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DISCUSSION AND REVIEW PAPER

Addressing Medical Issues in Behavior Analytic Treatment

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Abstract

This article offers strategies to help behavior analysts address medical issues which may affect behavioral intervention, beginning with the intake process and continuing through treatment and the coordination of care with other healthcare providers. The Behavior Analyst Certification Board's ethical guidelines for seeking medical consultation are reviewed. The importance of documenting clients' medical histories at intake and keeping updated medical files is emphasized. Behavioral manifestations and data patterns that may serve as red flags for medical problems are reviewed, with an emphasis on clients with limited verbal skills who cannot describe their symptoms. Multiple aspects of the behavior analyst's role in the coordination of care for clients' medical conditions are discussed.

Keywords Medical variables · Behavioral impact · Consultation · Care coordination

The Professional and Ethical Compliance Code for Behavior Analysts code 3.02 states: "Behavior analysts recommend seeking a medical consultation if there is any reasonable possibility that a referred behavior is influenced by medical or biological variables" (Behavior Analyst Certification Board 2017). Knowing when or if to refer a client for medical consultation presents significant challenges: behavior analysts are not formally trained to recognize medical conditions, many clients are unable to verbally express that they are experiencing pain or discomfort, distinguishing between behavioral or medical origins of behavior issues is extremely difficult, and medical conditions may cause behavioral issues which are maintained in the absence of medical symptoms (e.g., avoidance strategies). The current article offers behavior analysts strategies for recognizing medical issues which may have behavioral manifestations or may impact the delivery of behavioral interventions, beginning with the intake process, and continuing through the recognition of emerging medical issues and the coordination of care with other healthcare professionals.

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Medical Histories at Intake

An effective approach to medical issues begins with the intake process and continues throughout behavioral treatment.

The initial issue that behavior analysts face is to decide whether or not to accept a specific client. Through a caregiver interview and a review of the client's prior assessments, the behavior analyst must determine if: (a) the client has a documented disorder that the analyst has the appropriate education and training to treat and (b) the analyst's clinical experience is appropriate to address the topography and severity of the client's behavioral issues. If the client does not have a clear diagnostic history (as may happen in the case of educational referrals), a medical evaluation may be recommended as a prerequisite for behavioral intervention. Behavior analysts protect both their clients and themselves by making sure that they do not treat the behavioral manifestations of undiagnosed or unrecognized medical or environmental conditions. Common situations that often require in-depth medical evaluation, clearance, and coordination of care include psychiatric conditions (Newhouse-Oisten et al. 2017), severe self-injury (Iwata et al. 1994), and pediatric feeding disorders (Piazza 2008).

Once it has been determined that there are no apparent medical barriers to behavioral treatment, the behavioral intake may begin. Client medical histories, collected in a systematic intake checklist, are essential for conducting sound behavior analytic treatment, so care should be placed in completing each client's medical history intake form. This medical history can be one of the best resources for double-checking whether

it is appropriate to start behavioral treatment. The medical history checklist also helps to assess, in concert with family input, any need for current or future medical referral or consultation. Client files should include medical diagnoses, current medication, and any other therapies the client receives. The primary care physician, dentist, and any medical specialists that follow the client should be listed, with contact information and coordination of care permission forms (e.g., the "Authorization for release of patient information" form from the California Department of Health Care Services 2013). Each change in health status, medication, vitamins, supplements, or diet should be documented. Periodic careful review of the client's file is also required.

In addition to identifying clients' medications, knowing the dosages and routes of administration, potential side effects, and the duration of action of medications can be important. Many medications have known "rebound" effects (i.e., negative symptoms that occur as medications wear off). For example, rebound effects can occur with clients receiving stimulants for the treatment of attention deficit hyperactivity disorder (ADHD) (Stevens et al. 2013). A client taking ADHD medicine may become angry or hyperactive in the late morning or early afternoon, despite benefiting from the medication earlier in the day. Knowledge of the rebound effects of a medication and a scatter chart that indicates consistent deterioration at a specific time of day should prompt discussion with the family and a referral to the medicating physician. Even vitamins, nutritional supplements, and certain foods can have drug interaction and side effects. The client's physician is an appropriate source for much of this information. Valid online resources regarding medications and their side effects include Everyday Health (https://www.everydayhealth.com) and My Medicine on WebMD (https://www.webmd.com/my-medicine).

