Neuro-developmental Disorders Worksheet:

Neuro-developmental Disorders	Answer	Matching Options
Intellectual Disability		A. Involves frequent and significant problems with normal fluency and flow of speech, often including repetitions of words or parts of words, prolongations, and interruptions in speech.
Language Disorder		B. A disorder characterized predominantly by a significant disparity between higher verbal skills and weaker motor, visual-spatial and social skills.
Sensory Processing Disorder		C. Characterized by sudden, nonrhythmic motor movement or vocalizations that are not controlled by the individual.
Speech Sound Disorder		D. Marked by delays in achieving motor milestones, and difficulties with coordination and clumsiness that affect a child's ability to perform everyday tasks.
Stuttering		E. A genetic disorder caused by the presence of all or part of a third copy of chromosome 21, leading to developmental and intellectual delays.
Aphasia		F. Characterized by significant limitations in both intellectual functioning and in adaptive behavior, which covers many everyday social and practical skills.
Social Communication Disorder		G. Broad term covering difficulties in processing, sending, receiving, and comprehending concepts or verbal, nonverbal, and graphic symbol systems.
Auditory Processing Disorder		H. Characterized by patterns of attention difficulty, hyperactivity, and impulsiveness that interfere with functioning or development.
Communication Disorder		I. Difficulties with the social use of verbal and nonverbal communication, including problems in understanding and following social rules of verbal and nonverbal communication in naturalistic contexts.
Autism Spectrum Disorder		J. A hearing problem that affects about 5% of school-aged children where they have difficulty processing the information they hear and using it meaningfully.
Attention Deficit Hyperactivity Disorder (ADHD)		K. A disorder resulting from damage to portions of the brain that are responsible for language, leading to problems in speaking, understanding, reading, and writing.
Developmental Coordination Disorder		L. Involves persistent difficulties in the acquisition and use of language due to deficits in comprehension or production, including reduced vocabulary and limited sentence structure.
Tourette Syndrome		M. A neurological disorder characterized by repetitive, stereotyped, involuntary movements and vocalizations.
Down Syndrome		N. Difficulty in articulation of sounds characterized by substituting, omitting, adding or distorting sounds, making it hard to be understood by others.
Tic Disorder		O. A specific learning disability in math where individuals have a difficult time making arithmetical calculations and understanding math concepts.
Dyslexia		P. A condition where the brain has trouble receiving and responding to information that comes in through the senses, often causing problems with handling sound, touch, taste, sight, and smell.
Dyscalculia		Q. A learning disorder characterized by difficulty reading due to problems identifying speech sounds and learning how they relate to letters and words.

Dysgraphia			R. A learning disability that affects writing, which involves difficulty in automatically remembering and mastering the sequence of muscle motor movements.
Nonverbal Learning Disorder (NVLD, NLD)			S. A developmental disorder that affects communication and behavior, and includes symptoms such as difficulties in social interaction, repetitive behaviors, and challenges in communication.

Case Study Exercises

Case Study 1

Emily is a seven-year-old girl who often avoids playing on the playground because she seems overwhelmed by the noise and the chaotic environment. She frequently covers her ears when there are loud sounds and complains about clothing textures. Despite normal hearing tests, Emily struggles to follow verbal instructions unless they are delivered in a quiet and structured setting. Her parents notice that she is either excessively bothered by minor cuts or bruises or seems not to notice them.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 2

Jack, a nine-year-old boy, has difficulty making friends. He often misunderstands social cues and fails to accurately interpret body language and facial expressions. Although he is quite articulate about his hobbies, he struggles to engage in give-and-take conversations with peers. During group activities, he tends to interpret statements literally and misses the essence of jokes or sarcasm.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 3

Sarah, a 34-year-old woman, suffered a stroke last year and, since then, has had significant trouble with speaking and understanding speech. She can comprehend non-verbal signals and express her emotions through gestures, but she finds it challenging to form coherent sentences and often substitutes one word for another. Reading and writing, once her passion, are now tasks that require immense effort and often result in frustration.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 4

Tom is a 16-year-old high school student who has always had trouble with physical activities that require coordination, such as tying his shoes, writing neatly, or playing ball games. His

teachers have noted that his handwritten assignments are nearly illegible despite his intelligence. Tom often feels embarrassed about his difficulties and tends to shy away from sports and other physical activities.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 5

