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EDEC TOOL AND STEPS INTERVENTION
MEDIA INTERVENTION FOR CHILDREN WITH
COMPLEX COMMUNICATION NEEDS

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ABSTRACT

It is commonly known that children with complex communication needs have difficulty communicating about emotions. In this paper, I am going to evaluate the *Strategies for Talking about Emotions with Partners intervention* used with the parents of three children with Down syndrome using the Early Development of Emotional Competence tool which analyzes the communication patterns between families and children. The analysis will be used to answer the following questions; "How did the parents' responses to the EDEC tool change post intervention? Also, how did the intervention change the parents' construction of communication boards for communication about emotions?"

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Chapter 1 Emotional Competence

Emotional competence is the ability to pinpoint, respond to, and manage one's own emotions as well as the emotions of others (Saarni, 1999). Saarni (1999) expands upon this definition by identifying the eight skills that are required for the development of emotional competence: the awareness of one's emotional state, the ability to discern others' emotions, the ability to use the expression terms of emotion, the capacity for empathic and sympathetic involvement, the ability to discriminate inner and outer emotional states, the capacity for adaptive coping with emotions, the emotional communication within relationships, and the capacity for emotional self-efficacy.

The development of emotional competence is often limited in children who have Down syndrome in comparison to their typically developing peers (Na, 2015). A child that has Down syndrome may have restricted emotional expression and regulation, and may also be presented with fewer opportunities to engage in appropriate emotional exchanges (Na, 2015). A child with Down syndrome frequently presents hypotonia. Hypotonia is low muscle tone and it is typically found in children with Down syndrome at birth or during early infancy (Latash, Wood & Ulrich, 2008). Because of low muscle tone, the signals of children with Down syndrome may be difficult to read, causing a breakdown in interaction with their communication partner (Lewis & Sullivan, 1996). Children with Down syndrome also commonly present anatomical differences in the vocal tract, hearing difficulties, and vision difficulties that make reciprocal communication difficult (Rice, Warren, & Betz, 2005).

Augmentative and Alternative Communication (AAC) is one way to aid communication in children with Down syndrome who have limited speech production and comprehension. AAC is all forms of communication, other than oral speech, that are used to supplement or replace dysfunctional speech (Augmentative and Alternative Communication, n.d.). Some examples of AAC are gestures, body language, communication books, communication boards, voice output and written output (Augmentative and Alternative Communication, n.d.). Brady, Konkle, Alvarez and Olivia (2008) claim that visual aids (i.e. symbols, photos) can enhance communication in individuals with Down Syndrome as it better allows them to express their wants, needs, ideas, or emotions. When implementing AAC it is important to recognize the importance caregivers play in successful AAC intervention. Medirons and Cress (2010) discussed the role of caregivers in the successful implementation of AAC intervention. They claimed that a parent's quality and rate of responsiveness is essential to the success of intervention; therefore, it is critical to train parents on proper AAC and emotion communication modeling (Na, Wilkinson, & Liang, under review).

This paper aims to use previous works regarding emotional and communicative competence in children with Down syndrome to analyze the *Strategies for Talking about Emotions with Partners* (STEPS) and its influence on parental perception about emotion communication. Throughout this paper, I plan to reveal how the STEPS intervention can influence parents' use and construction of AAC boards. Finally, this paper aims to better explain the implications these findings have on the development of emotional competence in children with Down syndrome.

Chapter 2 Communicative Competence

Limited emotional competence in children with complex communication needs (CCN) can result in negative functional and communicative outcomes. Emotional competence is important for the development of functional outcomes including: making and maintaining friends, academic success/readiness for learning, community integration, context appropriate behaviors, and self-regulation skills. Without the development of emotional competence, children with Down syndrome often face challenges in social, academic, and developmental success (Na, Wilkinson, Karny, Blackstone, & Stifter, 2016).

