Unstuck and On Target: An Executive Function Curriculum that Increases Flexibility and On-Task Behavior

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• The Isadore & Bertha Gudelsky Family Foundation
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This talk addresses:

1. Why we developed Unstuck and On Target (UOT)
2. How we developed UOT
3. What UOT is
4. Is UOT effective?
Autism Spectrum Disorders Are….

- Neurogenetic and Defined by:
  - Deficits in social interaction, social communication
  - Repetitive behaviors, restricted of interests

- Heterogeneous and a *Spectrum*
  - IQ (38% of ASD $\geq 85$)
  - Co-morbidity (Leyfer, 2006)

- Common and increasing
  - 1 in 88 (CDC, 2008)
  - 5:1 = Males:Females
  - All races
WHY WE DEVELOPED UNSTUCK AND ON TARGET
“A failure to understand how a child’s typical behaviors reflect this disability can result in misperceptions such as viewing the child as noncompliant, willfully stubborn, or unmotivated, rather than confused, involved in repetitive routines, or focusing on less relevant aspects of the situation.” (Kunce & Mesibov, 1998)
What are Executive Functions?

**Behavioral/ Emotional Regulation**
- **Inhibit** - stop an action or not react to impulse
- **Shift** - move from one task or situation to another
- **Emotional Control** - regulate emotional response

**Metacognitive Problem-Solving**
- **Initiate** - begin task, activity, attention
- **Working Memory** - hold information actively in mind
- **Plan** - anticipate future events and develop steps
- **Organize** - establish, maintain order
- **Self-monitor** - attend to behavior/ performance; revise
Two Most Common Executive Function Challenges in ASD

- **Flexibility**
  - Transitioning from one activity to another
  - Changes in routine
  - Violations of expectations
  - Seeing more than one way of doing things
  - Easy to get stuck
  

- **Planning/Organization**
  - Knowing how to accomplish a goal
  - Prioritizing
  - Identifying main idea and organizing thinking
  - Can’t see the forest for the trees
  
“Asperger’s is like a vise on your brain. And each unexpected event is like another turn on the vise...it just keeps building until you feel like you’re going to explode. Sometimes when you explode, it comes out the wrong way.”

- A young student with ASD
Importance of Self-talk

Social context

- Language
  - Self-directed speech
    - Self-regulation
      - Executive control

(Luria, 1961)
Articulatory Suppression and Planning

Wallace et al. (2009) *Journal of Autism and Developmental Disorders*
Is Self Talk impaired in ASD?

• Russell (1997): executive deficits ASD related to failure of internalized, self-directed speech to regulate non-routine behaviors

• Whitehouse (2006): ASD group doesn’t use verbal labels

• Ozonoff (1995): Children with autism do not show WSCT deficits when it is administered on the computer

• “Actually it’s more difficult to do this with a human.”

• Tower performance in typical controls is predicted by language ability, but not in children with autism (Joseph et al, 2005)
Executive Dysfunction:

“The curious dissociation between knowing and doing” (Teuber, 1964)
Poor EF relates strongly with adaptive behavior delays: play, social and communication problems (Gilotty et al., 2002)

Kenworthy et al., 2005
HOW WE DEVELOPED UNSTUCK AND ON TARGET
It Takes A Village

• Inter-Disciplinary Development Team:
  – Children’s National- Psychologists
  – Take2 Summer Camp & The Ivymount Model Asperger Program – Educators, Occupational Therapist
  – Parent and Speech/Language Pathologist

• Development team members: Lynn Cannon, Katie Alexander, Lauren Kenworthy, Laura Anthony, Monica Adler Werner, Lisa Greenman, Mark Ylvisaker

• Extensive input from key stakeholders: Parents, Teachers, Students, Self Advocates (Ari Ne’eman, Alex Plank)
WHAT IS UNSTUCK AND ON TARGET
Unstuck and On Target!

