



Presenting Today

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UNIVERSITY**




Objectives

At the end of this workshop, participants will be able to:

1. Discuss what is known about driving for teens with ADHD in the occupational therapy literature.
2. Use evaluation data to draw conclusions related to ADHD, executive function, sensory processing, and driving errors.
3. Apply the learning to create appropriate assessment plans and interventions for teenage clients who are starting to learn to drive.

Plan

- Introduction
- Activity Analysis
- What is Known about ADHD and Driving




Break

- Exploratory Case Study
- Case Study Activity
- Driving Preparedness: Handbook for OTs
- Q&A

The Occupation of Driving for Teens


It's an IADL (27)

- Freedom!
- Independence
- Building adult competencies
- Access to school, work, and community involvement
 - Occupational enabler (28)



Certified Driving Rehabilitation Specialists

(CDRS)



- Already skilled at doing driving assessments and rehabilitation
- Mostly with older adults and acquired disabilities
- Are pediatric OTs connecting youth to CDRS ?

- ★ Who is a pediatric OT or COTA?
- ★ Is anyone a CDRS?

Activity Analysis

Driving is a complex task with many sub-tasks, client factors, and performance skills.

Activity Analysis

What are some examples of sub-tasks for driving?

Driving Sub-Tasks



Turning the vehicle on/off
Buckling a seatbelt
Navigation
Managing speed
Attending and responding to signage
Communicating with others

Activity Analysis

What functions are required for a person to safely drive a car?

Activity Analysis

A look at OTPF

1. Neuromuscular, Motor, and Movement Functions
1. Mental, Cognitive, and Sensory Functions

Activity Analysis

Neuromusculoskeletal
Motor Functions
Movement Functions

Activity

Note which OTPF terms that you believe might be required functions for the activity of driving.

Neuromusculoskeletal	Muscle Functions	Movement Functions
<ul style="list-style-type: none"> Joint mobility Joint stability 	<ul style="list-style-type: none"> Muscle Power Muscle tone Muscle endurance 	<ul style="list-style-type: none"> Motor Reflexes Involuntary movement reactions Control of voluntary movement Gait patterns

Activity

Areas that OT's should consider when addressing driving concerns

Neuromusculoskeletal	Muscle Functions	Movement Functions
<ul style="list-style-type: none"> Joint mobility Joint stability 	<ul style="list-style-type: none"> Muscle Power Muscle tone Muscle endurance 	<ul style="list-style-type: none"> Motor Reflexes Involuntary movement reactions Control of voluntary movement Gait patterns

Neuromusculoskeletal



Joint Mobility

Joint Stability

Muscle Functions



Muscle Power
Muscle Tone
Muscle Endurance

Movement Functions



Motor Reflexes
Involuntary Movement Reactions
Control of Voluntary Movement
Gait Patterns

Activity Analysis

Specific Mental Functions
Global Mental Functions
Sensory Functions

Activity

Note which OTPF terms that you believe might be required functions for the activity of driving.


Specific Mental Functions	Global Mental Functions	Sensory Functions
<ul style="list-style-type: none"> ○ Higher level Cognitive ○ Attention ○ Memory ○ Perception ○ Thought ○ Sequencing Complex movements ○ Emotional ○ Experience of self & time 	<ul style="list-style-type: none"> ○ Consciousness ○ Orientation ○ Temperament & personality ○ Energy & drive ○ Sleep 	<ul style="list-style-type: none"> ○ Visual ○ Hearing ○ Vestibular ○ Proprioceptive ○ Touch ○ Smell ○ Pain ○ Temperature & Pressure ○ Taste

Activity

Areas that OT's should consider when addressing driving concerns

Specific Mental Functions	Global Mental Functions	Sensory Functions
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Specific Mental Functions