One promising way to improve emotional competence in children with Down syndrome is through communicative competence. One study done by Roben, Cole, and Armstrong (2013) examined the longitudinal relationship between language skills and emotional regulation. They found that a growth in language correlated with an increase in regulatory strategies. Another study done by Vallotoon and Ayoub (2011) also longitudinally looked at the relationship between vocabulary and talkativeness and self-regulation. They too found that language was related to self-regulation (Na et. al, under review). While this research was done with typically developing children, the established correlation between emotional and communicative competence provides insight into possible strategies for improving upon the emotional and communicative competence of children with Down syndrome.

The correlation of emotion and language is further supported through the examination of the context in which language develops. Morris, Silk, Steinberg, Myers & Robinson (2007) claimed that early emotional development is influenced by the child's interactions within their physical and social environments. Vygotsky's sociocultural theory also argues that higher order functions including cognition, communication, and language development arise from social

interaction (Na et. al, under review; Tharp & Gallimore, 1988). Na et. al (under review) argues that the sociocultural theoretical framework positions communication language as a means through which emotional competence can develop. Based on these theories, it seems likely that the environment in which children with Down syndrome communicate about language is critical to their development of emotional competence, therefore, it is necessary to understand how children with CCN discuss emotions with their caregivers in order to support the development of emotional competence.

Chapter 3 EDEC Tool

One current method for soliciting information about the communication patterns between families and children is the Early Development of Emotional Competence (EDEC) tool. Na, Wilkinson, and Liang developed the tool for clinicians and researchers as a way to gather information about the preferences, expectations, and goals of communication about emotion between parents and children with CCN (Na et. al, under review). The tool is broken down into two main sections in which the clinician or researcher analyzes the parent's response to questions regarding their child's emotional competence.

The first section focuses on temperament and general behavioral characteristics of the child. By analyzing temperament, the examiner is able to see how a child reacts to a given emotional situation. The questions regarding temperament were adapted from the nine dimensions of temperament developed by Thomas, Chess, and Birch (1970): activity, rhythmicity, approach/withdraw, adaptability, intensity of reaction, mood, persistence, sensory threshold, and distractibility. The questions in section one about temperament provide a baseline on how personality affects a child's communication.

Development of emotional competence can be analyzed by asking questions regarding behavior, especially behaviors seen as difficult. The tool asks questions regarding the child's temper, self-injury, aggressive behavior and property destruction. Behaviors often serve as a form of communication in a child with CCN (Na, et. al, under review). The tool seeks to not only examine a child's difficult behaviors, but also relate those behaviors to communication about emotion by asking about the quantity of emotion words the child uses during emotional situations.

The second part of the EDEC tool asks questions about the established and emerging emotional expression skills of the child in order to understand their current emotional development. When looking at the established emotional expression skills, the tool examines expression and behavioral self-regulation by asking questions regarding communication modalities, labeling abilities, emotion eliciting conditions, and emotional reactions (Na, et. al, under review). By understanding a child's current emotional expression skills, it is possible to pinpoint emerging skills. Typically, emotion skills develop in a sequence, so by establishing the emotions a child currently understands and expresses it is possible to track the development of their emotional competence (Na, et. al, under review).

The second section of the tool also contains questions that establish the sociocultural patterns of emotions (Na et. al, under review). For instance, identifying the role of communication partners is important for identifying patterns. In regards to sociocultural patterns the tool also establishes which types of modalities the child prefers to use including: facial expressions, body postures, gestures, vocalizations, speech, manual signs, symbols/text on non-electronic communication displays, symbols/test on simple AAC devices, symbols/text on synthesized speech AAC device, symbols/text on mobile device/computer with apps/software, writing, or any other modality the child chooses to use to communicate. It also asks questions regarding communication contexts like, "Does [name] use these (signs, spoken words, and/or graphic symbols) in lots of different settings, like home, school, leisure activities in the community, church etc?" It is necessary to establish the sociocultural patterns in order to identify the ways in which children express emotions, with whom they choose to express their emotions, and the context in which they typically express emotions (Na, et. al, under review).

