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Addressing Vehicle Safety for Children with Additional Emotional and Behavioral Needs

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ADDRESSING VEHICLE SAFETY FOR CHILDREN WITH ADDITIONAL EMOTIONAL AND BEHAVIORAL NEEDS

by

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This Scholarly Project Paper, submitted by Madeline Aandal and Bailey Stotts in partial fulfillment of the requirement for the Degree of Master of Occupational Therapy form the University of North Dakota, has been read by the Faculty Advisors under whom the work has been done and is hereby approved.

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Title	Addressing Car Safety Among Children with Additional Emotional and Behavioral needs
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ABSTRACT

Purpose: More than 148,000 children were injured in motor vehicle crashes in 2011 (Center for Disease Control and Prevention, 2014). Currently, while it is understood that transporting children with special needs likely to affect behaviors (SNLAB) provide safety challenges (Yonkman, Lawler, Talty, O'Neil, & Bull, 2013), there is little information regarding how to evaluate and intervene for this significant aspect of daily life. The purpose of this project was to develop an occupational therapy protocol for evaluation and intervention for car safety to be used by occupational therapists working with children who have emotional and behavioral needs.

Methodology: An extensive literature review was conducted in order to better understand the targeted population and supports and barriers to providing transportation safety services to this population. Utilizing the Person Environment Occupation Model (PEO) (Law et al., 1996), a systematic analysis of occupational performance issues for riding safely in a car was conducted and was the basis for creating the evaluation and intervention tools to be used by occupational therapists.

Results: The Traveling Safely Evaluation and Intervention Protocol was developed to address the issue of vehicle transportation safety for children with SNLAB. This protocol includes an assessment for evaluation and resources to be utilized by the occupational therapist and parent when planning for car safety.

Conclusion: This protocol development is only a first step in addressing car safety for children with SNLAB. It is recommended this protocol be piloted and further refined. In addition, there is need for development of resources to assist in problem solving solutions for car safety for children.

CHAPTER I

INTRODUCTION

According to the Department of Transportation (DOT) (2015), the average daily miles traveled by one person is 36.1, with an average of 3.79 trips per day. The DOT (2015) also indicated that in 2012, there was 211.8 million registered drivers in the United States, a 9% increase from 2002. According to the Center for Disease Control and Prevention (CDC) (2014b), more than 650 children under the age of 12 died as passengers in motor vehicle crashes in 2011, and more than 148,000 children were injured. Of the children who died in a motor vehicle crash in 2011, approximately 33% were not using a safety restraint. In a study conducted by the CDC (2014b) researchers, it was found that more than 618,000 children age 12 and under rode in vehicles without the use of a safety restraint at least some of the time in one year. According to Brown, McCaskill, Henderson and Bilston (2006), 82% of children who were in a motor vehicle accident were utilizing incorrect restraint systems. The use of incorrect restraint systems in children while in a motor vehicle correlates with serious injuries when an accident occurs.

Although all children are affected by car safety, the population of focus for this Scholarly Project was children who have additional emotional or behavioral needs. Children with a variety of diagnoses are encompassed in this definition, and may include those with attention-deficit/hyperactivity disorder (ADHD), internalizing disorders including obsessive compulsive disorder (OCD), anxiety, depression, intellectual

disability, oppositional defiant disorder (ODD), autism spectrum disorders (ASD), cognitive disorders, and mood disorders (Huang, Kallan, O'Neil, Bull, Blum, & Durbin, 2009). Huang et al. (2009), referred to this cluster of diagnoses as special needs likely to affect behavior, or SNLAB. Multiple studies have also supported that children who have disabilities, including those with SNLAB, are exposed to a greater risk of driving accidents during transportation compared to children who are typically developing (Alimovic, 2013; Falkmer, Anund, Sorensen, & Falkmer, 2004; Huang et al., 2009; Park, Yelland, Taffe., & Gray, 2012).

According to Tison, Chaudhary, and Cosgrove (2011), a study conducted by the National Highway Traffic Safety Administration (NHTSA) found that talking to other passengers while in the vehicle, as well as interacting with children in the back seat of the car were among the most common causes of motor vehicle accidents. Reasons for driver-passenger interactions may include children attempting to escape safety restraints, attacking the driver or other passengers, or emotional outbursts of screaming and crying (Yonkman, Lawler, Talty, O'Neil, & Bull, 2013). There has also been studies conducted focusing on children with disabilities and their travel habits and routines. Children who have SNLAB are often found to be transported by their parents or caregivers, or by school transportation, on a daily basis (Falkmer et al., 2004).

Although vehicle travel is a large part of daily life, healthcare professionals working with families often do not feel as confident and knowledgeable as they would like to be when addressing concerns related to challenging behaviors during travel and appropriate child safety restraint options (Yonkman et al., 2013). Yonkman et al. (2013) concluded that challenging behaviors during transportation of children is not an area that

is adequately addressed by healthcare professionals, largely due to lack of education and resources.

It has been reported that occupational therapists are often consulted by families for specialized vehicle seating for children with special needs, and many times these therapists are expected to make recommendations without having adequate training in the area. When recommendations are made without adequate education and training, misuse of child restraints or an inappropriate selection of child restraints may be the result.

The Person Environment Occupation (PEO) Model was selected to guide this project as it focuses on the dynamic relationship between the person, various aspects of the environment, and the occupational demands that the individual participates in (Law et al., 1996). Children who fall into the SNLAB category often face challenges in the areas of emotional regulation, behavioral manifestations, sensory processing, language and communication, as well as have unique sets of values, beliefs, and goals that may not be similar to their peers who are typically developing (APA, 2014; Baker, Lane, Angley, & Young, 2008; Downing, 2011; Dunn & Thrall, 2012; Gonyea & Kopeck, 2011; Miller, Nielsen, & Schoen, 2012; Ooi, Tan, Lim, Goh, & Sung, 2011; Park et al., 2012; Poulsen, 2011; Yonkman et al., 2013). These children may also experience challenges with the environment aspects physical, cultural, institutional, virtual, and social contexts, including the driver of the vehicle (Antsey, Wood, Lord, & Walker, 2005; Asimakopulos et al., 2012; Bae et al., 2014; DOT, 2015; Keay et al., Mathias & Lucas, 2009; 2012; Philbrook et al., 2009; Ricci, 2000; Sennott & Bowker, 2009; Snowdon et al., 2008; Tison et al., 2011; Vick, 2010; Winston, Durbin, Kallan, & Moll 2000). The occupational demands included an analysis of the specific demands required of the child

passenger to engage in the occupation of traveling in a motor vehicle. Occupational demands included emotional regulation, sensory regulation, communication needs, tolerating various temporal demands, and follow-through of routines specific to the occupation of traveling in a motor vehicle.

Once the occupational issue of vehicle travel among children with SNLAB was well understood, The Traveling Safely Evaluation and Intervention Protocol was developed. The goal of the Traveling Safely Evaluation and Intervention Protocol is to consider all of these contributing factors in order to best address the vehicle safety of a child. The goal of the protocol is to better equip occupational therapists to address concerns related to vehicle safety among children who have SNLAB in order to improve the safety of these children and their caregivers during travel. Factors that will influence the application of this protocol include therapists' awareness of the availability of the protocol, resources available for problem solving safety concerns and intervention ideas, and future research to support the effectiveness of the protocol tools. Based on the information obtained through a comprehensive literature review and systematic analysis of the PEO transactions, the Traveling Safely Evaluation and Intervention Protocol was developed.

Key Terminology

The following terms and concepts are used throughout the literature review and product.

- **Child restraints:** Refers the crash-tested systems used in motor vehicles that meet the requirements for federal safety laws and standards. These crash-tested

systems are designed to provide crash protection for infants and children during vehicle travel (Yonkman et. al., 2013).

- **Special needs likely to affect behavior (SNLAB):** Refers to a cluster of diagnoses that are likely to affect the behaviors of the individuals who have the diagnosis. These diagnoses include attention-deficit/hyperactivity disorder (ADHD) internalizing disorders including obsessive compulsive disorder (OCD), anxiety, depression, intellectual disability, oppositional defiant disorder (ODD), autism spectrum disorders (ASD), cognitive disorders, and mood disorders (Huang et al., 2009).
- **Self-stimulation:** Children with ASD may often demonstrate stereotypical behaviors referred to as self-stimulation. These behaviors are defined as hand-flapping, spinning, rocking, head banging, hyperactivity, or other self-injurious behaviors (Baker et al., 2008; Hasting & Brown, 2002). These behaviors occur when a child is experiencing excitement, anxiety, discomfort, or is experiencing increased sensory stimulation (Hastings & Brown 2002).
- **Self-determination:** Self-determination has been referred to as an important component of an individual's quality of life, and provides a means to prepare children with special needs for participation in daily routines. Children with special needs may be limited in their development of self-determination due to a lack of opportunities to learn from mistakes, advocate for themselves and their needs, make their own decisions, and create their own goals (Dunn & Thrall, 2012).

- **Executive functioning skills:** The executive functioning skills are the higher order skills required for tasks such as driving. These skills may include decision-making, mental flexibility, insight, and judgment (Asimakopulos et al., 2012).

Chapter II presents the results of a comprehensive literature review that provides the basis for the Traveling Safely Evaluation and Intervention Protocol. Chapter III presents the methodology and the activities used to develop to protocol. The protocol itself is described in Chapter IV, and is available in its entirety in the Appendix. Finally, Chapter V is a summary of the protocol, including the strengths, limitations, and recommendations.

CHAPTER II

REVIEW OF LITERATURE

Car safety is a concern for all children. According to the Department of Transportation (DOT) (2015), the average daily miles traveled by one person is 36.1, with an average of 3.79 trips per day. The DOT (2015) also indicated that in 2012, there was 211.8 million registered drivers in the United States, at a 9% increase from 2002. According to the Center for Disease Control and Prevention (CDC) (2014b), more than 650 children under the age of 12 died as passengers in motor vehicle crashes in 2011, and more than 148,000 children were injured. Of the children who died in a motor vehicle crash in 2011, approximately 33% were not using a safety restraint. In a study conducted by the CDC researchers, it was found that more than 618,000 children age 12 and under rode in vehicles without the use of a safety restraint at least some of the time in one year. According to Brown, McCaskill, Henderson and Bilston (2006), 82% of children who were in a motor vehicle accident were utilizing incorrect restraint systems. The use of incorrect restraint systems in children while in a motor vehicle correlates with serious injuries when an accident occurs.

The purpose of this literature review is to examine the various aspects related to safe transportation of children, namely children who have additional emotional or behavioral needs that may influence safety of both the child and the caregiver during vehicle travel. The authors of this literature review will highlight safety concerns regarding children with disabilities while in a motor vehicle, educational and intervention

programs for both professionals and caregivers to enhance safety within the vehicle during travel, and explore current research regarding safety within the vehicle.

Children with Additional Emotional or Behavioral Needs

Though all children are affected by car safety, the population of focus for this Scholarly Project is children who have additional emotional or behavioral needs. Children with a variety of diagnoses are encompassed in this definition, and may include those with attention-deficit/hyperactivity disorder (ADHD), internalizing disorders including obsessive compulsive disorder (OCD), anxiety, depression, intellectual disability, oppositional defiant disorder (ODD), autism spectrum disorders (ASD), cognitive disorders, and mood disorders (Huang, Kallan, O'Neil, Bull, Blum, & Durbin, 2009). Huang et al. (2009) referred to this cluster of diagnoses as special needs likely to affect behavior (SNLAB).

