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Using Model, Cover, Copy, Compare, a Token Economy Program, and Discrete Trail Match to Sample Training for Teaching Functional Life Skills for a 13-Year-Old Middle School Student with Moderate Disabilities

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Abstract *– The purpose of this study was to evaluate the effectiveness of model, cover, copy, compare (MCCC), token system, and match to sample for teaching basic functional life skills with a middle age single student with disabilities. MCCC is a student-managed strategy that teaches discrete skills through errorless correction. Match to sample is another strategy that teaches how to identify and discriminate based on a visual representation of the identical information. The effectiveness of MCCC and match to sample was evaluated using a multiple baseline design. The results indicated that MCCC and match to sample was effective in teaching a single middle age school student with disabilities his name, phone number, home address, and emergency contact name and phone number. Maintenance of the basic functional life skills was also found; except for the emergency contact name. However, even if maintenance was not conducted on the final set, emergency phone number was maintained; this is attributed to the length of teaching sessions on the final set. The MCCC and match to sample interventions were both easy to implement and employ in the special education middle school classroom.*

Keywords*: model, modified copy, cover, and compare, match to sample, token system, functional life skills, middle school student, other health impairments, multiple baseline design*

I. INTRODUCTION

The basic functional life skills are an integral component for middle school students with disabilities as they transition to high school, such as being able to write names, phone numbers, addresses, and contact name and number in case of an emergency **(**Ozen, 2008) These basic skills have an impact on transitioning to a future career decision from middle school when the students start to think about what they would like to do in the future. A functional skill is anything that is useful, is required in multiple settings, helps to promote independence, and encourages participation of a disabled person within a natural setting. (Ozen, 2008) There have been a few studies that have indicated being able to write one's name is a functional skill that can be used for writing checks, filling out a job application, or communicating with others. (McLaughlin & Walsh, 1996). Additionally, other functional skills have equal impact such as, being able to communicate with others and completing a job application, while the emergency information has an impact on the future safety of being able to communicate a point of contact, e. g., if a student is lost and missed their stop riding the bus.

There is research that has shown the necessity of teaching specific skills which have significant safety related consquences as they progress to adulthood. (Ozen, 2008) The effects of teaching safety skills to a middle school student with disabilities has shown that they are able to learn the safety skills such as; crossing the street (Batu, Ergenekon, Erbas, & Akmanoglu, 2004), reading a product label (Collins, & Griffin, 1996), and functional sight words in the community (Schloss, & Alper, 1995), and knowing such skills as home address and phone number. In order to learn the functional skills it is important to be able to verballly articulate the functional skills, as well as, being able to write, or discriminate the written information.

Throughout the United States and internationally, there has a shift that attempts to provide students with the skills to be successful in the workplace, such as, T-2-4 within the local school system of learning a technical trade or attending a two or four year school. As lower functioning disabled middle school students

move towards transitioning to high school the focus of education shifts towards functional life skills that help them prepare for adult life and avoid a higher drop-out rate (Heward, 2013). There are several strategies that are used to teach students with disabilites various academic and functional skills (Joseph, et al., 2012). Some of the some these have included copy, cover, and compare (CCC) (McLaughlin & Skinner, 1996; Skinner, McLaughlin, & Logan, 1997) and match to sample (Lane & Critchfield, 1998).

CCC as an intervention has been widely used in a variety of academic subjects from reading, spelling, and math facts. It incorporates repetition and self-correction strategies along with retention component of being able to write the word or math fact from memory. Skinner had demonstrated the effectiveness of the strategy and this has been replicated numerous times with the same results (Skinner et al., 1997) and it has also shown it is an effective self-management strategy for student with moderate disablities while receiving immediate feedback on their work (Joseph, Konrad, Cates, Vajcner, Eveligh, & Fishley, 2012; Weber, McLaughlin, Cozza, & Millersmith, 2014).

In a recent study, this reviewed CCC as an intervention as a method for enhancing evidence based instruction in the educational system. A meta- analysis examined the effectiveness of CCC and found that CCC was an effective tool for teaching spelling and math and additional academic areas. In fact, it was found to have a dramatic improvement in the performances of students who had disabilities than without. One of the benefits of CCC is that it provides modeling, practice, and corrective feedback. (Skinner, Bamberg, Smith, E.S., & Powell, 1993) Copy, cover, compare can also be used to provide practice in other areas such as labeling maps or diagrams. (Smith, Dittmer, & Skinner, 2002) In fact, there are additional enhancement strategy that can improve the efficiency of CCC which includes an additional step of extra modeling at the beginning of the procedure which helps to provide more practice opportunities. (Joseph, et al. 2012)

Another recent study by Hoschstetler, McLaughlin, Derby, and Kinney (2013) with middle school students resulted in CCC instruction as a highly effective way to teach spelling. There have been multiple studies that have been replicated that include preschool, elementary, middle school students with disabilities and within the general classroom that have proven CCC to be a research based intervention and an effective strategy for teaching in multiple content areas. One such study showed that in addition to being an effective strategy it helped to decrease the number of errors and generalize the skills taught to the classroom curiculum with a middle school student. There was some question if the generalization could have been from a previous learned set (Hollingsworth, Keith, McLaughlin, Derby, 2012).