Finally, section two establishes the types of communication input that the child receives. The first way that the EDEC tool identifies communication input is through storybook reading (Na, et. al, under review). Storybook reading has been known to foster social closeness between a caregiver and a child. Storybook reading also provides the caregiver the opportunity to model and scaffold emotional responses to emotions found within the story. Similar to storybook reading, the tool establishes any other activity in which the parent engages in conversations about emotions (i.e. movies, television, plays). The tool also asks questions regarding the kinds of emotions presented to the child (i.e. all emotions, or only positive emotions). Questions that the EDEC tool asks like, "Are there any emotions you try not to express when you are with [name]? Why, or in what situations would this occur?" allows the researcher to see the kinds of emotions the child has access to on a daily basis. The tool also asks questions about how caregivers respond to the emotions that their children express. By establishing how the parents respond to emotions, the researcher is able to see the current emotional responses that the child is exposed to (Na, et. al, under review). The data collected from the EDEC tool was essential in gathering information to use in further intervention concerning emotional competence in children with Down syndrome.

Chapter 4 STEPS Intervention

The intervention developed to be used with the EDEC tool is known as the Strategies for Talking about Emotions as Partners (STEPS) intervention. The STEPS intervention is based on AAC and modeling (Na, 2015). Kent-Walsh and McNaughton (2005) developed the eight stages of communication partner instruction that is used in the STEPS intervention to scaffold appropriate emotion communication modeling. The eight stages are (1) pretest and commitment to instructional program, (2) strategy description, (3) strategy demonstration, (4) verbal practice of strategy, (5) controlled practice and feedback, (6) advanced practice and feedback, (7) posttest and commitment to long-term strategy use, and (8) generalization of targeted strategy use. The first six stages were used when instructing the caregiver on how to model appropriate emotion communication (Na, et. al, under review). Stage seven was used during the intervention phase of the STEPS program. Stage eight was used during the generalization phase of the STEPS program (Na, et. al, under review).

The STEPS program has been implemented with the parents of 3 parent child dyads (Na, 2015). The children within the intervention were under 10 years old, had emergent literacy skills, had a diagnosis of Down syndrome with under a 50% intelligibility, previous exposure to AAC, a receptive vocabulary over a 2-year-old level, and no diagnosis of emotional/psychiatric disorders (Na, 2015). For confidentiality reasons the three dyads will be referred to, in this paper, as MIF, F2M, and FIF.

The dyads were instructed to select from a series of books that included the following criteria: illustrations, incorporated text and storylines that were appropriate for the child's receptive language level, cultural background and interests, had at least two different categories of emotions related to the story and had ten double page spreads (Na, 2015). The dyads chose

Mercer Mayer's *Little Critter*, Houghton Mifflin's *Curious George* and Marilyn Sadler's *P.J. Funny Bunny.* The parents were then instructed using the eight stages of communication partner instruction through storybook reading and AAC intervention. During instruction, parents were taught how to design and select emotion vocab for an AAC display. They were then taught how to use that board to create effective emotional discussions during storybook reading (Na, 2015).

The STEPS program piloted a specific model during the instruction phase of communication partner instruction. The parents were first asked to create an AAC board. Then they were taught effective storybook reading through a system as follows: Label, Reason, Solution. In each of these sections the parent was also taught to: ask, wait, respond. This system is supported by Sanders and Welk (2015) who theorized that modeling, questioning and feedback [label, reason, respond] are some ways to support children's performance and foster emerging skill acquisition.