A four-year-old named Lisa has been noted by her preschool teacher to have trouble understanding and using spoken language. She speaks in two- to three-word sentences, significantly shorter and simpler than her peers. Lisa also has difficulty following simple instructions and often appears not to understand what is said to her, despite having normal hearing.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 6

Ben, a 13-year-old boy, exhibits frequent involuntary movements and vocalizations, including blinking excessively and clearing his throat repeatedly, despite not having any respiratory issues. These behaviors increase with stress and decrease with concentration on an absorbing activity. His parents report that these tics have been present for several years and seem to be worsening.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 7

Marcus is an 8-year-old with difficulties that his teacher describes as inattention, impulsivity, and sometimes hyperactivity. He often struggles to stay seated, seems to be in constant motion, and acts without thinking through the consequences. Completing schoolwork is a challenge, not because of a lack of understanding but because he cannot focus on any task for extended periods.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 8

Nina, a 15-year-old, has always had a unique way of interacting. She prefers routines and becomes very upset with changes to her environment or schedule. She rarely makes eye contact when talking to others and does not pick up on social cues. She tends to repeat phrases she has heard on television rather than generating her own responses.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 9

John, a 28-year-old man, has a history of stuttering that increases under stress or when he is tired. He has trouble starting phrases and often repeats the first sound of a word. He is conscious of his speech difficulty and sometimes avoids social situations or speaking on the phone.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 10

Alice, a six-year-old girl, does not speak clearly and is often misunderstood by those who do not know her well. Her parents report that she seems to drop sounds from the ends of words and substitutes one sound for another, making her difficult to understand.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 11

An 18-year-old college student named Sam finds reading to be an arduous task. He often confuses similar-looking letters and tends to read very slowly, frequently losing his place. Despite normal vision, reading comprehension tests indicate significant deficits.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 12

Leo, a four-year-old boy, has a genetic condition evidenced by certain facial features, a single crease across the palm of his hands, and developmental delays. He is cheerful and social but is progressing slower than his peers in terms of cognitive and physical milestones.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 13

Grace, a second-grader, has trouble processing what she hears. Despite having normal hearing, she often needs instructions to be repeated and finds it hard to follow conversations in noisy environments. She also has difficulty determining where sounds are coming from.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 14

Mike, a 22-year-old university student, excels verbally but struggles significantly with writing. His spelling and grammar are poor, and organizing his thoughts on paper is a challenge. He often avoids writing assignments and experiences considerable anxiety when writing essays or reports.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 15

Henry is a child who experiences quick and sudden repetitive movements, often occurring randomly. These movements include eye blinking, facial grimacing, and shoulder shrugging. He reports that these movements are involuntary and can sometimes be suppressed for short periods.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 16

Sam, an 8-year-old boy, exhibits delays across multiple developmental domains. He struggles with basic academic skills, particularly in understanding concepts his peers easily grasp. His teacher notes that Kevin requires explicit instruction and frequent repetitions to learn new tasks. At home, his parents focus on strengthening his daily living skills, such as dressing himself and using utensils properly. Despite these challenges, Kevin is sociable and benefits significantly from a structured routine and visual aids that help him understand and anticipate daily activities.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 17

An adult named Frank has been experiencing difficulties in social settings, especially in understanding and following the rules of conversation. He finds it hard to keep up with the pace of normal chatting and often interrupts or talks at inappropriate times, seeming unaware of the social impact of his actions.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 18

Kevin, a 12-year-old boy, has trouble learning how to evaluate and use numbers effectively. His difficulties extend beyond mathematics and include problems with time, measurement, and spatial reasoning.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Case Study 19

As a young adult, Laura struggles significantly with tasks requiring spatial and body awareness but excels in verbal and written communication. She finds it difficult to interpret maps, handle puzzles, and engage in activities that require good motor coordination.

This is an example of which anxiety disorder: _____

What is your treatment plan: _____

Answers

Matching
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Case Study 1: Sensory Processing Disorder

Emily exhibits classic symptoms, such as being easily overwhelmed by sensory information such as noise and textures, which indicate sensory processing issues.

- **Pharmacological**: There are no specific medications approved for sensory processing disorder.
- **Nonpharmacological**: Sensory integration therapy, occupational therapy to enhance sensory processing and reduce sensitivities, and structured and supportive environments.

Case Study 2: Social Communication Disorder

Jack struggles with understanding social cues and engaging in reciprocal conversation, which is typical of social communication disorder.

