

# Occupational Therapy using Rapid Prompting Method: A Case Report

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## Abstract

Individuals with autism spectrum disorders that are nonverbal or have significantly limited verbal ability often demonstrate difficulties with learning and communication that impact their ability to participate in everyday, functional activities. Healthcare providers and educators that provide intervention for individuals with autism spectrum disorders utilize a variety of interventions and treatment techniques while tailoring their interventions to consider the unique needs of the individual with autism. This case report reviews how incorporating Rapid Prompting Method, a relatively new teaching technique for individuals with autism spectrum disorders, into occupational therapy treatment for a young adult male with autism with significantly limited verbal ability improved his functional participation, including communication, behavior, and engagement in routine activities of daily living.

**Keywords:** Autism spectrum disorder; Occupational therapy; Rapid prompting method

## Introduction

The incidence of Autism Spectrum Disorders (ASD) has grown to 1 in 68 children in recent years [1]. Individuals with ASD are affected differently, and there is a wide variance in the type of challenges children with ASD exhibit. It has been estimated that 25-40% of children with ASD do not speak or have only a few words [2,3]. A recent report estimated that 46% of children with ASD have average to above average intellectual functioning [1]. Previously, autistic children with significantly limited verbal skills were thought to have severe cognitive impairments, but recent research has found that traditional IQ tests are not appropriate for these individuals and that children judged as "low functioning" have more cognitive potential than what was previously thought [4].

Therefore, interventions for autistic individuals need to be selected and customized based upon the unique strengths and deficits of the individual with ASD regardless of their perceived cognitive abilities or verbal skills. Some interventions for autistic individuals have a substantial amount of research supporting their use, whereas other new intervention techniques require research exploring their effectiveness. Rapid Prompting Method (RPM) is a relatively new teaching technique for children with ASD. It is a learning process through which attention, memory, retrieval, motor functions, and communication can be targeted and improved [5]. RPM is individualized to each participant's sensory learning needs. In addition to the therapist, parent, or other adults asking questions or giving verbal directions to the individual with ASD, sensory prompts (including visual, auditory, tactile, and kinesthetic) are incorporated to facilitate learner participation and understanding. Some examples of these prompts might be tearing the paper (auditory), writing key words or choices on small pieces of paper (visual), tapping the pencil on the written key words or choices (auditory), increasing the pace of questions or communication (auditory), touching the choices to the participant's hand prior to the individual making a selection (tactile),

or shaking the paper choices to gain the participant's attention (visual) [5]. These prompts provide increased sensory input which is utilized to help participants initiate a response as well as to decrease self-stimulatory behaviors that may distract them from active learning. As the participant gains accuracy and confidence with use of the technique, the prompts are faded to encourage independence [5]. RPM is tailored to each participant's current learning level and information is frequently taught to the individual based on age level [5].

In addition to presenting information using sensory cues that support the participant's most effective channel of learning, the instructor typically speaks at a rapid rate when presenting material in order to stimulate the participant and encourage engagement in the learning process. Consistent verbal flow is utilized to build confidence and to give positive feedback to the participant. Participants are taught about a particular topic and then asked to retrieve and express what they have learned through their most effective motor output [5]. For many participants, output begins with choosing between 2 written answers placed on the table and progresses to more complex motor outputs including making choices in a field of 3-4 written choices, pointing to letters on a stencil followed by a letter board (9-26 letters), and eventually use of a keyboard [5]. The method increases in complexity as the participant gains understanding and the ability to make more complex motor movements. As the participant becomes more independent with use of the method, the instructor is able to fade the amount of prompts he / she provides in order to for the individual be more independent with the method.

Little research has been conducted on RPM to date. While some have compared RPM to facilitated communication (which has been shown to be an ineffective communication strategy for individuals with ASD), RPM differs from facilitated communication; when individuals are learning to use RPM, they may be given verbal prompts to increase the accuracy of their responses, but they are not given physical assistance to influence choices and materials are not manipulated to increase their accuracy. Preliminary research on RPM has produced some positive results. An exploratory study of RPM in autistic children 8-14 years of age found that RPM was associated with a decrease in repetitive behaviors and an increase in the number of

choices an individual could choose between while still having a similarly successful response rate to questions [6].