Higher Level Cognitive

Attention

Memory

Perception

Thought

Sequencing Complex Movements

Emotional

Experience of Self & Time

Global Mental Functions



Consciousness
Orientation
Temperament & Personality
Energy & Drive
Sleep

Sensory Functions



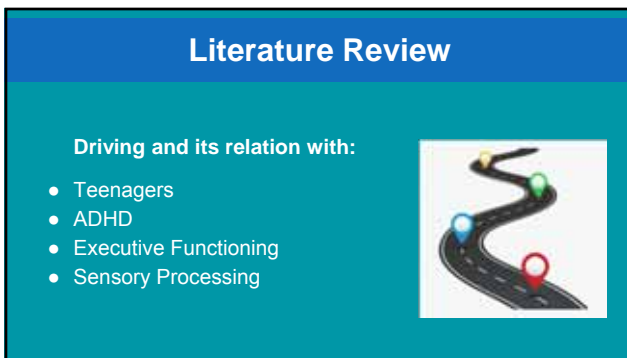
Visual
Touch
Vestibular
Proprioception
Hearing

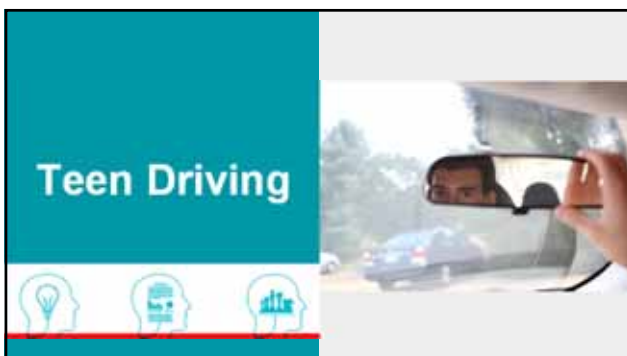
Driving
^
Sub-tasks
^
Client Factors
^

Performance Skills for
Clients with ADHD











- Extensive research in driving science
- Professor in variety of OT programs
- Editor-in-Chief of Occupational Therapy Journal of Research
- Editor and contributing author of *Driving Simulation for Assessment, Intervention, and Training*

Sherrilene Classen, PhD,
MPH, OTR/L, FAOTA, FGSA

Risks of Driving for (all) Teens

- Higher rates of road traffic accidents and fatalities
 - Worldwide - Leading cause of death for people age 15-29 years (1)
 - USA - 1/3 of all teen and young adult deaths (2)
 - Young men 15-19 years (2)
- Higher rates of traffic citations



Risks of Driving for (all) Teens

- Factors related to increased traffic accidents for all teens (6)
 - Limited experience driving
 - Risky driving behaviors
 - Impaired driving
 - Distracted driving
 - Visual - texting
 - Manual - eating, texting
 - Cognitive - other teen passengers



Neurology of the Teen Brain



- Brain maturation (3)
 - Prefrontal Cortex
- Amygdala and frontal lobe connection (4)
 - Emotions
 - Cognitive skills

Neurology of the Teen Brain



- Executive functions
 - 7 types
- Behavioral changes in adolescence (5)
 - Impulse control
 - Response inhibition
 - Sensation seeking

Areas of Concern for Children with ADHD (29, 30)





ADHD and Driving - Increased Risk Factors

- 4x higher risk for accidents for teens with ADHD in North America (7)
- Less safe driving habits, greater frequency of license suspensions (15)
- Executive function problems correlate with more traffic citations and accidents (13)
- Impaired driving may be related to problems with the control of emotions and motor actions, rather than inattention (16)

ADHD and Driving - Increased Risk Factors in the simulator:

Speeding, scanning, total errors (8)

- More accidents and lane maintenance problems (15)

Distracted driving

- More lane maintenance and speed constancy problems when texting than typical peers (11)

Medication

- Teens with ADHD who took their medication made fewer errors than unmedicated (12)

ADHD and Driving - Clinical Assessments

Mixed findings for:

connection between ADHD and lower scores on visual, cognitive, and motor function measures (8,16)

No connection between:

driving outcomes and performance based executive function tests (17)
→ Trail Making Test (TMT) A and B, Backwards Digit Span (BDS)

Executive Functions and Driving



- Metacognition
- Initiation
- Inhibition
- Planning
- Decision making
- Impulse control
- Problem solving

Executive Functions and Driving

- Inhibition → attention, ignoring distractions
- Planning → route selection, merging, passing
- Decision making → navigating turns, driver interactions
- Impulse control → following distance, maintaining speed
- Problem solving → hazard management, construction zone

Executive Function and Driving

Traffic accidents or citations for speeding, reckless driving, collisions, etc. (17, 19)

