


Enhancing Behind the Wheel Safety For Drivers with Special Needs

NCDTSEA Conference
April 25, 2025

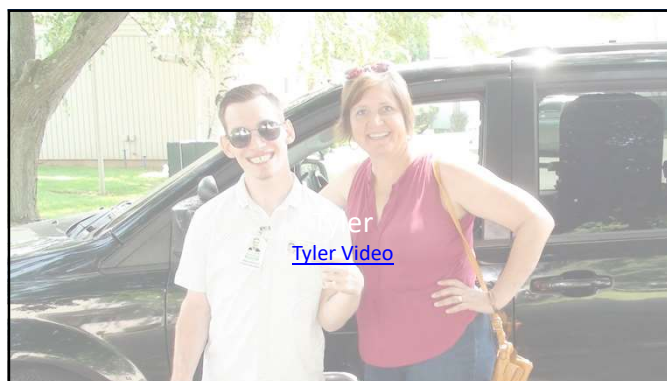
Driver Rehabilitation Services

Home | DMV Medical Examinations | Service Fees | Contact | Help



Driving does not define a persons value or worth.

However, the ability to drive does play an important part in a person's overall independence.



Driver Rehabilitation Services Team

- * Licensed Occupational Therapy Providers
- * Central Office
 - Near Greensboro
- * Satellite Offices
 - Concord/Charlotte
 - Raleigh
 - Wilmington



Cyndee Crompton:
Owner / Greensboro



Chantel Hill:
Office Manager



Brittany Harris
Greensboro



Amy Lawrence
Greensboro



Caroline Brooks
Wilmington



Emily Grace Conlan
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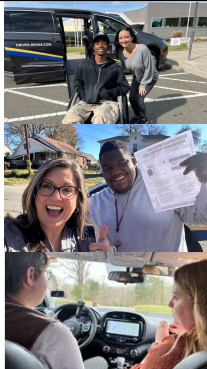
Emily Prins
Charlotte



Chelsea Carre
Raleigh

What is the benefit of evaluation and training by an Occupational Therapist?

- Comprehensive evaluation
- Task analysis
- Understanding of medical diagnoses and implications for driver safety
- Ability to break down task and teach skills



Driver Rehabilitation Services



Evaluation Services Provided By:

- * **Licensed Occupational Therapist**
 - Certified Driving Instructor (CDI)
 - Member of the National Association for Driver Rehabilitation Specialists
 - National Certification as Driver Rehabilitation Specialist (CDRS)
 - National Certification in Driving and Community Mobility (SCDCM) and Low Vision (SCLV)


**Experience – in business since 1997, Therapist owned
Non hospital based facility*

Service Locations:

- Central Office Near Greensboro
- Satellite Offices
 - Concord
 - Charlotte
 - Raleigh
 - Wilmington




We understand the needs of challenged drivers.



Driving with Adaptive Equipment

Appropriate adaptive equipment tailored to the individual's specific needs and a driver's level of vehicle operation will enhance all the art adaptive technology.


The right solution for your unique situation ensuring that you have the most comfortable and safe experience.



Driving with Brain Injury


The areas of the brain that is impacted differs when types of challenges the driver faces.

Each situation is different and after a professional evaluation we can help determine the right approach and work together with you to find a solution that helps you reach your driving goals.




Special Needs Novice Drivers

Autism, ADHD, learning disabilities, or behavioral challenges. Counselor challenges the supervisor or control panel. Our instructor or therapist's presence. Traditional driver's education may not meet the needs for the first time driver with these or other similar challenges. We can help.



Driving with Visual Challenges & Biotics


Our team has extensive training and experience in helping individuals with vision challenges gain independence behind the wheel. If vision impairment leads to safety we will help provide understanding.



Older Adult Drivers

There are many reasons that you may need to continue to drive. It may be to help those who need transportation or simply to remain independent.

We are a team of occupational therapists who specialize in assessing the physical, visual, and mental



Professional Evaluations

All of our specialized work with you starts with an evaluation of your situation, skills and unique set of goals.

We have the equipment and the right space to evaluate and we will have the proper time to understand you!