There has been research that the process of CCC is easy to implement and describes the process; a) look at stimulus; b) cover stimulus; c) copy the stimulus; d) and compares the written copy to the original stimulus. Then if correct the student progresses to the next item, and if it does not match writes the correct response a set number of times. (Skinner, et al., 1997) The self correction procedure is a built in component of immediate feedback and this has shown to be effective in increasing the performances over the traditional spelling practices. (e.g., Grskovic & Belfiore, 1996; Hubbert et al., 2000; Nies & Belfiore, 2006) In one of the studies Nies and Belfiore (2066) conducted they compared the CCC strategy to a copy–only strategy. The copy-only strategy consisted of saying the word, pointing to the word, repeat the word, then copy the word. Nies and Belfiore found that CCC strategy was more effective than the traditional copy and spell.

A recent literature review that specifically focused on ADHD and how there are several interventions that have been shown to be successful in improving students academic performance. The interventions need to have the following criterias: structured activities, strategy instruction, posititve reinforcement, and self-management training (Raggi, & Chronis, 2006) along with self-monitoring, goal setting, and self-correction. (Moser, Fishley, Konrad, & Hessler, 2012) When conducting a study it was found that self-monitoring helped to increase the productivity and on-task behaviors of middle school students. (Shimabukuro, Prater, Jenkins, & Edelen-Smith, 1999) The CCC strategy has all of these components and there is evidence of its effectiveness, there are few studies of the CCC that have used this strategy for learning some of the basic functional skills.(phone number, name, home address, and emergency contact name and phone number) Furthermore, all of the studies of CCC applied to academic content areas, and more specifically math, spelling, and reading. Learning the basic functional skills incorporates the later two of spelling and reading as a part of learning these skills and with this premise may yield strong results of being a highly effective intervention package (Swanson & Hoskyn, 1998).

Another intervention strategy is match to sample, which is teaching procedure that has been used with students who have a wide range of disabilities (Cooper,

Heron, & Heward, 2007; Smith, 1981). Matching to sample in its simplest form is where a student is given a sample to match with an array of stimuli. The student is given the opportunity to match that sample to the corresponding sample provided. This strategy has shown to be effective in academic subjects such as spelling, math, and number identification. (Bishop, McLaughlin, Derby, & Wuesthoff, in press) While there is minimal research this data helps to support that match to sample works with younger children. The ability to identify the basic functional skills from similar information is an important and necessary skill that all children with disabilites need to possess to promote generalization and maintenance across multiple settings.

Haegele, McComas, Dixon, and Burns, (2011) found that if you use a stimulus equivalence paradigm of match-to-sample in teaching numbers, it was an efficient way to teach numbers, words to pre-kindergarteners. The match to sample involves presenting a sample simulus with other choice, or comparison stimuli. They were instructed to via a computer to match the sample provided at the top of the screen from three other stimuli's provided at the bottom. Other researchers (e.g. Lane & Critchfield, 1998) have reported the match to sample as an effective way to develop stimulus equivalence classes, The research has shown that the match-to-sample procedure is an effective and successful teaching strategy, especially with the incorporation of technology. Lane and Critchfield's (1998) also noted that match-to-sample was an effective strategy to connect word with a picture with students that have disabilities.

Grannan and Rehfeldt (2012) found that matching a simple task over a complex task is more relational in that it is important for the participant to point to something that is in direct correlation or identified as a match–to-sample. Multi-media has been suggested as a means to improve the effectivenss of instruction with match to sample skills (Langone, Shade, Clees, & Day, 1999). In this research, the stimuli that was targeted was functional skills such as identifying cereal boxes on simulated grocery store shelves with the hope that it would generalize to the grocery stores. Their results indicated that there was an increase in the number of cereals chosen on a computer based setting and at the grocery store in the local community. While the purpose of this study did not involve multimedia based match-to-sample, there was some validity in having visual comparisons to be able to correctly discriminate from similar information in relation to teaching functional life skills.

The purpose of this study was to determine the effectiveness of a model, copy, cover, and compare and match to sample strategies to teach the functional life skills to a 13-year-old middle school student with moderate disabilities. Learning these skills would clearly his ability to communicate his personal information when needed in safety, career planning, or his transitioning into adulthood.

II. METHOD

Participant and Setting

The participant for the study was a 13-year-old male enrolled in a special education, seventh and eighth grade classroom. He received direct instruction in reading, writing, math, and communication, as well as, a behavioral intervention in this classroom. He had difficulty reading and recognizing common sight words at the kindergarten level. He also had difficulty in spelling the most common sight words, which has severely impacted his educational performance. The participant was significantly behind in his reading skills, which has adversely impacted his ability to write complete sentences using appropriate spelling. This also had adversely impacted his ability in essential functional life skills, such as; knowledge of his personal data information, (name – first and last, home phone number, home address, and emergency contact name and phone number) and the ability to write his personal data information. The participant's last intelligence score was based on the *BASQ2–clinical profile* (Reynolds & Kamphaus, 2004) was above 70 with a T-score range of (43-74), adaptive profile was 30 or below with a range of (32-49) and was diagnosed as significantly high with learning problems. He was classified in his IEP as health impaired with a medical alert of epilepsy and a diagnosis of ADHD. In addition, he had non-compliant behavior and was unable to work on an assigned task independently; that was difficult for a period thirty minutes without getting agitated. The special education teacher recommended this student for the study due to his low performance in reading and writing.