Occupational therapy (OT) is a healthcare service that is frequently utilized by individuals with ASD [7]. OT services are individualized and based upon the client or caregiver's goals for enhancing participation in functional activities [8]. Goals may focus on improving an individual's ability to engage in activities of daily living (such as grooming or dressing), instrumental activities of daily living (such as preparing a meal or doing laundry), education, work, leisure, social participation tasks, etc. [8]. As a result of the wide variety of goals that OT services may address, occupational therapists must utilize a variety of treatment techniques to meet the individual needs of each of their clients. Outcomes of OT intervention may be improved client performance or participation in meaningful activities, adaption to various environments or tasks, increased personal satisfaction with one's skill level, and increased participation in life roles [8].

Although it was originally developed as a method for use in educational settings, RPM may be used as a teaching tool during OT treatment to maximize an individual's ability to participate and to promote functional outcomes. Use of RPM within OT treatment sessions allows the therapist to match his/her teaching to the participant's style of learning. It utilizes multiple sensory channels and places greater emphasis on the sensory channel that is best for learning at the moment of teaching [5]. RPM utilized as a teaching technique during OT treatment sessions can help to promote improved therapeutic outcomes.

There is currently no published research on the use of RPM as a therapeutic tool to improve participation or outcomes in OT, and there is limited research regarding the effectiveness of RPM as a teaching technique for individuals with ASD. RPM was noted to be one intervention technique utilized within an educational setting in an article published by Shoener et al. [9]; however, use of RPM as a tool during OT was not specifically discussed. As a result, there exists a strong need for research into the use of RPM as a therapeutic tool for persons with ASD as well as how it can be utilized within OT intervention for individuals with ASD. Therefore, the purpose of this case report is to describe how incorporating RPM within OT treatment sessions improved a young adult male's functional participation, specifically increased self-confidence impacting his ability to participate in routine self-care activities and activities around his home (such as helping with laundry and washing his face), improved communication abilities, and increased participation in desired leisure activities.

## Methods

### Research design

A case report design is utilized in this research report. Case studies are useful for building foundational work for science and research of new and unique methods [10]. Due to the paucity of research available regarding RPM as an intervention technique, the case report methodology allows for incorporating a thorough description of RPM as a treatment technique within OT and how RPM affected this client's outcome.

### Participant

E.D. is a 22 year old male with a diagnosis of ASD. He has participated in outpatient OT frequently throughout his lifespan with

limited results with traditional OT intervention. E.D. was referred for a re-evaluation by his previous occupational therapist due to concerns with his functional skill acquisition including consistent access of his communication device, participation in activities of daily living, behavior, and social engagement.

At his OT evaluation in October 2013, E.D.'s mother expressed concerns with E.D.'s participation in functional self-care skills, such as washing his face, his handwriting and keyboarding skills, behavior, and functional communication. During the evaluation, E.D. demonstrated the ability to isolate his index finger to type using a "hunt and peck" method; he was able to type his name on a keyboard independently. E.D. maintained his grasp on a pencil for short durations to engage in graphomotor tasks. His writing was large with inconsistent legibility, including ability to maintain letters within boundaries/on the lines. E.D. was able to follow basic, one step directions but required consistent prompting to remain engaged in tasks that were not highly motivating.

Due to difficulties with functional communication, E.D. was working on using a communication program on his i-pad called Word Power. At the time of the evaluation, he was able to use his i-pad to make simple requests for highly motivating items, such as food or drink. His speech language pathology notes indicated that at the time of his OT evaluation, E.D. was able to use his communication device to label actions and emotions with approximately 50% accuracy when given cueing. E.D. was able to vocalize one word answers or short phrases ("yes", "gift shop"), at a whisper volume only, if he was prompted to vocalize these words. During the summer of 2013, E.D.'s speech pathologist attempted to complete standardized testing activities with E.D. to assess his receptive and expressive language abilities. These notes indicate E.D. would not cooperate with the majority of standardized testing activities; he was able to demonstrate receptive vocabulary up to that of a child 6 years of age.

### Measure: The Canadian occupational performance measure (COPM)

The Canadian Occupational Performance Measure (COPM) [11] identifies and prioritizes individual occupational performance problems and evaluates the change in these performance problems [12]. The client or a proxy (caregiver) identifies problems in the areas of daily occupations and then ranks each problem in order of personal importance [11]. Next, the participant rates each problem for performance, and satisfaction on a scale from 1 to 10 with "10" being the highest [11,13]. The performance and satisfaction are then reassessed at a later date [14]. The COPM has demonstrated reliability and validity as an outcome measure in a variety of OT practice settings [15,16].