- What each skill is and why it’s important
- How to make it work for you
- Real world practice & rewards
UOT Philosophy: Neurodiversity is a civil right, or two ways to help

Accommodate
- Change the environment
- Change expectations
- Change the task

Remediate
- Explain the rationale
- Introduce new concepts
- Teach new skills
- Teach a process

“An ounce of prevention is worth a pound of cure.”
Ben Franklin

"Give a man a fish, feed him for a day. Teach a man to fish, feed him for a lifetime.”
Lao Tzu
Overload and Inflexibility

• Overload is dangerous
  – Leads to anxiety, impulsivity, inappropriate behavior

• Overload creates profound risk in context of:
  – Social isolation, teasing and bullying

• In a mine field caution and resistance to sudden, unplanned moves is wise (Ari Ne’eman)

• Inflexibility serves an adaptive role in limiting the amount of unexpected, spontaneous events to which a person must respond
Accommodations: UOT Prerequisites for Successful Intervention

To improve the Brain-Environment fit for people with ASD (and everyone else!):

• **Increase predictability and structure**
  – Provide explicit assurance that certain routines will remain unchanged

• **Keep it Positive**

• **Distinguish Can’t from Won’t**

• **Avoid Overload**

• **Make the Big Picture Explicit**

• **Talk Less, Write More**
Accommodations for the Inflexible Brain

- Make schedule clear and visual
- Forewarn of any changes in schedule
- Give 2 minute warnings of time to change
- Make changes from one task or topic to the next clear and explicit
- Stick to routines
- Limit the number of adults/peers child works with.
- Respect and use special interests
Keep it Positive

Emotions are Contagious

Child mad
You’re mad
Child madder
You’re madder

Reinforcement Breaks the Cycle

4 to 1

Praise
Praise
Praise

Correction or command

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### Moral Turpitude vs Different Brain/Coping Mechanism

<table>
<thead>
<tr>
<th>What looks Like “won’t”……</th>
<th>May actually be “can’t”….</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Oppositional, Stubborn”</td>
<td>Cognitive inflexibility</td>
</tr>
<tr>
<td></td>
<td>Protective effort to avoid being overwhelmed</td>
</tr>
<tr>
<td>“Can do it if he wants to”</td>
<td>Difficulty shifting</td>
</tr>
<tr>
<td>“Self-centered”</td>
<td>Impaired social cognition</td>
</tr>
<tr>
<td></td>
<td>Poor theory of mind</td>
</tr>
<tr>
<td>“Doesn’t try”</td>
<td>Poor initiation</td>
</tr>
<tr>
<td></td>
<td>Impaired planning &amp; generativity</td>
</tr>
<tr>
<td>“Won’t put good ideas on paper”</td>
<td>Poor fine motor</td>
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<tr>
<td></td>
<td>Disorganization</td>
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<tr>
<td>“Sloppy, erratic”</td>
<td>Poor self monitoring</td>
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<tr>
<td></td>
<td>Overloaded</td>
</tr>
<tr>
<td>“Won’t control outbursts”</td>
<td>Overload</td>
</tr>
<tr>
<td></td>
<td>Disinhibition</td>
</tr>
<tr>
<td>“Prefers to be alone”</td>
<td>Impaired social problem solving</td>
</tr>
<tr>
<td>“Doesn't care what others think”</td>
<td>Impaired understanding and production of nonverbal social cues</td>
</tr>
</tbody>
</table>
Accommodations for the Detail Oriented Brain: Prevent Overload

- Structure, structure, structure
- Give breaks from people
- Avoid, decode or at least predict large group or unstructured events
- Reduce stimulation: characteristics of classroom, seating, baseball cap, earplugs, sensory sensitivities
- Assign specific jobs or tasks
- Look for overload and respond quickly
Putting it into Action: Predicting and Reducing Overload

**Catch Overload Early**

*Remember the last time your child became overloaded.* What occurred 15, 10 and 5 minutes before overload? Were there any warning signs? List overload warning signs your child makes (e.g. starts to talk loudly/faster/in a higher voice, gets stuck on something, humming, repetitive behaviors increase, more impulsive, more anxious, starts refusing to do things, clenches body):

1. 
2. 

List triggers (e.g. hunger, crowds, fatigue, too much talking) that lead to your child’s overload:

1. 
2. 

**Defuse the Situation: What to Do**

*Remember the last time you were able to help your child with ASD avoid overload.*

What did you do that calmed your child (e.g., steer them to a quiet place, touch or hold them, make a sign to them that cues them to calm down, use other visual cues, leave them alone)?

1. 
2. 

What coping strategies did your child use effectively (e.g. take deep breaths, distract self with a favorite activity, think of a favorite thing or place, ask for a hug)

1. 
2. 

What did you do that helped you stay calm (e.g. breathe deeply, think of how much you love your child, think of a calming melody, look at your child and put yourself in his shoes)?

1. 
2. 