The study took place in a low socio-economic middle school located in a large urban school district in the Pacific Northwest. The participant was attending a direct instruction classroom 95% of his day with the remainder of the day in an adaptive PE class for 5% of the day. The Direct instruction classroom focused on reading, writing, and social skills. He was pulled out to another direct instruction classroom for functional math

and science. The study was conducted three to five times a week. The researcher took the participant to another area located in the direct instruction classroom with a partition separated from the other students, so that the participant could focus on the tasks without distractions. The participant along with the researcher, and the master teacher, were the only people or sometimes an instructional assistant was in the classroom. This classroom has been employed in research projects between the local private university and the school district (Cole, McLaughlin, Derby, & Johnson, 2013; Ruwe, McLaughlin, Derby, & Johnson, 2011).

Materials

The materials used in this study were index cards, data collection sheets, teacher created model, cover, copy, compare worksheets, and worksheets for the written information, (See Appendix A) pencils, and teacher created token board (candy- tangible, computer time (5 minutes), and Skylander trading cards). The index cards were three by five inches and had the targeted personal data information for each area that was focused on; name- first and last (10), home phone number (6), home address (7), and emergency contact name and phone number (6). In total, the study used 28 cards. (See Appendix B). All personal information has been changed. These were used for the discrete trial training with the match to sample cards (MTS) (5-7 different cards each); were used for data collection and intervention. Additionally, intervention and data collection was taken with the model, cover, copy, and compare worksheets and the written worksheets of which the pencils were used to monitor for maintenance, and baseline data. For data collection; verbally, the information was recorded on the data sheets based on the information given. For data collection, the written worksheets were presented and the data sheets were used to record the participant's responses. Data collection was taken additionally on the model, cover, copy, and compare worksheets, and the verbal responses to the discrete trial training with the match to sample was recorded on the data sheets. A token board was used to decrease talk outs and focused on work during the intervention. This can be seen in Appendix C.

Dependent Variables and Measurement Procedures

There were three dependent variables in the present study. The first was the accurate verbal articulation of personal data information. This was defined as correctly saying the following within 3 to 5 seconds following the verbal prompt of; 1) "What is your first and last name?" 2) "What is your home phone number?" 3) "What is your home address?" (Digits and street name only), and 4) "What is your home emergency contact name, (first and last), and phone number?" An error was defined as communicating; 1) I don't know, 2) stating, 'No', 3) Shaking head or not answering in response to the questions above after the verbal prompt.

The second dependent variable was written and was defined as correctly demonstrating in writing the letters or digits on the first author created worksheet; 1) name (first and last), 2) home phone number, 3) home address (digits and street only), and 4) home emergency contact name (first and last) and phone number. An error was defined as not demonstrating in writing on the worksheet one of the following; 1)' No' in the blank space on the worksheet, 2) leaving worksheet blank, 3) letters and digits were not clearly written and distinguishable, 4) incorrect letters or digits written, and 5) letters or digits written in the incorrect order. For both first and second dependent variable in order to determine the percentage of recording; each letter and digit was given a point for correct or the incorrect.

The third dependent variable was scoring when the participant pointed to one of the two flashcards presented to the participant with a verbal prompt of, "Which one?" for each of the following: 1) first name, 2) last name, 3) home phone number, 4) home address (digits and street only), 5) home emergency contact name (first and last) and phone number for a total of 5 trials. An error was defined as participant pointing to the flashcard that was presented to the participant with incorrect information.

Event recording was used in recording the number of letters and digits correct and incorrect for verbal and written. A pre-test was completed prior to determine which personal data information was known and unknown. The researcher then chose four sets of personal data information. The researcher recorded correct responses with a (+) if all letters, digits and first or last name were correct or the correct numbers were listed, e.g., (6) on the data collection form next to the corresponding information; verbal (letters, digits, or first, last name) all verbal data was recorded after each request; written (letters, digits, or first, last name). Incorrect responses were recorded with a (-) if all letters, digits were incorrect or if one or more letter or digits were incorrect a (-) and the number incorrect, e.g., (-3) on the data collection form next to the corresponding information; verbal (letters, digits, or

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first, last name) all verbal data was recorded after request; written (letters, digits, or first, last name). After each session was completed by the participant, researcher would mark on the permanent product the number of incorrect letters or digits (-1 letter) next to an incorrect response. (See Appendix D) The visual flashcards were presented to participant, researcher recorded correct responses for all 5 trials with a (+) on the data collection form next to first, last, letters, or digits. Incorrect responses for visual flashcards were recorded with a (-) on the data collection form next to first, last, letters, or digits. The breakdown of the number of letters, digits for each area of personal data information that was determined are listed below in more detail.

Verbal. The total number of letters or digits per each functional skill was recorded to determine a percentage of correct or incorrect letters or digits that were articulated to the researcher. Name (first and last) had fourteen letters total (seven first and seven last), home phone number had seven digits, address had three digits and nine letters for a total of twelve, and home emergency contact name was broken down nine letters (five first and four last name) and seven digits for emergency contact phone number.

