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# **Social Learning Theory as a Framework for Recreational Therapy Intervention in Children with Neurodevelopmental Disorders**

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## **Abstract**

People with neurodevelopmental disorders demonstrate a higher incidence of obesity, emotional and mental health issues, and behavioral problems than the typically developing (TD) population. Based on the importance of early intervention for children with disabilities, research has been done regarding learning and development in children with neurodevelopmental disorders. However, limited research has been done tying a theory-based learning approach to recreational therapy (RT) intervention in the population. RT is a field that is inherently social and experiential, depending on interaction and activity to achieve desired outcomes. The Social Learning Theory (SLT) is a framework that focuses on learning from a social and experiential perspective, and is therefore uniquely compatible with RT methods. This paper will provide a starting point for a theory-based learning approach to RT by discussing the potential utility of SLT in RT for children with neurodevelopmental disorders. Suggestions for future research are discussed.

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**Keywords:** recreation; recreational therapy; social learning; Social Learning Theory; modeling; imitation; neurodevelopmental disorder; Down syndrome; autism spectrum disorder

More than five million people in the U.S. have been diagnosed with a neurodevelopmental disorder, according to the 2010 U.S. Census (2012). Neurodevelopmental disorders are impairments of brain function, typically manifesting during the early developmental period, which produce mild to profound personal, social, cognitive, and occupational impairments (American Psychiatric Association, 2013). Along with these symptomatic characteristics, this population demonstrates a higher incidence of obesity, emotional and mental health issues, and behavioral problems than the typically developing (TD) population, where typical development means achieving developmental milestones within an average range when compared to same-age peers. (Dandashi et al., 2014; Foley et al., 2015; Sappok et al., 2013; Solomon & O'Brien, 2016).

The importance of early intervention for children with various disabilities has been well documented (Almsbhiene, 2016; Goode, Diefendorf, & Colgan, 2011; Guralnick, 1997). Based on the importance of early intervention, theoretical and empirical research has been done regarding learning and development in children with neurodevelopmental disorders (Alzyoudi, Sartawi, & Almuhihi, 2015; Bauer & Jones, 2015; Biederman, Stepaniuk, Davey, Raven, & Ahn, 1999; Bushwick, 2001; Cebula, Moore, & Wishart, 2010; Clore, 2006; Foti et al., 2014; Hahn, Fidler, Hepburn, & Rogers, 2013; Hudson, Nijboer, & Jellema, 2012; Jing & Fang, 2013; Parish-Morris, Hennon, Hirsh-Pasek, Golinkoff, & Tager-Flusberg, 2007). However, only limited research has been done tying these learning techniques to recreational therapy (RT) outcomes of independence, health, and wellness in the population ("What is RT/TR?" 2015; Wise, 2002). Because RT implementation is founded in leisure education and RT outcomes are achieved through learned behavioral changes, a learning-centered RT framework may prove useful – especially in a population where learning is often a perceived weakness in comparison to the TD population (Stumbo & Peterson, 1998). RT is social and experiential, depending on interaction and activity to achieve desired outcomes ("Definitions of recreational therapy", n.d.). The Social Learning Theory (SLT) focuses on learning from a social and experiential perspective, and is therefore uniquely compatible with RT methods (Bandura, 1971). This paper will provide a starting point for a theory-based learning approach to RT by discussing the potential utility of SLT in RT contexts. The paper uses current literature on social learning and SLT in children with neurodevelopmental disorders, specifically using children with Down Syndrome

(DS) and children with Autism Spectrum Disorder (ASD) as symptomatically different examples of the socio-emotional and functional range of neurodevelopmental disorders. The paper will conclude with suggestions for future research, to address potential strengths and weaknesses in the application of the SLT framework and to incorporate the theory into the evidence-based practice of RT.

### History of SLT

Introduced by Bandura in 1971, SLT is a cognitive and behavioral theory that explains human behavior through the interaction of personal (cognitive), environmental, and behavioral factors in a social setting. Bandura later updated his theory to incorporate an additional focus on the cognitive aspects of behavior and renamed the theory "social cognitive theory," but for this paper's focus on social learning, SLT will be used (Bandura, 1986). Contrasting behavioral change theories (such as operant conditioning) that focus on rewards and reinforcement, SLT describes the interaction and influence of personal, environmental, and behavioral factors on one another in a process called reciprocal determinism (Bandura, 1986; Rholetter, 2013). According to SLT, a person's behavior is influenced by his or her environment as well as inherent personal traits, that person's environment is influenced by the presence of and interaction with that person's behaviors and traits, and personal traits are influenced by both behavior and the environment. While each of these three factors is considered to influence the other two within reciprocal determinism, the amount of contribution each factor makes in a specific behavior is variable, and so pursuing behavioral intervention using the theory involves determining the extent to which each factor should be addressed, as well as determining appropriate methods of address (Miller & Morris, 2016).