**Defuse the Situation: What not to do**

Once your child is overloaded, it is usually not helpful to:

1. **Talk.** Reasoning at this stage makes things worse. Your child is unlikely to be able to process what is said. Learning can not happen when your child overloaded.
2. **Act Impulsively.** If you don’t know how to help your child, don’t do anything. An escalation of your emotions will probably escalate your child.
3. **Rush your child.** It can take a long time to recover from overload. Some children need hours of downtime.

*An experienced ER doctor training new ER doctors once said “Don’t just do something, stand there!”* When things are not going well it is hard for most of us to hold back, but that is how we observe what is happening and avoid making things worse than they already are.
Accommodations for the Detail Oriented Brain: Emphasize the “Big Picture”

- Emphasize goals
- Safe Address
- Teach to strength: explicit short rules, recipes, checklists and routines
- Explicitly review situations which require drawing inferences, picking up on nuance
- Put new information in familiar context
**Break it Down**

- **John has a book I want**
  - Hit John, take book
    - Time out - Miss TV time
      - Was this what I wanted?
  - Ask John for a turn
    - Look at book, give it back, get TV time
      - Was this what I wanted?
Talk Less, Write More

- Dry Erase boards
- Checklists
- Use technology:
  - Time: Google calendar, iCal, Pure Calendar App, Outlook
  - Tasks: Workflowy, Toodledo, GoogleTasks
  - Writing: Noodle Tools, Inspiration.com, Diigo, MyStudyBar
  - Apps for Autism, Lois Jean Brady
Consistency across settings

Teach and use key scripts and words

Teach by doing

Use visual supports

Make it fun!

Checklists
Cues
White Boards

Coach
Make Implicit Explicit
Support-fade-generalize

Humor, rewards
Collaborate with your child
Active Coaching

Scaffold  
Fade  
Generalize

http://www.bianys.org/learnet
# Unstuck and On Target!

(27 small group lessons; Parent/teacher generalization activities)

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<th>• Guide to Using This Manual</th>
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<td>• Being Flexible Makes You a Good Friend</td>
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<td>Topic 10</td>
<td>• Flexible Futures</td>
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</tbody>
</table>
# Topic 1: The Meaning of Flexibility

## Flexibility

<table>
<thead>
<tr>
<th>Flexible — bending, changing, switching</th>
<th>Parent examples (words or pictures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible example: Octopus</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rigid — stiff, extremely difficult to change, stuck</th>
<th>Parent examples (words or pictures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rigid example: Mountain</td>
<td></td>
</tr>
</tbody>
</table>

## Flexible Can Be Faster

Name: ___________________________ Date: _______________________

**Project:** Flexible Can Be Faster

Sometimes, flexibility can allow things to be done faster. In this experiment, you will find out whether flexibility or rigidity works best. You will create one arch out of toothpicks and one arch out of pipe cleaners.

**Prediction:**
Which do you think will work better? (Circle one.)
- Toothpicks
- Pipe cleaners

**What do you do?**
Create an arch (the shape of a rainbow), one time with pipe cleaners and another time with toothpicks. Use a timer to track how long it takes to create each arch.

**Check your prediction:**

1. Which took less time? (Circle one.)
   - Toothpicks
   - Pipe cleaners

2. How many toothpicks did you need? _____

3. How many pipe cleaners did you need? _____

4. Overall, which worked better? (Circle one.)
   - Toothpicks
   - Pipe cleaners
Unstuck and On Target! Sample Classroom Extensions

Classroom Extension 1

Summary: In group, we have just completed our review of flexibility and rigidity as they are defined in the physical world. Each student has participated in several individual and group activities designed to make the definition of flexibility and rigidity as meaningful as possible. During group sessions, students are encouraged to use their new vocabulary, flexibility and rigidity. Teachers will use the language to reflect on student behaviors as well as narrate their own experiences out loud. During their social skills groups, students will continue to be introduced to new “flexible language.” As new words are introduced, they will build a visual to help students and teachers remember the concepts and remind them to use the language. To help support generalization of the language and concepts, build your own classroom visual.

Materials:
- Poster board or chart paper
- Glue
- Key word templates (provided)

To Do:
- Cut out key word templates
- Glue them to the poster board
- Name the board something catchy (i.e., flexi-con, or something that ties in with an existing classroom theme)
- Hang the poster board in a prominent place in the classroom
- As often as possible, use the key words in your language by narrating your and your student’s experiences out loud and reinforcing students for demonstrating key behaviors.