Written. The total number of letters or digits per each functional skill was recorded to determine a percentage of correct or incorrect letters or digits the participant had written on the researcher created worksheet. Name (first and last) had fourteen letters total (seven first and seven last), home phone number had seven digits, address had three digits and nine letters for a total of twelve, and home emergency contact name was broken down into nine letters (five for the first name and four for the last name) and seven digits for emergency contact phone number.

Visual. This was scored out of the total number of presentations per each functional skill was five trials and was recorded to determine a percentage of correct or incorrect responses.

Experimental Design and Conditions

A multiple baseline design (Kazdin, 2011; McLaughlin, 1983) was utilized to document the effects of a model, copy, cover, and compare procedure in learning personal data information. There were four sets of personal data information; name (first and last), home phone number, home address (digits and street only), and home emergency contact name (first and last) and phone number. A single subject multiple baseline design was also implemented to evaluate the effects of employing a match to sample. A description of the various conditions follows.

Baseline. Before baseline, personal data worksheets were used to help the participant practice writing and memorizing the specific personal functional life skills information. During this time, the participant would write the information known without looking at a filled in data sheet. Then participant would look at the filled in data and fill in the blank spaces. There was no explicit instruction given at this time. Baseline data was gathered in a tiered design for each personal data area, "name, phone number, address, and emergency contact name and phone number, with verbal and written. This was to eliminate confusion of too much information requested of the participant at one time.

Verbal. When baseline data were collected, the researcher verbally prompted the participant with the following questions. "What is your first and last name?", "What is your home phone number?", "What is your address?", and "What is your emergency contact name and phone number?" Baseline was gathered for name over a period of 2 school days, home phone number over a period of 4 school days, home address over a period of 7 school days, and emergency contact name and phone number over a period of 11 school days.

Written. When baseline data were collected for written, researcher created worksheets were used per each area of personal data information requested. (See Appendix E) Baseline data was gathered for name over a period of 3 school days, home phone number over a period of 3 school days, home address over a period of 3 school days, and emergency contact name and phone number over a period of 4 days.

In both verbal and written baselines, no feedback or verbal praise was given for correct or incorrect responses. During the first session researcher noticed that participant was off task during session and was very talkative. Researcher implemented a token system to decrease talking and increase on task behavior. Data was not taken on token system.

Model, copy, cover, and compare. (CCC). A modified copy, cover, compare strategy (CCC) (Hollingsworth, Keith, McLaughlin, 2012; McLaughlin & Skinner, 1996; Skinner, McLaughlin, & Logan, 1997) was used with a slight modification to a model, copy, cover, and compare. In this personal data intervention the researcher created a worksheet (see Appendix A) with columns for each set of functional skills. The procedure was done with the same tiered design that was used during baseline and was continued

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throughout the intervention. In the first column was the correctly spelled personal data information that was to be practiced. The second column was a model- copy column where participant could copy the information from column one. In the next column the participant was instructed to copy the personal data information being practiced as he read the information, saying each letter as he spelled it out. The following column was where the participant could check the information that he copied against the original column and was instructed to place a (√) check mark if correct or a (-) if incorrect. The participant was then instructed to flip the worksheet over and in the following column was compare-test where participant could spell the personal data information from memory. The next column was another check spelling column where the participant could compare the spelling of the personal data information. The following column was a re-test and participant was provided with a sheet of paper to cover up the 'compare-test' column and spell again from memory. If participant spelled correctly from memory, participant could move down the sheet until all the personal data information listed was completed. The researcher took the letters or digits correct and transferred the data to a data collection sheet and then the researcher calculated the percentage correct. If it was incorrect, the participant would correctly spell the word in the last column labeled 'correct', for more practice three times, before moving on to the next personal data information. When the participant spelled the personal data information correctly in three consecutive sessions a pre-post-test was given and the personal data information was moved to the discrete trial training with the match to sample cards, then was moved to maintenance every session and a periodic check for maintenance on verbal. Each set of personal data information was modified slightly as indicated below.

Name. The participant's name was broken down into first and last name on the MCCC worksheet. Participant writing was slightly bigger than the spaces provided and additional spaces below were used as needed. The procedure remained the same as indicated above.

Home phone number. The home phone number was provided in its entirety during the first intervention session. The intervention was started on this functional skill after a couple of sessions in intervention on name. The procedure remained the same as indicated above with the modification of instead of letters, digits were used instead and the number correct was transferred to the data collection sheet and then the researcher calculated the percentage correct.

Home address. Intervention for the home address was modified to incorporate both digits and letters. The digits and the letter for the direction were broken down in column one on the first row and the street name was placed on the second row in column one. The procedure remained the same as indicated above.

Emergency contact name and phone number. The intervention for this was modified to eliminate confusion with the participant in order to not be inundated with a lot of information at once. The emergency contact name was broken down into three areas; first name, last name, and phone number; for the initial introductions; in three sessions and then was introduced all at once in the remaining sessions. The procedure remained the same as indicated above.

Praise and corrective feedback were given contingent upon responding and participating throughout the study. A token system which was started during baseline was continued throughout the intervention in order to increase on task behavior and decrease talk outs.