Within SLT, the interplay of cognition, environment, and behavior creates a social foundation for learning that begins with observation of behavioral models (Health Communication Capacity Collaborative [HC3], 2015). Behavioral models may be in-person or digital demonstrations of a desired behavior, such as smiling or completing a puzzle. According to HC3, observational learning comprises four distinct cognitive stages: *attention*, or actively observing the behavioral model; *retention*, or storing new information to be retrieved at a later time; *reproduction*, or recreating modeled behavior in order to practice it; and *motivation*, or feeling compelled to continue the behavior in the future. As will be later discussed, children with neurodevelopmental disorders may have impairments in

some of these cognitive functions, but not to an extent that would preclude use of SLT in adaptive RT intervention.

### **Social Skills and Learning in Children with Neurodevelopmental Disorders**

SLT occurs within a social setting and using social tools, so it is important to first explore the social capacities of children with neurodevelopmental disorders. Though mild to profound social and cognitive impairments are characteristic of the population, foundational capacities may exist and be supported in an adaptively implemented SLT-focused RT intervention (Vanvuchelen, Feys, & De Weerd, 2011; Wishart, 2007).

#### **Children with DS**

Characteristics of children with DS include an outgoing personality and elevated interaction (Cebula et al., 2010). While these characteristics are social strengths in some ways, it is important to note the ways in which the DS population exhibits unique needs in the processing of information in a social environment in order to produce RT programming that supports social and cognitive development.

A study by Wishart (2007) explored object concept, emotional recognition, and collaborative learning skills in children with DS using hiding tasks, distinguishing between six primary emotions, and sorting tasks alongside a peer, respectively. Results showed difficulties in all three areas, though results on the topic of emotional recognition were more relative and varied than those of the other topics. Most notably, while TD children have been shown to learn well from working collaboratively, Wishart found that children with DS showed no significant improvement after an activity with a peer partner, suggesting that the sociability characteristic to people with DS may not be a tool that is naturally used effectively in a social learning environment. Wishart's findings provide qualitative and quantitative evidence that while children with DS display some social understanding and interaction, their socio-cognitive development is notably different from their TD counterparts. From an RT perspective, this difference in socio-cognitive development demonstrates a barrier to be overcome with intervention focused on inclusion in peer groups and socialization. However, when designing an RT program for children with DS, a motivation to engage socially may be considered a strength to be used to promote participation in recreational behavior.

A study by Fidler, Most, Booth-LaForce, and Kelly (2008) measured functional development in children with DS, finding that children with DS display relative weaknesses in development of motor skills and cognitive development when compared to children with other developmental disabilities. In fact, a slowing of cognitive development was measured over time. However, relative strengths in the areas of social orientation and social engagement (as compared to the areas of emotion regulation and motor skills) were found when children with DS were observed and rated on a developmental scale. More recently, Hahn et al. (2013) produced a study in which understanding of intention was determined through imitation of target condition as well as failed intention condition. Resulting evidence showed that while children with DS were more likely than those with other developmental disabilities to correctly perform the activity after the demonstrator failed, affect sharing and imitation of the failed intention produced a significant positive correlation. The combination of these two studies of social relating in DS children points to both the elevated social skills and the developmental difficulties in the population, where a child may display traits of relatability and engagement, but lack the social cognition required for increasingly complex social relationships. Within RT intervention, these social skills may be leveraged in the social learning of leisure and recreational behaviors, adding to the potential for meaningful wellness outcomes (Stumbo & Peterson, 1998).

#### **Children with ASD**

ASD is characterized by social impairments such as a lack of interest in other people, lack of participation in social reciprocity, challenges with symbolic communication, and difficulty interpreting verbal and nonverbal cues (Bushwick, 2001; Vaiouli, Grimmet, & Ruich, 2015). Indeed, an ASD condition is diagnosed by difficulties in social learning (Bushwick, 2001). According to Bushwick, these social impairments make it difficult for children with ASD to navigate the social environment and behave appropriately. While the extent to which these impairments manifest varies across the autistic spectrum, they inherently produce a difficulty in learning within a social context for the learner with ASD.

A study by Hudson et al. (2012) investigated the association of autistic traits with the perception of pro- and anti-social behavior through the facial expressions of others. The results of the study showed a negative correlation between implicit learning of social information and autistic



traits. Such a study provides some insight into the inherent implicit learning difficulties associated with ASD; subtler social cues that are not explicitly taught but come to be understood over time in the TD population are more difficult for children with ASD to grasp. In terms of RT programming, this information is significant, as it provides both guidance for implementation (using explicit social cues) and a potential treatment goal of increasing nuanced social understanding.

