Occupational Therapy Treatment
Across the age span
Motor, ADL’s, Social Skills, Sensory and Behavioral Difficulties

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Outline
• What do we know about motor skills, activities of daily living and sensory processing in children with X & Y chromosome variations?
• OT interventions across the age span
  • Motor skills, visual motor integration and activities of daily living
  • Our research project and results
  • Sensory Processing, sensory based strategies & coping skills, behavior suggestions
  • Occupational therapy Interventions and Treatments
  • School and home recommendations

Motor Skills
• Fine motor abilities
• Activities of daily living
• Balance and Coordination
• Motor planning
Dexterity Skills

- **Finger Coordination**
  - Moving fingers individually
  - Holding pencil
  - Scissors
  - Counting change

- **Wrist**
  - Turning hand over
  - Sensory play
  - Dressing & Fasteners
  - Opening lids
  - Vocation skills

Bilateral Coordination

- **Scissor Skills**
- **Pre-Scissor skills**
  - Tearing paper
  - Squeeze or loop scissors
  - Snipping

- **Scissor Skills**
  - Cutting Straight line
  - Move to curved lines
  - Shapes
  - Hand Strength- spray bottle, squeeze activities

Printing & Pencil Grasp

- **Pre-Printing**
  - Markers & Crayons
  - Sensory play-sand, clay, shave cream
  - Use Stickers to target and connect the lines
  - Sensory play with writing
  - Shoulder stability

- **Printing**
  - Vertical surface/wall or Chalkboard
  - Vertical & horizontal Orientation
  - Left to Right
  - www.HWTears.com
  - www.TVTeacher.com
**Assistive Technology**

- Keyboarding
- Touch screen programs
- Track pads
- Alternative keyboards
- Keyboarding programs to teach Keyboarding

**Developmental Considerations**

Praxis

- Initiation, Planning, & Sequencing
- Imitation (motor and oral-motor)
- Engagement in purposeful activities
- Play
- Language
- Self-Care
- Social interaction

**Research**

- Motor Skills
- IQ
- Adaptive
- Visual Motor Integration
Aims of our study

- To Evaluate and compare visual motor integration and motor skills, IQ and adaptive skills in two groups of children with X&Y chromosome variations:
  - XXY/Klinefelter syndrome
  - XXYY
- To Evaluate how age, IQ and adaptive skills are relate to motor skills

Methods

- Subjects
  - Inclusion criteria:
    - Age 5 years - 19 years
    - X&Y Chromosome variations: XXY/Klinefelter syndrome, XXYY
  - Exclusion criteria:
    - X & Y variation plus another genetic disorder
Age, IQ, and Visual Motor Skills

<table>
<thead>
<tr>
<th></th>
<th>CALVAX</th>
<th>6RSVT</th>
<th>Test Results</th>
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<tr>
<td>Age</td>
<td>30.37</td>
<td>30.94</td>
<td>30.90 – 37.09</td>
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<td>Mean (SD)</td>
<td>12.03 ± 3.87</td>
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<td>Range</td>
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<td>IQ (VART &amp; WISC-IV)</td>
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<td>Verbal Mean</td>
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<td>9.94-14.94</td>
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<td>Performance</td>
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<td>8.76</td>
<td>0.30-14.74</td>
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<td>Performance</td>
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<td>8.76</td>
<td>0.30-14.74</td>
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<td>7.60</td>
<td>0.30-14.90</td>
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<tr>
<td>Bayley Visual Motor Integration</td>
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<td>Visual Motor</td>
<td>9.02</td>
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<tr>
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<td>0.30-14.90</td>
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<tr>
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<td>0.30-14.90</td>
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<td>7.70</td>
<td>0.30-14.90</td>
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Daily Routines

- Morning and evening routines
- Using Visual Schedules
- Chores
- Homework
- Leisure activity

Teaching Strategies for Activities of Daily Living

- Using picture or word schedules
- Charts
- Video modeling
- Practice and repetition
Chaining

- Chaining is a very useful basic teaching procedure that you can use for these kinds of skills
- Chain
  - Multi-step actions where all steps have to occur in the correct sequence to finish the task correctly

Forward Chaining

- Teach the steps in a forward manner, 1 at a time
  - 1 (reinforcer)... mastery
  - 1-2 (reinforcer)... mastery
  - 1-2-3 (reinforcer)... mastery, etc.
- Use when the client can perform each of the steps
- Use when the initial steps are easiest

Routine-based Strategies

Work systems

The individual work system answers four questions
1. What work?
2. How much work?
3. How do I know when I am finished?
4. What happens next?