Pre- and Post testing. A pre and posttest was administered to our participant after mastering the intervention in at least three consecutive sessions. The testing was given in the same format as the intervention with a researcher created worksheet format as the MCCC. The modifications to the worksheet incorporated differentiation of the different personal data information; 1) name – first and last, 2) home phone number, 3) home address, 4) emergency contact name and phone number. * All personal information has been changed. For example, the home phone number is in the first column, researcher handed a piece of blank paper to participant to cover the column. The second column had a model of two numbers that participant was instructed to circle one phone number. Researcher then instructed the participant to copy the correct phone number from the original column, and then self-check against the original column. If correct participant would place a (√) mark in the fourth column, if incorrect a (-) was placed in the column. Participant was instructed to flip the paper over for another compare/test with a different number added from previous column and researcher verbally prompted participant, "Circle one of the phone numbers." Participant then self-checks in column six against the original column. Column seven was a retest of the home phone number. Researcher prompted participant to cover column five and rewrite the home phone number. Data collection was taken on

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the retest column, the number of correct digits or letters were written on the data collection sheet. If an error was made participant would rewrite the correct home phone number three times in the next column. The data was collected in the same procedure as indicated above and the percentages were calculated based on the number of letters or digits correct for each functional skill area. The pre-post-test was in preparation for the next intervention of match to sample. The researcher did not provide praise or feedback during the testing.

Discrete trail training using match to sample (DDT). The match to sample sets were created based on the personal data information for each area. Each set consisted of the following; name- first and last; were separated and broken down into two sets of five for a total of (10) flashcards. The flashcards for home phone number; was broken down into one set of six flashcards, and the home address; consisted of one set of seven flashcards. The emergency contact name and phone number; set was one set of (6) flashcards which had all of the information on the flashcards. The researcher placed two cards in front of participant in random order in order to eliminate bias. Researcher asked participant, "Which one is _____?" One of the flashcards would have the correct information. If the participant pointed to the correct flashcard the researcher placed two new cards in front of the participant. If the participant incorrectly pointed to the wrong flashcard an error correction procedure would be engaged. For an error correction, the researcher modeled which flashcard had the correct information by physically pointing to the correct card and verbal prompt participant, "This is the correct information _____ (name, home phone number, address, or emergency contact name and phone number). The participant was then required to point to the correct flashcard. When the participant correctly pointed to the correct flashcard, verbal praise and feedback was given; such as, "Good job, excellent, or you rock." Each set had a discrete trial training of at least 5-7 trials. This condition was in effect for only one to two sessions per functional skill area.

Token system. A token system (McLaughlin & Williams, 1988) was put in place during baseline when researcher noticed that the participant was talkative and off task with behavior. A list of preferred items was observed by the researcher that the participant engaged in daily and was used for the token board. (See Appendix C) One side had three preferred items that the participant chooses prior to starting baseline or intervention. (One piece of candy, computer time (5 minutes), and Skylander card) All tokens and items were attached by Velcro. The other side had (5) tokens that the participant was able to earn for on task behavior and decreased talk outs, which impacted his ability to concentrate effectively. The researcher would give praise and feedback for being on task and participating throughout the study. Data was not collected on the token system.

Pre- and posttesting. A pre and posttest was given to the participant, researcher instructed the participant to complete the starred items and one additional item added of, 'emergency contact phone number', on the personal data worksheet that was created by the master teacher. (See Appendix F) The pre-test personal data sheet was prior to the creation of researcher's post-test worksheet. (See Appendix G) The child was given unlimited time to complete the worksheet. These two tests were given as a measure of evaluating improvements from baseline to posttest as well as Model, Copy, Cover, and Compare (CCC). The first author did not provide praise or feedback for correct or incorrect responses during the pre and post-testing.

Reliability of Measurement

For inter-observer agreement (IOA) on the personal data information of being able to verbally communicate name (first and last), write (first and last) name, and visually match to sample (first and last) name, a recording of 21 out of 21 sessions was taken, observed, and scored independently of the researcher. Correct responses were recorded on a separate data collection sheet with a (+) and an incorrect response was recorded with a (-) or number of incorrect, e.g., (-1) next to (first and last). IOA was collected 21 out of 21 sessions for a total of 100%. Recorded data was compared on a point-by-point agreement ratio. An agreement was defined as a letter that was scored in the same manner via verbally, written, visually by both the researcher and observer. A disagreement was defined as a letter being scored via verbally, written, or visually in a different manner by either scorer. The number of (agreements divided by the number of disagreements) x 100 = % of agreement. The agreement for verbal, written, and visual was 95%.

The inter-observer agreement (IOA) on the personal data information of being able to verbally communicate home phone number, write home phone number, and visually match to sample home phone number, a recording of 21 out of 22 sessions was taken, observed, and scored independently of the researcher. Correct responses were recorded on a separate data collection

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sheet with a (+) and an incorrect response was recorded with a (-) or number of incorrect, e.g., (-1). IOA was collected 21 out of 22 sessions for a total of 95%. Recorded data was compared on a point-by-point agreement ratio. An agreement was defined as a digit that was scored in the same manner via verbally, written, visually by both the researcher and observer. A disagreement was defined as a digit being scored via verbally, written, or visually in a different manner by either scorer. The number of (agreements divided by the number of disagreements) x 100 = % of agreement. The agreement for verbal, written, and visual was 100% each time.