A four-experiment study by Parish-Morris et al. (2007) compared children with ASD to TD children in nonverbal enactment and word-learning tasks, finding that children with ASD pay attention to social cues and can use attentional social cues to learn words, but have some difficulty with understanding and learning intent. A more recent study by Jing and Fang (2013), focused on identifying toys with novel labels, supported the previous evidence that children with ASD exhibit more difficulty than TD children in learning new words through referential intentional information gathered in a social context. Findings in these two studies are notably similar to Hahn et al.'s (2013) study of understanding intent in children with DS, showing a possible similarity between the two populations with regard to picking up on subtler social cues and cognizing more complex social interaction. RT programming, therefore, must adapt implementation techniques to ensure comprehension within the practitioner-client social environment.

Research by Vaiouli et al. (2015) used a child-focused, improvisational music therapy intervention to study the effects of the therapy on face focus, response to joint attention, and initiation of joint attention (i.e., a shared focus by two people on one object) in children with ASD. Increased levels of engagement in all three areas of study point to the potential efficacy of interactive and relationship-based learning opportunities for children with ASD, despite the low levels of social engagement at baseline. This study is especially interesting in a discussion of social learning for RT implementation, as the interactive music therapy provides an example of modality that can be used in RT, and the result of social engagement reflects an RT outcome that would be desirable for the population (Bittman et al., 2004).

While all of the above studies describe social and cognitive impairments in children with DS and children with ASD, it is important to note strengths as well as

examples of interventions that can be used to improve social and cognitive functioning. It is also significant that in most of the studies, the capacities of the children with DS/ASD were being measured against TD children or children with other developmental disorders. While this information is valuable in terms of understanding different ways of developing social and cognitive skills in different populations, intervention for these groups will focus on personal improvement from baseline. In other words, while the population shows difficulties in certain areas relating to SLT, it is still possible (and worth further study) that intervention using an SLT framework yields positive outcomes. Specifically, with respect to RT intervention, this information shows that social learning can be a useful tool in achieving outcomes such as social engagement, group participation, and learning of specific (health/leisure) behaviors (Vaiouli et al., 2015).

### **SLT and Children with Neurodevelopmental Disorders**

In a discussion of SLT-based RT treatment for children with neurodevelopmental disorders, addressing proven strengths that have promoted SLT-based learning within the population is imperative. While few studies specifically cite SLT in exploring a learning program for children with neurodevelopmental disorders, many have included aspects of the theory, such as observational learning (learning through observing the behavior of others) and imitation (mirroring the observed behavior of others) in the population. Observation and imitation represent two foundational steps in the SLT learning process, and so exploring these behaviors in children with neurodevelopmental disorders will offer some insight into how SLT can be implemented in RT intervention for the population (HC3, 2015).

An early study by Biederman et al. (1999) focused on video modeling as an example of Bandura's (1971) passive observation, and explored the effect of modeling speed on learning outcomes in children with DS as well as children with other developmental disabilities. Results supported the effectiveness of observational learning without verbal reinforcement in both groups, and suggested that observational learning may be more effective than standard classroom instruction for the population (Biederman et al., 1999). Passive observation was further supported in Biederman and Freedman's (2007) literature analysis that touted the use of video instruction of life skills, signs, and lettering for children with DS, children with ASD, and

children with other developmental disabilities. Such evidence looks promising for application in recreation and leisure instruction, such as demonstrating an art project or putting on a life jacket for canoeing. Furthermore, modeling speed variation in Biederman et al.'s (1999) study indicated that a slower speed should be used based on individual observational information processing speeds, proving the adaptability of the modeling technique. A study by Corbett and Abdullah (2005) described how individuals with ASD benefit from visually cued instruction and process visual information more readily than verbal information. Based on these characteristics, as well as the ability to focus narrowly and for extended periods of time, the study suggests that video modeling is uniquely suitable to learning intervention for children with ASD through its support for attention, retention, production, and motivation in learned behavior. Additionally, a study by Alzyoudi et al. (2015) explored the use of video modeling as an application of SLT in the development of social skills in children with ASD. All participants achieved mastery of the social skills targeted in the study. The authors of the study suggest that its outcomes may be due to the motivation (a key factor of SLT) achieved through participation in an activity that is rewarding. The significance of these findings cannot be overstated, as social skills are a building block to learning within SLT, and the study provides evidence that SLT itself can be used to promote such skills. Such potential in the theory creates a social learning cycle wherein early intervention begets early development of basic skills that lay the foundation for continued learning and development over the course of an individual's life. The idea of developing social skills (an RT outcome) through a rewarding activity (recreation) is one that suggests the usefulness of these techniques within an RT context. This warrants further exploration into more active and socially engaging activities that will likewise provide the motivation to achieve RT outcomes.