- Low working memory
- Low planning
- Low inhibition (19, not 17)
- Slow reaction time (19)

*Speeding is associated with low inhibition specifically

Traffic citations, not resulting in accident (17)

- Low inhibition
- Low task monitoring
- Low organization of materials

No associations found for emotional control, shifting, or monitoring with negative driving outcomes (17)


Executive Function and Driving

Lane maintenance problems (19)

- Low response inhibition
- Low verbal working memory
- Low attention

Poor hazard detection (19)

- Low inhibitory control



Young adults with inefficient EF are at risk for driving accidents immediately after licensure because the demands on controlled processes (vs. automatic) are prominent during the early stages of driving competence (18)

Sensory Processing and Driving



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Sensory Processing

The way the nervous system receives messages from the senses and turns them into responses

- Sensory Systems
- Sensory Processing Disorder (SPD) – neurological "traffic jam" that prevents certain parts of the brain from receiving information needed to interpret sensory information correctly (26)



ADHD and Sensory Processing

- Children with ADHD have more sensory processing differences on all scales of the Sensory Processing Measure (SPM) than neurotypical peers. (21)
- Children with ADHD have lower scores for all four response patterns on the Sensory Profile (SP) than neurotypical peers. (22, 24)

ADHD and Sensory Processing

- ★ There does not appear to be a specific pattern of sensory processing and modulating for children with ADHD, however, there are clear sensory differences in ADHD. (24)

ADHD and Sensory Processing

Risky behaviors are related to higher sensory seeking and lower effortful control

- Having ADHD and sensory seeking patterns did not correlate with risky driving habits (23)
- Having ADHD and lower effortful control correlated with risky driving habits (23)

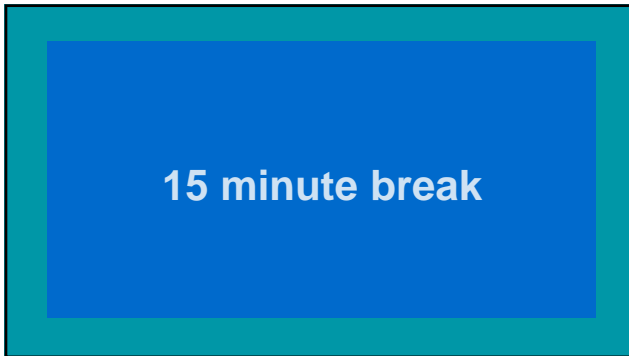
Summary

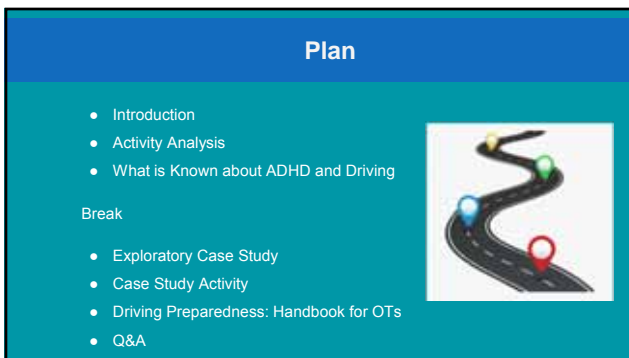
- Driving is an important occupation for teens
- Teens are at a greater risk in general
- Teens with ADHD have amplified risk for traffic accidents and citations
- OTs can provide skilled assessments and interventions that include executive function, sensory processing, and motor concerns

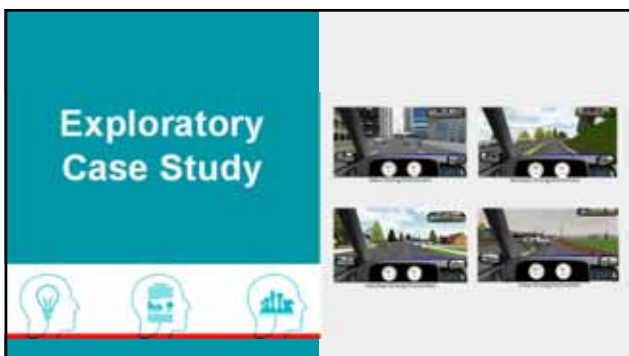
Implications for Practice:

Multi-modal assessment and intervention (9)

- Education
- Parent involvement
- Consider CDRS
- Simulator practice with instrumentation to record driving behaviors
- Additional on-road driving practice
 - Practice, practice, practice to increase automaticity
- Medication while driving (10)
- Consider a manual transmission (25)







Research Question

What is the relationship between driving errors, executive function, and sensory processing for teens with ADHD?