Clients' medical histories may reveal chronic medical conditions. These conditions can include epilepsy, diabetes mellitus, heart conditions, endocrine or immunological disorders, respiratory disorders such as asthma, skin conditions such as eczema, gastrointestinal disorders, orthopedic or rheumatological conditions, and genetic conditions with known medical manifestations (e.g., Down syndrome, Fragile X syndrome, muscular dystrophy, sickle cell anemia, and myriad others). For these clients, coordination of care with primary care physicians may be appropriate at intake. The primary care physician can provide information on how the client's medical condition and medications can affect stamina, attention, coordination, responsiveness to reinforcers, and many other variables. According to the Centers for Disease Control and Prevention, up to 15% of children and 50% of adults in the general population currently have at least one significant chronic medical condition (Centers for Disease Control and Prevention n.d.), and a similar or even higher rate holds true for individuals with developmental disabilities, depending on the cause of their disability. Consequently, most behavior analysts need to be cognizant of their clients' chronic health issues and how these issues impact their clients' behaviors and responsiveness to treatment daily.

See the Appendix for a summary of appropriate content areas/questions for medical history forms. Positive responses to many of these questions will require substantial further queries.

Recognizing Occult Medical Conditions During Treatment

The medical term "occult" refers to conditions that are hidden, not readily detectable, or are difficult to observe. Once behavioral intervention has begun, clients may develop occult medical conditions, or the impact of previously existing occult conditions may become evident. Occult conditions present some of the greatest challenges for clients, caregivers, and clinicians. Clients with deficits in communication skills may be more likely to experience occult conditions than individuals in the general population. For example, a migraine headache is not an occult event for a neurotypical person, but it may be for a nonvocal person with autism.

Medical conditions that may present in an occult manner in individuals with developmental disabilities (such as autism and intellectual disability) can include any type of unrecognized pain (e.g., migraines or other headache types), gastrointestinal disorders, dental issues, respiratory problems, skin problems (such as itching without visible rash or skin findings hidden by clothes), allergies, sleep disorders, mental health disorders, sensory deficits (most commonly, hearing, vision, and tactile issues), fluid and electrolyte disturbances (such as dehydration), blood disorders, urinary disorders, endocrine disorders, and medication side effects. These categories do not represent an exhaustive list but, due to their common occurrence, are of particular importance.

The following behaviors and data patterns may indicate that a client's inappropriate behaviors, non-response, or slow skill acquisition rate have a medical origin and that a medical referral is indicated. This is not intended to be an exhaustive list of potential reasons for medical referral but, rather, a summary of some of the most common warning signs and medical issues that behavior analysts face. It should be noted that virtually all warning signs can be related to *multiple* potential medical conditions:

- *Rapid and unusual weight gain or loss*. These symptoms may be indicative of psychiatric, gastrointestinal, endocrine, or other acute or chronic medical disorders. Major depression can lead to severe changes in appetite and activity, resulting either in overeating or undereating, as well as underactivity, necessitating a potential mental health referral via alerting the client's primary care doctor.

Gastrointestinal causes (such as stomach ulcer or inflammatory bowel disease with forms of colitis) are also high on the list of possible diagnoses, especially for unusual weight loss (Kushak et al. 2016). Thyroid disorders are examples of endocrine problems that can cause weight change. The family (parents or guardians) and the primary care doctor should be involved when a client has any unusual change in weight.