Children with ASD in particular are notable when looking at emotional and behavioral concerns. According the Center for Disease Control and Prevention (2014a), ASD occur in about 1 in 68 children, and are seen across all ethnic, socioeconomic, and racial groups. ASD is characterized by impairments in social skills, communication skills, and impairments with behavior (Sztmari, 2000). Individuals with ASD may also vary greatly on the basis of cognitive abilities, ranging from "below average" to "above average" (Alexander, 2011). Often times, these individuals may demonstrate stereotypical behaviors such as hand-flapping, spinning, rocking, head banging, hyperactivity, peer problems, or other self-injurious behaviors (Baker, Lane, Angley, & Young, 2008; Hasting & Brown, 2002). These stereotypical behaviors may also be referred to as self-stimulation (Baker et al. 2008). Self-stimulation often occurs when a

child is in a situation where he or she feels uncomfortable, excited, or is experiencing increased sensory stimulation (Hastings & Brown 2002). Park, Yelland, Taffe, and Gray (2012) elaborated on how children with ASD may also experience language deficits and behavioral problems along with the social impairments and repetitive behaviors that are characteristic of the diagnosis. The researchers posed the question of whether or not understanding, or the use of effective communication, is required to reduce behavioral problems. This is related to safety within the car as communication capabilities assist in determining whether children understand what is occurring while the caregiver or other drivers attempt to convey messages or information to the child during transportation. Although communication abilities vary, a portion of individuals with SNLAB may be nonverbal. Despite language deficits, communication may still be possible through alternative means, such as the use of an augmentative and assistive communication device as a way to meet communication demands of an individual (Sennott & Bowker, 2009). If communication channels are lacking between child and the driver, this may offer an explanation as to why certain behaviors may be occurring (Park et al., 2012).

In a study by Ooi, Tan, Lim, Goh, and Sung (2011), results indicated that between 72% and 86% of children who had a diagnosis of high-functioning ASD had at least one emotional or behavioral problem that was of a clinical concern. Some of these concerns included 25.4% of children displaying aggressive behaviors, 12.7% displaying rule-breaking behaviors, 19.7% displaying oppositional defiant problems, and 22.5% displaying conduct problems (Ooi et al., 2011). There have been also been several research studies conducted on children with sensory processing disorders. Sensory processing can be referred to as the visual, auditory, proprioceptive, and vestibular input

that the child is receiving from another source (Baker et al. 2008). The way an individual processes this information will determine his or her response and output characteristics, which can lead to undesirable behaviors in various situations including riding in the car which is a highly multi-sensory experience. Miller, Nielsen, and Schoen (2012) described different categories that children with sensory modulation difficulties may fall into. Children described as "sensory-seeking/craving" are those who seek out increased duration of, and high intensity, sensory input. These children may meet their sensory needs through falling down, crashing, touching people and items, and constantly moving. Those who are described to have "sensory-over-responsivity" are those who feel sensations more intensely, or for a longer period of time. These children may respond to sensory stimuli in atypical manners, such as throwing a tantrum, avoiding stimuli, or screaming. Finally, children who are described to exhibit "sensory-under-responsivity" are those who have a lessened response to sensory input, or take a longer time to respond to sensory input. These children may appear withdrawn, have difficulty following instructions, and have a difficult time determining where their body is in space (Miller et al., 2012). It is not uncommon that a child may have more than one diagnosis, in addition to children with ASD, children who have ADHD or anxiety may also have difficulties with sensory modulation or integration (Miller et al., 2012).

The American Psychiatric Association (APA) (2013) further identifies common characteristics related to a number of the diagnoses that fall into the SNLAB category. Among children who are diagnosed with ODD, characteristics are likely to include an angry and irritable mood, being touchy or easily annoyed, easily losing temper, actively denying or refusing following rules or requests from others, deliberately annoying others,

and being vindictive (APA, 2013; Gonyea & Kopeck, 2011). Children with major depressive disorder may exhibited difficulty with sleeping patterns, psychomotor agitation or retardation, feelings of excessive and inappropriate guilt or worthlessness on a frequent basis, difficulty making decisions, decreased mental function, thoughts of suicide, and may be argumentative or short tempered (APA, 2013; Downing, 2011).

In addition to depression, children who have other types of mood disorders may demonstrate explosive outbursts when faced with frustration, destructive behaviors, defiance towards individuals of authority, engagement in risky behaviors, poor judgment, impulsive behaviors, and delusions and/or hallucinations (Downing, 2011). Children with anxiety disorders may be edgy or restless, irritable, may have difficulty concentrating, may demonstrate disturbances with sleep patterns, may exhibit muscle tension, may be fearful or startle easily, and may have a challenging time controlling his or her worrying (APA, 2013; Downing, 2011). Children who have a diagnosis of ADHD may exhibit a variety of characteristics including inattention, hyperactivity, and impairment in multiple settings that may include strong emotional reactions, aggressive responses to frustrations, inappropriate touching of other people or objects, difficulty listening, and noncompliance (APA, 2013; Gonyea & Kopeck, 2011; Poulsen, 2011).

Along with the diagnostic characteristics of the individuals included in the SNLAB category, self-determination of the child is also a significant factor to consider. Self-determination has been defined as a set of knowledge, skills, attitudes, and behaviors that promote engagement in self-regulated, goal-directed, autonomous behavior (Field, Martin, Miller, Ward, & Wehmeyer, 1998). Dunn and Thrall (2012) focused specifically on case examples of two children, one with a diagnosis of ADHD and one with a

diagnosis of ASD, who demonstrated a lack of self-determination. The authors indicate that children with special needs may be limited in their opportunities to develop self-determination due to lack of opportunities to learn from mistakes, advocate for themselves and their needs, make their own decisions, and create their own goals. Self-determination was highlighted as an important component of an individual's quality of life, and it provides a means to prepare children with special needs for participation in daily routines (Dunn & Thrall, 2012).

It is also important to take into consideration the impact that multiple diagnoses might have on a child when considering the best way to determine and address his or her needs. Alimovic (2013) conducted research to gain a better understanding of emotional and behavioral concerns exhibited by children with visual impairments, intellectual disabilities, and multiple disabilities. The results of the study concluded that children who have multiple impairments exhibit more emotional and behavioral problems, including aggressive behaviors, than do children with single impairments, and much more than children who are typically developing (Alimovic, 2013).

Children with Disabilities and Car Safety

Multiple studies have also supported that children who have disabilities, including those with SNLAB, are exposed to a greater risk of driving accidents during transportation compared to children who are typically developing (Alimovic, 2013; Falkmer et al., 2004; Huang et al., 2009; Park et al., 2012). Several reasons why an accident may occur exist. According to Tison, Chaudhary, and Cosgrove (2011), a study conducted by the National Highway Traffic Safety Administration (NHTSA) found that talking to other passengers while in the vehicle, as well as interacting with children in the

back seat of the car, were among the most common causes of motor vehicle accidents. It was also found that 28% of drivers reported they always interact with passengers in the vehicle while driving and 6.2% of drivers reported interaction with children in the backseat while driving during every occasion of vehicle travel. Interacting with child passengers may occur for a variety of reasons. Among these reasons include children attempting to escape safety restraints, attacking the driver or other passengers, or emotional outbursts of screaming or crying (Yonkman, Lawler, Talty, O'Neil, & Bull, 2013).

There have also been studies conducted focusing on children with disabilities and their travel habits and routines. In a survey of transportation providers, emotional behavioral problems were reported to be experienced by 51% of the cases, with 2% of those children being diagnosed with ASD. The reasoning for this low prevalence of diagnoses of ASD was based on previous research focusing on locomotor disabilities (Falkmer et al., 2004). Children who have SNLAB are often found to be transported by their parents or caregivers, or by school transportation, on a daily basis. Falkmer et al. (2004) reported that children with ASD are also likely to have an increased need for transportation between school, social events, and doctor or other professional visits.

Education of Professionals Involved in Car Safety

Although vehicle travel is a large part of daily life, the healthcare professionals working with families often do not feel as confident and knowledgeable as they would like to be when addressing concerns related to challenging behaviors during travel and appropriate child safety restraint options (Yonkman et al., 2013). It has been reported that occupational therapists are often consulted by families for specialized vehicle seating

for children with special needs, and many times these therapists are expected to make recommendations without having adequate training in the area. When recommendations are made without adequate education and training, misuse of child restraints or an inappropriate selection of child restraints may be the result. Yonkman et al. (2013) concluded that challenging behaviors during transportation of children is not an area that is adequately addressed by healthcare professionals, largely due to lack of education.

Similarly, Baker, Galvin, Vale, and Linder (2012) conducted a survey to assess the knowledge of pediatric occupational therapists regarding appropriate restraint use among children with special needs during vehicle travel. Seventy-nine of the occupational therapists surveyed reported that the professional most likely to be asked to do child restraint recommendations at their facility was the occupational therapists. Sixty-six of the therapists reported that they were asked to make recommendations based on behavioral problems that a child was displaying. Challenges that the therapist faced included inadequate funding, lack of knowledge, lack of time to make and implement recommendations, limited opportunity to develop expertise, and pressure from other members of the health team. A majority of these therapists indicated that having a written resource would be a beneficial tool and allow them to have increased confidence and skill in this area.

In Linder's (2013) work, she referenced the Australian/New Zealand Standard 4370: *Restraint of children with disabilities in motor vehicles* (AS/NZS 4370), which was a 2013 publication put forth by Standards Australia. The AS/NZS 4370 is a resource available to medical professionals who are involved in the assessment of a child's needs and recommendations for safe transportation based on those needs. Linder (2013)

conducted a study aimed at understanding the knowledge of, and challenges faced by, pediatric occupational therapists in regards to vehicle safety restraints for children with additional needs. Results of the author's researched indicated that 61% of the 107 pediatric occupational therapists surveyed did not have access to the AS/NZS 4370, and nearly 31% percent of those surveyed were unaware that the AS/NZS 4370 existed at all. Based on this research, it is critical that resources are available for the professionals expected to provide assessment and recommendations for safe transportation of children who have additional needs, but also that the intended population is aware that the resources exist, as well as have adequate access to the resources.

Brixey and Guse (2009) also conducted research aimed at determining behaviors, knowledge, and comfort level related to child passenger safety restraints, this time among physicians and caregivers rather than primarily occupational therapists. The researchers found that physicians are also in need of additional information about child car seat transitions, sources of information for patients and their families, and ways to incorporate the information into regular check-ups. Results indicated that 43% of physicians reported that neither they, nor their clinic staff, had received prior training in child passenger safety; however, 89% reported addressing motor vehicle safety with caregivers of children between 0 through 1 year old, gradually decreasing to 59% addressing motor vehicle safety with caregivers of children who were 8 years old. A reported 37% knew where to refer caregivers for more information, and 40% reported wanting additional training and education to be provided in their office or clinic. Of the caregiver respondents, 67% wanted to learn more about safely placing their 4 to 8 year old children in vehicles, and about half of the caregivers reported that their physician asked about

child vehicle restraint practices at the child's last checkup. It was also noted that interventions aimed at increasing the use of child restraints appear to show diminishing results over time, suggesting that healthcare professionals must consistently reinforce the message (Brixey & Guse, 2009).

Driver Safety

At present time, limited research exists regarding the best techniques to be used for managing difficult behavioral or emotional challenges that a child passenger may demonstrate during vehicle travel that may compromise the safety of both the driver and the passengers (Yonkman et al., 2013). In addition to the importance of considering physical safety aspects of motor vehicle travel, it is also critical to consider the performance skills required of the driver to ensure safe transportation of children. Such skills required for safely operating a motor vehicle mentioned in existing literature include cognitive, visual, physical capabilities, and emotional regulation (Anstey, Wood, Lord & Walker, 2005; Mathias & Lucas, 2009).

