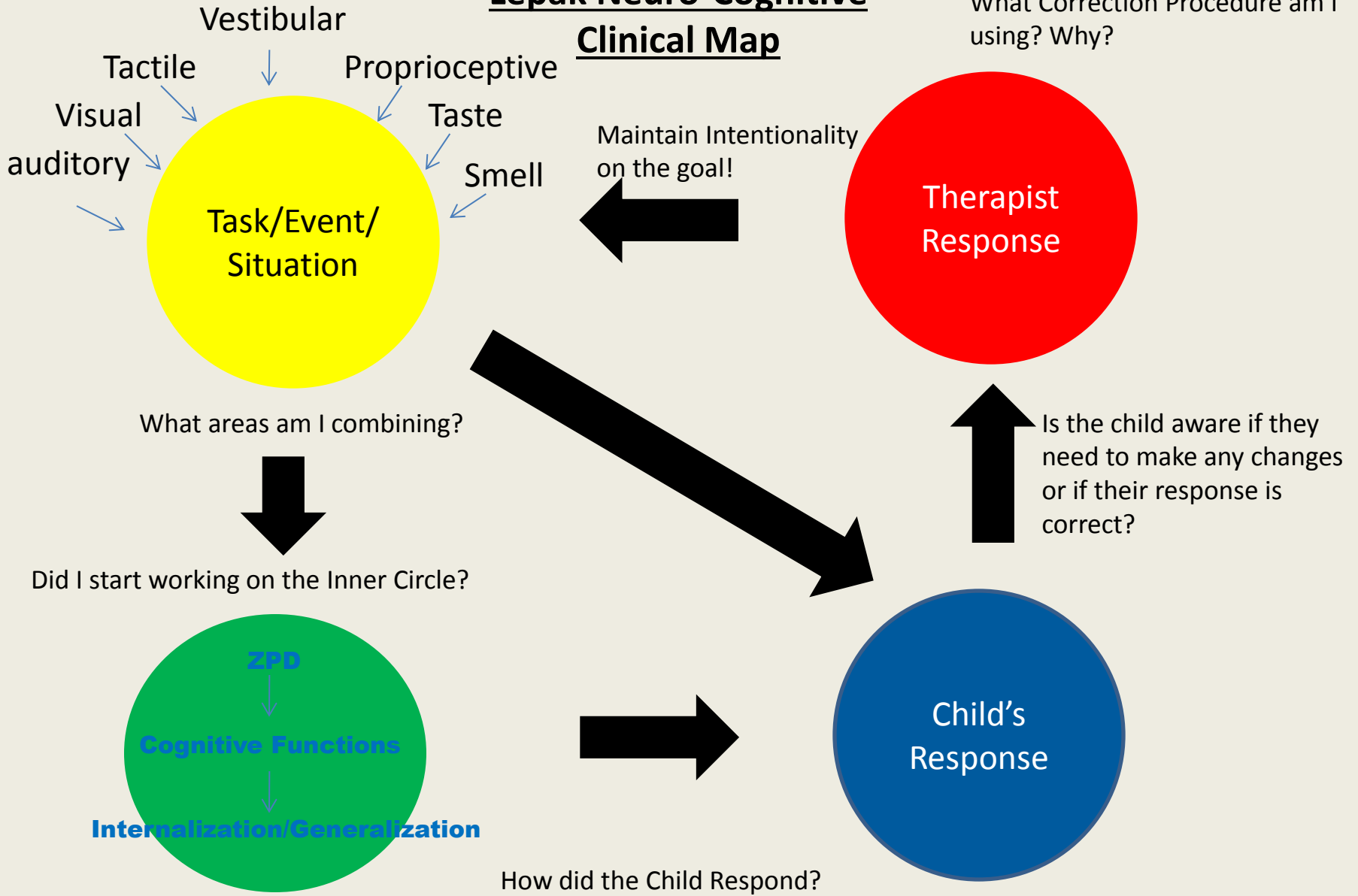 – Inferential-Hypothetical Thinking
- Output:
  – Clear and Precise Language
  – Thinking Things Through before Responding
  – Staying Calm/Not Blocking

The Cognitive Child

- Internalization/Generalization
  - The child will generalize cognitive skills while moving and in a natural environment
  - The child will develop awareness as well as self-correction for errors in natural environments
  - The child will generalize that her actions and others actions are related:
    - Theory of I
    - Theory of Me
    - Theory of You
    - Theory of Us
    - Theory of Them

Lepak Neuro-Cognitive Clinical Map

Vestibular

Tactile

Visual

auditory

Proprioceptive

Taste

Smell

Task/Event/Situation

What Correction Procedure am I using? Why?

Maintain Intentionality on the goal!

Therapist Response

What areas am I combining?

Did I start working on the Inner Circle?

ZPD

Cognitive Functions

Internalization/Generalization

Is the child aware if they need to make any changes or if their response is correct?

Child's Response

How did the Child Respond?

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