- *Areas of redness, swelling, or discoloration; labored breathing; sweating; extreme paleness; and behaviors such as wincing, moaning, doubling over, back arching, grabbing or rubbing a body part, and increased self-injury.* These conditions and behaviors may indicate unrecognized pain. Note that clothing may inadvertently hide what would otherwise be some observable signs of a problem. Monitoring for visual and behavioral signs of pain is important in any client, but especially in those with severe communication disorders. In a toddler, a head-to-toe exam may reveal an unexpected finding like a hair tourniquet: a strand of hair that accidentally gets wrapped tightly around a digit, such as a toe. In other cases, the start of an incarcerated, painful hernia or testicular torsion may be discovered. A client's self-injurious behavior (SIB) directed toward hitting or banging their head could, at times, relate to headaches, unrecognized dental pain or tooth abscess, and sinus or ear infection. New SIBs that appear to have either self-stimulatory or undifferentiated functions should receive scrutiny (O'Reilly 1997).
- *Bloating, swallowing problems, diarrhea, constipation, vomiting, and unusual arching of the torso*. These may indicate gastrointestinal disorders (for example, acid reflux, *Helicobacter pylori* stomach infection, irritable bowel syndrome, celiac disease, and inflammatory bowel disease) that require attention from the client's primary care doctor. In turn, the primary doctor may make a specialty referral to a gastroenterologist. Arching of the torso can be an attempt to ease gastrointestinal pain, especially the burning pain from gastroesophageal reflux disease, otherwise known as "GERD" or acid reflux (Chaidez et al. 2014; Sullivan 2008).
- *Loss of interest in many or most preferred foods and activities*. This may indicate occult pain, gastrointestinal disorders, depression, and/or thyroid conditions (particularly in clients with Down syndrome). Clients with Down syndrome should have thyroid function tests performed at least yearly and whenever potential symptoms develop (Bull and Committee on Genetics, American Academy of Pediatrics 2011).
- *Unusual inattention, repetitive eye-blinking and lip-smacking, twitching, and loss of postural tone (which might be mistaken for deliberately falling to the ground or self-stimulatory behaviors)*. These conditions and behaviors may indicate a seizure disorder. If there is a strong family history of epilepsy or the client has a diagnosis that often has an accompanying seizure disorder, this should increase the level of suspicion for possible onset of seizures. A few of the many genetic syndromes that often have associated seizures include tuberous sclerosis, Fragile X syndrome, Angelman syndrome, Rett syndrome, and neurofibromatosis (especially type 1). There are useful review articles on the medical needs of these genetic neurodevelopmental disabilities (Bull and Committee on Genetics, American Academy of Pediatrics 2011; Krueger and Northrup 2013; Lozano et al. 2016; Lane et al. 2011; Hirbe and Gutmann 2014). Up to 30% of individuals with autism spectrum disorders are at risk of developing seizures over their lifetime (Chez 2008). Seizures have been implicated in the regressive form of autism and are known to exacerbate maladaptive behaviors and psychiatric conditions in persons with autism.
- *Marked lack of focus, frequent inattention, especially to non-preferred tasks, extreme distractibility, impulsivity, and an excessive level of activity in all settings over a sustained time period of 6 months or more*. These symptoms are commonly found in ADHD, which is a common comorbid condition often seen in conjunction with other developmental problems. ADHD diagnoses are given within three presentation types: predominantly inattentive, predominantly hyperactive-impulsive, and combined. While the symptoms of ADHD are partially amenable to behavioral strategies, when a diagnosis is established, consideration of ADHD medication is warranted (Deutsch et al. 2008).
- *Atypical difficulty toilet training, onset of bowel and urinary accidents following successful toilet training, or new onset of nighttime urinary accidents*. These may indicate some common medical conditions, such as constipation or urinary tract infections (Friman and Vollmer 1995), or potentially uncommon conditions. One such intestinal condition is Hirschsprung's disease, a condition involving missing nerve cells in the colon, but there is a host of other gastrointestinal or urinary tract problems that should be considered (Brazelton et al. 1999; Klassen et al. 2006). In elderly clients, unrecognized urinary tract infections can possibly cause a confused mental state or temporarily worsen symptoms of delirium, though more research is needed on this topic (Balogun and Philbrick 2014).
- *Difficulty waking in the morning, inconsistency in ability to focus and attend (across days or across time of day), and/or falling asleep during activities*. These may indicate sleep disorders, such as insomnia, hypersomnia, obstructive sleep apnea, and central sleep apnea. Sleep disorders are common in clients with developmental disabilities, and a review of a client's general health should always include an assessment of sleep hygiene and changes in

sleep patterns (Richdale and Baker 2014). Fortunately, there is a synergistic overlap between the medical concept of good sleep "hygiene" and published behavior analytic sleep treatment protocols (Friman 2005; Jin et al. 2013).