Asimakopulos et al. (2012) described a more specific set of skills, labeled as executive function skills. Executive functioning refers to higher order thinking skills that are required for safe driving. The authors included examples of executive functioning, which including decision making, mental flexibility, insight, and judgment. Due to the higher level cognitive skills that are necessary for safe driving, it is crucial that drivers of vehicles limit distractions as much as possible while operating a vehicle. Linder (2013) made note that children with additional emotional or behavioral needs, such as children who have ASD, often present challenges to various aspects of traveling, such as keeping restraints properly fastened and ensuring the safety of other travelers in the vehicle. In

instances when a child is demonstrating difficult behaviors, including trying to escape, becoming physically aggressive to the driver or other passengers, or demonstrating emotional behaviors such as screaming or crying, safety of those in the vehicle may be jeopardized as a result of the distractions. According to the NHTSA (2012), 3,328 individuals were killed in crashes related to distracted driving. Additionally, approximately 421,000 people were injured in accidents that involved a distracted driver, which was a 9% increase from the previous year (NHTSA, 2012).

Although no definition for best practice exists regarding the safe transportation of children with additional needs, several laws and regulations have been established to address safety concerns during vehicle transportation of children in general. Bae, Anderson, Silver, and Macinko (2014) studied the existing laws of all 50 states in the United States of America, as well as the correlation of these laws and safety within the vehicle. The authors of the study discovered that all states currently had laws in effect to enforce child passenger safety, with most of the laws having been in place since the early eighties. This revelation emphasized the importance of child safety during vehicle transportation in all regions of the United States. Bae et al. (2014) also reported that in 2010, between 10 and 15 states implemented rear seating laws, approximately 39 states implemented height/weight guidelines regarding child safety restraints, and approximately 10 states implemented booster seats laws. These laws, and similar ones, exist in order to ensure safety for children during transportation. Additionally, Bae et al. (2014) indicated that legislation is often established in "waves," and suggested that more recent waves of laws have occurred due to increased and advanced technology. Keay et al. (2012) conducted a study aimed at evaluating education, distribution, and fitting

programs to be used to increase appropriate use of child safety restraints, with results of the study providing implications for policy in the area the study was conducted, with the potential to contribute to a reduction in child passenger injuries and death. Although laws do currently exist to aid in the reduction of injury and death of children involved in motor vehicle accidents, the literature indicates that as technology and education continue to advance; laws and regulations will continue to change and grow to meet the needs of the population affected.

Researched Programs Aimed at Child Safety

Though current literature lacks information regarding existing programs aimed at improving child transportation safety, Elliott et al. (2013) focused on a computer-based inpatient child passenger safety program that aimed to ensure all children admitted to the hospital at which the program took place would be assessed for child passenger safety needs and would receive the appropriate interventions as needed. Results of this study indicated that of the 3650 children that had been assessed, 598 consultations had been initiated, 325 families had received child passenger safety education, appropriate car seats were distributed to 419 children, and specialty car seats were loaned to 134 families (Elliott et al., 2013).

In order to ensure that parents and caregivers are providing children with appropriate child safety restraint systems, it is important to make certain that they have access to the most current education and it is presented in an effective way. Winston, Durbin, Kallan, and Moll (2000) indicated that premature graduation or improper use of a booster seat or restraint system could lead to injury or death for a child. In most instances, improper use or inappropriate child restraints are used as a result of lack of

information. Keay et al. (2012) conducted a study based on the Buckle-Up Safely program, and results indicated that 41% of children aged 3, and 13% of children aged 4 through 5 were not in age-appropriate child restraints. Errors in either installation or use of the restraints were observed with 48% of the children. The study highlighted that children who had been secured in a child restraint system that has been correctly installed and is age-appropriate were far less likely to be injured in a motor vehicle accident.

In order to ensure that a child is placed in the most appropriate safety restraint system for them, parents require some form of education regarding safe restraint use among child passengers. Snowdon et al. (2008) discovered that parents learned through PowerPoint presentation format. Parents in this study participated in an educational seminar using a PowerPoint presentation regarding proper seating and positioning devices for children during transportation. Based on their research, the authors of the study concluded that parents' knowledge regarding appropriate use of rear facing booster seats, proper transition to forward facing booster seats, and graduation to a seat belt from a booster seat increased (Snowdon et al., 2008).

In the Buckle-Up Safely program researched by Kaey et al. (2012), the program included a workshop for educators, a parent information session, and each family was provided with an information packet regardless of attendance at the information session. Children who attended the intervention centers compared to the control centers were more likely to be optimally restrained (43% compared to 31%). Authors concluded that this program increased correct and age-appropriate use of child restraint systems among the children, even among families who did not speak English as their primary language. Philbrook et al. (2009) also conducted a study aimed at gaining insight on how parents

learn best. The researchers invited parents to participate in one of three groups. The groups included an information-only group in which education was sent home with the children to the parents, an hour-long educational group at the child's school for parents to attend regarding transportation safety, and a seminar for both children and parents in the classroom.

Philbrook et al. (2009) discovered that printed information alone was not enough education for parents and caregivers, and the most effective educational method was to hold an educational seminar targeted at both parents and children. As it is important for both parents and children to be involved in the educational process regarding transportation safety, it is critical to understand the best ways to educate children who have additional needs as well. Ricci (2000) conducted a study to determine the most effective way to educate children who have special healthcare needs, discovering that a combination of informational and interactive strategies proved to be the best method. Results of existing literature focused on parent and child education models support a multimedia and interactive approach to education. Even if an individual has the foundational skills, knowledge, and understanding to be a licensed driver, driving can still be a difficult and dangerous task.

Ensuring safe driving and safe transportation of passengers is a multidisciplinary effort, and occupational therapists play an important role in establishing the foundation for safe motor vehicle travel, especially when passengers include children who have additional emotional or behavioral needs. Occupational therapists are in a unique position to address the area of driving and travel, especially for children, because vehicle travel overlaps with several areas of occupation that are within the occupational therapy

scope of practice. In many instances, an occupational therapist may be already working closely with a child or family who would benefit from intervention related to the area of safe travel. Children, particularly those who have additional needs, are passengers in vehicles several times throughout the day to attend school, a variety of appointments related to health maintenance, as well as leisure and social opportunities.

Although there is largely a lack of education for occupational therapists regarding safe vehicle transportation for children with additional emotional and behavioral needs, some education programs for other healthcare professionals do exist to aid in addressing safe transportation of children in general. In an article by Vick (2010), the author described a national child passenger safety certification training program for nurses that was sponsored by Safe Kids USA and State Farm Insurance Company. The course was a four-day workshop that, upon successful completion, resulted in a two-year national certification as a child passenger safety technician and continuing education hours. This training enabled staff to better educate parents and caregivers on child vehicle safety. The author concluded that healthcare professionals are advocates for their patients and highlighted the importance of being able to provide caregivers with the education they need (Vick, 2010).

Researched Programs for Adults

Despite the limited programming geared towards child passengers, programs such as CarFit exist to address issues of car safety among older adult drivers. The CarFit events include an occupational therapist and aim to address three main objectives, which include promotion of continued safe driving and mobility among older drivers, creating an environment that promotes discussion related to driving, and providing information,

education, and resources to drivers in a convenient and non-threatening way (Stav, 2010). Stav (2010) conducted research on the effectiveness of the CarFit program. Results of the study indicated that, of the participants who responded, 70% of the individuals made at least one vehicle adjustment, 74% reported that they discussed the program with friends or family, 95% of the participants felt that the event was useful, and 96% reported that they were likely to recommend CarFit to others. Overall, CarFit provided a positive experience for many of the participants and the program facilitated positive safety behavior changes (Stav, 2010). The research by Stav supports the effectiveness of consumer-involved driver safety programs, suggesting that a program geared towards parents or caregivers of children could also be helpful in improving safe transportation.

Key Elements of Successful Programs

A variety of programs aimed at improving car safety throughout the lifespan have been researched, and from that research, several key elements can be identified that contribute to the successfulness of a program. One of these elements is the incorporation of both an informational component and an interactive component, which is a format that has been used to educate children who have special healthcare needs in the past (Ricci, 2000). This hands-on component is critical for the education of healthcare professionals, such as occupational therapists, who are working with individuals to address safe travel, as research has indicated that printed materials alone are not the most effective method to use when educating (Philbrook et al., 2009). Kaey et al. (2012) also found the multi-dimensional approach more successful, utilizing a program to increase car safety that included a workshop for the educators, a parent session, and printed resources. Kaey et al.'s (2012) research was not the only study found that highlighted the importance of

educating the consumer rather than just the professional or educator, and Stav (2010) and Vick (2010) also indicated how critical it was for successful carryover and application of information to not only educated the professional, but also the client's and their families. Providing information and education to clients and their families can be particularly challenging if barriers, such as cultural or language barriers, are evident. Kaey et al. (2012) highlighted the importance of having a safety program that was available in multiple languages in order to reduce some of these barriers and improve the successfulness of the program for all clients involved.

As important as it is to be mindful of how the education is provided, it was also apparent from current literature that location has a large impact on successfulness of intervention as well. Primarily, it is critical to consider availability to clients. Elliot et al. (2013) focused on a program in which all children that came through the hospital's system were screened for child passenger safety needs, eliminating the need for any additional time and effort on the part of the caregivers to make appointments and recognize the need for additional child vehicle safety needs. The program of focus for the research completed by Kaey et al. (2012) also took into consideration location, making the program available at the daycare centers where the children were already attending, making it possible for more families to be included in the program. Along with accessibility, Zaza, Sleet, Thompson, Sosin, and Bolen (2001) found that programs having a larger outreach into the community have also demonstrated higher rates of success. Examples of specific community resources may include factors such as safety seat displays in public areas or check points. Researchers also indicate that having the whole community involved in improving safe and appropriate child safety restraints

during transportation is an important part in making a program successful. Methods in which community involvement could be achieved included utilizing resources such as television commercials or radio broadcasts as a means to increase awareness and improve the success of the program (Zaza et al., 2001). In order to do this, the program needs to have sufficient funding available in order to assist in the promotion of the program.

Conclusion

In summary, it has become evident that child safety within the motor vehicle is a significant concern for both children with and without a disability. Current research suggested that health care professionals, such as occupational therapist, are not confident with the level of training, knowledge, and resources they have available to them in order to assess and assist with interventions in this area. In addition, parents and caregivers are also lacking adequate education and resources necessary for safe vehicle transportation of children. Several key components for a program successful in improving vehicle safety of children with additional emotional and behavioral needs include education of caregivers and professionals, as well as individualizing safety restraints based on the child's age and size, the physical needs of the child, and the challenging behaviors the child is exhibiting while traveling in a vehicle.

CHAPTER III

METHODOLOGY

During the development of this Scholarly Project, the authors were aware of how challenging and dangerous travel may be for families that have children with emotional or behavioral concerns. Yonkman et al. (2013) indicated the need for tools for evaluation and intervention for safely transporting children with ASD (Yonkman et al., 2013) which led to this proposed scholarly project; however, the authors felt it important to expand the population further than just those with ASD, and decided upon a population referred to as "special needs likely to affect behavior" (SNLAB) (Huang et al., 2009).