Following modeling and observation, the act of imitation is a behavior necessary for SLT-based behavior learning. A study by Vanvuchelen et al. (2011) used the Preschool Imitation and Praxis Scale to measure the motor imitation ability of children with DS and children with other intellectual disabilities. The study discovered an absolute strength in bodily and procedural imitation and absolute weakness in language for both groups. The strength of imitation, not only in children with DS but also in children with other intellectual disabilities, is of significance for this paper, as it indicates one foundational capacity required to

follow an observational social learning process. Feeley, Jones, Blackburn, and Bauer (2011) performed a foundational study on the use of prompts, corrective feedback, and social reinforcement to elicit verbal imitation and requesting skills in young children with DS. Participants showed acquisition of imitation and requesting skills, and continued to display the skills in follow-up meetings. Further research by Bauer and Jones (2015) used social reinforcement and prompting to teach infants with DS to imitate increasingly complex verbalizations. Results indicated strong positive outcomes for intelligible verbal imitation over several intervention periods, dependent on each participant's needs. The study further described generalized request-making and problem-solving skills resulting from increased verbal imitation abilities, showing the potential of early intervention in some basic skills to avoid a "cascade of negative consequences from these early impairments" (Bauer and Jones, 2015, p. 64). Instead, early intervention in these basic skills may provide the building blocks for continued development in verbalization and problem-solving, which lay a foundation for RT goals such as participation, cognitive functioning, and confidence. Furthermore, the common strategies and outcomes of the studies by Feeley et al. and Bauer and Jones suggest the benefit of using social reinforcement as a tool in pursuit of learning outcomes in children with DS, who are, in general, naturally inclined toward social engagement. In the RT setting, social reinforcement could be an especially useful and usable tool, as RT focuses on learning positive health and wellness behaviors within a social context.

Research by Foti et al. (2014) used video modeling to compare imitation abilities in learning a visuomotor sequence (in this case, observing and repeating a pattern on a computer touch screen) between children with ASD and TD children. Results showed marked similarities between the two groups, with the exception of the ASD group's high number of imitative errors, indicating a difficulty with "imitative inhibition" (Foti et al., 2014, p. 2444). A similar, earlier study by Nielsen, Slaughter, and Dissanayake (2012) used in-person modeling to compare overimitation and synchronic imitation between children with ASD and TD children. Results were somewhat different from Foti et al.'s in that there was no distinguishable difference in behavior between the two groups of children, in appropriate imitation of the actor or in overimitation and synchronic imitation. It is important to note the hypothesis that individuals with ASD are impaired in socially based imitation was not supported in

the study, and that it suggests a potential for social motivation and understanding not frequently associated with the ASD population (Foti et al., 2014).

Because modeling, observation, and imitation are integral to effective social learning, strengths in these areas indicate the potential effectiveness of SLT-based learning. Based on the discussed studies, evidence of effective modeling, observation, and imitation of learned behaviors in children with neurodevelopmental disabilities, as well as the potential to adapt intervention to individual needs and environments, provides support for the use of the techniques in recreation and leisure behavior-learning intervention for the population.

### **Practical Implications for SLT in RT**

The focus of RT intervention is achieving positive change in functioning and/or behavior in pursuit of physical and mental wellness for the client. At its core, RT intervention aims to teach certain beneficial behaviors through recreation and leisure activities. For children with neurodevelopmental disorders, these behaviors may include social interaction, motor and life skills, problem solving, teamwork, health participation, or any number of areas where there may be a deficit (Bushwick, 2001; Foley et al., 2015; Foti et al., 2014; Hudson et al., 2012; Jing & Fang, 2013; Parish-Morris et al., 2007; Sappok et al., 2013; Vaiouli et al., 2015). In pursuit of individual goal behaviors, SLT-based RT intervention can focus on two main areas: leisure education and specific skill instruction.

According to Dattilo (2015), leisure education stimulates self-awareness, promotes acquisition of leisure-related knowledge, and encourages skill development that enhances self-determination by meeting needs for autonomy, competence, and social connections. Stumbo and Peterson (1998) describe leisure education as one of the three main aspects of RT practice (the other two being treatment and recreation participation). They describe the aim of leisure education as providing skills and knowledge that allows independent, informed choice in leisure participation. For children with neurodevelopmental disorders, leisure education has the potential to support leisure participation by providing the motivation necessary to participate. Recall the four steps of SLT: attention, retention, reproduction, and motivation. Modeling, observation, and imitation focus on the first three steps, but in order to achieve meaningful, lasting behavioral change, the participant must be motivated to continue the behavior

(HC3, 2015). Focusing leisure education on the possible goals and rewards that can be achieved will promote leisure participation (Hutzler, Oz, & Barak, 2013). Additionally, the existence of perceived choice promotes motivation (Elliott & Dillenburg, 2016). Therefore, leisure education intervention that includes social modeling of leisure activity and its results (e.g., enjoyment), as well as choice in participation, will aim to support motivation and therefore leisure participation.