- *Changes in mood, temperament, and daily habits (including poor eating and sleeping); loss of interest in appearance; irritability; extreme worry and avoidance; explosive anger and marked distractibility; visual and auditory hallucinations (e.g., hearing voices)*. As in the neurotypical population, these conditions and behaviors may indicate a range of psychiatric disorders, including depression, anxiety, psychosis, and substance abuse. Research suggests that 30–40% of people with developmental disabilities are dually diagnosed with at least one additional psychiatric condition (Munir 2016). Parents or guardians may be the first to observe such symptoms in the client, so any expressed concerns should be taken seriously. The intermittent appearance of these problematic conditions and behaviors in patterns that are inconsistent with known psychiatric conditions may indicate referral for possible seizures. Alerting the client's primary care doctor is a good starting point for such symptoms. In turn, the primary care doctor can facilitate obtaining additional mental health or neurological services if needed.
- *Cyclical patterns*. When problem behaviors start and stop on a regular basis, this suggests that a physiological process may be involved. SIB within the menstrual cycle of developmentally disabled women has been well described (Taylor et al. 1993). Another cyclical medical condition that is neurological in nature and can be hard to diagnose is called "cyclical vomiting." Unlike rumination syndrome, cyclical vomiting is involuntary and occurs in a time-related pattern. Attacks typically occur every few days, every few weeks, or every few months. While the duration of the cycle varies across patients, cycles within individual patients are typically consistent (Levinthal 2016).
- *Sudden changes in the intensity, frequency, or conditional probability of inappropriate behaviors, or the sudden emergence of a new behavior, in the absence of changes in motivating operations or discriminative stimuli*. When the rate of a problem behavior increases suddenly without correlates within the three-term contingency (antecedent–behavior–consequence), consider the possibility of an occult medical problem.
- *Change in motor or adaptive functioning*. Loss of hearing, sight, and motor control can occur at any time in a client's life span. Clients with undiagnosed Rett syndrome may have their gradual loss of motor control perceived as noncompliance. Similarly, clients with post-viral or genetic syndromic or nonsyndromic progressive sensorineural hearing loss (e.g., the latter includes conditions like Norrie syndrome with mental deficiency, Alport syndrome, Stickler syndrome, Usher syndrome, and Waardenburg syndrome) may show increased difficulty following verbal directions (Walsh et al. 2010; Koffler et al. 2015).
- *Rapid loss of cognitive or verbal skills*. Very rapid loss of function may be seen in conditions such as stroke, seizures, and certain severe mental health conditions. Strokes can happen to anyone, at any age, but they are more common in certain hereditary conditions or when there are health risk factors, such as high blood pressure, diabetes, and heart rhythm problems. New onset of face drooping, arm weakness, and communication difficulties can be signs of a stroke (Lisabeth et al. 2009). A rare childhood disorder called Landau–Kleffner syndrome is characterized by the loss of language comprehension and verbal expression in association with a severely abnormal electroencephalogram (EEG) during sleep and clinical seizures (Chez 2008). Severe major depressive disorder and catatonia are two mental health conditions that can cause a rapid loss of cognitive or verbal skills (Lam et al. 2014).
- *Undifferentiated behavioral function*. When a functional assessment of a problem behavior reveals no clear function for the behavior (undifferentiated), the client may be responding to internal body cues that come and go in a fashion that is not easily picked up by the functional assessment. Hence, the behavior looks like it has no clear function, but may be the client's attempt to cope with various kinds of pain, discomfort, or other physiological or sensory disturbance they are experiencing internally on an intermittent and not obvious basis (O'Reilly 1997).