Through an initial literature review, it was identified that there are limited services available for addressing the travel safety needs of children who have SNLAB. It was further identified that there are also limited resources available for the professionals expected to address this concern, resulting in a lack of confidence and inadequate attention given to the needs of this population. Based on the problem identified, an extensive literature was completed. Literature articles were obtained through a search of the CINAHL database, PubMed, AOTA, OT SEARCH, PsychINFO, and Google Scholar. Search terms used included "child safety restraints AND occupational therapy," "children with emotional disorders AND occupational therapy," "children with behavioral disorders AND occupational therapy," "transportation of children with special needs," "car safety AND occupational therapy," "autism AND traveling," "child safety

restraints AND special needs," "car AND challenging behaviors," "sensory AND ASD," "sensory AND ADHD," "development of self-determination," "children AND anxiety," and "children AND ODD."

Information from the literature review was organized using the Person Environment Occupation (PEO) Model (Law et al., 1996). This model was chosen to organize the literature and product development due to the unique way of looking at the individual aspects of the person, environment, and the occupational demands; as well as the transactive relationship between the person, environment, and occupational demand components (Law et al., 1996). Information obtained through the literature review was organized into the categories of person, environment, and occupational demands. Following the PEO Model, person aspects for the purposes of this project included information specifically related to the child passenger. Aspects of the person included emotional regulation, behavioral manifestations, sensory, language and communication, and values, beliefs, and goals. Environment aspects of the PEO Model include physical, cultural, institutional, virtual, and social contexts, including the driver of the vehicle. The occupational demands included an analysis of the specific demands required of the child passenger to engage in the occupation of traveling in a motor vehicle. Occupational demands included emotional regulation, sensory regulation, communication needs, tolerating various temporal demands, and follow-through of routines specific to the occupation of traveling in a motor vehicle.

Once the information was collected and organized, areas and patterns of deficits for child passengers with SNLAB became evident. Through a systematic analysis of the occupational performance issues, presented in Table 1, areas of need were identified

using the PEO Model. The person, environment, and occupational demand components were assessed individually initially. After individually assessing the PEO components, the person environment, person occupation, and environment occupation transactions were assessed. From these results, tools for evaluation and intervention were created in order to improve occupational performance specific to vehicle travel among children with additional emotional and behavioral needs.

Table 1
Systematic analysis of occupational performance of traveling in a motor vehicle

Occupational Performance Issue		
Vehicle travel among children with additional emotional and behavioral concerns*: The occupational performance issue is vehicle travel secondary to challenges with sensory regulation, emotional regulation, difficult behaviors, and communication.		
Assessment of Main Components		
Person	**Environment**	**Occupational Demands**
The "person" focuses specifically on the child passenger. ***Emotional Regulation:*** Children with ODD will often demonstrate aggression, argue with adults, or disregard rules (APA, 2013; Gonyea & Kopeck, 2011) Major depression and other mood disorders may be characterized by irritability, argumentative, short tempered, decreased mental functioning, and difficulty making decisions (Downing, 2011). Characteristics of anxiety disorder may include being fearful, startling easily, and excessive worrying that is difficult to control (Downing, 2011) ***Sensory:***	***The driver of the vehicle is included as a social aspect of the "environment."*** ***Physical:*** Layout of motor vehicle Amount of space between other passengers in the vehicle Degree of sensory input during travel • Auditory input including the radio, other passengers talking, and sounds the vehicle makes • Olfactory input including gasoline, air fresheners, and foods in the vehicle • Tactile input including the seat belt or fasteners of child safety seats, and the material of the seats	**Analysis of traveling in a motor vehicle:** Complete process of travel preparation including entering vehicle, locating seat, buckling seat belt or fastening restraint Emotional regulation Regulate sensory input Remain within seat or safety restraint Be able to communicate wants and needs effectively Follow laws and regulations

Difficulties with sensory modulation or integration commonly affect children who have diagnoses such as ADHD, anxiety, and ASD (Baker et al., 2008; Miller et al., 2012) Common categories of sensory dysfunction may be described as: • Sensory-seeking/craving: actively seek out high intensity sensations or an increased duration of sensory input; may crash, fall, invade space, smell, lick, rub, and touch other people and items (Baker et al., 2008; Miller et al., 2012) • Sensory-over-responsivity: feel sensations too intensely for longer periods of time; may throw tantrums, cry, scream, and avoid stimuli (Miller et al., 2012) • Sensory-under-responsivity: respond less to sensations or take a longer time to feel them; may appear withdrawn, demonstrate poor body awareness, and have difficulty following instruction or listening (Miller et al., 2012) Stereotypical behaviors such as: hand-flapping, spinning, rocking, head banging, hyperactivity, peer problems, or other self-injurious behaviors in ASD population (APA, 2013) ***Behavioral Manifestations:***	• Vestibular input associated with being in the moving vehicle Proper use of an appropriate safety restraint (Keay et al., 2012; Philbrook et al., 2009; Snowdon et al., 2008; Winston et al., 2000) Preferred items or toys available to child while in the vehicle ***Social:*** Driver of the vehicle: • cognitive skills being used during operation of vehicle include decision making, mental flexibility, insight, and judgment • may be unable to fully attend to child due to demands of operating vehicle • may be unable to fully attend to safely operating vehicle due to attention demands of child ○ 6.2% of drivers report interacting with children in the back seat of the car (Anstey et al., 2005; Asimakopulos et al., 2012; Mathias & Lucas, 2009; Tison et al., 2011)	Tolerate various periods of time and conditions in vehicle such as • Traveling to school in the morning • Traveling to appointments during the day • Traveling to after school programs in the evening • Long car trips vs. brief car trips • Various types of weather conditions • Postural support needed to maintain position in seat or child restraint

Children with ASD may demonstrate behaviors such as attempting to escape safety restraints, attacking the driver or other passengers, and emotional outbursts (Yonkman et al., 2013) Up to 86% of children who had a diagnosis of high-functioning ASD had at least one emotional or behavioral problem that was of a clinical concern including aggressive behaviors, rule-breaking behaviors, oppositional defiant problems, and conduct problems (Ooi et al., 2011) Children with mood disorders may react to frustrations in explosive outbursts, be defiant to authority, engage in risky behaviors, demonstrate poor judgement or impulsive behaviors, and exhibit psychomotor agitation (Downing, 2011) Individuals with anxiety may experience restlessness or irritability which may impact daily activities (APA, 2013; Downing, 2011) Children with ADHD may exhibit a variety of characteristics including inattention, hyperactivity, and impairment in multiple settings that may include strong emotional reactions, aggressive responses to frustrations, inappropriate touching of other people or objects, difficulty listening, and noncompliance (APA, 2013; Gonyea et al., 2011; Poulsen, 2011)	Additional passengers in the vehicle ***Cultural:*** Availability of culturally competent education and training (Keay et al., 2012) The average daily miles traveled by one person is 36.1, with an average of 3.79 trips per day (DOT, 2015) In 2012, there was 211.8 million registered drivers in the United States (DOT, 2015) ***Institutional:*** Availability of programs for parent and caregiver education and fitting (Keay et al., 2012; Philbrook et al., 2009; Ricci, 2000; Snowdon et al., 2008; Winston et al., 2000) Limited availability of training programs for professionals; National Child Passenger Safety Certification Program (Vick, 2010) Existing national and state laws and regulations regarding vehicle travel and restraint for children (Bae et al., 2014)	

Language and Communication: Many children with ASD experience language deficits and other concerns such as difficulty with receptive communication (Park et al., 2012) Auditory filtering has been shown to be an area of difficulty for children with ASD and children may appear distracted or inattentive (Baker et al., 2008) ***Values, Beliefs, and Goals:*** Those with ODD often blame others for mistakes that the individual has made or instances in which the individual has misbehaved (APA, 2013) Those with anxiety disorders may become so overcome with worrisome beliefs or anxiety-provoking thoughts that it impairs function (APA, 2013) Individuals with major depressive disorder may have diminished or decreased interest/ pleasure in activities, may have feelings of excessive guilt, or believe they are worthless (APA, 2013) Children with special needs may lack self-determination as a result of limited opportunities to learn from mistakes, advocate for themselves and their needs, make their own decisions, and create their own goals (Dunn & Thrall, 2012)	***Virtual:*** Use of electronics, such as movies or video games, during travel Assistive communication devices may be used to meet communication needs of children who are nonverbal or experience difficulties with communication (Sennott & Bowker, 2009).	

Assessment of PEO Transaction		
Person – Occupation • Children with SNALB may have difficulties with sensory processing and regulation, which is essential for vehicle travel • Children with SNALB may demonstrate challenging behaviors, such as escaping child safety restraints during transportation, placing them in potentially dangerous situations. • Communication difficulties may lead to challenges with, or inability to, convey wants and needs	**Occupation - Environment** • The driver is required to transport children for various lengths of time and throughout various times of a day • Drivers need to be educated on appropriate safety restraint use in order to abide by laws and regulations • Sensory stimulation in vehicle may be difficult to regulate during travel • Lack of programs for professionals to provide alternative solutions for safely remaining in seat	**Person – Environment** • Children with SNLAB may demonstrate disruptive behaviors, such as outburst, which may distract drivers • Children with SNLAB may have difficulty with auditory filtering, receptive communication, or language which may impact communication with driver • Children experience sensory input in vehicle • Additional passengers or restricted space in the vehicle may impact sensory stimulation the child is receiving • Having preferred items, toys, or electronics available in vehicle during travel may distract or entertain child and reduce behaviors • The content of material discussed in car between driver and passenger may trigger behaviors

Intervention/Strategies to Improve Occupational Performance
A protocol for assessment and intervention of car safety, along with potential resources to assist in addressing safety within the vehicle. Information is to be gathered based on the person, environment, occupation, and the transactions between these components.

* With a focus on diagnoses described as SNLAB, including attention-deficit/hyperactivity disorder (ADHD), internalizing disorders such as anxiety or depression, intellectual disability, oppositional defiant disorder (ODD), autism spectrum disorders (ASD), cognitive disorders, and mood disorders (Huang et al., 2009).

Based upon the methodology described, a protocol for occupational therapist evaluation and intervention regarding safe vehicle travel for children with additional emotional and behavioral needs was created. The protocol includes an evaluation that assesses the aspects of the person, environment, and occupational demands that were described in Table 1, as well as a framework for providing resources and intervention for the child and caregivers responsible for transportation. The product is further described in Chapter IV of this scholarly project, and can be found in its entirety in the Appendix.

CHAPTER IV

PRODUCT

In the United States, more than 650 children died in 2011 from motor vehicle accidents, and more than 148,000 children were injured (CDC, 2014b). Vehicle travel is a significant aspect of many individuals' daily routine, and in most cases, caregivers are responsible for safely transporting the children they are responsible for. Among the several key elements that are factors in safely transporting children include following laws and regulations, proper use of appropriate safety restraints, limiting distractions, and caregiver education (Bae, Anderson, Silver, Macinko, 2014; Brown, McCaskill, Henderson, & Bilston, 2006; Keay et al., 2012; Tison, Chaudhary, & Cosgrove, 2011). Yonkman, Lawler, Talty, O'Neil, and Bull (2013) found that caregivers who are responsible for children that have additional emotional and behavioral needs, such as those with an autism spectrum disorder (ASD), face additional challenges during transportation.