Leisure participation, then, both supports and is supported by leisure education. Leisure education encourages participation in the ways described above, and the experience of participation and its results support the principles (the “how” and “why”) of leisure education. Leisure participation requires teaching the participant specific activity-related skills (e.g., how to plant seeds in gardening or how to slice onions in cooking). This process involves both behavior instruction, comprehension, and action, which can be achieved through the discussed SLT steps of modeling, observation, and imitation, respectively – steps that have been proven to promote learning in children with neurodevelopmental disorders in the discussed studies (Alzyoudi et al., 2015; Bauer & Jones, 2015; Biederman & Freedman, 2007; Biederman et al., 1999; Corbett & Abdullah, 2005; Feeley et al., 2011; Foti et al., 2014; Nielsen et al., 2012; Vanvuchelen et al., 2011). Thus, the process of modeling and observing, and ultimately imitating and seeing the results of leisure behavior provides the backbone for RT intervention based in SLT for the population.

Promoting the use of the SLT framework, a study by Dipnarine, Delisle, and Stopka (2012) showed evidence that an adaptive fitness intervention for children with intellectual disabilities, focused on modeling and motivation, produced significant increases in health participation, cardiorespiratory fitness, and endurance, as well as a decrease in body fat. As such, it demonstrates one way SLT can be effectively incorporated into an RT intervention for the population discussed in this paper. While the discussed leisure education and skill instruction focus on specific learned behaviors, the ultimate RT goals of mental, emotional, social, and physical wellness must be kept in mind during intervention planning and execution.

The social aspect of SLT is one that meshes well with the social nature of many RT interventions (e.g., camps, parks, play groups). Facilitators of RT programs may use modeling, observation, and imitation within a social context

to support social learning and RT outcomes (Alzyoudi et al., 2015; Biederman & Freedman, 2001; Biederman et al., 1999; Corbett & Abdullah, 2000; Vanvuchelen et al., 2011). In this way, the SLT factor of the environment, over which the RT practitioner has the most influence compared to cognitive and behavioral factors, becomes an important aspect of implementation in an RT setting. Maintaining awareness of a client's individual strengths, needs, and preferences allows the practitioner to shape the learning environment in order to achieve certain goals. For example, a client who is assessed as having low social engagement may not do well thrown into a dynamic group activity. Thus, engagement may become a goal in an individualized program that supports existing strengths. Because of variability of social interaction in learning and the environment in which learning occurs, social skills may become both an input and an output in SLT-based RT intervention for children with neurodevelopmental disorders, and social learning a tool used to achieve RT goals.

To operationalize the SLT framework within RT intervention, it is important to focus on the adaptable nature of the social learning process. Based on the unique needs of children with neurodevelopmental disorders, intervention facilitation may need to be slowed down or repeated as necessary to give the participant time to absorb observed information (Bauer & Jones, 2015; Biederman et al., 1999). Furthermore, social reinforcement, which should be readily available in an RT environment, may be used to support the behavioral learning and development pursued with intervention (Bauer & Jones, 2015; Feeley et al., 2011). Combining the client's cognition (personal) and behavior factors; leisure education; specific skill instruction (participation); motivation; and modeling, observation, and imitation in a social learning environment involves a complex and cyclical process of continual improvement and environment manipulation. Below is a model of the interplay between the client, practitioner, and environment in an SLT-focused RT program.

(Figure 1. Model of SLT application in RT programming available in Appendix A)

As the reader can see, the process begins with input from both the client and the RT practitioner, creating a complex and inter-influential process of learning and skill development, with an output of RT outcomes (goals determined in the initial treatment plan). Important aspects

are the interrelation between the client's cognition and behavior and the learning environment, the interplay between specific skill instruction (participation) and leisure education, and the cyclical nature of health results influencing future RT programming. The model provides a process through which SLT can be implemented in an RT environment in general, with support for its use in children with neurodevelopmental disorders specifically provided in this paper.

### Suggestions for Future Research

This paper serves as only a starting point for a theory-based learning approach to RT implementation, and significant additional research is required to test the hypothesis that SLT-based RT programming is an effective intervention for the reviewed populations in this paper. Additional research should focus on applying the elements of observation of behavioral models, retention, reproduction, and motivation within RT settings and qualitatively determining how RT outcomes from the theory-based intervention compare to those of current interventions. Researchers should use an understanding of the interaction between personal, environmental, and behavioral factors to guide research/program design.

Based on the wide range of symptoms and characteristics present within the population of children with neurodevelopmental disorders, as well as the limited representation of the population within the present paper, future research should focus on implementing SLT in RT intervention for narrow and specific groupings (e.g., children with specific learning disabilities, children with fetal alcohol spectrum disorder). Such focus guarantees greater utility of findings, and highlight differences between interventions for different groups.