STEPS Instruction Page

1. Labeling of Emotion		
(1) Ask	**(2) Wait**	**(3) Respond**
(ex) *"How does bunny feel?"* • Ask your child **what emotion** the character is experiencing in the book. • Place the emotion board within reach, but do not provide any cues (e.g., pointing to the board) • You can repeat/rephrase 1-2 times your question to assist your child's understanding.	..................pause.................. • Pause for **at least 5 seconds** or until your child begins his/her response to your question. • Look directly at your child to convey an expectation for him/her to take a conversational turn. • Remain the emotion board within reach, but do not provide any cues (e.g., pointing to the board).	(ex 1) *"You're right. Bunny is sad."* • When your child said the right emotion name, listen reflectively (repeating back a child's response) while **pointing** to the emotion symbol on the board. (ex 2) *"Bunny is sad."* • When your child said differently or did not respond within 10 seconds, tell the right emotion name while **pointing** to the emotion symbol on the board.

2. "Because" statement		
(1) Ask	**(2) Wait**	**(1) Respond**
(ex) *"Why does bunny feel sad?"* • Ask your child the **reason** why the character is experiencing the emotion in the book. • Place the emotion board within your child's reach, but do not provide any cues (e.g., pointing to the board) • You can repeat/rephrase 1-2 times your question to assist your child's understanding.	..................pause.................. • Pause for **at least 5 seconds** or until your child begins his/her response to your question. • Look directly at your child to convey an expectation for him/her to take a conversational turn. • Remain the emotion board within your child's reach, but do not provide any cues (e.g., pointing to the board).	(ex 1) *"You're right. Bunny is sad because he has no friends."* • When your child said the **right** reason for the emotion, listen reflectively (repeating back a child's response). (ex 2) *"Bunny is sad because he has no friends."* • When your child said **differently** or did not respond within 10 seconds, tell the right answer. • If there is a corresponding "because" statement on the emotion board, **point** to it while you speak.

3. Solution for the Emotion		
(1) Ask	**(2) Wait**	**(1) Respond**
(ex) *"What can Bunny do?"* • Ask your child the **action** the character can/may take to deal with the emotion in the book. • Place the emotion board within your child's reach, but do not provide any cues (e.g., pointing to the board) • You can repeat/rephrase 1-2 times your question to assist your child's understanding.	..................pause.................. • Pause for **at least 5 seconds** or until your child begins his/her response to your question. • Look directly at your child to convey an expectation for him/her to take a conversational turn. • Remain the emotion board within your child's reach, but do not provide any cues (e.g., pointing to the board).	(ex 1) *"You're right. Bunny can tell them to play together."* • When your child said an appropriate solution for the emotion, listen reflectively (repeating back a child's response). (ex 2) *"Bunny can tell them to play together."* • When your child said **differently** or did not respond within 10 seconds, tell an appropriate solution for the emotion. • If there is a corresponding strategy statement on the emotion board, **point** to it while you speak.

Figure 1. STEPS model for communication partner instruction

Chapter 5 Research Question and Hypotheses

Parental Perception-Communication about Emotion

After the implementation of the STEPS intervention, it would be expected that parents' perception of communication about emotion would change. In the STEPS intervention, parents were being trained through a series of eight steps of communication partner instruction designed by Kent-Walsh and McNaughton which are outlined above. Through these eight steps, parents were taught how to use storybook reading to label, explain, and develop a solution about emotion. The parents' proper use of storybook reading developed a model for children to replicate, to improve their own emotion communication techniques. It would be logical to assume that with improved understanding of communication about emotion in both the parents and the children, that parents would gain a different perception about communication about emotion throughout the intervention.

Research Question

In light of previous success using the STEPS intervention, through storybook reading, this paper seeks to evaluate the effect the STEPS intervention has on the parents' perception of communication about emotion and their children's emotional temperament. Specifically, how did the parents' responses to the EDEC tool change post intervention? Also, how did the intervention change the parent's construction of the communication board and what does this

imply? Finally, this paper hopes to better explain the implications these findings have on the development of emotional competence in children with Down syndrome.