The inter-observer agreement (IOA) on the personal data information of being able to verbally communicate home address (letters and digits), write home address (letters and digits), and visually match to sample home phone number (letters and digits), a recording of 20 out of 22 sessions was taken, observed, and scored independently of the researcher. Correct responses were recorded on a separate data collection sheet with a (+) and an incorrect response was recorded with a (-) or number of incorrect, e.g., (-1). IOA was collected 20 out of 22 sessions for a total of 91%. Recorded data was compared on a point-by-point agreement ratio. An agreement was defined as a digit and letter that was scored in the same manner via verbally, written, visually by both the researcher and observer. A disagreement was defined as a digit and letter being scored via verbally, written, or visually in a different manner by either scorer. The number of (agreements divided by the number of disagreements) x 100 = % of agreement. The agreement for verbal, written, and visual was 95%.

The inter-observer agreement (IOA) on the personal data information of being able to verbally communicate home emergency contact name (first and last) and emergency contact phone number (letters and digits), write home emergency contact name (first and last) and emergency contact phone number (letters and digits), and visually match to sample home emergency contact name (first and last) and emergency contact phone number (letters and digits), a recording of 24 out of 26 sessions was taken, observed, and scored independently of the researcher. Correct responses were recorded on a separate data collection sheet with a (+) and an incorrect response was recorded with a (-) or number of incorrect, e.g., (-1). IOA was collected 24 out of 26 sessions for a total of 92%. Recorded data was compared on a point-by-point agreement ratio. An agreement was defined as a digit and letter that was scored in the same manner via verbally, written, visually by both the researcher and observer. A disagreement was defined as a digit and letter being scored via verbally, written, or visually in a different manner by either scorer. The number of (agreements divided by the number of disagreements) x 100 = % of agreement. The agreement for verbal, written, and visual was 92%.

III. RESULTS

The percent of personal data information, letters and digits, verbally articulated and written correctly during baseline and the MCCC and Match to Sample strategies across four sets of personal data information can be shown in Figure 1.

Name. In baseline, for verbal during sessions one and two percentages of name –first and last aurally said correct was 100%. (*M* = 100%). During maintenance of verbal in Session 19, results the outcomes indicated that 100% of the information was maintained. In addition, the pre and Post-test percentage aurally said correct was 100%. In baseline, for written during sessions three through five the percentage of name – first and last written correctly was 50%. (*M* = 50%), which increased during the MCCC, with the percentage of name – first and last written correctly ranged from 92.85% to 100% *(M* = 99.41%). During maintenance after the instruction the range of percentage correct was 78.57% to 100% (*M* = 95.92%), which increased and maintained on the pre-post-test and post-test to 100%. During the match to sample**,** sessions 10 and 11, the percentage for first Name was 50% and last name was 50%.

Home phone number. In baseline, for verbal during sessions one through four percentages of home phone number aurally said correct was 0%. (*M* = 0%). During maintenance of verbal; session twenty, results showed the percentage aurally said correct was 100% and Post-test percentage aurally said correct was 85.71%. In baseline, for written during sessions five through seven the percentage of home phone number written correctly was 0%. (*M*= 0%), which increased during the MCCC with the percentage of home phone number written correctly to 100% each for sessions eight through eleven *(M* = 100%). During maintenance after the instruction the range of percentage correct was 85.71% to 100% *(M* = 97.61%), which increased to 100% on the pre-post-test and post-test. During the match to sample**,** session 13, the percentages correct for home phone number was 100%.

Home address. In baseline, for verbal during sessions one through seven percentages of home address aurally said correct was 0%. (*M* = 0%). During

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maintenance of verbal; session twenty, results showed the percentage aurally said correct was 100% and Post-test percentage aurally said correct was 83.33% a slight decrease from maintenance. In baseline, for written during sessions eight through ten the percentage of home address written correctly was 0%. (*M*= 0%), which increased during the MCCC, with the percentage of the home address written correctly ranged from 91.66% to 100% *(M* = 95.83%). During maintenance after the instruction the range of percentage correct was 75% to 100% *(M* = 88.89%), which increased and maintained on the pre-post-test and post-test to 100%. During the Match to Sample; session16, the percentages correct for home address was 100%.

Emergency contact name (first and last) and phone number. In baseline for verbal during sessions one through eleven the percentages of emergency contact name (first and last) and phone number aurally said correct was 0%. (*M* = 0%). A verbal maintenance was not given but the results of the post-test percentage aurally said correct was 93.75%. In baseline for written during sessions twelve and thirteen the percentage of emergency contact name – first and last written correctly was 0%. (*M*= 0%), and sessions fourteen and fifteen the percentage of emergency contact name- first and last and phone number was 0% (*M*= 0%), which increased during the MCCC with the percentage of emergency contact name – first; written correctly during session sixteen was 25%, last name during session seventeen was 25%, and phone number during session eighteen was 50%. Information was given separately to start, once each area of personal information was introduced then the remainder of the sessions contained all information in the intervention. The percentage of emergency contact name-first and last and phone number written correctly during sessions nineteen and twenty was 100% per each session *(M* = 100%). Maintenance after the instruction was not implemented due to the ending of the semester for the first author. A pre-and posttest was given and the percentage correct was 68.75%, so intervention was implemented again during sessions twenty two and twenty three and the percentage written correctly was 100% per each session (*M*= 100%), which increased from the pre-post-test to 81.25% on the posttest. During the Match to Sample session 24, the percentage for emergency contact name - first and last was 100%.