Huang, Kallan, O'Neill, Bull, Blum, and Durbin (2009) identified children with a variety of diagnoses including attention-deficit/hyperactivity disorder (ADHD), internalizing disorders including obsessive compulsive disorder (OCD), anxiety, depression, intellectual disability, oppositional defiant disorder (ODD), ASD, cognitive disorders, and mood disorders as part of a category referred to as special needs likely to

affect behavior (SNLAB). It was found that families will often seek assistance from healthcare professionals to guide them in addressing safe vehicle travel with these children who have SNLAB; however, these healthcare professionals have reported a lack of knowledge and confidence in addressing these concerns (Baker, Galvin, Vale, & Linder, 2012; Brixey & Guse, 2009; Linder, 2013; Yonkman et al., 2013).

An extensive literature review was conducted and information on the population was obtained. The information obtained through the literature review was then analyzed using the Person Environment Occupation (PEO) Model (Law et al., 1996). Following the PEO Model, person aspects for the purposes of this project included information specifically related to the child passenger. Aspects of the person included emotional regulation, behavioral manifestations, sensory, language and communication, and values, beliefs, and goals. Environmental aspects of the PEO Model include physical, cultural, institutional, virtual, and social contexts, including the driver of the vehicle. The occupational demands included an analysis of the specific demands required of the child passenger to engage in the occupation of traveling in a motor vehicle. Through the use of the PEO Model, a systematic analysis of the occupational performance issues was conducted. Areas of need were then identified, and evaluation and intervention tools were created to improve occupational performance of children with SNLAB related to vehicle travel.

Based on the methodology described above, the Traveling Safely Evaluation and Intervention Protocol was developed. This protocol consists of several tools designed to evaluate the needs of the child and caregivers responsible for transportation, as well as provide ideas for intervention based on the needs identified. This product was created for

utilization by occupational therapists in clinical practice as part of the evaluation process, and during intervention planning.

The Traveling Safely Evaluation and Intervention Protocol begins with the Traveling Safely Evaluation tool designed to obtain an occupational profile of the client and the family. Areas of focus in the evaluation include aspects regarding the child's values and beliefs, the child's ability to regulate his or her emotions, what behaviors the child demonstrates that are worrisome or distracting, how the child processes sensory stimuli, and the child's ability to understand and communicate his or her wants or needs. The Sensory Worksheet and Vehicle Safety Checklist supplemental forms are also included and are designed to obtain additional information related to the person, environment, and occupational demands.

The Sensory Worksheet is completed with the therapist, child, and caregivers to help determine the sensory needs of the child. The Vehicle Safety Checklist is intended to be completed by the caregivers to the best of their ability prior to the evaluation to obtain more information about the primary and secondary vehicles the child travels in, as well as the safety features of the vehicle(s). Following the evaluation process, primary areas of concern are developed. Based on these areas of concern, an Intervention Worksheet is completed for each. The Intervention Worksheet allows the therapist, client, and caregivers to develop ideas for intervention, as well as weigh the pros and cons of these ideas, and formulate a plan. Sample crisis planning and behavioral planning worksheets are included in the protocol to assist therapists in intervention planning. In addition to these tools, a list of helpful resources for clinicians and/or caregivers is provided to offer further guidance in the intervention process. Finally, two

case examples illustrating the clinical application of the Traveling Safely Evaluation and Intervention Protocol are provided. The full product is presented in its entirety in the Appendix.

CHAPTER V

SUMMARY

The purpose of this project was improving vehicle safety among children with special needs likely to affect behavior (SNLAB). Through the use of the Person Environment Occupation (PEO) Model, a systematic analysis of the occupational performance issues was conducted (Law et al., 1996). Based upon the systematic analysis, areas needing to be addressed in order to understand the occupational performance issue were identified and included in the evaluation and intervention tools. The Traveling Safely Evaluation and Intervention Protocol was developed to address the areas of need. The Traveling Safely Evaluation and Intervention Protocol includes the Traveling Safely Evaluation tool, the supplemental Vehicle Safety Checklist, the supplemental Sensory Worksheet, the Intervention Worksheet template, and samples for a crisis plan and behavioral contract. In addition, completed case study examples were created to demonstrate the clinical application of the Traveling Safely Evaluation and Intervention Protocol.

Strengths

The Traveling Safely Evaluation and Intervention Protocol has several strengths. This protocol serves as an initial step towards the development of tools designed to address the travel safety needs of children that have SNLAB. The developed protocol was based on evidence-based literature and grounded in the PEO Model, taking into consideration the unique dynamic relationship between the person, the environment,

and the occupational demands throughout the evaluation and intervention process (Law et al., 1996). In addition, this protocol can be easily modified and adapted to meet the needs of an individual child or family, contributing to client-centered best-practice.

Limitations

The Traveling Safely Evaluation and Intervention Protocol has several limitations. Among these limitations is that the Traveling Safely Evaluation and Intervention Protocol has not yet been used by practicing clinicians, and has not been applied to an actual clinical case. In addition, the protocol itself has not be implemented or researched has not been researched, so it is unsure whether or not the protocol contributes to a reduction in accident, injury, or death related to vehicle travel. A final limitation of the protocol is the limited number of resources available to assist in the development of solutions for intervention.

Recommendations

As the Traveling Safely Evaluation and Intervention Protocol is only an initial step towards addressing car safety among children with SNLAB, it is recommended that the protocol be piloted and further refined. It is also recommended that further resources be developed to assist in problem solving solutions for car safety for children.

APPENDIX

TRAVELING SAFELY EVALUATION AND INTERVENTION PROTOCOL MANUAL

http://www.lifewithfive.com/transportation-options-for-kids-in-palo-alto/

Madeline Aandal, MOTS, Bailey Stotts, MOTS, Sarah Nielsen, PhD, OTR/L, and Cherie Graves, MOT, OTR/L

Traveling Safely Evaluation and Intervention Protocol Manual

Table of Contents

Product Development

Safe travel for children with emotional and behavioral concerns is an issue many families face. Unfortunately, limited resources are available for occupational therapists to utilize in order to complete an evaluation and develop intervention ideas. The Traveling Safely Evaluation and Intervention Protocol was developed to assist occupational therapists in addressing community mobility among children with special needs likely to affect behavior, or SNLAB (Huang, Kallan, O'Neil, Bull, Blum, & Durbin, 2009). It has been identified that there are limited services available for addressing the travel safety needs of children who have SNLAB. It was further identified that there are also limited resources available for the professionals expected to address this concern; resulting in a lack of confidence and inadequate attention given to the needs of this population. Based on the problem identified, an extensive literature was completed.

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Once the information was collected and organized, areas and patterns of deficits for child passengers with SNLAB became evident. Through a systematic analysis of the occupational performance issues, presented in Table 1, areas of need were identified using the PEO Model. The person, environment, and occupational demand components were assessed individually initially. After individually assessing the PEO components, the person environment, person occupation, and environment occupation transactions were assessed. From these results, tools for evaluation and intervention were created in order to improve occupational performance specific to vehicle travel among children with additional emotional and behavioral needs.

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Instructions for Implementation

Materials in the manual may be copied for individual use by the owner of the manual. The forms are also available in electronic format. Case examples demonstrating how the Traveling Safely Evaluation and Intervention Protocol may be applied in a clinical setting are provided in the Appendix.

Evaluation Tools

Evaluation tools designed as part of the Traveling Safely Evaluation and Intervention Protocol include the Traveling Safely Evaluation, the Vehicle Safety Checklist, and the Sensory Worksheet. These tools were developed to be used in conjunction with each other in order to provide a comprehensive assessment of all aspects of the person, environment, and occupation indicated in the PEO assessment.

Traveling Safely Evaluation

The Traveling Safely Evaluation form is the primary tool that is used during the assessment. The therapist obtains the necessary information through a semi-structured interview with the child's caregivers, and the child if able. This evaluation tool was developed based upon the PEO Model. The tool itself was designed to address a variety of components that were evident through analysis of the PEO Model. Person factors addressed include: a) values, beliefs, and goals, b) emotional regulation, c) behavioral manifestations, d) sensory processing, and e) language and communication. Environmental factors addressed include physical, and social components. The assessment between the person, environment, and occupation transactions were areas of focus. The evaluation tool was created to be used in conjunction with two supplemental forms, the Sensory Worksheet and the Vehicle Safety Worksheet.

Sensory worksheet. The Sensory Worksheet is intended to be completed through a semi-structured interview with caregivers. Due to the nature of the content, it is likely that some parents and caregivers will not be able to provide all the information requested, such as what type of evaluation was completed and the results of the evaluation. If parents are unable to provide this information, it is recommended that the therapist, with the permission of the caregivers, obtain this information from the clinic in which the child was evaluated.

Vehicle safety worksheet. Prior to the implementation of the Traveling Safely Evaluation form, it is recommended that the caregivers of the child be provided with the Vehicle Safety Worksheet and instructed to complete the worksheet to the best of their knowledge. Caregivers are asked to bring this worksheet with them to the evaluation, and the therapist and caregivers will go through this worksheet together. If caregivers were unable to answer any questions, or had further questions of their own regarding this worksheet, the therapist will assist them in completion of the worksheet.

Intervention Tools

A variety of possible intervention tools were developed to be used in conjunction with the evaluation tools. These intervention tools include the Intervention Worksheet, sample crisis planning worksheet, and a sample behavioral contract. It should be noted that the tools provided are not exhaustive, and therapists should feel free to develop tools for intervention that they feel would best meet the needs of the client.

Intervention Worksheet

After completion of the evaluation process, the information gathered will be used to create ideas for intervention. The Intervention Worksheet is intended to serve as a tool

that is to be used in collaboration with the therapist, the caregiver(s), and the child if able to participate. Recommended use of this tool is to complete an Intervention Worksheet for each "Area of Concern" identified on the Traveling Safely Evaluation. Ideas to address the identified area of concern are described on the worksheet, and the identified pros and cons of these ideas are listed in a chart format. After ideas are identified and pros and cons of each have been listed, the therapist, caregivers, and child will develop the intended plan of action for addressing this area of concern.

Crisis plan. As part of intervention planning, it is recommended that each family, in collaboration with the therapist, develop a crisis plan to be utilized in a "worst case scenario" situation. The crisis plan is created for the driver of the vehicle, not the child. Based upon the information gathered during evaluation, the caregiver(s) and therapist will determine the steps of action that the caregiver(s) will take in the event that the situation escalates to a point of possible danger or fear. A sample format for the development of an individualized crisis plan is provided as a supplemental material.

Behavioral contract. For some children, it may be appropriate to create a behavioral contract as part of the intervention planning process. A behavioral contract is created through collaboration with the child, the child's caregiver(s), and the therapist working with the family. A behavioral contract will allow the child to identify what his or her expected behaviors are, as well as understand consequences of his or her behaviors. Upon completion of the behavioral contract, the child and the caregiver both sign the contract, indicating that the information stated on the contract is understood by all parties.

Appendix

Traveling Safely Evaluation

Child's Name: _____ Date: _____

Caregivers' Names: _____

D.O.B.: _____ Height: _____ Weight: _____

Primary Diagnosis: _____

Referring Physician: _____ Therapist: _____

Reason for Referral: _____

Person

Values, Beliefs, Goals:

What are your child's values, beliefs, and goals?

- Is your child working on any goals right now?
- Do you have any goals for your child at this time?
- What does your child enjoy?
- How does your child feel about himself or herself?

_____

_____

_____

Tell me about your child's ability to make decisions:

_____

_____

_____

Emotional Regulation:

Tell me about your child's ability to express his or her feelings:

- How does your child do with identifying emotions?
- Tell me about your child's ability to express his or her emotions.
- What type of coping strategies does your child utilize?