Emotion in Media

Because the STEPS intervention instructed parents through a storybook medium it is expected that media usage would increase post intervention. The EDEC tool analyzed parental use of emotion communication through media in section II questions 11, 13, and 14. Question 11 stated, "When you do share or talk about emotions with your child, what things do you say or do? For instance, do you read books about it together? Do you explain the emotion? Do you demonstrate it somehow?" Na (2015) gathered interviews of the parents who were given the intervention, and their responses indicated that parents were successful in the implementation of storybook reading in both design of an AAC board and in its usage. Based on the preliminary results found from parent interviews aside from the EDEC, it was expected that question 13, "Does [name] enjoy listening to and/or reading stories watching videos etc. Can you give me an example?" and question 14, "When you are reading books or watching TV/movies, do you talk about emotions that the characters are experiencing?" would too indicate an increase in frequency of interaction of media use.

Parental Perception and Temperament

I expected that parents would not change in their perception of their children's temperament after the implementation of the STEPS intervention. Lombard-Vance (2011) describes temperament as individual differences in behavior that are present early in life and that

remain relatively stable across an individual's lifetime. Fidler (2005) describes the emotional temperament of a child with Down syndrome as generally positive, predictable, and stubborn, with low activity levels, less persistence, and high distractibility.

Section I question 1b of the EDEC tool gathered information on the parents' perception of their children's emotional temperament. The question was formulated based on the nine dimensions of temperament created by Thomas, Chess, and Birch (1970): activity, rhythmicity, approach/withdraw, adaptability, intensity of reaction, mood, persistence, sensory threshold, and distractibility. In the pre-intervention EDEC, parents were given a pair of words that described the possible range of each of the nine dimensions of temperament. They were also given the ability to answer that their child fell between either end of the range. For example, for the dimension of rhythmicity parents were given the options of: predictable, in between, and unpredictable. When the pre-intervention EDEC was completed it was found that children with Down syndrome were generally active, predictable, stubborn, optimistic, and sensitive. Because temperament is relatively stable over an individual's life, it is expected that parents will report their children as active, predictable, stubborn, optimistic, and sensitive in the post intervention EDEC as well.

AAC Board Construction

After the STEPS intervention, I expected that parents would create AAC boards that supported communication about emotion in storybook reading. As mentioned above, Na (2015) found that parents were successful in their creation and usage of communication boards within

storybook readings. Pre-intervention communication boards used basic nouns and emotions. An example of a pre-intervention communication board is shown below.
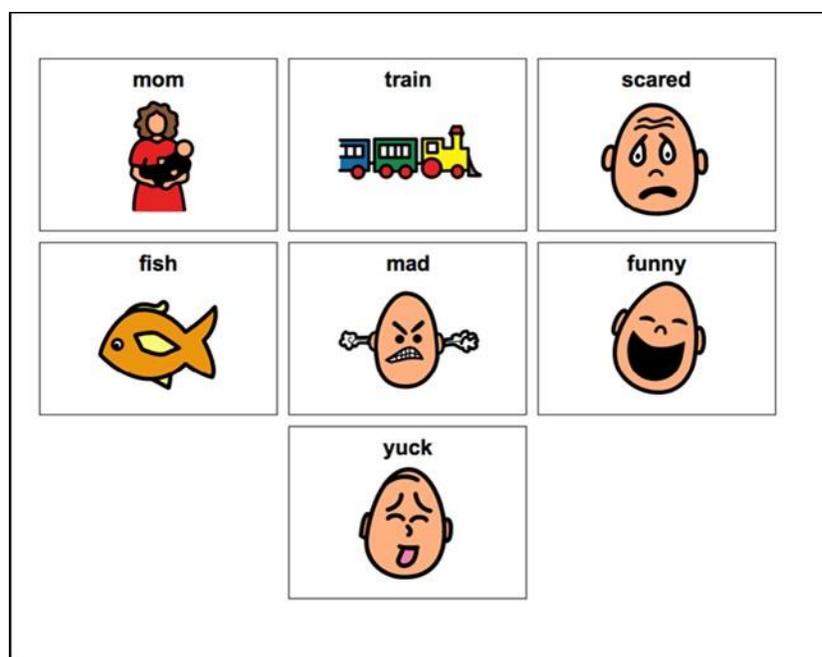