While the literature reviewed in this paper focused largely on the capacities of children with neurodevelopmental disorders to participate productively in social learning interventions, additional research is needed to determine specific outcomes produced by SLT-focused RT intervention, as well as the efficacy with which outcomes are achieved. Research should also explore what adaptations are most necessary and most effective for specific populations. In addition, because children with neurodevelopmental disorders exhibit mild to profound personal, social, cognitive, and occupational impairments from an early age, investigating the extent to which early intervention aids future development and processing may help promote holistic wellness programming for the population.



### Conclusion

There is a great deal more experimental research to be done in order to fully support the use of SLT in RT intervention for children with neurodevelopmental disorders, but based on preliminary studies relating to the observational learning and imitative capacities in the group, the outlook for use of the framework is promising. There is some literature that suggests the potential use of the Social Cognitive Theory in general RT application; however, it is relatively old and remains admittedly weak in its exploration of people with severe cognitive impairments (Wise, 2002). This paper focuses, then, on the qualities, opportunities, and difficulties specific to children with neurodevelopmental disorders. While children with neurodevelopmental disorders may have difficulties in socio-cognitive functioning, SLT may be implemented in a way that uses what capacities exist to beget socio-cognitive and other outcomes, making the process of social learning easier as intervention progresses. Based on the adaptability of social learning, the SLT framework may be tailored to RT intervention in a way that supports RT outcomes of independence, health, and wellness within a social context.

### References

- Almsbhiheen, M. M. (2016). Early Intervention Services, Importance and Availability Extent from Workers Point of View, Who Serves in the Intellectual Disability Centers in Ma'an, Jordan. *International Education Studies*, 9(10), 216-230.
- Alzyoudi, M., Sartawi, A., & Almuhihi, O. (2015). The impact of video modelling on improving social skills in children with autism. *British Journal of Special Education*, 42(1), 53-68. doi:10.1111/1467-8578.12057
- American Psychiatric Association. (2013). Neurodevelopmental disorders. In *Diagnostic and statistical manual of mental disorders, fifth edition*. doi:10.1176/appi.books.9780890425596.dsm01
- Bandura, A. (1971). *Social learning theory*. Morristown, NJ: General Learning Press.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, New Jersey: Prentice Hall.
- Bauer, S. M., & Jones, E. A. (2015). Requesting and verbal imitation intervention for infants with Down syndrome: Generalization, intelligibility, and problem solving. *Journal of Developmental And Physical Disabilities*, 27, 37-66. doi:10.1007/s10882-014-9400-6
- Biederman, G. B., & Freedman, B. (2007). Modeling skills, signs and lettering for children with Down syndrome, autism and other severe developmental delays by video instruction in classroom setting. *Journal of Early And Intensive Behavior Intervention*, 4, 736-743. Retrieved from <http://www.eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=EJ805606>
- Biederman, G. B., Stepaniuk, S., Davey, V. A., Raven, K., & Ahn, D. (1999). Observational learning in children with Down syndrome and developmental delays: The effect of presentation speed in videotaped modelling. *Down's Syndrome, Research And Practice: The Journal of The Sarah Duffen Centre/University of Portsmouth*, 6(1), 12-18. doi:10.3104/reports.93
- Bittman, B. B., Bruhn, K. T., Lim, P. B., Neve, A., Stevens, C. K., & Knudsen, C. (2004). Testing the power of music-making. *Provider*, 30(11), 39-41.
- Bushwick, N. (2001). Social learning and the etiology of autism. *New Ideas in Psychology*, 19, 49-75. doi:10.1016/S0732-118X(00)00016-7
- Cebula, K., Moore, D., & Wishart, J. (2010). Social cognition in children with Down's syndrome: Challenges to research and theory building. *Journal of Intellectual Disability Research*, 54, 113-134. doi:10.1111/j.1365-2788.2009.01215.x
- Clore, C. (2006). *Social skills use of adolescents with learning disabilities: An application of Bandura's theory of reciprocal interaction* (Unpublished doctoral dissertation). University of North Texas, Denton, TX. Retrieved from <http://digital.library.unt.edu/ark:/67531/metadc5291/>
- Corbett, B. A., & Abdullah, M. (2005). Video modeling: Why does it work for children with autism? *Journal of Early and Intensive Behavior Intervention*, 2(1), 2-8. Retrieved from <http://www.eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=EJ846467>
- Dandashi, A., Karkar, A., Saad, S., Barhoumi, Z., Al-Jaam, J., & Saddik, A. (2014). Enhancing the cognitive and learning skills of children with intellectual disability through physical activity and edutainment games. *International Journal of Distributed Sensor Networks*, 1-11. <http://dx.doi.org/10.1155/2015/165165>