IV. DISCUSSION

The results of the present case report found that basic survival or functional skills could be taught to a middle school student with moderate disabilities. The participant increased his knowledge in each area of the basic functional skills in all areas using MCCC and Match-to-Sample interventions with visual and written as evidenced in the pre and posttests. All areas were mastered except for emergency contact name, of which the contributing factor was not enough time in the intervention and maintenance of the skill. However, the participant was able to generalize some of the skills taught; such as, writing his full name on his papers in the classroom. At first the participant's behavior was very talkative during the whole intervention, so much so, that the participant was not concentrating on learning the functional skills when the interventions were enacted. Researcher added a token system that was not tracked or included as part of the intervention. This helped the participant to maintain focus on the intervention and this incentive seemed to work well for the participant. As the study continued, the participants' willingness to participate increased to the point that he wanted to learn his middle name as well. The researcher started this with the MCCC intervention, but did not complete due to concentration on the last functional skill; this did not deter from the intervention but helped to enhance the study and the willingness of the participant. Also at one point, the researcher had to modify and breakdown the components of the MCCC strategy into smaller portions, such as in, the address and emergency contact name and phone number, since the participant would get frustrated trying to cognitively remember all of the information at once. Once this was modified, participant was able to focus and maintain the information with the MCCC strategy.

Overall, our interventions were very effective with the combination of visual and written strategies. This is consistent with other studies that show the effectiveness of the Copy, Cover, and Compare and Match-to-Sample interventions for students with learning disabilities. Even though this is the first study using MCCC and Match-to-Sample intervention in learning the basic functional skills; (figure 1,2, and 3) it has shown to have an impact in learning the essential basic functional skills that a middle school student will need as they progress towards a high school in learning the some of the basic functional skills for a job. The interventions have shown that they can be implemented for a variety of purposes to increase spelling, writing, reading, and math abilities as already indicated in the students and now for also learning the basic functional skills for students with moderate disabilities.

In this study, the MCCC procedure, first implemented by Skinner, Bamburg, and Powell (1993) and is very easy and practical. It took only 25 minutes a day, three to five times a week to execute. It does take some time to prepare the material and create the worksheets in the beginning but the simplicity, effectiveness, and minimal cost of the procedure makes up for the difference. The MCCC was nice for data collection because you have a permanent product that is easy to score and take reliability. It is also very effective and once you have a MCCC worksheet, it is simple to use and can be used simultaneously by multiple participants. It is also an independent intervention that teachers can implement quickly and easily with the students. This procedure is very cost efficient only needing copies of the worksheets (once created) and a pencil, most of these items can be found in the schools.

In addition, the match-to-sample intervention (Lane, & Critchfield,1998) and was practical. It helped to firm up the connection between the MCCC and the differentiation between writing, verbal, and differentiation of visually seeing the basic functional skills as shown in Figure 2. The match to sample helped to improve the mastery and retention of the skills required for a middle, elementary, or high school student with moderate disabilities. The materials are limited and cost efficient with minimal preparation. The researcher did not have to spend much time doing the data collection. Additionally, this procedure can be easily implemented in a classroom setting, or done at home. The token system that was implemented was cost effective as well; the researchers' cost was minimal for all interventions; 3 x 5 index cards, markers, and Skylander cards. The cost was well under $10.00, and most of the other rewards were already provided within the classroom. Compiling the worksheets for the MCCC intervention took minimal time on the computer and once created can be used for multiple purposes and for multiple students.

The strengths of the study include the low cost of the materials, ease of implementation, the positive atmosphere, hardworking participant, and the multiple data points evaluating the effectiveness of the MCCC and MTS strategies. The classroom was a comfortable place for the participant. He was a hard worker even when he was talkative and with the token system his work efforts and work increased as evidenced by the final outcomes. When asked how he felt about his progress, he acknowledged the need for help in learning his basic functional skills and felt that he was gaining with memorizing the information with the help of the interventions. The MCCC strategy provided immediate feedback and the MTS incorporated an error correction as feedback on how the participant was progressing, which helped the participant to increase his accuracy of the functional skills.

There were limitations in the present research that should be noted. First, there was only one participant in the study. This limits the effects of the study and the reliability to some degree. Future research would need to be conducted with multiple participants in order to solidify the effectiveness of the study. Second, the interventions subject matter of learning the basic functional skills is new to the MCCC and MTS strategies, even though the strategies have shown to be effective in other subject areas, this warrants further study. Research would need to be conducted in order to substantiate that these interventions are effective in learning the basic functional skills.