Figure 2: Pre intervention AAC board

The STEPS intervention used the concepts of modeling and role playing to instruct parents on how to communicate with their children using AAC boards during storybook reading. Modeling is a behavior based procedure that uses models to demonstrate a particular behavior that is wanted to change (Modeling, 2016). Modeling was created based on the social learning theory which emphasizes learning through observation, imitation, rewards, and punishments (Modeling, 2016). As mentioned above, the STEPS program incorporated Kent-Walsh and McNaughton's (2005) eight stages of communication partner instruction. During stage 3 of the STEPS interventions a trained research assistant used a video model to present proper strategy usage of the three steps of emotion communication (label, reason, solution) during story book reading. Also during stage 3 research assistants and parents used role playing to implement proper strategy usage. In this stage the researcher took on the role of the parent, while the parent

took on the role of the child. In stage 5, controlled practice and feedback, the roles of the researcher and parent switched. The role-playing in this stage consisted of parents taking on the role of a parent while the researcher took on the role of the child. After each step of modeling and role-playing feedback was given.

When rewards and feedback is present, modeling has been shown to create long term behavior changes in the targeted behavior. Because the parents received feedback from the researcher during the intervention, and rewards through their children's emotional engagement after intervention, it was expected that the parents' AAC board creations would mimic those used during intervention. Therefore, it was expected that the AAC boards constructed after the STEPS intervention would include labeling communication symbols such as happy, mad, or sad; reasoning symbols such as being loud, running fast, making fun; and solution symbols such as be quiet, slow down, or be nice.

Prompting

Using the concepts of perception and perceptual learning, it was hypothesized that the implementation of emotional communication training through the STEPS program would cause parents to prompt more frequently. Perceptual learning is an improvement in performance of a perceptual task after a prolonged exposure to a learned signal or training of a task (Ernest, 2015). In theory, the eight stages of communication partner instruction would present an opportunity for prolonged training of emotion communication.

It was expected that the STEPS intervention would increase the frequency of prompting as well as influence the form in which parents prompt their children. Within the STEPS program

there are three levels of prompting during storybook reading. The first level consists of labeling

emotions that the characters' exhibit within the picture book. Within each level there are three

phases: (1) ask, (2) wait, (3) respond. The phases of each level instruct the parents to use

nonverbal prompting. The parents are specifically instructed to, "Look directly at your child to

convey an expectation for him/her to take a conversational turn."

The EDEC tool served as a comparison to analyze the change in parental perception of

communication about emotion. It provided parents an opportunity to answer questions about

their emotional communication prior to intervention and once the intervention had ended.

Section II question 6 of the EDEC analyzed parents' perception of prompting communication

about emotion. The question stated, "Different families/caregivers may vary in how they prompt

their children's verbal labeling of emotion. How often do you try to get [name] to label his/her

own emotions using words, signs, or symbols?"

Expressing Emotions

The STEPS intervention prompted parents to label, state the reason, and find a solution

for the emotions found within the storybook. I expected that parents would come across the

emotions that they tend to withhold during their daily lives (i.e. anger) while story book reading,

and it would become a normalcy for discussion. For this reason, I expected that parents' quantity

of types of emotional expression around their children would increase post intervention. The

EDEC presented an opportunity to analyze the types of emotions parents choose to use in front

of their children. Section II Questions 9 and 10 stated, "Different families/caregivers may vary

in how they feel about expressing emotion in front of children. What kinds of emotions do you

feel comfortable expressing in front of [name]? Why, or in what situations would this occur?"

and "Are there any emotions you try not to express when you are with [name]? Why or in what

situations would this occur?"