http://www.teacch.com/
Visual organizers

- Visual Schedules
- Graphic Organizers

<table>
<thead>
<tr>
<th>Bedtime Routine</th>
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<tbody>
<tr>
<td>I put on my pajamas</td>
<td></td>
</tr>
<tr>
<td>I wash my face</td>
<td></td>
</tr>
<tr>
<td>I brush my teeth</td>
<td></td>
</tr>
<tr>
<td>I kiss them and say goodnight</td>
<td></td>
</tr>
<tr>
<td>I get in bed</td>
<td></td>
</tr>
<tr>
<td>I turn off the light and go to sleep</td>
<td></td>
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</tbody>
</table>

Sensory Integration
Sensory Integration

• A neurological process
• Theory that describes the relationship associated between behavior and neurological processes
• “The neurological process that organizes sensation from one’s own body and makes it possible to use the body effectively within the environment.” (Ayres, 1979)
• The ability to receive, interpret and organize sensory information (i.e. Self-Regulation)

Brain

• Registers in the sensations
• Decides what is important
• Initiates a response
• Influences a behavioral response

Tactile System

• Our skin discriminates tactile sensation
• How our clothes feel on our body
• Messy hands
• Brushing teeth and hair
• Discrimination of types of touch
  • Light
  • Heavy
Proprioceptive system

- Muscle sense
- Body awareness
- Balance
- Grading of force during play and interactions

Vestibular System

- Directs changes in our head position and tells our body where we are in space
Sensory avoiding

Sensitivities in X & Y Variations

- Causes anxiety and avoidance
- Difficulty with transitions
- Impacts self care tasks, dressing, bathing
- Refusal behaviors
- Tantrums
- Meltdowns
Challenges with Sensory Processing

- Sensitivities to sounds, textures and clothing
- Sensitivities to visual and auditory information
- Sensitivities to movement
- Low muscle tone affecting motor skills
- Difficulty coordinating motor tasks
- These difficulties impact daily living and transitions at home and school

How to support Children with Sensory Challenges

- Work with an OT to design treatment for sensory sensitivities
- Structure and support during daily activities: dressing, bathing, brushing teeth
- Sensory calming activities at home and school
- Give language using visual or verbal support when overwhelmed
- Sensory based activities
- Environmental modifications
- Reduction of task demands to meet the child’s needs
The Relationship of Arousal to Attention, Learning and Performance

GOOD

ADAPTIVE RESPONSE

(Attention, Learning, Performance)

POOR

LOW

⇑⇑

OPTIMAL RANGE

⇑⇑

HIGH

OF AROUSAL

After Hebb, 1949

A Model for Understanding Sensory Modulation

Sensory Overload

Optimal Level of Arousal

Low Arousal

Sensory Events

Arousal-Relaxation Cycle Builds Self-Regulation

Child experiences a “need”

Child feels upset

Child feels content/organized behavior

Child feels content need
The Sensory Diet Concept
• Originated by Patricia Wilbarger, M.A., OTR

Sensory Diet Components
• Routines for transitions and key issue management
• Family lifestyle and preferences assessed and modified
• Interaction style modified for best comfort
• Task/activity modification
• Environmental modifications

Sensory Based Strategies
Movement: Modalities
• What sensory receptors are stimulated?
• What areas of the brain are activated?
• How does it affect arousal & alertness?
• How does it support function?
• Intensity
• Frequency
• Duration
• Rhythmicity
Sensory Strategies

- Sensory Play
- Tactile
- Heavy Work
- Movement (vestibular)
- Auditory (music)
- Oral Proprioceptive
- Visual

Pyramid of Learning

The Key is Building a Daily Schedule

<table>
<thead>
<tr>
<th>Event Time</th>
<th>Sensory Diet Activity</th>
<th>Transition</th>
<th>Other Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wake-Up AM</td>
<td></td>
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<tr>
<td>Lunch</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Early PM</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Dinner</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Bed-time</td>
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</tbody>
</table>
Tantrums & Meltdowns

• Ask: Was this due to a sensory trigger?
• Help provide a quiet place to go when upset
• Offer sensory supporting activities that
  – Calm
  – Organize
  – Provide Self-regulation

Sensory Resources

• Stickids Program: www.stickids.com
• Pocket Full of Therapy- www.pfot.com
• Therapro- www.therapro.com
• “How Does Your Engine Run” a Self-Regulation Program by Sherry Shellenberger & Mary Sue Williams: www.alertprogram.com
• “Tools for Teachers” by Diana Henry. www.ateachabout.com

Cognitive Strategies

Kari Dunn Buron - Leah Kuypers.
Social Thinking Press
Cris Rowan
Self-Regulation Strategies

- Simple Cueing (one word/gesture)
- Complex Strategies:
  - Think It, Say It, Do It!
  - Five-Finger Approach
  - Alert Program by Williams and Shellenger
  - Self-Talk

Education and Advocacy

- Education
  - School & community personnel
  - Explaining learning strategies
  - Explaining behavioral differences
- Advocacy
  - Educating about X & Y conditions
  - Teaching strategies for success
  - Promoting success across all environments
Thank you For your Attention!

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