These warning signs should be interpreted with the following caveats: (a) not all warning signs are the product of medical conditions and (b) a lack of clear motivating operations, discriminative stimuli, or reinforcers may indicate flawed data collection procedures (e.g., omitted or inaccurate data, unreliable reporters), rather than potential medical conditions.

The medical histories of family members may offer insight into a client's potential medical conditions. Many disorders have known genetic or familial components (e.g., allergic and atopic reactions, including asthma, eczema,. and seasonal allergies; migraines or other forms of headache; inflammatory bowel disease like ulcerative colitis; gastrointestinal disorders like celiac disease; some types of epilepsy and some forms of anemia). Thus, diagnoses known to be present in parents or siblings, in conjunction with the red flags discussed, may indicate the need for medical referral. For example, if a child starts to show symptoms such as abdominal pain, vomiting, and constipation combined with non-gastrointestinal symptoms such as delayed growth during puberty, these symptoms may be indicative of more than routine constipation or an occasional stomach flu virus. If it is revealed that the parent

has celiac disease, this child may now be showing signs of celiac disease as well (Kushak et al. 2016).

Individuals with genetic disorders such as Fragile X syndrome, tuberous sclerosis, neurofibromatosis, Down syndrome, Prader–Willi syndrome, and a large variety of other disorders may be more prone to chronic medical conditions. These should be carefully documented in the client's file. The presence of a complex or rare genetic disorder warrants a summary description of the disorder from a reputable online medical source, such as the National Organization for Rare Disorders (https://rarediseases.org) and the United States National Institutes of Health (https://www.nih.gov). Medical review articles provide further reading on the typical medical needs for such genetic syndromes (Bull and Committee on Genetics, American Academy of Pediatrics 2011; Hirbe and Gutmann 2014; Krueger and Northrup 2013; Lozano et al. 2016; Lane et al. 2011). Parents often provide helpful resources on their child's rare medical condition.

Coordination of Care

The behavior analyst's role does not necessarily end with informing parents and guardians about medical concerns, consulting with physicians, or making a referral for medical evaluation. Behavior analysts can play an active role in the medical professional's diagnosis and treatment of many medical conditions. Further actions may include:

- *Directly contacting medical personnel and explaining why a referral was made*. Parents may not be able to communicate an analyst's concerns clearly or understand the rationale for the referral. For example, parents are unlikely to be able to convey the significance of a sudden increase in aggression that is undifferentiated across demand conditions. Note that contacting medical personnel should only be done when appropriate informed consent has been granted by the parents.
- *Providing family and medical personnel with information on the magnitude and significance of changes in client functioning levels*. Suppose that, over a period of a month, a client completely stops using her vocabulary of ten spontaneous verbal mands. Many pediatricians may see the client as essentially unchanged. She was severely language delayed a month ago, and she is still severely language delayed. However, an analyst can explain that, while the net change in words was small, the clinical significance of their loss is dramatic and may justify an evaluation for occult medical issues.
- *Providing frequency, duration, scatter, and ABC data on referring behavioral problems at the time of referral and during subsequent treatment*. Data provided at medical referral can aide in diagnosis. Data during treatment can facilitate medical personnel's assessment of treatment efficacy.
- *Collecting data on medication side effects*. In addition to documenting changes in referring problems, behavioral personnel can be extraordinary resources for finely detailed data on potential medication side effects, such as undesired changes in aggression, mood, activity level, attention, appetite, tics, and sleep patterns. Personally tailored medication side effect checklists can be developed with input from the client's physician and from parents. There are also generic medication side effect checklists available for specific categories of medications. For instance, The Recovery Trust website offers a side effect checklist for mental health medications online (The Recovery Trust n.d.).
- *Teaching clients skills that facilitate or allow medical assessment and treatment*. Many diagnostic procedures and treatments require tolerance of novel stimuli and compliance with novel demands. Behavioral personnel can teach clients to remain immobile during imaging studies; use glucose monitoring devices; wear hearing aids or glasses; tolerate injections, dental exams, and dental procedures; and take pills and other medications. There is a growing body of published behavior analytic studies in this evolving area (McComas et al. 1998; Allen and Wallace 2013; Richling et al. 2011; DeLeon et al. 2008).