<p>National Best Practice Standards</p> <p>Comprehensive Driving Evaluations should be performed by an occupational therapist with specialized training in driver evaluations (known as driver rehabilitation specialists) typically certified by ADED and AOTA.</p> <p><u>Comprehensive evaluations include three key components:</u></p> <ol style="list-style-type: none"> 1. Clinical assessment 2. Behind the wheel assessment 3. Documentation of performance <p><small>References:</small></p> <ul style="list-style-type: none"> - AMA- Physician's Guide To Assessing and Counseling Older Drivers - ADED- Best Practice Guidelines and Model Practices - AOTA- Driving Evaluations by an Occupational Therapist - The Hartford Foundation- Safety for a Lifetime 	<p>National Industry Regulators</p> <p>ADED</p> <ul style="list-style-type: none"> • Association of Driver Rehabilitation Specialists (www.aded.net) <p>AOTA</p> <ul style="list-style-type: none"> • American Occupational Therapy Association (www.aota.org) <p>AMA</p> <ul style="list-style-type: none"> • American Medical Association (www.ama.org) <ul style="list-style-type: none"> • Responsible for setting best practice standards, providing continuing educational training and certification and credentialing oversight.
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Making a Difference



Driver Rehabilitation Services Overview

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Comprehensive Services and Fee Schedule

Evaluation \$925 - \$1400

Medical/Functional Driver Evaluation
Clinical evaluation of vision, cognition, behavioral, and physical functioning


Behind the Wheel Evaluation
Vehicles utilizing state of the art equipment
Wheelchair Accessible Van/Hand controls/Steering orthotics

Vehicle and Equipment Prescriptions
Written Documentation outlining necessary adaptive equipment

Specialized Driver Training \$135-155/hour
Training sessions designed to meet individual needs. Including DMV road test




Driver Fittings \$850+
Assuring proper placement and fit for all driver modifications in client's vehicle

(Fees vary depending upon the location of client and the evaluation vehicle required).
Private pay discounts available (not listed)
Credit Card payments accepted



Detailed Recommendations

- Pulling the findings together
- Include the client
- Think about each stage of the process, including modifications restrictions, or retiring from driving.
- Clearly express concerns, expectations and process with written documentation




A Good Driver Evaluation

Clinical assessment: Visual, perceptual, cognitive, physical and behavioral abilities as they relate to safe and independent driving.

Behind-the-wheel assessment: Individual's actual skill performance in operating a motor vehicle and making safe and independent driving decisions.

State of the art technology is utilized during the assessment for clients with physical limitations to assess the person's ability to interface with equipment

The purpose of a good evaluation accomplishes four things

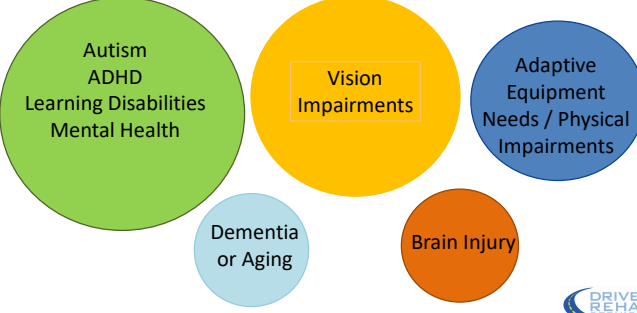
 <p>Identify the limitation in occupational performance – Medical/Functional Fitness to Drive</p>	 <p>Identify the factors (conditions) that contribute to the limitation in performance</p>
 <p>Determine if intervention is necessary or beneficial</p>	 <p>Identify most appropriate intervention to achieve an optimal outcome</p>



3 Categories of Drivers

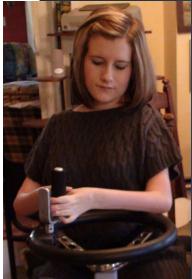
Novice Driver	Injured/Disabled Driver	Aging Driver
<p>The ability to drive is one of the first steps into adulthood.</p> <p>The special needs teen can be left behind peers.</p> <p>Proper intervention allows a realistic expectation for achieving this life milestone.</p> 	<p>Most adults don't view driving as a "privilege", but rather as a "necessity". Regaining the ability to drive independently enables many adults to resume education, employment, and community mobility.</p> 	<p>Driver safety is often a sensitive issue for seniors.</p> <p>A driver's license signifies more than the ability to drive a car; it is a symbol of freedom and self-sufficiency.</p> <p>Driving is not a privilege that anyone wants to relinquish willingly. When is it time to restrict or retire from driving?</p> 