_____

_____

_____

_____

Behavioral Manifestation:

What type of behaviors does your child demonstrate that have been challenging or worrisome?

- What type of behaviors does your child demonstrate that have been or may become an issue while riding in the car?
- What additional worries do you have about your child's behaviors while riding in the car?

_____

_____

_____

Sensory Processing:

Please complete the attached sensory worksheet

_____

_____

_____

Language and Communication:

How does your child communicate his/her wants and needs?

- How does your child communicate while in the vehicle?

_____

_____

_____

Environment

See vehicle checklist if completed

Physical:

Describe the layout of the vehicle(s) the child travels in most frequently:

_____

_____

_____

_____

Describe the seating in the vehicle:

- Does your child use a safety seat/booster seat/special restraint?
- Does your child wear a seatbelt? If yes, how does he/she wear it?

_____

_____

_____

Social:

Who is/are the primary transporter(s) of your child? Who else is typically in the vehicle with your child?

_____

_____

What are your child's feelings about riding in the car?

_____

_____

How do you respond to your child's behaviors when they become distracting or disruptive in the vehicle?

_____

_____

_____

Do you have any additional concerns?

_____

_____

Assessment of the Person Environment and Occupation Transactions

Primary areas of concern include:

1. _____
2. _____
3. _____
4. _____

_____ _____

Therapist's Signature Date

Sensory Worksheet

Has your child ever had a sensory-based evaluation? ☐ **Yes** ☐ **No**

If **yes**, when was the evaluation completed? _____

Do you know what evaluation was completed? _____

Where did the evaluation take place? _____

What were the findings of the evaluation? _____

_____

_____

Additional comments: _____

The following questions should be asked regardless of whether or not the child has had a sensory processing evaluation. It is up to the expertise of the therapist to determine whether or not sensory processing evaluation is warranted.

In the vehicle, does your child seem to...

Have difficulty with seatbelts or child seat fasteners touching him or her? _____

Comments: _____

Have difficulty with the movement of the vehicle in motion? _____

Comments: _____

Have difficulty with noises, such as the radio or other people talking? _____

Comments: _____

Be bothered by smells within the vehicle? _____

Comments: _____

Be bothered by other passengers in the vehicle? _____

Comments: _____

Have a more difficult time during certain times of the day? _____

Comments: _____

Therapist recommendations: _____

_____

Vehicle Information Worksheet

Primary Vehicle

Vehicle Make: _____ Vehicle Model: _____

Vehicle Description: _____

Number of passengers: _____

Secondary Vehicle

Vehicle Make: _____ Vehicle Model: _____

Vehicle Description: _____

Number of Passengers: _____

For each vehicle that your child travels in on a regular basis:

Do you have the owner's manual? ☐ **Yes** ☐ **No**

If **yes**, where is it located? _____

If **no**, it is recommended that you contact your dealership for information regarding some of the safety features of your vehicle.

Are you familiar with how to activate child safety locks for the doors and windows? ☐ **Yes** ☐ **No**

Page number in manual: _____

Comments: _____

Is your child using a child seat in the vehicle? ☐ **Yes** ☐ **No**

If yes, please answer the following questions.

Have you heard of the L.A.T.C.H system? ☐ **Yes** ☐ **No**

Does your vehicle have the L.A.T.C.H. system option? ☐ **Yes** ☐ **No**

Are you interested in a L.A.T.C.H. system demonstration? ☐ **Yes** ☐ **No**

Page number in manual: _____

Additional information you would like regarding your vehicle: _____

_____

Intervention Worksheet

This Intervention Worksheet is intended to serve as a tool to be utilized in collaboration between the occupational therapist, the caregivers of the client, and the client as able. The purpose of the Intervention Worksheet is to provide recommendations to address the primary areas of concern the child and caregivers are experiencing during vehicle travel.

Area of Concern:_____

_____

Ideas for Intervention

_____

_____

_____

_____

_____

Pros	Cons

Plan

_____

_____

_____

_____

Developing a Crisis Plan

When my child _____

_____

_____

_____

I will

_____

_____

_____

_____

_____

Behavioral Contract

I _____(child's name) recognize my target behavior as:
_____

My anticipated steps in order to achieve this behavior:

- _____
- _____
- _____

The challenges towards achieving this behavior include: _____
_____

The advantages of achieving this behavior are: _____
_____

If I achieve this positive and healthy behavior I will be able to choose from the following rewards:

- _____
- _____
- _____

I _____(child's name) understand that if I do not achieve this positive and healthy behavior, or utilize the coping skills listed above, I will not be able to choose a positive reward.

_____
Signature Date

_____
Parent's Signature Date

Additional Resources

Training Programs

National Child Passenger Safety Certification: A Program of Safe Kids Worldwide

https://ssl06.cyzap.net/dzapps/dbzap.bin/apps/assess/webmembers/tool?pToolCode=TAB9&pCategory1=TAB9_COURSESEARCH&Webid=safekidscertSQL&pSearch=yes

This Child Passenger Safety (CPS) Certification course generally consists of a three to four day training that includes multiple learning components. The CPS course combines classroom instruction, hands-on activities, skills assessments with car seats and vehicles, and a safety seat checkup event in the community. Successful completion of this course results in a two-year certification as a CPS technician.

Safe Travel for All Children: Transporting Children with Special Health Care Needs

http://www.preventinjury.org/Special-Needs-Transportation/Training

This program is a supplement course designed for individuals who are currently CPS technicians and are interested in gaining knowledge related to children who have special needs. The course incorporates a classroom component, as well as an interactive component, over the course of two days, concluding in a proficiency exam. Topics covered include information regarding common medical conditions that may influence restraint choices and the chance to explore various safety restraints.

Restraint Information and Selection

Special Needs- Medical Conditions

http://www.preventinjury.org/Special-Needs-Transportation/Medical-Conditions

This resource page identifies common medical conditions that a child may have and recommendations and considerations for appropriate restraint selection. Medical conditions listed in this resource may include both physical and behavioral concerns. Several of the diagnoses listed also have suggestions for where to gather further information.

The Children's Hospital of Philadelphia- Car Seat Safety for Kids

http://www.chop.edu/centers-programs/car-seat-safety-kids#.VRqfqOHiGis

This website provides several links that may be beneficial for both caregivers and clinicians. Featured topics include "Avoiding Common Car Seat Installation Mistakes," "Car Seat Safety by Age," and "Vehicle Safety Information from Our Experts," as well as a resource link providing links to a variety of different topics addressing car safety for children and teens.

Parents Central- From Car Seats to Car Keys: Keeping Kids Safe

http://www.safercar.gov/parents/CarSeats/Car-Seat-Safety.htm

This website is powered by the National Highway Traffic Safety Administration (NHTSA) and provides information regarding car seat laws and guidelines, recalls, car safety ratings, and car seat information. This website also features a "Child Car Seat Inspection Station Locator" that allows caregivers to find locations nearby where they are able to check that the child safety seat is properly installed, and appropriate for the child using it.

Challenging Behaviors

Challenging Behaviors and Autism; A Guide for Transportation Personnel

http://r.search.yahoo.com/_ylt=AwrTccMGoRpV2.YAG9YnnIlQ;_ylu=X3oDMTEzcWkwNG1lBHNlYwNzcgRwb3MDMQRjb2xvA2dxMQR2dGlkA1lIUzAwM18x/RV=2/RE=1427837318/RO=10/RU=http%3a%2f%2fwww.faptflorida.org%2f60thConfPresentations%2fIdeas%2520for%2520Challenging%2520Behavior%2520and%2520Autism.pdf/RK=0/RS=uNJOguihugTJBGZmWGIhUSYtBBk-

This guide was developed with the intentions of being used for children with ASD during bus transportation. This guide may offer tips that can be utilized for children other than those with an ASD diagnosis, as well as transporters of children who may not be school bus drivers. This guide has several problem areas or core impairments broken down for individuals who may not fully understand the child or the diagnosis. A number of intervention ideas are also described including social stories, visual supports, and choice boards.

Autism Speaks- Challenging Behaviors Toolkit

https://www.autismspeaks.org/family-services/tool-kits/challenging-behaviors-tool-kit

This toolkit was developed specifically with a focus on ASD. This is a resource that may have information that is transferrable to other children without an ASD diagnosis. This tool provides information on aggressive or challenging behaviors related to ASD, things that should be considered when a child is displaying challenging behaviors, positive strategies for supporting behavioral improvements, managing crisis situations, and several additional resources that are listed throughout the toolkit.

Case Example One

The following case study focuses on a 5-year-old male with a diagnoses of Autism Spectrum Disorder, Level 2 severity and Sensory Processing Disorder. The child was referred to occupational therapy for a safety evaluation related to safety concerns during vehicle travel. The child's parents participated in the Traveling Safely Evaluation and Intervention process, and the child was present for the evaluation. The child's parents had the Vehicle Information Worksheet completed in its entirety prior to evaluation. The Sensory Worksheet was completed through interview between therapist and child's parents. The child's parents were able to provide information from his most recent sensory evaluation, and brought along a copy of the evaluation report they requested when this evaluation was completed.

Traveling Safely Evaluation

Child's Name: *Daniel Austin* Date: *01/16/2015*

Caregivers' Names: *Sheila (mother) and David (father)*

D.O.B.: *10/03/2009* Height: *46"* Weight: *50 lbs.*

Primary Diagnosis: *Autism Spectrum Disorder (level 2); Sensory Processing Disorder*

Referring Physician: *Dr. Rick Teller* Therapist: *Jenn Miller, OTR/L*

Reason for Referral: *Evaluate and treat*

Person

Values, Beliefs, Goals:

What are your child's values, beliefs, and goals?

- Is your child working on any goals right now?
- Do you have any goals for your child at this time?
- What does your child enjoy?
- How does your child feel about himself or herself?

Sheila reports that Daniel is working on several goals in OT at school related to transitions between tasks, attending to a task for short durations, and utilizing a toilet training schedule. Daniel enjoys Legos and toy cars.

Tell me about your child's ability to make decisions:

Daniel is able to make simple decisions regarding choices between two different items, such as what he would like for snack or what game he would like to play. Daniel uses a picture schedule for choices.

Emotional Regulation:

Tell me about your child's ability to express his or her feelings:

- How does your child do with identifying emotions?
- Tell me about your child's ability to express his or her emotions?
- What type of coping strategies does your child utilize.

Daniel's mother reports that he does identify "happy face" or "sad face" with exaggerated facial expressions when prompted. When he becomes upset

he will usually cry and scream, and occasionally drop to the floor. He has difficulty calming himself, but responds well to "squishes" from parents.

Behavioral Manifestation:

What type of behaviors does your child demonstrate that have been challenging or worrisome?

- What type of behaviors does your child demonstrate that have been or may become an issue while riding in the car?
- What additional worries do you have about your child's behaviors while riding in the car?

Daniel will have a "typical Daniel meltdown" (crying/screaming/thrashing) occasionally in the car if he can't have something he wants (i.e. can't get french fries at McDonald's when driving by). "It's hard to calm him while driving."

Sensory Processing:

Please complete the attached sensory worksheet

Daniel has a history of Sensory Processing Disorder and his parents are aware of strategies that may be used with Daniel to assist him in regulating his sensory system.

Language and Communication:

How does your child communicate his/her wants and needs?

- How does your child communicate while in the vehicle?

Daniel communicates with either short (1-3 word) phrases or by selecting laminated pictures from his choice board (not in vehicle). He is often times unable to convey his wants/needs and becomes frustrated and has a meltdown.