- Dattilo, J. (2015). Positive psychology and leisure education. *Therapeutic Recreation Journal*, 49(2), 148-165. Retrieved from <http://js.sagamorepub.com/trj/article/view/5740>
- Definitions of recreational therapy. (n.d.). Retrieved from <http://www.recreationtherapy.com/define.htm>
- Dipnarine, K., Delisle, T., & Stopka, C. (2012). A preliminary evaluation of a Social Cognitive Theory-based structured physical activity program for improving fitness in populations with an intellectual disability. *PELINKS4U*, 14(7). Retrieved from [http://www.pelinks4u.org/articles/adapted8-9\\_2012.htm](http://www.pelinks4u.org/articles/adapted8-9_2012.htm)
- Elliott, C., & Dillenburger, K. (2016). The Effect of Choice on Motivation for Young Children on the Autism Spectrum during Discrete Trial Teaching. *Journal of Research In Special Educational Needs*, 16(3), 187-198.
- Feeley, K., Jones, E., Blackburn, C., & Bauer, S. (2011). Advancing imitation and requesting skills in toddlers with Down syndrome. *Research in Developmental Disabilities*, 32, 2415-2430. doi:10.1016/j.ridd.2011.07.018
- Fidler, D., Most, D., Booth-Laforce, C., & Kelly, J. (2008). Emerging social strengths in young children with Down syndrome. *Infants & Young Children*, 21, 207-220. doi:10.1097/01.IYC.0000324550.39446.1f
- Foley, K., Bourke, J., Einfeld, S. L., Tonge, B. J., Jacoby, P., & Leonard, H. (2015). Patterns of depressive symptoms and social relating behaviors differ over time from other behavioral domains for young people with Down syndrome. *Medicine*, 94(19), 1-7. doi:10.1097/MD.0000000000000710
- Foti, F., Mazzone, L., Menghini, D., De Peppo, L., Federico, F., Postorino, V., & ... Vicari, S. (2014). Learning by observation in children with autism spectrum disorder. *Psychological Medicine*, 44, 2437-2447. doi:10.1017/S003329171300322X
- Goode, S., Diefendorf, M., & Colgan, S. (2011). The importance of early intervention for infants and toddlers with disabilities and their families. *National Early Childhood Technical Assistance Center*. Retrieved from <http://www.eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=ED522123>
- Guralnick, M. J. (1997). Effectiveness of Early Intervention for Vulnerable Children: A Developmental Perspective. *American Journal of Mental Retardation - AJMR*, (4), 319. doi:10.1352/0895-8017(1998)102<0319:EOEIFV>2.0.CO2
- Hahn, L., Fidler, D., Hepburn, S., & Rogers, S. (2013). Early intersubjective skills and the understanding of intentionality in young children with Down syndrome. *Research in Developmental Disabilities*, 34, 4455-4465. <http://dx.doi.org/10.1016/j.ridd.2013.09.027>
- Health Communication Capacity Collaborative (HC3). (2015). *Social learning theory: An HC3 research primer*. Retrieved from <http://www.healthcommcapacity.org/wp-content/uploads/2014/09/SocialLearningTheory.pdf>
- Hudson, M., Nijboer, T., & Jellema, T. (2012). Implicit social learning in relation to autistic-like traits. *Journal of Autism and Developmental Disorders*, 42, 2534-2545. doi:10.1007/s10803-012-1510-3
- Hutzler, Y., Oz, M., & Barak, S. (2013). Goal perspectives and sport participation motivation of Special Olympians and typically developing athletes. *Research on Developmental Disabilities*, 2149-2160. doi:10.1016/j.ridd.2013.03.019
- Jing, W., & Fang, J. (2013). Brief report: Do children with autism gather information from social contexts to aid their word learning? *Journal of Autism and Developmental Disorders*, 44, 1478-1482. doi:10.1007/s10803-013-1994-5
- Miller, B. B., & Morris, R. G. (2016). Virtual peer effects in Social Learning Theory. *Crime & Delinquency*, 62 (12), 1543-1569.
- Nielsen, M., Slaughter, V., & Dissanayake, C. (2013). Object-directed imitation in children with high-functioning autism: Testing the social motivation hypothesis. *Autism Research*, 6, 23-32. doi:10.1002/aur.1261
- Parish-Morris, J., Hennon, E., Hirsh-Pasek, K., Golinkoff, R., & Tager-Flusberg, H. (2007). Children with autism illuminate the role of social intention in word learning. *Child Development*, 78, 1265-1287. Retrieved from <http://www.bu.edu/autism/files/2010/03/Parish-et-al-CD-20071.pdf>
- Rholetter, W. M. (2013). Operant conditioning. *Salem Press Encyclopedia*.
- Sappok, T., Budczies, J., Dziobek, I., Bölte, S., Dosen, A., & Diefenbacher, A. (2013). The missing link: Delayed emotional development predicts challenging behavior in adults with intellectual disability. *Journal of Autism and Developmental Disorders*, 44, 786-800. doi:10.1007/s10803-013-1933-5