Another weakness of this study was the inability of the participant to read the words of address, emergency contact name and phone number, which inhibited and limited the independence for the participant. In the future, researcher would need to incorporate pictures to communicate the words so that independence could be facilitated in the MCCC intervention. Finally, the role of the token system as part of the interventions was not evaluated. The use of the MCCC conditions with and without the token system could determine its impact. These outcomes appear to warrant further study.

In summary, overall the Model, Copy, Cover, Compare and Match-to-Sample strategies proved effective. The outcome replicates prior studies of MCCC, especially with middle school students (Hochstetler, McLaughlin, Derby, and Kinney, 2013) and provided additional efficacy of employing the match to sample intervention (Bishop, McLaughlin, Derby, and Wuesthoff, in press). This research also provides initial evidence that MCCC and MTS interventions can be effective for teaching the basic functional skills to middle school students. Although the study had a small sample size, the results provided clear evidence that the procedures were successful. More importantly, the results suggest that maintenance and generalization can be achieved through continuious repetition and that it is useful when learning new skills; be it in academics, social, or the basic functional skills required for success in school. The present research adds to the body of evidence that has suggested that MCCC and MTS are effective methods to teach students academics and the possibility of basic functional skills to students with moderate disabilities.

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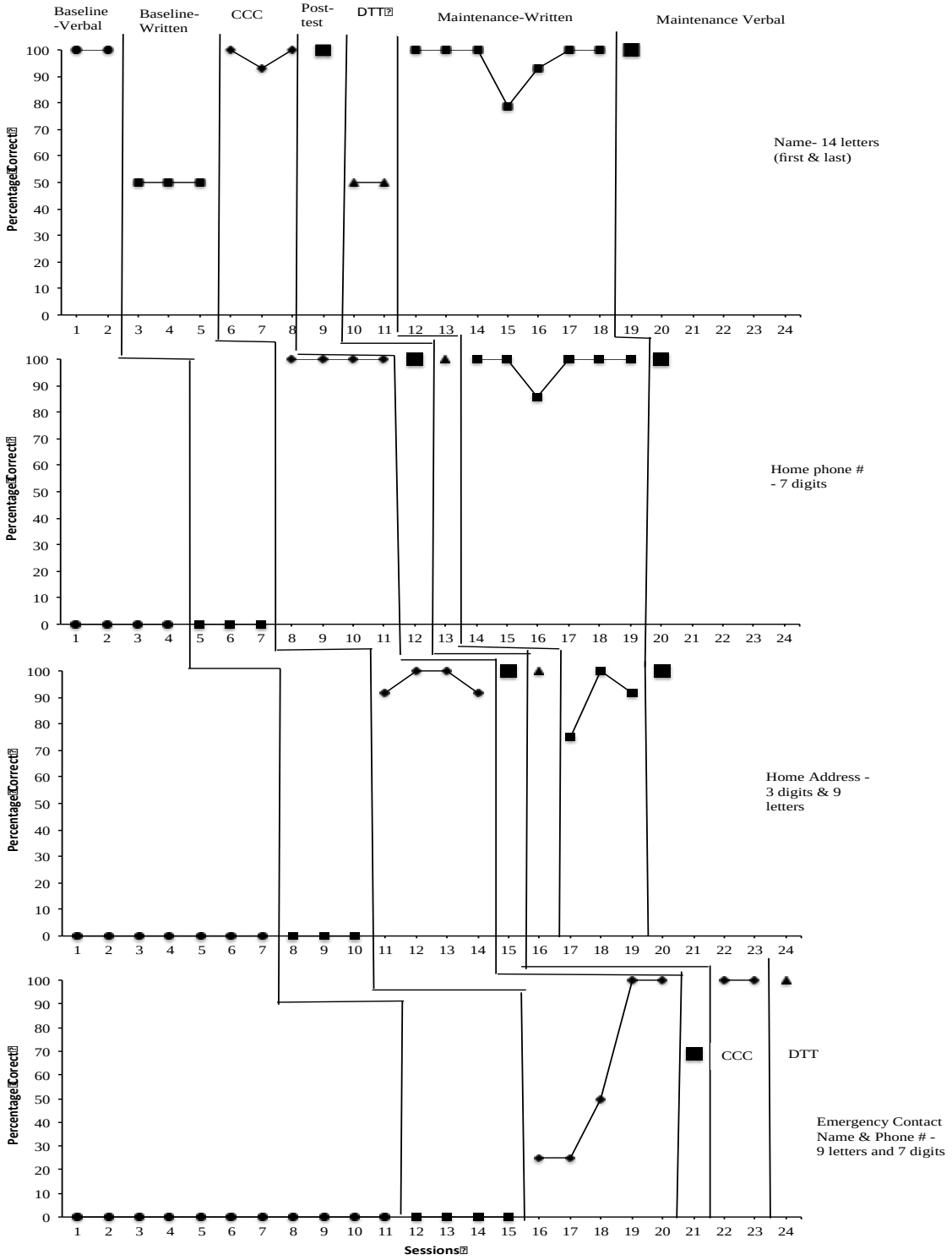

Figure 1. Data showing baseline, intervention, and maintenance of basic functional skills for written and verbal formats for each skill. CCC was a modified to model, cover, copy, and compare., DDT discrete trial training presented in a match to sample format, and pre and posttest scores for our participant. .