- **Pharmacological**: No specific medications; sometimes medications are used to manage associated symptoms like anxiety or ADHD (selective serotonin reuptake inhibitors [SSRIs], stimulants, and non-stimulants (atomoxetine [Strattera], guanfacine [Intuniv], clonidine [Kapvay]), and bupropion (Wellbutrin).
- **Nonpharmacological**: Speech and language therapy, social skills training, cognitive-behavioral therapy, and educational interventions.

Case Study 3: Aphasia

Sarah's difficulties with speaking and understanding language following a stroke are characteristic of aphasia.

- **Pharmacological**: Numerous drugs, including memantine (Namenda), donepezil (Aricept, Adlarity), galantamine (Razadyne ER), and piracetam, have demonstrated potential in limited studies. However, further investigation is required before these treatments can be endorsed.
- **Nonpharmacological**: Speech and language therapy focuses on relearning languages and communication skills and using alternative communication methods, such as apps and devices.

Case Study 4: Developmental Coordination Disorder

Tom's coordination and motor skills challenges and his difficulty performing everyday tasks like writing suggest developmental coordination disorder.

- **Pharmacological**: No medications have been explicitly developed to enhance motor function, coordination, or related issues. Propranolol and other beta-blockers have been utilized to manage severe essential tremors, which can accompany coordination difficulties in children but should only be prescribed in extreme cases. Medications are generally used to address associated conditions, such as attention deficit hyperactivity disorder (ADHD).
- **Nonpharmacological**: Occupational therapy, physiotherapy, task-oriented motor training, and adaptations for learning environments.

Case Study 5: Language Disorder

Lisa's significantly shorter and simpler sentences and difficulty in understanding simple instructions are signs of a language disorder.

- **Pharmacological**: There are no specific medications. Antidepressants or anti-anxiety medications may be prescribed to treat accompanying disorders and symptoms commonly found in these cases.
- **Nonpharmacological**: Speech and language therapy to improve vocabulary, sentence structure, and communication skills, as well as educational support.

Case Study 6: Tourette Syndrome (TS)

Ben’s involuntary movements and vocalizations, which increase with stress, align with Tourette syndrome.

- **Pharmacological**: Haloperidol (Haldol), pimozide (Orap), and aripiprazole (Abilify) are currently the only medications approved by the Food and Drug Administration (FDA) to treat tics. PMHNPs might initially employ "off-label" treatments like guanfacine (Intuniv) and clonidine (Kapvay), both alpha-adrenergic agonist medications - these have been moderately effective in reducing tics and are generally well-tolerated. Additionally, managing a co-occurring condition such as OCD (with treatments like fluoxetine [Prozac] for adults and children 7 and older; fluvoxamine [Luvox] for adults and children 8 and older; paroxetine [Paxil] for adults only) can enhance the quality of life for patients with TS. Tetrabenazine (Xenazine) can sometimes be utilized because it depletes presynaptic dopamine and serotonin stores and blocks postsynaptic dopamine receptors – however, it can cause severe depression.
- **Nonpharmacological**: Behavioral therapy, Comprehensive Behavioral Intervention for Tics (CBIT), psychoeducation, and support groups.

Case Study 7: Attention Deficit Hyperactivity Disorder (ADHD)

Marcus shows symptoms of inattention, impulsivity, and hyperactivity, which are hallmarks of ADHD.

- **Pharmacological**: Medications commonly used to treat ADHD include stimulants such as amphetamine/dextroamphetamine (Adderall), dextroamphetamine (Dexedrine), lisdexamfetamine (Vyvanse), and methylphenidate (Ritalin, Concerta, Daytrana), as well as non-stimulants like atomoxetine (Strattera), guanfacine (Intuniv), and clonidine (Kapvay); also, bupropion (Wellbutrin), an atypical antidepressant.
- **Nonpharmacological**: Behavioral therapy, psychoeducation, organizational skills training, parent training, and educational accommodations.

Case Study 8: Autism Spectrum Disorder

Nina's preference for routines, difficulty with social cues, and repetitive speech patterns suggest autism spectrum disorder.

- **Pharmacological**: No medications treat the core symptoms; however, antipsychotics for irritability (risperidone [Risperdal] and aripiprazole [Abilify] are the only medications approved by the FDA for treating children with autism spectrum disorder. Risperidone is suitable for children aged 5 to 16 years and helps manage irritability and aggression. aripiprazole is approved for use in children aged 6 to 17 years); SSRIs for anxiety and stimulants for co-occurring ADHD may be used.
- **Nonpharmacological**: Behavioral interventions, speech therapy, occupational therapy, structured teaching, and social skills training.