Environment

See vehicle checklist if completed

Physical:

Describe the layout of the vehicle(s) the child travels in most frequently:

The family has a large Suburban, 4-doors, leather interior, both bucket and bench seating options, DVD player from the ceiling that can be viewed by passengers in the back, seats 7. There is enough space so passengers are not "too close" to each other.

Describe the seating in the vehicle

- Does your child use a safety seat/booster seat/special restraint?
- Does your child wear a seatbelt? If yes, how does he/she wear it?

Daniel is currently in a commercially available forward-facing seat with harness (Britax Pioneer 70) which has the option to convert into a booster seat. Seat is recommended for use up to 54" and 70 lbs.

Social:

Who is/are the primary transporter(s) of your child? Who else is typically in the vehicle with your child?

Daniel's mom and dad are the primary transporters of him and his sister (Ellie). Occasionally, Daniel's grandmother will pick him and Ellie up from school.

What are your child's feelings about riding in the car? *Mom reported that even though Daniel will have meltdowns in the car, he appears to enjoy car rides and Daniel becoming upset is usually not related to the actual car ride.*

How do you respond to your child's behaviors when they become distracting or disruptive in the vehicle?

Sheila reports that she generally will try to figure out why Daniel is upset or uncomfortable by assessing the situation, asking him questions, and

twisting around to see him, or reaching behind her seat to "squeeze" his legs.

Do you have any additional concerns? _____

_____

Assessment of the Person Environment and Occupation Transactions

Primary areas of concern include:

- *Ability to regulate emotions when tired/hungry/told "no"*
- *Seating options for when he outgrows forward-facing seat harness*
- *Additional difficulty communicating wants/needs in car- leading to meltdown*
- *Parent coping skills/plan when child is distressed/disruptive while driving, such as when Daniel is seeking "squishes" from driver during meltdown*

Jenn Miller, OTR/L *01/16/2015*

Therapist's Signature Date

Sensory Worksheet

Has your child ever had a sensory-based evaluation? ☑ **Yes** ☐ **No**

If **yes**, when was the evaluation completed? *September 2013*

Do you know what evaluation was completed? *Sensory Processing Measure- Preschool*

Where did the evaluation take place? *Southside Pediatric Clinic*

What were the findings of the evaluation? *Results indicated **definite dysfunction** in the areas of body awareness, balance and motion, social participation, planning and ideas, hearing, and total sensory system; **some problems** in touch and vision*

Additional comments: *Parents demonstrate good understanding of child's needs and implement a variety of sensory strategies at home; willing to try new suggestions*

The following questions should be asked regardless of whether or not the child has had a sensory processing evaluation. It is up to the expertise of the therapist to determine whether or not sensory processing evaluation is warranted.

In the vehicle, does your child seem to...

Have difficulty with seatbelts or child seat fasteners touching him or her? *Somewhat*

Comments: *During meltdowns: grabs at straps and yanks away from body*

Have difficulty with the movement of the vehicle in motion? *No*

Comments: _____

Have difficulty with noises, such as the radio or other people talking? *Occasionally*

Comments: *People talking when radio is on, especially favorite songs*

Be bothered by smells within the vehicle? *Doesn't appear to be bothered by smells*

Comments: _____

Be bothered by other passengers in the vehicle? *Occasionally*

Comments: *Increased irritability when sister in car if already upset*

Have a more difficult time during certain times of the day? *Yes*

Comments: *If he sleeps poorly the night before; when hungry; late at night*

Therapist Recommendations: *Recommend a re-evaluation using the SPM to gain updated information on Daniel's sensory processing patterns due to length of time since last evaluation.*

Vehicle Information Worksheet

Primary Vehicle

Vehicle Make: *Chevrolet* Vehicle Model: *Suburban*

Vehicle Description: *Spacious, seats seven, four-door, DVD player, bucket seats*

Number of passengers: *Most commonly four or five passengers*

Secondary Vehicle

Vehicle Make: *Nissan* Vehicle Model: *Altima*

Vehicle Description: *Limited space between passengers, four-door, seats five*

Number of Passengers: *Most commonly three passengers*

For each vehicle that your child travels in on a regular basis:

Do you have the owner's manual? ☑ **Yes** ☐ **No**

If **yes**, where is it located? *Glove compartment in both vehicles*

If **no**, it is recommended that you contact your dealership for information regarding some of the safety features of your vehicle.

Are you familiar with how to activate child safety locks for the doors and windows? ☑ **Yes** ☐ **No**

Page number in manual: *35*

Comments: *Currently have child safety locks engaged for windows and doors*

Is your child using a child seat in the vehicle? ☑ **Yes** ☐ **No**

If yes, please answer the following questions.

Have you heard of the L.A.T.C.H system? ☑ **Yes** ☐ **No**

Does your vehicle have the L.A.T.C.H. system option? ☑ **Yes** ☐ **No**

Are you interested in a L.A.T.C.H. system demonstration? ☑ **Yes** ☐ **No**

Page number in manual: *43*

Additional information you would like regarding your vehicle: _____

_____

Intervention Worksheet

This Intervention Worksheet is intended to serve as a tool to be utilized in collaboration between the occupational therapist, the caregivers of the client, and the client as able. The purpose of the Intervention Worksheet is to provide recommendations to address the primary areas of concern the child and caregivers are experiencing during vehicle travel.

Area of Concern: *1. Daniel's ability to regulate emotions when tired, hungry, or told "no".*

Ideas for Intervention

Provide Daniel's family with social stories to read before car rides.

If possible, plan travel when Daniel is less likely to be tired or hungry.

Create a "car kit" of preferred items to serve as a distraction in the car.

Try to avoid situations that will result in non-preferred responses or responding to Daniel in the vehicle if the response is non-preferred.

Pros	Cons
Having favorite items in car may prevent a meltdown from occurring if child is distracted. *Social stories may help Daniel be more prepared for trips, or assist Daniel in understanding where he is going (ex. "Going to Grandma's").* *Planning routes could eliminate certain triggers completely.*	*Planning travel around Daniel's needs may not always be possible.* *Providing Daniel with "car kit" if he is already upset may reinforce negative behaviors.* *Meltdown may exacerbate if route is changed of if parents avoid responding to requests.*

Plan

Provide family with "Riding in the Car" social story specific to Daniel.

Help family create a travel kit of favorite items (ex. Legos, cars, snacks).

Assist parents in planning routes to common destinations that avoid driving by trigger locations, such as McDonald's.

Intervention Worksheet

This Intervention Worksheet is intended to serve as a tool to be utilized in collaboration between the occupational therapist, the caregivers of the client, and the client as able. The purpose of the Intervention Worksheet is to provide recommendations to address the primary areas of concern the child and caregivers are experiencing during vehicle travel.

Area of Concern: *2. Finding appropriate seating options for Daniel when he outgrows his forward-facing seat harness.*

Ideas for Intervention

Schedule routine check-ups with family to assess Daniel's fit in current seat.

Explore other commercially available and special seating options for the next stage in Daniel's development.

Provide family with list of resources of seating options to consider.

Pros	Cons
Check-ups allow for opportunities to follow-up on Daniel's behaviors, family needs, communication, size, etc.. *Family has sense of autonomy by providing them with several choices and resources so they play important role in making choice.*	*May be difficult to determine needs for future.* *Seats, especially custom or special seating options may be expensive.*

Plan

Schedule next appointment to follow-up with family for 6 months from now.

Provide the family with resources in which they can learn more about available seating options, giving parents the opportunity to ask questions and collaborate with therapist about best options for Daniel and his needs.

Intervention Worksheet

This Intervention Worksheet is intended to serve as a tool to be utilized in collaboration between the occupational therapist, the caregivers of the client, and the client as able. The purpose of the Intervention Worksheet is to provide recommendations to address the primary areas of concern the child and caregivers are experiencing during vehicle travel.

Area of Concern: *3. Daniel having additional difficulty communicating his wants and needs while in the vehicle, often leading to meltdowns.*

Ideas for Intervention

Communication device to suit family's needs (iPad, picture board, etc.).

Video modeling or role playing appropriate ways to communicate in car.

Social stories for parents to read before transportation/child to have in car.

Positive reinforcement system when he does use acceptable communication.

"Power card" of favorite character to remind him to use the words he has.

Pros	Cons
Daniel has tools to remind him of expected ways to communicate/tools to understand expected ways to communicate. *Positive reinforcement system encourages desired behaviors, ideally increased the "good" and reducing undesirable ways to communicate (ex. crying, screaming).*	*If visual communication board, driver may still need to turn around.* *If already having outburst, child may throw communication tool at others in vehicle or be too upset to use it.* *A device that will provide audio output, such as an iPad, may be expensive.*

Plan

Create power cards and social stories for family to trial. Implement role playing and/or video modeling into OT sessions. Collaborate with parents to develop reinforcement program/token rewards system for in car. Work with family to determine wants/needs for possible communication tools.

Intervention Worksheet

This Intervention Worksheet is intended to serve as a tool to be utilized in collaboration between the occupational therapist, the caregivers of the client, and the client as able. The purpose of the Intervention Worksheet is to provide recommendations to address the primary areas of concern the child and caregivers are experiencing during vehicle travel.

Area of Concern: *4. Parent coping skills/plan for when Daniel is distressed disruptive while driving, such as child seeking "squishes" during travel.*

Ideas for Intervention

Daniel may benefit from a weighted blanket or lap pad while traveling.

Daniel may benefit from wearing compression garments while in vehicle.

Parent may plan breaks for "squishes" during long trips.

Develop crisis plan for parents in the event that alternative solutions are unsuccessful at de-escalating/preventing meltdown.

Pros	Cons
Weighted materials and/or compression garments may provide similar input to that which Daniel seeks with "squishes". *Some techniques may be preventative- reducing the instances of meltdowns during travel.* *Increased safety while traveling due to driver being less distracted.*	*Weighted materials and/or compression garments can be expensive.* *Breaks may not always be possible to schedule for certain trips, or they may not occur at times of need.* *Eliminate direct-parent interaction for Daniel during meltdown, possibly being less effective at de-escalating behavior (increased duration).*

Plan

Trial weighted/compression materials rented through clinic. Create break schedule for long trips. In the event of a "worst case scenario" situation, the attached crisis plan has been created in collaboration with parents to plan action steps for driver's response in the event of a disruptive/distracting meltdown.

Developing a Crisis Plan

When my child *becomes distressed and/or disruptive while I am driving, including crying, screaming, kicking, thrashing, pulling at car seat straps, and/or demanding "squishes"*

I will:

1. *Attempt to ignore the behaviors- DO NOT TURN AROUND*
2. *Complete deep breathing to keep myself calm*
3. *Pull the vehicle over at next appropriate place to do so*
4. *Once vehicle is stopped, and hazard lights are on, I will attempt to comfort/calm Daniel from within the vehicle*

Case Example Two

The following case study focuses on a 10-year-old female with Oppositional Defiant Disorder. The child was referred to occupational therapy for a safety evaluation related to safety concerns during vehicle travel. The child and her parents participated in The Traveling Safely Evaluation and Intervention process. The child's parents completed the Vehicle Information Worksheet to the best of their ability prior to the assessment, and the occupational therapist assisted with completion of the worksheet at the time of the evaluation. The Sensory Worksheet was completed through an interview with both of the parents and the occupational therapist.