5 General Categories of Challenges



Typical Teen Diagnoses

- ADHD
- Anxiety Disorders
- Arthrogryposis
- Autism Spectrum Disorders
- Cerebral Palsy
- Dwarfism /Osteogenesis Imperfecta
- Juvenile Rheumatoid Arthritis
- Learning Disabilities
- Limb Amputation
- Low Vision
- Muscular Dystrophy
- Spina Bifida /Spinal Cord Injury
- Traumatic Brain Injury



Statistics (Thanks AI)

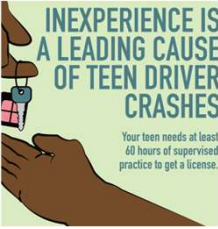
In North Carolina, teen drivers (15-19) are disproportionately involved in crashes, with inexperience being a leading factor. In 2023, 105 teens were killed in crashes, and 41% of those killed were not wearing seatbelts.




NC Vision Zero

- **But** with guided practice, clear driving rules, and safety features in cars, that risk can be lowered.

<https://ncvisionzero.org/safety-focus-areas/teen-drivers/#?text=In%202023%2C%20105%20teens%20ages,that%20risk%20can%20be%20lowered.>




When A Referral is Appropriate



Special Needs Novice Drivers

Autism, ADHD, learning disabilities, or behavioral challenges. Congenital challenges like spina bifid or cerebral palsy. Or, older drivers with or without dementia. Traditional driver's education may not meet the needs for the first-time driver with these or other similar challenges. We are here to help.

[Read More about Special Needs Novice Drivers](#)


When A Referral is Appropriate

- Autism/ADHD/Behavioral Health Challenges
- Has an IEP in school
- Low IQ
- Need for adaptive equipment (hand controls, LFA, etc.)
- Has low vision and must drive with bioptic lenses (telescopes)
- Aging Driver
- Referred through DMV Medical Review

REFERRALS

Why Refer?



- Client is not making progress
- Unsure of Medical Diagnosis
- Serving the client optimally
- Litigation
- Connection to next steps and funding sources
- Connection to vehicle modifiers
- DMV Medical Review Board Requirements




COGNITION

New Drivers

- Autism
- Learning Disabilities
- Anxiety
- Mental Health

Top 6 Autism Stats for North Carolina



<https://abacustherapies.com/autism-prevalence-in-north-carolina/>

- Autism affects 1 in 39 8-year-olds in central North Carolina.
- Since 2002, the share of kids with ASD in NC has nearly tripled.
- In North Carolina, the median age at diagnosis is 38 months.
- Boys in NC are 4.7 times more likely to be diagnosed with ASD than girls.
- Asian and Pacific Islander kids in NC are most likely to have ASD.
- 34.1% of autistic 8-year-olds in North Carolina have an intellectual disability.

ADHD in North Carolina: Prevalence, Treatment, and Looking to the Future

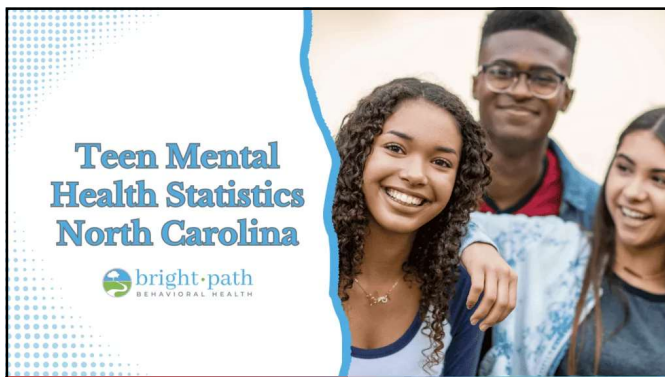
At present, data suggests that attention-deficit/hyperactivity disorder may be more prevalent in North Carolina than other states, but whether we are properly identifying and treating cases, in childhood and adulthood, is murky. Much innovative work to this end is being done in North Carolina, but more is needed.