Most medical personnel are still generally unfamiliar with the field of behavior analysis and will rarely initiate coordination of care. Consequently, the burden for establishing care coordination currently typically falls on the behavior analyst.

Conclusion

Starting at intake, and continuously throughout treatment, behavior analysts must evaluate whether the behavioral issues that they are addressing have medical etiologies. The quality of client care is improved when analysts carry out the following:

- Complete a detailed medical history intake form on each client.
- Learn the side effects of clients' medications.
- Learn the symptoms and behavioral impacts of clients' chronic medical conditions.
- Keep updated client files and know the medical information in the client's file.
- Recognize the red flags for possible occult medical issues.
- Collaborate and coordinate care with other healthcare professionals.

Behavior analysts' first priority in evaluating potential medical conditions is to make sure that behavioral interventions are not improperly applied to biologically controlled behaviors. However, the behavior analyst's role in clients' overall medical care should not be seen as purely exclusionary or insignificant. Behavior analysts' specialized ability to rule out behavioral causes for maladaptive behaviors means that they may be the first, and sometimes only, healthcare professionals to recognize the presence of occult medical conditions. This is particularly true for clients with deficits in communication skills. In addition, behavior analysts' ability to teach new skills and reduce inappropriate behaviors can play a critical role in clients' access to a broad range of medical assessments and treatments (e.g., sleep studies for seizure disorders, dental care, and medication delivery). Consequently, the behavior analyst's attention to potential medical issues not only reduces the probability of inappropriate behavioral interventions, but can also improve the timeliness and accessibility of clients' overall medical care.

Compliance with Ethical Standards

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors.

Appendix: Content Areas/Questions for Medical History Forms

- Primary care doctor's name and phone number.
- All medical conditions (diagnoses) that the client has received.
- For each medical condition, provide treating doctor's name, treating doctor's specialty, and treating doctor's phone number.
- All other doctors treating the client and their phone numbers.
- Hospital/clinic preference.
- Dentist's name and phone number.
- Allergies.
- Safety concerns of special note.
- Special dietary needs.
- Current prescription medications, including: (a) dosage, (b) route of administration, (c) administration times, (d) what the medication is used for, and (e) potential side effects.
- Current over-the-counter medications, herbal treatments, and supplements, including: (a) dosage, (b) route of administration, (c) administration times, (d) what the medication is used for, and (e) potential side effects.
- Current weight.
- Current height.
- Handedness.
- Vision or hearing problems/concerns.
- Date of last hearing test and who performed it (physician, audiologist, school, etc.).
- Prior surgeries (operations) and hospitalizations.
- Eating problems.
- Sleeping problems.
- Toileting problems.
- Problems during pregnancy.
- Problems during delivery.
- Problems during first year of life.
- Serious illnesses or injuries (such as head injury) in the past.
- Seizures: include: (a) type, (b) description of typical seizure event, (c) medications, and (d) special diets.
- Immunization status: are immunizations up to date?
- Has client ever been admitted to hospital/treatment center for psychiatric, behavioral, or crisis situations?
- Is client currently receiving psychotherapy or counseling?
- Who has current custody/guardianship of child?
- Medical restrictions to client's activities.
- Does client have a history of substance use, including tobacco and alcohol?
- Is client an identified risk to self or others? Are they suicidal or do they pose a risk of homicide?
- Is client under Department of Corrections supervision or under civil or criminal court-ordered mental health or chemical dependency treatment?

References

Allen, K. D., & Wallace, D. P. (2013). Effectiveness of using noncontingent escape for general behavior management in a pediatric dental clinic. *Journal of Applied Behavior Analysis*, *46*(4), 723–737.

Balogun, S. A., & Philbrick, J. T. (2014). Delirium, a symptom of UTI in the elderly: Fact or fable? A systematic review. *Canadian Geriatrics Journal*, *17*(1), 22–26.