Measures

- Intake forms
- Driving simulator
- AASP
- CEFI



4 pre-driving girls with ADHD

Standardized Intake Forms

Teen Driving Form

When did you first start driving? _____

How often do you drive? _____

In what conditions do you normally drive? (e.g., daytime, night, highways, etc.) _____

Please rate your interest in driving:

1	2	3	4	5
Not at all		Sometimes		Love it

Please rate how confident you feel when driving:

1	2	3	4	5
Not confident at all				Very confident

Do you play video games? Yes No

If yes, how many hours do you play a week? _____ hours

- Participant background
- Diagnoses
- Medication
- Driving experience

STISIM Drive



- 5 trials
- Varying scenarios
- Driving errors
- High ecological validity (31, 32)

Adolescent/Adult Sensory Profile

- Participant self-questionnaire
- 5 point Likert scale
- Norm referenced
- 4 quadrants
- Good reliability & validity (33)




Comprehensive Executive Function Inventory (CEFI)



- 9 domains
- Strengths / weakness
- Norm-referenced data
- Excellent reliability & validity (34)

Interactive Case Study






Activity - Case Studies

4 Stations

- Visit each station
- Discuss
- Interpret the assessment results



Case Study Summary



ADHD and Sensory Processing

There is a known connection between ADHD and sensory processing differences, but no clear pattern

- Two participants with low registration and sensory sensitivity
- Zero participants with sensory seeking
- One participant similar to others in all areas
- One participant different in 3 of 4 areas

Sensory Processing and Driving

The two participants who reported very low registration and sensory sensitivity also had more center line crossings and speeding

Quadrant	#1	#2	#3	#4
Low registration	Similar to most people	Similar to most people	Much more than most people	Much more than most people
Sensation seeking	Similar to most	Less than most	Similar to most	Similar to most
Sensory sensitivity	Similar to most	Similar to most	More than most	More than most
Sensation avoiding	Similar to most	Less than most	Similar to most	More than most

ADHD and Executive Function

There is a known connection between ADHD and executive function difficulties, but no defined pattern

- Participants had overall low Executive Functioning, especially:
 - Working Memory, Planning, and Attention
- Participants had significant variability on other CEFI subscales

ADHD and Executive Function

CEFI subtest scores <24 standard score:

All 4 participants

- Attention, working memory, planning

3 of 4 participants

- Emotional regulation, initiation, organization, self-monitoring

2 of 4 participants

- Flexibility, inhibitory control

Executive Function and Driving

There is a known connection between executive function difficulties and driving errors

- Our results did not show specific connections between executive function skills and types of errors
- The two participants with overall CEFI scores <9 (standard score):
 - #2 had the fewest simulator errors
 - #3 had the most simulator errors

ADHD and Driving

All participants increased driving accuracy with successive simulator practices


- One participant increased speeding errors with practice
- It is consistent with existing literature to recommend extensive practice and repetition to develop automaticity and safe driving habits




ADHD and Driving

It may be difficult to predict an adolescent's driving readiness based on AASP or CEFI scores


- Complete a full individualized assessment
- Consult or refer to a CDRS
- Educate parents and teens throughout the process

Practice Recommendations



Practice Recommendations



Pediatric OTs and CDRS

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Practice Recommendations

Develop skills
in executive
function assessment
and intervention



Practice Recommendations

Make sensory
screening part of a
pre-driving
assessment for teens
with ADHD



Practice Recommendations



Creatively expand OT
services for youth 11-
17 years

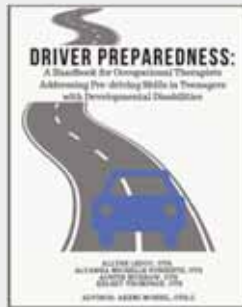
In Practice: ADHD and Driving Interventions

Multi-modal assessment and intervention (9)

- Education
- Parent involvement
- Refer to a CDRS
- Simulator practice with instrumentation to record driving behaviors
- Additional on-road driving practice
 - Practice, practice, practice to increase automaticity
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- Consider a manual transmission (25)

Driver Preparedness: Handbook for OT's

Addressing Pre-driving Skills in Teens with Developmental Disabilities



Driver Preparedness Handbook: Purpose

GO-TO Introductory Resource
Ideas and Information
Support for Therapists

Driver Preparedness Handbook: Overview

Introduction

Task Analysis

Screening Tools and Assessments

Intervention Suggestions

Resources

References

Driver Preparedness Handbook: Introduction

Why is Driving Important?