NCMJ vol. 81, no. 2 ncmedicaljournal.com
 INVITED COMMENTARY: Will H. Canu



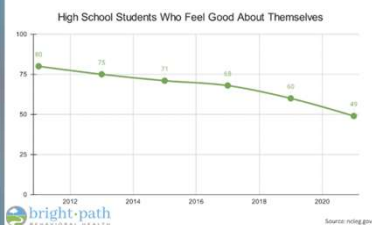
Inattention is essentially the biggest challenge of ADHD-afflicted teenagers who desire of being able to drive.

- This was confirmed by Bruce Simons-Morton, a senior investigator of the National Institute for Child Health and Human Development, in Bethesda, Md.
- Dr Simons-Morton noted, most of the car crashes that occur are caused by a driver that loses his attention on the road even for a quick two seconds.
- This increased the risk of car accidents two times more than with drivers who don't have ADHD.



Mental Health Concerns

- In 2022, 11% of North Carolina children aged 3 to 17 received a diagnosis of depression or anxiety from a healthcare provider. This is up from 7.6% in 2016 — a 48.7% increase.
- In 2021, only 49% of North Carolina high school students said they felt good about themselves. This figure was 80% in 2011.



Who Are We Training?

- What are our risks?
- What are their risks?
- How do we best assist?
- How do we educate parents?
- What if parents are not involved?
- How do we work together?



DRS Stories

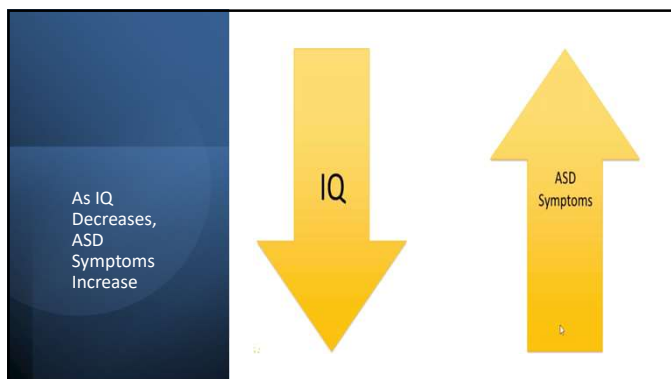
Student 1

Student 2

Autism Spectrum Disorder: Associated features

- Individuals with ASD who do not have an intellectual impairment, still have an “uneven profile of abilities” (APA, 2012, P. 55)
 - Gap between intellectual and adaptive functional skills
 - Motor Deficits
 - Prone to anxiety and depression
 - Poor social skills

Diagnostic and statistical manual of mental disorders DSM-5 (2013). Arlington, VA: American Psychiatric Association.



Autism Spectrum Disorder: Associated features

- Young adults with ASD are:
 - Less likely than their peers to obtain a driver's license.
 - More likely to become anxious while driving
 - Less likely to identify road hazards that are socially based, such as pedestrians.
 - Less Likely to monitor visual fields while driving.

Autism Spectrum Disorder: Driving Difficulties

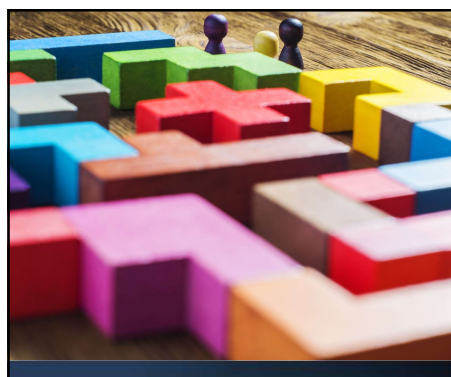
- Motor coordination
- Speed Regulation
- Lane Maintenance
- Signaling
- Adjusting to unexpected events

(Cox et al., 2015)

One cognitive theory that explains the symptoms of ASD is the "executive-dysfunction theory".

Executive Dysfunction Theory

- Restricted and repetitive behaviors are caused by impairments in the "initiation of new actions and being stuck in certain patterns" (Roelofs et al., 2015)
- Poor cognitive shifting has been identified as a frequent EF deficit seen in people with ASC (Cognitive shifting: the ability to change to a different thought or action in response to changes in the environment)



Executive Functioning Skills
Needed to plan, organize, focus, and manage our time and emotions, enabling us to effectively complete tasks and adapt to changing situations.

Executive Functional Skills Include

Working Memory: The ability to hold and manipulate information in your mind while performing a task.