- Solomon, J. W., & O'Brien, J. C. (2016). *Pediatric skills for occupational therapy assistants*. St. Louis, MO: Elsevier.
- Stumbo, N., & Peterson, C. (1998). The leisure ability model. *Therapeutic Recreation Journal*, 32(2), 82-96. Retrieved from <http://kg6ek7cq2b.search.serialssolutions.com.proxyiub.its.iu.edu/?genre=article&atitle=The%20Leisure%20Ability%20Model.&title=Therapeutic%20Recreation%20Journal&issn=00405914&isbn=&volume=32&issue=2&date=19980401&aulast=Stumbo,%20N.J.&spage=82&pages=82-96&sid=EBSCO:SPORTDiscus%20with%20Full%20Text:SPH493976>
- U.S. Census Bureau (2012). *Americans with disabilities, 2010: Household economic studies*. Retrieved from <http://www.census.gov/prod/2012pubs/p70-131.pdf>
- Vaiouli, P., Grimmet, K., & Ruich, L. (2015). "Bill is now singing": Joint engagement and the emergence of social communication of three young children with autism. *Autism*, 19(1), 73-83. doi:10.1177/1362361313511709
- Vanvuchelen, M., Feys, H., & De Weerd, W. (2011). Is the good-imitator-poor-talker profile syndrome-specific in Down syndrome?: Evidence from standardised imitation and language measures. *Research in Developmental Disabilities*, 32, 148-157. doi:10.1016/j.ridd.2010.09.010
- What is RT/TR? (2015). Retrieved November 24, 2015, from <https://www.atra-online.com/what>
- Wise, J. (2002). Social cognitive theory: A framework for therapeutic recreation practice. *Therapeutic Recreation Journal*, 36(4), 335-351. Retrieved from <http://js.sagamorepub.com/trj/article/view/1030>
- Wishart, J. (2007). Socio-cognitive understanding: A strength or weakness in Down's syndrome? *Journal of Intellectual Disability Research*, 51, 996-1005. doi:10.1111/j.1365-2788.2007.01007.x

## Appendix A

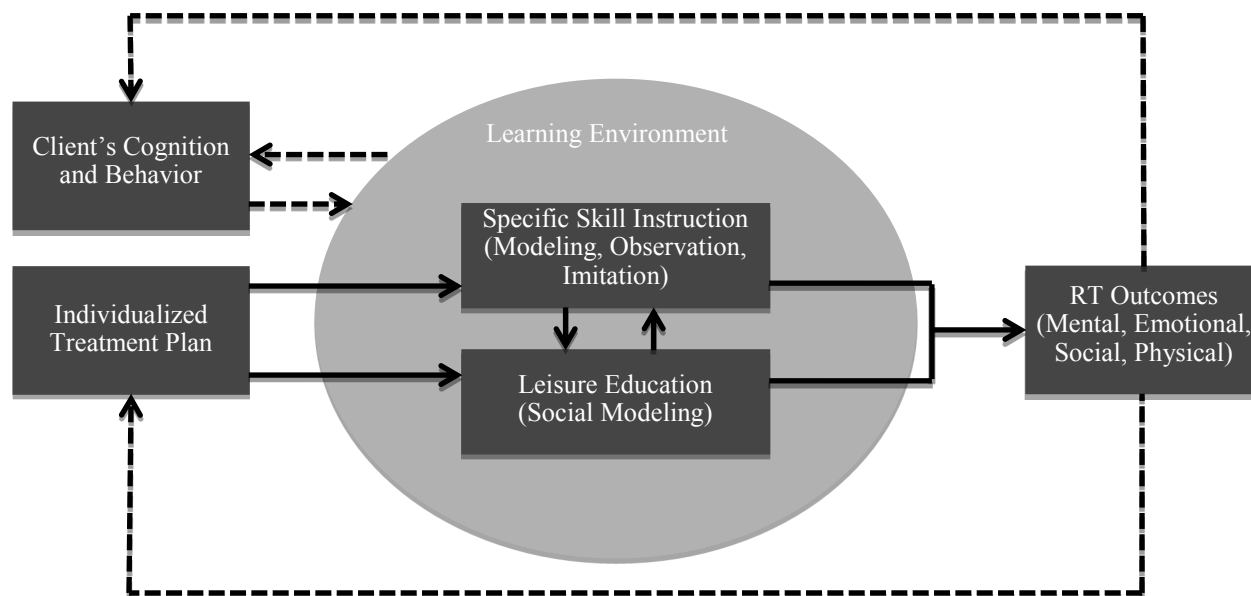


Figure 1. Model of SLT application in RT programming