Driving and Teens with Developmental Disabilities

Role of Caregiver

■ Community Mobility

■ Driving as an Occupation

■ Mode of Independence

■ Pre-driving and Teens

■ Safety

■ Importance in caregiver participation


Driver Preparedness Handbook: Task Analysis


Common areas of concern

Client Factors


Performance Areas

Driver Preparedness Handbook: Task Analysis		
Driving Skills	Performance Skills needed for Driving	Clinical Observations
Transferring in and out of the vehicle	<ul style="list-style-type: none"> Aligns Bends Coordinates Initiates Moves Positions Sequences Stabilizes 	<ul style="list-style-type: none"> Is the client steady moving from one surface to the next? Will the client know how to adjust the seat settings to customize to their needs?

Driver Preparedness Handbook: Task Analysis Screening Items	
	<ul style="list-style-type: none"> i. Transferring in/out of vehicle ii. Preparation for driving iii. Starting/turning off vehicle iv. Speed Regulation v. Driving Etiquette vi. Interacting with the Vehicle vii. Maintaining car and understanding symbols


Preparing for Driving	
	<ul style="list-style-type: none"> Accommodates Aligns Calibrates Flows Grips Handles Initiates Manipulates Positions Reaches Searches/locates Terminates

Speed Regulation



- Accommodates
- Attends
- Calibrates
- Coordinates
- Initiates
- Paces
- Positions
- Sequences

Driving Etiquette



- Approaches/starts
- Concludes/Disengages
- Expresses Emotion
- Gesticulate
- Heeds
- Looks
- Notices/responds
- Regulates
- Takes Turns
- Thanks

Driver Preparedness Handbook: Screening Tools and Assessments

Cognitive skills

Visual Skills

Motor Skills

Visual-Motor Skills

Driving Specific Assessments

Driver Preparedness Handbook: Screening Tools and Assessments

Information Included:

- Assessment
- Description
- Target Population
- Where to find it

Occupational Therapy: Driver Off Road Assessment (OT-DORA)

Description: Can be used as an off-road or on-road assessment. This assessment covers cognition, perception, sensory skills, behavior, and other driving skills.

Population: Teenagers/Adults

Availability: Found at [ADTA Store](#)

Simulated Driving Assessments (SDAs)

Description: A virtual reality driving simulation assessment in which the individual drives a course and the computer detects any errors produced such as lane deviations and speed assessment.

Population: Ages 18 years old +

Availability: Contact website for available options at [Simulator Systems International](#)

Driver Preparedness Handbook: Assessment Flowchart

4 Skill Areas to Evaluate:

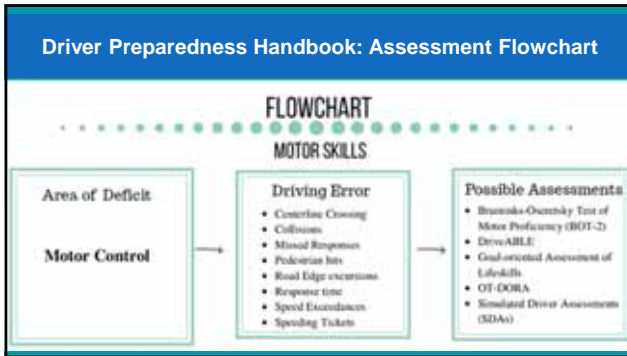
- Cognitive
- Visual
- Motor
- Visual-Motor Integration