Cognitive Flexibility: The ability to adapt to changing situations and switch between different tasks or goals.

Inhibition: The ability to resist impulses, distractions, and inappropriate behaviors.

Planning and Organization: The ability to set goals, create strategies, and organize tasks to achieve them.

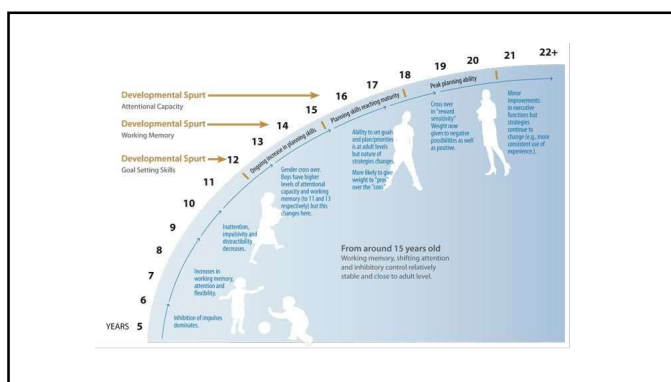
Time Management: The ability to accurately estimate time required, allocate time effectively, and meet deadlines.

Executive Functional Skills Include

- Task Initiation:** The ability to start tasks without hesitation or procrastination.
- Emotional Control:** The ability to regulate emotions and manage impulses.
- Self-Monitoring:** The ability to observe and evaluate one's own behavior and performance.
- Attention and Focus:** The ability to concentrate and sustain attention on a particular task or activity.
- Prioritization:** The ability to identify and focus on the most important tasks.
- Problem-Solving:** The ability to identify problems, analyze situations, and develop solutions.

Critical

- Executive Functions are a set of skills that are necessary for creating and implementing purposeful and future-oriented behavior in reaction to a changing environment.
 - Intellectual abilities, knowledge, skills, and other cognitive functions comprise *what* a person knows, and executive functions comprise *how* a person implements such knowledge.
- When the ability to execute behaviors is impaired, it is difficult to function in daily life.



SIPDE

- Search
- Identify
- Predict
- Decide
- Execute

Social Processing

Another difference in the cognitive abilities of individuals with ASD that has an impact on their readiness to driver concerns **social processing**.

Social Processing While Driving

People with ASC spend less time looking at social stimuli and have difficulty interpreting social information

- Infants with ASD look at people less frequently and for shorter amounts of time than typically developing infants (Sheppard et al., 2009)
- High-Functioning adults with ASD spend less time looking at the eyes of other people, instead focusing on mouths or other bodies and objects in the environment. (Sheppard et al., 2009)

Social Processing While Driving

It is necessary to make judgements about the intentions of other road users:

- Is that car swerving because he is about to change lanes?
- Does that car have its turn signal on by accident, or do they intend to come into my lane?
- Is there enough room to pass the person in the bicycle lane?
- Is the person waving me to come out trustworthy regarding other traffic flow?

Social Processing and Driving Safety

- Studies testing typical adults on hazard perception show that longer time detecting driving hazards is associate with actual accident rates. As a result of these findings, a hazard perception test is now par of the UK driving test. (Sheppard et al., 2009)


Driving Hazard Perception in Autism

- Research conducted by Sheppard et. Al, found that although people with ASD can identify driving hazards, they may have increased difficulty when the hazard involves a person.
- ASD Drivers were slower to respond to any driving hazard
- Was the slowness related to motor control, planning, or speed of identification that it was a hazard? This is unknown.

Life Skills Checklist

This is part of the paperwork sent home prior to the first appointment with the Easterseals Crossroads New Driver Program.

Self Management	Does do...		Does NOT do...	
	WITHOUT assistance or supervision	WITH some assistance or supervision	Due to difficulty or problems	Please explain if previous column is checked
Sets own alarm and initiates getting ready for the day				
Makes a to-do list that follows a reasonable set of priorities and follows through	★			
Makes necessary appointments	★			
Remains calm under pressure	★			
Keeps a calendar of activities (on phone or otherwise)/knows own schedule	★			
Manages personal grooming (shampoo, bath, shower, nails, oral care)	★			
Chooses appropriate clothes to wear for the weather and occasion	★			
Identifies activities that are time wasters				
Stays at home alone				



Before Getting in Car

Clients Learning History	Patterns of Reactions	Expectations
Visual Schedules	Highly Reactive?	What are they hoping to accomplish?
Mnemonics	Angry when others don't follow rules?	Familiar Routes
Verbal or Visual Cues	Able to self-calm?	How frequently?
Generalization of other skills	Useful external calming strategies?	Is there any specific thing student is anxious about? Car accidents, emergencies, being alone?
	Sensory sensitivities and reaction?	