For example:
- “I know you wanted to use the red marker, great job being flexible and using the blue one.”
- “I was hoping to use the color printer to print the handouts. It is out of ink, so I will have to be flexible and use the black and white one.”
- “My Internet is not working. I am feeling very frustrated right now. I am going to have to come up with a Plan B so I can still get the information I need.”
- “I know you wanted to go outside for recess today. I love that you did not get stuck and came up with a Plan B to stay inside.”
- “I hope the library has a book on Martin Luther King, Jr. I know they may be all checked out, so I will keep an open mind and think about what other books I can check out.”

Notes:
- Students will be introduced to this language throughout the manual. Social skills teachers will keep you posted as new language is introduced.
- Feel free to modify key word templates to coordinate with an existing classroom theme.
- You are encouraged to use these words and concepts as part of your classroom reinforcement system (i.e. filling up the classroom marble jar—each time a student is flexible, he or she earns a marble for the group).

Extension Activity:
The following activity is designed to reinforce flexibility concepts and bring the words flexibility and rigidity into the classroom.

Materials you will need:
- Computer and printer (if possible)
- Markers, colored pencils, pencils, and/or crayons
- Scissors (1 per student)
- Glue (1 per student)
- Bulletin board or poster board

Instructions:
1. Review each student’s flexibility handouts
2. Students will work in groups to develop a poster or bulletin board background.
3. Each student should chose 1–2 images that represent flexibility (it can be a replica of something they have included on handout: Flexibility or it can be something new).
4. Once that image is found, created, or drawn on a separate sheet of paper, the student should then attach it to the poster or bulletin board.
5. The bulletin board should maintain a prominent position in the classroom.
Unstuck and On Target! Sample Home Extensions

Home Extension 1

**Summary:** In class, we have just completed our review of flexibility as it is defined in the physical world. Each student has participated in several individual and group activities, all designed to make the definition of flexibility as meaningful as possible.

There are several things you can do at home to help your child learn as fully as possible. The more experiences your child has outside the classroom, the better he or she will be able to learn and apply that learning.

1. As often as you can, use the word flexible or flexibility to point out objects, animals, or people who demonstrate flexibility. For example, you might say, “Look at how flexible the cat is to reach that far under the table for his toy.”

2. Please complete the bottom half of this handout with your child and return it to school with your child.

3. You also will find the other handouts that your child has completed in school. Please return them when you have finished your review. This is for your information.

In the upcoming lessons, we will work with students on flexibility of the brain. In this way, we will move progressively from the concrete meaning of flexibility to the abstract meaning.

**Flexibility and Rigidity Around the House**

1. Find three objects that are rigid (list them here):

2. Find three objects that are flexible (list them here):

3. What would happen if your pencil was super flexible?

4. What would happen if your napkin was super rigid?
Teaching EF Example: Flexibility
What is Flexibility? Why Be Flexible?

• Flexible is strong
• The “facts” of life
• What to do when what I want is impossible
• Getting part of what I want is better than not getting anything
• Being flexible gives me more choices
• If I am flexible, more good things happen for me
Flexibility Words

- **Flexible**
  - Great job being flexible

- **Unstuck**
  - I'm getting stuck on ___, how can I get unstuck?

- **Compromise**
  - Let's compromise so we both get some of what we want

- **Plan A/Plan B**
  - What is our plan?
  - What is our Plan B?
Flexibility Scripts

- Big Deal/Little Deal
  - How can we make this big deal into a little deal?

- Choice/No Choice
  - Is this a no choice situation?

- Handling the Unexpected
  - What will change?
  - What will stay the same?
  - Why is the change happening?

Source: Mark Ylvisaker  http://www.bianys.org/learnet
Target Goals/Whim Goals

Target Goal: To get to school on time

Whim: Want to watch TV

Plan: Record show to watch later
On Target Scripts

Whim/On Target

- Is this a whim, or are we on target?
- What is our target goal?
Goal, Plan, Do, Check

Goal
What do we want to do?

Plan
How will we do it?

Do
Let's try our plan

Check
How did it work?
Running errands: My goal was to finish all my errands today, so I could just relax tomorrow, and my plan was to do the grocery shopping, pick up the dry cleaning, get your prescription filed and get home in time to run before dinner, but now it is 5pm and I have only done the first two steps on my plan, can you help me come up with a plan B?