Traveling Safely Evaluation

Child's Name: *Jane Peterson* Date: *March 20, 2015*

Caregiver's Names: *Diane Peterson (mom) and Robert Peterson (dad)*

D.O.B.: *January 9th 2005* Height: *4' 5"* Weight: *70 pounds*

Primary Diagnosis: *Oppositional Defiant Disorder*

Referring Physician: *Dr. Johnson* Therapist: *Rachel Olson, OTR/L*

Reason for Referral: *Evaluate and treat*

Person

Values, Beliefs, Goals:

What are your child's values, beliefs, and goals?

- Is your child working on any goals right now?
- Do you have any goals for your child at this time?
- What does your child enjoy?
- How does your child feel about himself or herself?

Jane is currently working on regulating her own emotions. Parents and Jane report goals include minimizing outbursts. Jane enjoys playing with her iPad and mom states "Jane is proud of her gaming abilities".

Tell me about your child's ability to make decisions:

Jane is able to make her own decisions; however, mom feels she does not always consider how decisions affect others. Jane makes decisions when considering multiple choices.

Emotional Regulation:

Tell me about your child's ability to express his or her feelings:

- How does your child do with identifying emotions?
- Tell me about your child's ability to express his or her emotions.
- What type of coping strategies does your child utilize?

Mom states Jane is able to identify her emotions when encouraged by a parent or teacher; however, she is unable to identify prior to outburst. Jane will often lose

her temper, or disregard authority figures such as parents or teachers. Mom states Jane's current strategies to cope include time outs and deep breathing.

Behavioral Manifestation:

What type of behaviors does your child demonstrate that have been challenging or worrisome?

- What type of behaviors does your child demonstrate that have been or may become an issue while riding in the car?
- What additional worries do you have about your child's behaviors while riding in the car?

Mom states Jane's current behaviors include hitting and running away when Jane becomes upset. In addition, dad worries about when Jane begins to throw objects at the driver, when she unbuckles her seatbelt, and when she begins to hit the driver from behind.

Sensory Processing:

Please complete the attached sensory worksheet

The sensory processing worksheet was completed. Jane is not demonstrating sensory processing concerns at this time.

Language and Communication:

How does your child communicate his/her wants and needs?

- How does your child communicate while in the vehicle?

Dad reports that Jane is able to communicate full sentences while in the vehicle. However, when she begins to become upset, she will often disregard what her parents are stating and she will yell at others in the vehicle.

Environment

See completed vehicle checklist if completed

Physical:

Describe the layout of the vehicle(s) the child travels in most frequently:

The vehicle includes 4 doors and seats 5 people. The vehicle is a sedan and lower to the ground. The vehicle has cloth interior. Mom states that Jane will complain that others are sitting "too close to her".

Describe the seating in the vehicle:

- Does your child use a safety seat/booster seat/special restraint?
- Does your child wear a seatbelt? If yes, how does he/she wear it?

The child is currently not utilizing any seating restraints at this time. Jane is currently using an adult seatbelt.

Social:

Who is/are the primary transporter(s) of your child? Who else is typically in the vehicle with your child?

Mom and dad are the primary caregivers who transport Jane. Other family members will not transport Jane due to their fear she will try to escape or become aggravated.

What are your child's feelings about riding in the car? *Mom states that Jane enjoys riding in the vehicle, but often has outbursts. Mom described a pattern of outbursts occurring when Jane is asked to do something, told no, or after a bad day at school.*

How do you respond to your child's behaviors when they become distracting or disruptive in the vehicle?

Mom and dad report that Jane yells, kicks the driver seat, and reaches towards the driver as distracting. Mom and dad discussed trying to talk to Jane in order

Mom states she will occasionally try to reach back and hand Jane the iPad to calm her down, and that will occasionally work.

Do you have any additional concerns? *Jane unbuckling and grabbing parents*

Assessment of the Person Environment and Occupation Transactions

Primary areas of concern include:

1. *Behavioral outbursts distracting parents from driving safely.*
2. *Jane's regulating emotions when told no or when siblings are present.*
3. *Jane communicating without raising voice to ensure wants/needs are met*
4. _____

Rachel Olson, OTR/L *3/20/15*

Therapist's Signature Date

Sensory Worksheet

Has your child ever had a sensory-based evaluation? ☐ **Yes** ☒ **No**

If **yes**, when was the evaluation completed? _____

Do you know what evaluation was completed? _____

Where did the evaluation take place? _____

What were the findings of the evaluation? _____

_____

_____

Additional comments: _____

The following questions should be asked regardless of whether or not the child has had a sensory processing evaluation. It is up to the expertise of the therapist to determine whether or not sensory processing evaluation is warranted.

In the vehicle, does your child seem to...

Have difficulty with seatbelts or child seat fasteners touching him or her? *No concerns*

Comments: _____

Have difficulty with the movement of the vehicle in motion? *No concerns*

Comments: _____

Have difficulty with noises, such as the radio or other people talking? *No concerns*

Comments: _____

Be bothered by smells within the vehicle? _____

Comments: _____

Be bothered by other passengers in the vehicle? *Yes*

Comments: *Jane has difficulty regulating her emotions; especially with younger brother*

Have a more difficult time during certain times of the day? *Yes*

Comments: *Jane has difficulty while transporting after school.*

Therapist Recommendations: *No sensory concerns noted at this time. Further evaluation is not recommended at this time.*

Vehicle Information Worksheet

Primary Vehicle

Vehicle Make: *Honda* Vehicle Model: *Accord*

Vehicle Description: *Four-door, cloth interior, cross-body seatbelts for all seats*

Number of passengers: *Seats five passengers*

Secondary Vehicle

Vehicle Make: _____ Vehicle Model: _____

Vehicle Description: _____

Number of Passengers: _____

For each vehicle that your child travels in on a regular basis:

Do you have the owner's manual? ☑ **Yes** ☐ **No**

If **yes**, where is it located? *Located in center console*

If **no**, it is recommended that you contact your dealership for information regarding some of the safety features of your vehicle.

Are you familiar with how to activate child safety locks for the doors and windows? ☑ **Yes** ☐ **No**

Page number in manual: *33*

Comments: *Already used*

Is your child using a child seat in the vehicle? ☐ **Yes** ☑ **No**

If yes, please answer the following questions.

Have you heard of the L.A.T.C.H system? ☐ **Yes** ☐ **No**

Does your vehicle have the L.A.T.C.H. system option? ☐ **Yes** ☐ **No**

Are you interested in a L.A.T.C.H. system demonstration? ☐ **Yes** ☐ **No**

Page number in manual: _____

Additional information you would like regarding your vehicle: _____

_____

Intervention Worksheet

This Intervention Worksheet is intended to serve as a tool to be utilized in collaboration between the occupational therapist, the caregivers of the client, and the client as able. The purpose of the Intervention Worksheet is to provide recommendations to address the primary areas of concern the child and caregivers are experiencing during vehicle travel.

Area of Concern: *1. Behavioral outbursts distracting the driver*

Ideas for Intervention

1. *Behavioral contract*
2. *Reward system*
3. *Do not discuss consequences for behavior in vehicle*
4. *Do not respond to child's requests such as playing with friends, stopping for food, or increased gaming time while in vehicle, wait until arrival*

Pros	Cons
Jane will collaborate with caregivers in order to determine appropriate behavior. *By implementing reward system, it will allow Jane to learn appropriate behavioral responses.* *By not discussing consequences it will decrease the potential of outbursts*	*Jane may become upset when the caregiver does not respond to her requests or questions.* *Jane may also demonstrate an outburst prior to entering the vehicle due to prior incidence.*

Plan

Develop a behavioral contract with Jane. Allow for collaboration between Jane, parents and professionals. Implement a reward system when Jane demonstrates desired behavior while in the vehicle. Rewards may include but are not limited to: increased iPad time, increased gaming time, or allowing friends to come over.

Intervention Worksheet

This Intervention Worksheet is intended to serve as a tool to be utilized in collaboration between the occupational therapist, the caregivers of the client, and the client as able. The purpose of the Intervention Worksheet is to provide recommendations to address the primary areas of concern the child and caregivers are experiencing during vehicle travel.

Area of Concern: *2. Jane regulating emotions when told no or when siblings are present.*

Ideas for Intervention

1. Establish personal boundary system

2. Reward system

3. Keep middle seat open when traveling with other passengers

4. Utilize a "stomp rug"

Pros	Cons
Personal boundary system will allow for Jane to plan for the social situation. *Reward system will allow for Jane to learn appropriate behaviors to display while traveling with others in the vehicle.* *By keeping the middle seat open when possible, it will allow for more personal space.* *Stomp rug will allow Jane to release some of the emotions in a healthy manor.*	*Keeping the middle seat open is not always feasible, therefore implementing the personal boundary system may not be an option.* *Jane may utilize the rug incorrectly such as throwing the rug at the driver or other passengers.*

Plan

Collaborate with Jane, caregivers, and health care professionals to determine if keeping the middle seat open is an option. Work with Jane, caregivers, and other family members in order to determine an appropriate personal boundary system to implement.

Intervention Worksheet

This Intervention Worksheet is intended to serve as a tool to be utilized in collaboration between the occupational therapist, the caregivers of the client, and the client as able. The purpose of the Intervention Worksheet is to provide recommendations to address the primary areas of concern the child and caregivers are experiencing during vehicle travel.

Area of Concern: *3. Communicate without yelling, kicking, or hitting others.*

Ideas for Intervention

1. *Assertive communication*
2. *Pull the car over to discuss what is bothering the child*
3. *Reward system for positive behaviors*
4. *Look up state information regarding lock system so child cannot undo seatbelt*

Pros	Cons
Reward system will provide Jane with praise for appropriate communication/behaviors. *Using assertive communication, such as "I feel" statements, will allow Jane to communicate more effectively.* *By pulling over, Jane will have the full attention of the caregiver.* *Using lock system would increase likelihood of Jane staying in seat.*	*Jane may escape from the vehicle and run into traffic while the car is pulled over.* *Jane may not want to use assertive communication.* *Using a lock system may be an inappropriate restraint; therefore the therapist and family will need to visit with local social services to discuss appropriateness/acceptableness.*

Plan

Sessions will focus on teaching Jane the importance of assertive communication, as well as teaching her techniques she can use. The team will create an award system in order to increase the appropriate behavior within the vehicle. Finally, the team will create a crisis plan in order to promote safety.

Developing a Crisis Plan

When my child *Begins to hit the driver, kick the driver's seat, or yell.*

_____

_____

_____

I will *select one of the options 2-4 that is appropriate for the intensity of the situation:*

1. *Utilize coping skills in order to remain calm*
2. *Pull the car over and sit until Jane calms down, be sure the doors are locked*
3. *Once pulled over, call 911*
4. *Ignore Jane and stay focused on driving, drive to the nearest hospital.*

Behavioral Contract

I Jane (child's name) recognize my desired target behavior as: having a good car ride without having any outbursts.

My anticipated steps in order to achieve this behavior:

- When I feel like yelling, I will use "I feel" statements
- I will calm myself by deep breathing
- I will save request until we get home
- I will calm myself by stomping on my stomp rug

The challenges towards achieving this behavior include: I will have to learn not to have any more outbursts.

The advantages of achieving this behavior are: I will be able to get more time on the iPad or to spend with my friends.

If I achieve this positive and healthy behavior I will be able to choose from the following rewards:

- I will be able to have 10 extra minutes on the iPad
- I will be able to have a friend over for supper
- I will be able to play my video game for 10 extra minutes

I Jane understand that if I do not achieve this positive and healthy behavior, or utilize the coping skills listed above, I will not be able to choose a positive reward.

Jane Peterson	March 25, 2015
Signature	Date
Diane Peterson	March 25, 2015
Parent's Signature	Date

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