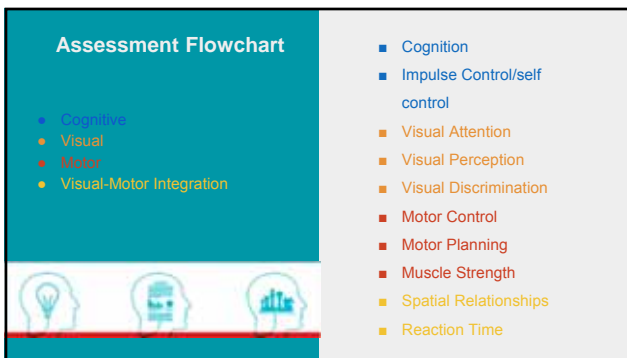
Area of Deficit	Driving Error	Possible Assessments
Impulse control/ self control	<ul style="list-style-type: none"> • Collisions • Road blocks • Pedestrian hits • Stop sign tickets • Speeding tickets • Traffic light tickets 	<ul style="list-style-type: none"> • Road Rating Scale • Driver of Experience

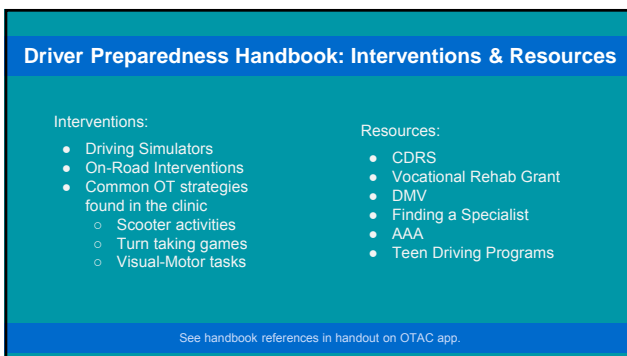
Driver Preparedness Handbook: Assessment Flowchart

FLOWCHART
VISUAL SKILLS

Area of Deficit	Driving Error	Possible Assessments
Visual Attention	<ul style="list-style-type: none"> • Collisions • Missed Responses • Road Edge excursions • Speed Excursions • Stop sign tickets • Traffic light tickets 	<ul style="list-style-type: none"> • DriveABLE • Simulated Driver Assessment (SDA(s))







Driver Preparedness Handbook: Availability?

Coming soon!
Currently in Review Process

Would you like to provide feedback?
Grab a flyer to help out!

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DRIVER PREPAREDNESS:

A Handbook for Occupational Therapists
Addressing Pre-driving Skills in Teenagers
with Developmental Disabilities



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TASK ANALYSIS



Driving Skills

Performance Skills needed for Driving

Clinical Observations

Starting/Turning off vehicle

- Calibrates
- Chooses
- Flows
- Grips
- Handles
- Initiates
- Manipulates
- Moves
- Paces
- Reaches
- Sequences
- Stabilizes
- Uses

- Will the client have a key or push-start?
- Will the client be able to locate the correct key?
- Will the client be able to use a functional grasp with a key (e.g., lateral prehension grip)?
- Will the client know the correct sequence of starting the car or putting it back in park (e.g., automatic, manual, push-button start, and key ignition)?
- Does the client have appropriate in-hand manipulation skills with small objects such as a key?
- Does the client have steady arm movements when reaching?

Speed Regulation

- Accommodates
- Attends
- Calibrates
- Coordinates
- Initiates
- Paces
- Positions
- Sequences

- Will the client be able to regulate speed in accordance to the environment and speed limit?
- Can the client use visual scanning while moving in vehicle to read speed limit signs?
- Does the client understand the vehicle's speedometer and react with appropriate ankle movements?



TASK ANALYSIS



Driving Skills

Performance Skills needed for Driving

Clinical Observations

Driving Etiquette

- Approaches/Starts
- Concludes/Disengages
- Expresses Emotion
- Gesticulate
- Heeds
- Looks
- Notices/Responds
- Regulates
- Takes Turns
- Thanks

- Does the client have fluid movement when demonstrating ankle dorsiflexion and plantar flexion?
- Will the client be able to understand and obey the rules and laws of the road?
- Will the client be able to appropriately gesticulate and communicate with other drivers?
- Does the client understand the use of gesticulations (e.g., waving a hand to let other drivers pass) related to driving?
- Does the client understand the use of the car's horn and when it is appropriate?
- Will the client know to follow emergency-service etiquette (e.g., pulling off to the side of the road when an emergency vehicle passes by)?
- Will the client know when to use turn signals at appropriate times?