### Procedures

E.D. participated in OT sessions at an outpatient satellite of a pediatric hospital in the Midwestern United States. OT sessions lasted for approximately one hour and occurred one time per week for 6-12 weeks, followed by a break from OT to practice skills and promote generalization of skills to the home environment. Since beginning this episode of OT using RPM in November 2013, E.D. participated in approximately 45 OT sessions.

Based upon the results of the evaluation, E.D.'s goals for OT intervention focused on improving his visual motor coordination in order to accurately point to letters in a competing background,

increasing his initiation and involvement in daily self-care activities and life skills, and improving his expressive communication skills including keyboarding skills, use of his communication device, and handwriting accuracy.

As discussed above, RPM was developed as an educational method for persons with ASD and can be utilized to promote skill acquisition in academics, functional skills, motor skills, and communication. Lesson plans are developed from a variety of academic areas to give an individual a solid foundation from which he/she can develop reasoning and understanding [5]. When using RPM, the instructor presents material using a variety of sensory supports or prompts to maximize the participant's ability to take in and process the information. This helps overcome the individual's preferred stimming behaviors at the time of learning.

Although RPM was initially developed for use in an academic setting, its principles can be directly applied to skills being taught within OT treatment sessions. OT practitioners' help people of all ages participate in activities and tasks that promote both independence and engagement in purposeful activities. RPM can be incorporated into this setting with persons with ASD to help teach the skills needed to gain greater independence with life skills. The skills addressed in OT can also help to strengthen a participant's ability to use RPM successfully across environments (for example, an individual may work on tasks to improve motor planning during OT sessions that improve his/her ability to access a letter board or keyboard).

During E.D.'s initial sessions of OT his mother stated that she would like him to improve his ability to engage in functional tasks and in his ability to express himself. ED initially used written choices during his sessions and then was able to transition to use of a stencil with a field of 26 letters followed by a laminated letter board with a field of 26 letters. E.D. was noted to be an auditory learner. E.D. was able to engage in seated work tasks with intermittent tactile sensory breaks (bubbles, use of therapy putty) for the duration of a therapy session (approximately 50-60 minutes). His family members were present for all sessions so they were able to help E.D. generalize what he had learned into his home environment.

During his sessions, E.D. responded well to a constant flow of auditory input from the therapist. In E.D.'s first sessions, it was determined that he was better able to access the letter board when it was held to the right of his midline, midway between his shoulder and his waist, centered off of the placement of his right hand due to his visual preference and right hand dominance. E.D. used his finger or a pencil to touch choices or letters on a laminated letter board containing all 26 letters in alphabetical order. As his sessions progressed, E.D. was able to sequence a series of letters into words and then sentences when the letter board remained stationary at an angle in front of him. He was able to consistently answer questions related to material that was presented during his sessions as well as questions about participation in daily activities, such as how to increase his independence with washing his face, and more open ended questions, such as what his goals were for the future. Prompts were built into E.D.'s learning process to encourage continual initiation and execution of the movement pattern needed to access his letter board including: visual prompts (placement of the board in front of him when it was his turn to engage), auditory prompts (use of encouraging phrases including "that's it", "keep going", "lift your elbow"), and tactile prompts (placement of the pencil in his hand only when it was time for him to respond). The same type of prompting could then be generalized to teach functional skills in other settings. E.D. is continuing to work

toward transitioning his skills to other adults/caregivers and accessing the letter board while it is on a stable surface instead of held in front of him. He is also working toward use of a letter board in standard keyboard format (as opposed to the letters being in alphabetical order) to match the keyboard with his home computer and the keyboard on his communication device.

## Results

OT intervention for individuals with ASD does not generally include formal pre- and post-testing as many individuals with ASD are not appropriate for standardized testing typically utilized by occupational therapists. The COPM was utilized to establish goals for OT intervention and to assess parent perception of E.D.'s progress toward goals during the course of this episode of therapy. The COPM was completed with E.D.'s mother two times during this episode of OT using RPM. Using the COPM, E.D.'s mom identified goals for treatment and gave a numeric score (from 1-10) regarding her perception of E.D.'s performance of these goals and her satisfaction with his performance; she then gave re-assessment scores approximately 3-6 months after setting these goals. On both occasions, E.D.'s mother's scores indicated a clinically significant change (greater than two points) for all goals (4-5 goals each time) that she had identified for E.D. to work toward during OT.