Tips for Teaching

Control the environment <ul style="list-style-type: none"> • Limited people in car • Turn off Music • Put cell phone out of sight • Emergency Kit present • Limit routes 	Explicit Instructions <ul style="list-style-type: none"> • Step by step instructions • Avoid sarcasm or figurative language – concrete language • Clearing explain behaviors of other drivers, even if they seem obvious • Short instructions • Positive feedback
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Tips for Teaching –

- Positive Terms: “Slow down” instead of “stop going so fast”
- Commands instead of suggestions: “Stop at the stop sign” instead of “why don’ts we start slowing down for the stop sign?”
- Discuss Route Beforehand/Lead/Have a Plan: Decreases anxiety, controls expectations, creates visual or verbal scripts
- Explain Social Aspects of Driving: “Although there are rules, not everyone follows them”. Use of horn for different situations. Waving, flashing headlights, road rage


Tips for Teaching –

Build a routine into driving sessions	Helps to build mastery	Predictability reduces anxiety	Clarifies expectations
Teach what to do in case of panic	Calming strategies	Pulling over to call parents	
Teach student to use GPS	Reduces anxiety when driving in new environments	Provides strategy for what to do when lost	

Tracy M. Gale, Psy.D., HSPP
Fastenals Crossroads

Pre-Driver Readiness

- More than 1/5 of accidents with teen drivers involve scanning mistakes
 - Failure to scan the road ahead and check mirrors for potentials risks behind and to the side
 - Misjudging speed of oncoming cars while turning left
- Narrate while riding



LifeSaver

The Science Behind Cell Phone Addiction at Work **SCREEN LOCK NOW**

lifesaver

Features - Plans - Insurers - Partners - Settings - Resources - About Us - **Let's chat** - **Login**


Screen Blanking Behind the Wheel

PROTECT FLEET DRIVERS

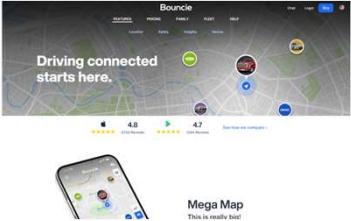
We keep your employees and others on the road safe by blocking mobile device use while driving.

No hardware to install in the vehicle.

Let's chat



Bouncie



Driving connected starts here.

Mega Map
This is really cool!

Vision Impairments

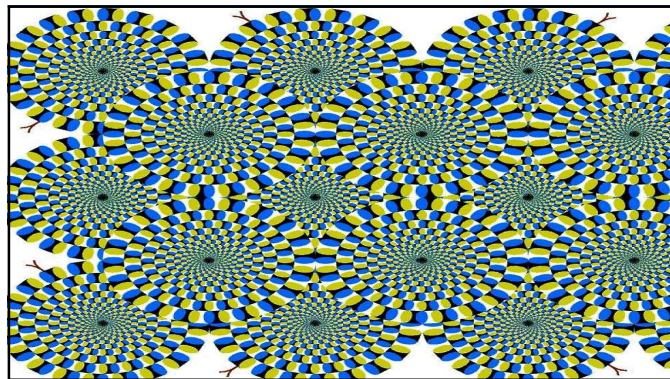
- John Streff, OD
“If vision is working properly, it *enhances*. If vision is dysfunctional, it *interferes*.”