TASK ANALYSIS

Driving Skills

Performance Skills needed for Driving

Clinical Observations

Interacting with the vehicle settings

- Chooses
- Continues
- Coordinates
- Flows
- Grips
- Handles
- Manipulates
- Moves
- Positions
- Reaches
- Searches/Locates
- Sequences
- Stabilizes
- Uses

- Will the client be able to locate and interact with: turn signals, headlight settings, window settings, A/C settings, emergency hazards, and windshield wiper settings?
- Can the client use a functional grip with task objects (e.g., a turn dial for the A/C)?
- Can the client use stereognosis to locate appropriate task objects?
- Does the client know the function of the vehicle settings

Maintaining car and understanding symbols

- Adjusts
- Benefits
- Initiates
- Inquires

- Will the client be able to understand dashboard symbols and their implications on the vehicle (e.g., low oil, check engine, airbag, etc.)?
- Will the client be able to understand regular maintenance of a vehicle (e.g., changing tires, changing oil, refilling gas, etc.)?

NOTE: The OT should be familiar with updated technology in vehicles and how it can benefit or hinder a novice driver.



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WROTSS 2020 – Driving, Teens, and ADHD: Between Group Data Comparison Table

	Participant #1	Participant #2	Participant #3	Participant #4
Comprehensive Executive Function Inventory (CEFI) parent report measure				
Overall Score*	Low Average Percentile: 16	Below Average Percentile: 7	Low Average Percentile: 7	Low Average Percentile: 13
Attention*	Below average	Low average	Below average	Low average
Emotional Regulation	Average	Low average	Low average	Low average
Flexibility	Low average	Average	High average	Low average
Inhibitory Control	Average	Low average	Well below average	Average
Initiation	Low average	Well below average	Average	Below average
Organization	Low average	Below average	Below average	Average
Planning*	Low average	Low average	Low average	Below average
Self-Monitoring	Low average	Below average	Below average	Average
Working Memory*	Low average	Below average	Well below average	Below average
CEFI data notes:	<ul style="list-style-type: none">• Attention, planning, and working memory consistent for all 4 participants• Overall, EFs very impacted for our participants with ADHD			
Adolescent/Adult Sensory Profile (AASP) self-report measure				
Low Registration	Similar to most people	Similar to most people	Much more than most people	Much more than most people
Sensation Seeking	Similar to most	Less than most	Similar to most	Similar to most
Sensory Sensitivity	Similar to most	Similar to most	More than most	More than most
Sensation Avoiding	Similar to most	Less than most	Similar to most	More than most
AASP data notes:	<ul style="list-style-type: none">• No clear pattern, must evaluate on an individual basis			
Driving Errors				
Total Errors	3	2	12	3
Road Excursions	2	1	4	0
Collisions	1	1	5	0
Center Line Crossings (% of drive time)	0%	0%	11%	6%
Speeding (% of drive time)	0%	0%	5.5%	26%
Driving Errors data notes:	<ul style="list-style-type: none">• Errors decreased over trials (excl. P4’s speeding)• May be driving overly cautious because lack of experience; problems may arise with small amount of experience when novice drivers start to feel more comfortable			
Interest vs. Confidence in Driving (0-5 scale) self-report measure				
Interest	3	3	3	5
Confidence	2	0	0	3
Difference	1	3	3	2
INT vs. CON data notes:	<ul style="list-style-type: none">• All participants were more interested than confident, which may be unusual as over-confidence is usually hallmark of teens			

Normative sample data ranges for the CEFI- parent report.

	Well below average	Below average	Low average	Average	High average	Superior	Very superior
Percentile	0-2	2-8	9-24	25-74	75-90	91-97	98-100

WROTSS 2020 – Teens, Driving, and ADHD Case Study Data Sheets

Participant #1

16 y/o female	ADHD, static encephalopathy	Stimulant medications	Pre-driver
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Simulator scores:

Total errors: 3

Types of errors: 2 road excursions, 1 collision, 0 center line crossing, 0 driving across center line or speeding

Observations: Very cautious. Errors decreased over trials.