Additionally, E.D. demonstrated improved functional communication abilities and receptive and expressive language skills. As discussed previously, during standardized testing administered by E.D.'s speech language pathologist in 2013, E.D. was unable to complete most standardized testing activities. He demonstrated receptive speech skills up to age 6, identifying 7/10 words correctly. E.D.'s speech therapist re-administered standardized testing in March 2015, and E.D. was cooperative to complete standardized testing activities using RPM. Per his speech therapy note in the medical record, E.D. completed portions of the Expressive One-Word Picture Vocabulary Test [17] using RPM. He was able to identify 16/20 words correctly that were in the 15 year to 18 year, 11 month age range; examples of words that E.D. was able to identify during standardized testing were microscope, hammock, Africa, spices, funnel, scroll, scales, bulldozer, hexagon, column, and stethoscope. This represents a clinically meaningful change both in his willingness to participate in standardized testing in speech therapy and with his ability to identify and express advanced vocabulary words in comparison to his previously measured expressive and receptive language abilities.

During OT sessions, E.D. is now able to accurately respond to close ended and open ended questions related to the material presented during the session as well as to discuss other topics. He demonstrates the ability to sequence letters to form both words and sentences. E.D. uses his index finger or a pencil to touch letters to spell words. E.D. is able to engage in RPM for up to 50-60 minutes when provided with sensory supports and occasional short breaks from therapy tasks. He demonstrates minimal to no self-injurious behaviors during his OT sessions incorporating RPM.

Subjectively, E.D., his mother, and his two sisters (who are his caregivers) report many improvements since E.D. began OT using RPM. His mother and sisters report that E.D. is now able to follow verbal directions to complete chores, such as getting sheets from the dryer, spraying clothes with stain solution, and putting food away, when he was not previously able to do these things. They report that E.D. seems to be talking more frequently and using a more powerful

voice instead of whispering when he talks, and he participates in making decisions now at home. They also report improvements with E.D. being more focused overall and more deliberate in his actions, resulting in better sequencing of steps to complete tasks. A big area of improvement they noted is that E.D. is more accepting when he makes mistakes, with improved behavior and less self-injurious behavior overall. Finally, E.D.'s caregivers report that he seems to be more empathetic and his personality is more evident since beginning OT using RPM.

E.D. reports improvements since beginning to use RPM as well. Using an alphabetical-order, laminated 26 letter board, E.D. was able to communicate about why he likes using RPM. He reported, "I like having to not get mad so much," and "I can say so many things I couldn't say before. . . So many amazing things. . . Like I love my mom."

## Discussion

The purpose of this case report was to describe how RPM can be utilized in OT for individuals with ASD and how using RPM improved this young man's functional outcomes. E.D. had participated in traditional outpatient OT sessions on and off throughout the course of his life, and while he made some improvements in OT, such as learning to tie his shoes and write his name, E.D. continued to have a variety of difficulties impacting his ability to participate in everyday functional activities. Once E.D. began participating in OT using RPM, E.D. made significant improvements with his functional communication, decreased aggressive and self-injurious behaviors, and increased participation in activities of daily living and instrumental activities of daily living, such as meal preparation, face washing, and laundry tasks. While this case report specifically highlights how an occupational therapist utilized RPM when working with a client with ASD that had significantly limited verbal ability, it has applicability to a variety of professionals who provide intervention for individuals with ASD.

E.D. is similar to many clients with ASD that receive OT intervention and other services. Individuals with ASD have varying verbal abilities, and those with significantly limited verbal ability or those that are nonverbal often are perceived to have lower cognitive abilities. In actuality, these individuals may need a less traditional intervention in order to help maximize their functional skills, learning, and communication. RPM demonstrates promise as a tool to help individuals with ASD that are nonverbal or have significantly limited verbal ability to learn information and to communicate.

There are several limitations with this research paper. First, a case report is only the account of a single individual and the impact that the intervention had on him, and therefore, the ability to generalize the findings is limited. Additionally although findings were clinically significant, outside of the COPM and standardized testing completed by an SLP, no formal testing was completed, and data is not analysed for statistical significance in a case report. Given the limitations particularly in regard to study design, this case report provides preliminary support for the benefit of using RPM with a young adult male with ASD who had significantly limited verbal abilities.

RPM appears to be a promising teaching tool for individuals with ASD that are nonverbal or have significantly limited verbal ability. While this case report demonstrates the effectiveness of using RPM with an adult male with ASD who had significantly limited verbal abilities, additional studies with more rigorous designs will be needed to substantiate the use of RPM with individuals with ASD.

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