Behavior Analyst Certification Board. (2017). BACB professional and ethical compliance code for behavior analysts. Retrieved from https://www.bacb.com/ethics/ethics-code.

Brazelton, T. B., Christophersen, E. R., Frauman, A. C., Gorski, P. A., Poole, J. M., Stadtler, A. C., et al. (1999). Instruction, timeliness, and medical influences affecting toilet training. *Pediatrics*, *103*(6), 1353–1361.

Bull M.J., & Committee on Genetics, American Academy of Pediatrics. (2011). Health supervision for children with down syndrome. *Pediatrics*, *128*(2), 393–406.

California Department of Health Care Services. (2013). Authorization for release of patient information. Retrieved from https://www.dhcs.ca.gov/formsandpubs/forms/Forms/Mental_Health/DHCS_1811.pdf.

Centers for Disease Control and Prevention. (n.d.). Chronic disease overview. Retrieved from https://www.cdc.gov/chronicdisease/about/index.htm.

Chaidez, V., Hansen, R. L., & Hertz-Picciotto, I. (2014). Gastrointestinal problems in children with autism, developmental delays or typical

development. *Journal of Autism and Developmental Disorders*, *44*(5), 1117–1127.

Chez, M. G. (2008). *Autism and its medical management* (pp. 69–70). London & Philadelphia: Jessica Kingsley Publishers.

DeLeon, I. G., Hagopian, L. P., Rodriguez-Catter, V., Bowman, L. G., Long, E. S., & Boelter, E. W. (2008). Increasing wearing of prescription glasses in individuals with mental retardation. *Journal of Applied Behavior Analysis*, *41*(1), 137–142.

Deutsch, C. K., Dube, W. V., & McIlvane, W. J. (2008). Attention deficits, attention-deficit hyperactivity disorder, and intellectual disabilities. *Developmental Disabilities Research Review*, *14*(4), 285–292.

Friman, P. C. (2005). *Good night, sweet dreams, I love you: Now get into bed and go to sleep!* Boys Town, NE: Boys Town Press.

Friman, P. C., & Vollmer, D. (1995). Successful use of the nocturnal urine alarm for diurnal enuresis. *Journal of Applied Behavior Analysis*, *28*, 89–90.

Hirbe, A. C., & Gutmann, D. H. (2014). Neurofibromatosis type 1: A multidisciplinary approach to care. *The Lancet Neurology*, *13*(8), 834–843.

Iwata, B. A., Zarcone, J. B., Vollmer, T. R., & Smith, R. G. (1994). Assessment and treatment of self-injurious behavior. In E. Schopler & G. B. Mesibov (Eds.), *Behavioral issues in autism* (pp. 131–159). New York: Plenum Press.

Jin, C. S., Hanley, G. P., & Beaulieu, L. (2013). An individualized and comprehensive approach to treating sleep problems in young children. *Journal of Applied Behavior Analysis*, *46*, 161–181.

Klassen, T. P., Kiddoo, D., Lang, M. E., Friesen, C., Russell, K., Spooner, C., et al. (2006). The effectiveness of different methods of toilet training for bowel and bladder control. *Evidence Reports/ Technology Assessment*, *147*, 1–57.

Koffler, T., Ushakov, K., & Avraham, K. B. (2015). Genetics of hearing loss: Syndromic. *Otolaryngologic Clinics of North America*, *48*(6), 1041–1061.

Krueger, D. A., & Northrup, H. (2013). Tuberous sclerosis complex surveillance and management: Recommendations of the 2012 International Tuberous Sclerosis Complex Consensus Conference. *Pediatric Neurology*, *49*(4), 255–265.

Kushak, R. I., Buie, T. M., Murray, K. F., Newburg, D. S., Chen, C., Nestoridi, E., et al. (2016). Evaluation of intestinal function in children with autism and gastrointestinal symptoms. *Journal of Pediatric Gastroenterology and Nutrition*, *62*(5), 687–691.