Your spouse wants to go out with old friends: If your goal is for me to let you go out on Saturday night, you need a plan that includes giving me a foot rub during the day!

Your child is resisting homework: You had a goal of getting an A in math right? Wasn’t part of the plan for achieving that goal doing your homework?

Your child is moping about cleaning her room: If your goal is to get outside and play with your friends, then let’s make a plan for getting your room cleaned fast. Should we set a timer and make it a race?
## Topic 6: GPDC (goal, plan, do, check)

<table>
<thead>
<tr>
<th>Goal</th>
<th>To have fun at recess</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan A</td>
<td>Ask Johnny if he wants to play soccer</td>
</tr>
<tr>
<td>Plan B</td>
<td>(If J says, “no”) Ask Melissa to play soccer</td>
</tr>
<tr>
<td>Plan C</td>
<td>Swing on the swings</td>
</tr>
<tr>
<td>Do</td>
<td>Follow my plans</td>
</tr>
<tr>
<td>Check</td>
<td>Did I meet my goal?</td>
</tr>
<tr>
<td></td>
<td>Which plan worked?</td>
</tr>
<tr>
<td></td>
<td>Would I do it the same or different next time?</td>
</tr>
</tbody>
</table>

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Goal: *What do you want to do?* Keep my room clean

Plan A: *How do you want to do it?*

Put clothes away:
- Clean clothes in the closet
- Dirty Clothes in the hamper

Put toys in toy box
Put books on bookshelf

When I finish cleaning my room, I get to play a game with Mom.

Do: *When do you want to try out your plan?* I will create a checklist of my plan and do the plan everyday after snack, checking off my checklist as I go. Every time that I do my plan, I get to play a game with mom.

Check: *How did it go? Do I need to add any steps to the checklist?*
IS UNSTUCK AND ON TARGET EFFECTIVE?
## FCPS and Parochial School Trial of Unstuck and Social Skills Curriculum (Jed Baker)

<table>
<thead>
<tr>
<th></th>
<th>UOT (n=47)</th>
<th>SS (n=20)</th>
<th>Chi-Sq or t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>87%</td>
<td>90%</td>
<td>0.102</td>
</tr>
<tr>
<td>White</td>
<td>70%</td>
<td>55%</td>
<td>3.406</td>
</tr>
<tr>
<td>Public School</td>
<td>96%</td>
<td>75%</td>
<td>6.45*</td>
</tr>
<tr>
<td>On Psychotropic Medication</td>
<td>54.5%</td>
<td>60%</td>
<td>2.95</td>
</tr>
<tr>
<td>Age</td>
<td>9.49(1.00)</td>
<td>9.58(1.10)</td>
<td>0.326</td>
</tr>
<tr>
<td>Mother’s education</td>
<td>1.91(0.88)</td>
<td>1.95(0.76)</td>
<td>0.155</td>
</tr>
<tr>
<td>Father’s education</td>
<td>2.04(1.12)</td>
<td>1.95(0.91)</td>
<td>-0.328</td>
</tr>
<tr>
<td>WASI FSIQ</td>
<td>108.80(18.52)</td>
<td>107.63</td>
<td>-0.023</td>
</tr>
<tr>
<td>ADOS Social + Communication</td>
<td>11.64(3.76)</td>
<td>12.00(4.39)</td>
<td>0.343</td>
</tr>
<tr>
<td>ADOS Stereotyped Behavior</td>
<td>1.98(1.71)</td>
<td>1.90(1.33)</td>
<td>-0.183</td>
</tr>
</tbody>
</table>

*p < .05*
Mean WASI Block Design T-Score
Higher Score = Better Performance

46.3% of Unstuck vs 23.5% of Social Skills Participants made gains > SEM
Mean Challenge Task Flexibility Raw Scores
higher score = less flexible

![Graph showing the change in raw scores from Pre to Post for Unstuck and Social Skills. The graph indicates a decrease in scores post-treatment for both categories.]
Mean Parent & Teacher BRIEF Shift
T-scores (higher score = less flexible)

- Unstuck Teacher
- Social Skills Teacher
- Unstuck Parent
- Social Skills Parent

Clinical cutoff
Anecdotal Reports

“UOT helped tremendously. It lessened meltdowns. For example, one student had 3 meltdowns per day, and UOT reduced her outbursts to 2 occurrences in one quarter. Not only that, the intensity was reduced as well”

“This has been a life changing experience for my daughter”

“UOT was a lifesaver for us this year!”