Visual Impairment

- Alters cognitive performance
 - Errors made because person doesn't get enough input and/or accurate input for decision making
- Changes way person responds to the environment and engages in daily activities
 - Slow in moving and responding
 - Anxious
 - Uncertain
 - Decreased confidence
 - Increased passivity

© UAB/MW
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Major Visual Processes

Two separate processes

- Focal process (Central)
- Ambient process (Peripheral)

Mediated through two different cellular pathways:

- Parvocellular Pathway (Central)
- Magnocellular Pathway (Peripheral)

DRIVER REHAB SERVICES

Focal / Ambient Vision

<ul style="list-style-type: none"> • Focal <ul style="list-style-type: none"> – For object identification <ul style="list-style-type: none"> • “What is it?” – Central – Conscious – Photopic – Sustained Vision – Slow Processing 	<ul style="list-style-type: none"> • Ambient <ul style="list-style-type: none"> – For object localization <ul style="list-style-type: none"> • “Where is it?” • “Where am I?” – Central and Peripheral – Non-conscious – Scotopic – Temporal Vision – Motion Detection – Fast Processing
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DRIVER REHAB SERVICES

Visual Strategies

[https://www.youtube.com/watch?v=305n1a1u100](#)


Low Vision Driving – Bioptic Lens

NC State Criteria Eligibility for Bioptic Driving
www.driver-rehab.com

- Visual Acuity of at least 20/200 in one or both eyes through the carrier lens.
- Visual field of at least 70 degrees horizontal or if vision in only one eye at least 40 degrees temporal and 30 degrees horizontal.
- Visual acuity of at least 20/70 in one or both eyes with the bioptic telescopic lenses and without the use of field expanders.
- DL-77 vision form for report of examination by an ophthalmologist or optometrist provided to the NC Division for Medical review to determine if all vision requirements are met.
- Behind the Wheel training and completion of DL 77BT form by Driver Rehab Professional to assure BTW performance is safe.

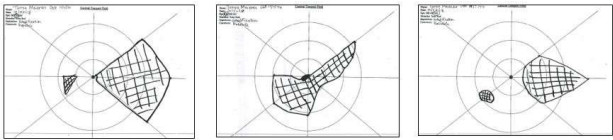
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Low Vision Driving – Bioptic Lens



Bioptic Lens
Carrier Lens

Mapping Central Vision



Left Eye – California Central Visual Field Test
 Right Eye – California Central Visual Field Test
 Both Eyes – California Central Visual Field Test

Using a Bioptic Lens System



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Permit Tutoring Program

- 6 modules
- One on One virtual



DRIVER REHAB SERVICES

The Right Equipment for Physical Challenges = Safety



Low Tech
Mid Tech
High Tech

Adaptive Equipment - Low Tech

- Wheelchair Lift
- Left Foot Accelerator
- Hand Controls
- Parking Brake Extension
- Turn Signal Extension
- Steering Orthotics



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Injured Student – Spinal Cord Injury



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Daniel Driving

[Daniel Driving](#)



DRS Evaluation Van

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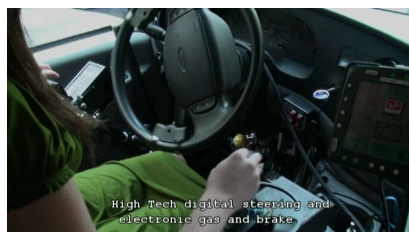
Ethan



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Adaptive Equipment - High Tech



High Tech digital steering and electronic gas and brake

- Electronic Gas and Brake
- Digital Steering System
- Touch Pad Controls
- Joystick Driving
- Likely a Wheelchair Driver

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Training for Enhancing Independent Transportation



Cognitive and Behavioral Disabilities



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Referral Process

1. A referral can be made initiated through our online referral form. <https://driver-rehab.com/refer/> or by directly calling our office, 336-697-7841.
2. Cost quote including services, travel, and mileage (if appropriate) is provided from Chantel to the client/payor source.
5. Prepayment may be required.
6. Client is scheduled by Chantel.
7. Services are provided and final report with recommendations is sent from Chantel to any participating parties (CM, Adjuster, client, DMV, physician).
8. An estimate for further recommended services (e.g., training/fittings) is sent.

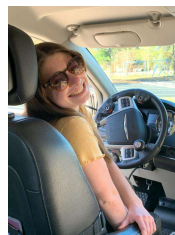


In Conclusion

- Driving is a complex task
- A deficit can pose significant risk to safety
- The diagnosis has a large impact on driver success
- Driving Remains a High Priority for many individuals
- A thorough and complete evaluation by an Occupational Therapist (**BOTH** Clinical and Behind the Wheel) leads to optimum results and the **correct recommendations**
- Always Balance Safety and Independence



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