Adolescent/Adult Sensory Profile (AASP) scores:

Low registration	Similar to most people
Sensory seeking	Similar to most people
Sensory sensitivity	Similar to most people
Sensation avoiding	Similar to most people

Comprehensive Executive Function Inventory (CEFI) scores:

Subscale	Percentile rank	Classification
Attention	8	Below average
Emotional regulation	27	Average
Flexibility	13	Low average
Inhibitory control	42	Average
Initiation	14	Low average
Organization	19	Low average
Planning	19	Low average
Self-monitoring	12	Low average
Working memory	12	Low average
Overall	16	Low average

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Participant #2

15 y/o female	ADHD, depression	Stimulant and anti-depressant medications	Pre-driver
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Simulator scores:

Total errors: 2

Types of errors: 1 road excursion, 1 collision, 0 center line crossing, 0 driving across center line or speeding

Observations: Very cautious. Errors decreased over trials.

Adolescent/Adult Sensory Profile (AASP) scores:

Low registration	Similar to most people
Sensory seeking	Less than most people
Sensory sensitivity	Similar to most people
Sensation avoiding	More than most people

Comprehensive Executive Function Inventory (CEFI) scores:

Subscale	Percentile rank	Classification
Attention	9	Low average
Emotional regulation	10	Low average
Flexibility	34	Average
Inhibitory control	19	Low average
Initiation	1	Well below average
Organization	4	Below average
Planning	9	Low average
Self-monitoring	8	Below average
Working memory	8	Below average
Overall	7	Below average

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Participant #3

14 y/o female	ADHD	No medication	Pre-driver
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Simulator scores:

Total errors: 12

Types of errors: 4 road excursions, 5 collisions, 11% time driving across the center line, 5.5% time speeding.

Observations: Errors decreased over trials, was very talkative and easily distractible

Adolescent/Adult Sensory Profile (AASP) scores:

Low registration	Much more than most people
Sensory seeking	Similar to most people
Sensory sensitivity	More than most people
Sensation avoiding	Similar to most people

Comprehensive Executive Function Inventory (CEFI) scores:

Subscale	Percentile rank	Classification
Attention	6	Below average
Emotional regulation	12	Low average
Flexibility	81	High average
Inhibitory control	1	Well below average
Initiation	45	Average
Organization	6	Below average
Planning	18	Low average
Self-monitoring	7	Below average
Working memory	1	Well below average
Overall	9	Low average

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Participant #4

14 y/o female	ADHD	No medication	Pre-driver
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Simulator scores:

Total errors: 3

Types of errors: 0 road excursions, 0 collisions, 6% time driving across center line, 26% time speeding

Observations: Percent of time speeding increased from 0 to 54% over 3 trials. Center line crossing decreased from 19% to 0 over 3 trials. Errors decreased over trials (except speed).

Adolescent/Adult Sensory Profile (AASP) scores:

Low registration	Much more than most people
Sensory seeking	Similar to most people
Sensory sensitivity	More than most people
Sensation avoiding	More than most people

Comprehensive Executive Function Inventory (CEFI) scores:

Subscale	Percentile rank	Classification
Attention	14	Low average
Emotional regulation	16	Low average
Flexibility	18	Low average
Inhibitory control	25	Average
Initiation	7	Below average
Organization	34	Average
Planning	8	Below average
Self-monitoring	25	Average
Working memory	8	Below average
Overall	13	Low average

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Activity

Note which OTPF terms that you believe might be required functions for the activity of driving.

Neuromusculoskeletal

- Joint mobility
- Joint stability

Muscle Functions

- Muscle Power
- Muscle tone
- Muscle endurance

Movement Functions

- Motor Reflexes
- Involuntary movement reactions
- Control of voluntary movement
- Gait patterns

Activity

Note which OTPF terms that you believe might be required functions for the activity of driving.

Specific Mental Functions

- Higher level Cognitive
- Attention
- Memory
- Perception
- Thought
- Sequencing Complex movements
- Emotional
- Experience of self & time

Global Mental Functions

- Consciousness
- Orientation
- Temperament & personality
- Energy & drive
- Sleep

Sensory Functions

- Visual
- Hearing
- Vestibular
- Proprioceptive
- Touch
- Smell
- Pain
- Temperature & Pressure
- Taste