Lam, R. W., Kennedy, S. H., McIntyre, R. S., & Khullar, A. (2014). Cognitive dysfunction in major depressive disorder: Effects on psychosocial functioning and implications for treatment. *Canadian Journal of Psychiatry*, *59*(12), 649–654.

Lane, J. B., Lee, H. S., Smith, L. W., Cheng, P., Percy, A. K., Glaze, D. G., et al. (2011). Clinical severity and quality of life in children and adolescents with Rett syndrome. *Neurology*, *77*, 1812–1818.

Levinthal, D. (2016). The cyclic vomiting syndrome threshold: A framework for understanding pathogenesis and predicting successful treatments. *Clinical and Translational Gastroenterology*, *7*(10), e198. https://doi.org/10.1038/ctg.2016.55.

Lisabeth, L. D., Brown, D. L., Hughes, R., Majersik, J. J., & Morgenstern, L. B. (2009). Acute stroke symptoms: Comparing women and men. *Stroke*, *40*, 2031–2036.

Lozano, R., Azarang, A., Wilaisakditipakorn, T., & Hagerman, R. J. (2016). Fragile X syndrome: A review of clinical management. *Intractable Rare Diseases Research*, *5*(3), 145–157.

McComas, J. J., Wacker, D. P., & Cooper, L. J. (1998). Increasing compliance with medical procedures: Application of the high-probability request procedure to a toddler. *Journal of Applied Behavior Analysis*, *31*(2), 287–290.

Miller, J. L. (2012). Approach to the child with Prader–Willi syndrome. *The Journal of Clinical Endocrinology & Metabolism*, *97*(11), 3837–3844.

Munir, K. M. (2016). The co-occurrence of mental disorders in children and adolescents with intellectual disability/intellectual developmental disorder. *Current Opinion in Psychiatry*, *29*(2), 95–102.

Newhouse-Oisten, M. K., Peck, K. M., Conway, A. A., & Frieder, J. E. (2017). Ethical considerations for interdisciplinary collaboration with prescribing professionals. *Behavior Analysis in Practice*, *10*(2), 145–153.

O'Reilly, M. F. (1997). Functional analysis of episodic self-injury correlated with recurrent otitis media. *Journal of Applied Behavior Analysis*, *30*, 165–167.

Piazza, C. C. (2008). Feeding disorders and behavior: What have we learned? *Developmental Disabilities Research Reviews*, *14*(2), 174–181.

Richdale, A. L., & Baker, E. K. (2014). Sleep in individuals with an intellectual or developmental disability: Recent research reports. *Current Developmental Disorders Reports*, *1*(2), 74–85.

Richling, S. M., Rapp, J. T., Carroll, R. A., Smith, J. N., Nystedt, A., & Siewert, B. (2011). Using noncontingent reinforcement to increase compliance with wearing prescription prostheses. *Journal of Applied Behavior Analysis*, *44*(2), 375–379.

Stevens, J. R., Wilens, T. E., & Stern, T. A. (2013). Using stimulants for attention-deficit/hyperactivity disorder: Clinical approaches and challenges. *The Primary Care Companion for CNS Disorders*, *15*(2), PCC.12f01472.

Sullivan, P. B. (2008). Gastrointestinal disorders in children with neurodevelopmental disabilities. *Developmental Disabilities Research Reviews*, *14*(2), 128–136.

Taylor, D. V., Rush, D., Hetrick, W. P., & Sandman, C. A. (1993). Self-injurious behavior within the menstrual cycle of women with mental retardation. *American Journal on Mental Retardation*, *97*, 659–664.

The Recovery Trust. (n.d.). Medicine side effect checklist. Retrieved from http://www.therecoverytrust.org/forum/articles/WhatsNew/a_medicine_side_effect_checklist.htm.

Walsh, T., Shahin, H., Elkan-Miller, T., Lee, M. K., Thornton, A. M., Roeb, W., et al. (2010). Whole exome sequencing and homozygosity mapping identify mutation in the cell polarity protein GPSM2 as the cause of nonsyndromic hearing loss DFNB82. *The American Journal of Human Genetics*, *87*(1), 90–94.