Case Study 9: Stuttering

John's difficulty initiating phrases and repeating sounds, especially under stress, is indicative of stuttering.

- **Pharmacological**: The FDA has not approved any medications for treating stuttering. However, there is increasing evidence that dopamine antagonist medications can effectively reduce the severity of stuttering symptoms.
- **Nonpharmacological**: Speech therapy focusing on fluency, electronic devices that enhance auditory feedback, and cognitive-behavioral therapy.

Case Study 10: Speech Sound Disorder

Alice’s issues with dropping sounds and substituting sounds are typical symptoms of a speech sound disorder.

- **Pharmacological**: No medications are specifically approved for this disorder; however, anxiolytics can sometimes be utilized with cooccurring anxiety.
- **Nonpharmacological**: Speech and language therapy to correct sound production and improve speech clarity and phonological training.

Case Study 11: Dyslexia

Sam’s confusion with letters and slow reading pace are classic indicators of dyslexia.

- **Pharmacological**: No specific medications.
- **Nonpharmacological**: Structured literacy programs, reading interventions, tutoring, educational accommodations, and technology assistance.

Case Study 12: Down Syndrome

Leo's described genetic condition and developmental delays align with Down syndrome.

- **Pharmacological**: Treatment of specific medical conditions associated with Down syndrome may require medications.
- **Nonpharmacological**: Early intervention programs, speech therapy, occupational therapy, physical therapy, and special education services.

Case Study 13: Auditory Processing Disorder

Grace's difficulty in processing auditory information and distinguishing sound locations suggests an auditory processing disorder.

- **Pharmacological**: No specific medications.
- **Nonpharmacological**: Auditory training, environmental modifications, use of hearing aids or FM systems, and speech-language therapy.

Case Study 14: Dysgraphia

Mike's issues with spelling, grammar, and organizing thoughts on paper are symptoms of dysgraphia.

- **Pharmacological**: No specific medications.
- **Nonpharmacological**: Occupational therapy, specialized educational interventions, use of assistive technology, and accommodations such as extra time or different ways of completing assignments.

Case Study 15: Tic Disorder

Henry's description of sudden, involuntary movements fits with a tic disorder.

- **Pharmacological**: Haloperidol (Haldol), pimozide (Orap), and aripiprazole (Abilify) are currently the only medications approved by the FDA to treat tics. Clonidine (Kapvay), tetrabenazine (Xenazine), and botulinum toxin injections may also be given "off-label."
- **Nonpharmacological**: Behavioral therapy, Comprehensive Behavioral Intervention for Tics (CBIT), psychoeducation.

Case Study 16: Intellectual Disability

Sam displays typical characteristics of intellectual disability, including significant delays in academic and developmental skills, the need for explicit instruction and repetition to learn, and challenges with daily living tasks. His sociability, combined with a requirement for structured support and visual aids, further supports the diagnosis of intellectual disability.

- **Pharmacological**: No specific drugs treat intellectual disability per se, but medications may be used to manage co-occurring conditions or symptoms such as mood disorders SSRIs), epilepsy (antiepileptics), or aggressive behaviors (antipsychotics).
- **Nonpharmacological**: Behavioral interventions and educational programs, with special education tailored to the individual's learning capacity and needs. Occupational therapy can assist with developing life skills (dressing, eating, and personal care). Additionally, speech therapy, physical therapy, and community-based programs are also available.

Case Study 17: Social Communication Disorder

Frank's challenges with conversational rules and social timing are indicative of social communication disorder.

- **Pharmacological**: No specific medications; sometimes, medications for associated symptoms like anxiety are prescribed.
- **Nonpharmacological**: Speech and language therapy, social skills training, cognitive-behavioral therapy, and educational interventions.

Case Study 18: Dyscalculia

Kevin's broad issues with numerical concepts, including time and spatial reasoning, are characteristic of dyscalculia.

- **Pharmacological**: No specific pharmacological treatments.
- **Nonpharmacological**: Specialized math instruction, educational interventions, use of visual aids, and cognitive training.

Case Study 19: Nonverbal Learning Disorder (NLD)

Laura's significant difficulties with spatial and body awareness, contrasted with her verbal and written strengths, suggest a nonverbal learning disorder.

- **Pharmacological**: No specific medications; sometimes medications for associated symptoms like anxiety (SSRIs, anxiolytics).
- **Nonpharmacological**: Educational support, social skills training, psychotherapy, and occupational therapy to address motor coordination.