Chapter 6 Results

Emotion in Media

The post-intervention EDEC results supported the expected hypothesis that the STEPS intervention would increase the use of media to communicate about emotion. The pre-intervention EDEC questionnaire that consisted of questions 11, 13, and 14 found that 2/3 of parents reported that they did not communicate about emotion with their children while engaging in forms of media. Post-intervention interviews with parents revealed that the STEPS intervention influenced parents' use of media to discuss communication about emotion. After the intervention, all three parents still reported that their children enjoyed engaging with media. Parents also reported engaging in emotional communication through the medium of media in some aspect. F2M reported using media to talk about emotion, especially when it pertained to an event in a child's life like a bad day at school. FIF also reported using media to discuss communication about emotion when it is relevant to the child's day. MIF stated that they now use books to discuss emotions. MIF's statement pinpointed the STEPS intervention as the impetus for using media as a medium to communicate about emotion with their child.

Parental Perception and Temperament

In the post-intervention interview it was found that parents were less decisive in their answers of their children's characteristics overall, which differed from the original hypothesis, which stated that parents' perception of temperament would still reflect the characteristic temperaments of the children of this study including: active, predictable, stubborn, optimistic,

and sensitive. When asked temperament questions, the responses shifted towards an increase in

an in-between temperament for 6 out of the 9 temperament dimensions. These shifts occurred in

temperament traits such as activity, adaptability, mood, and sensory threshold. The notable

changes in parental perception in temperament correlate to typical temperament traits in children

with Down syndrome. The temperament traits of approach/withdraw and persistence also shifted

towards a response of more in-between temperament. As expected based on the hypothesis, the

temperament characteristic of rhythmicity (predictable) remained stable in the post-intervention

stage. The results are shown below.
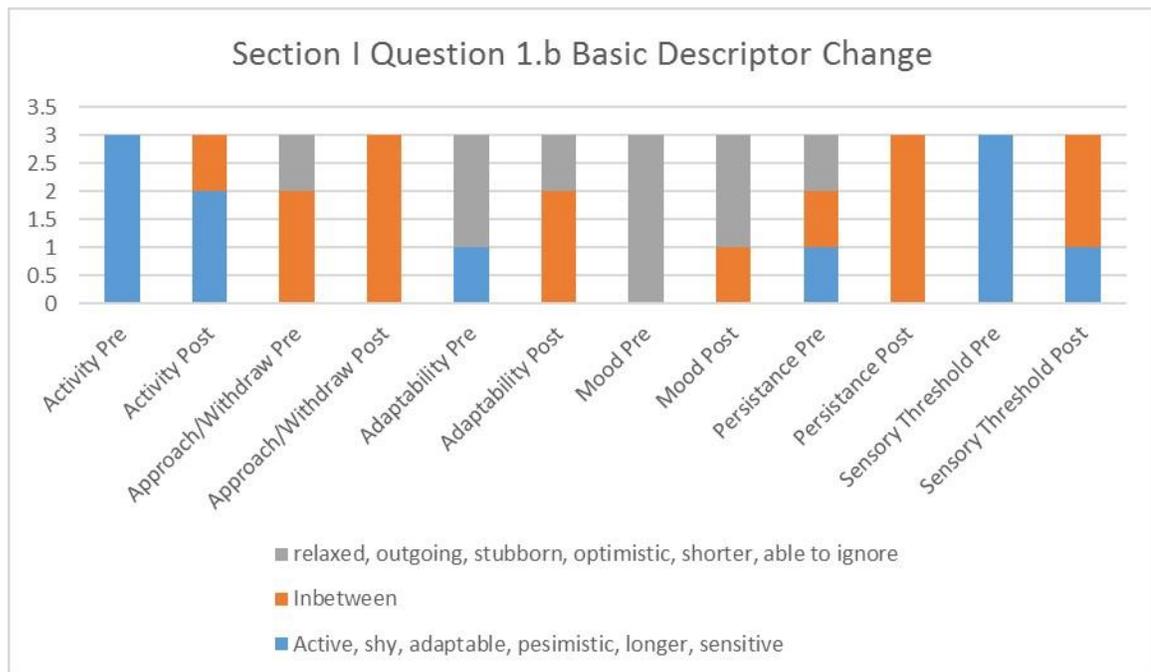
Figure 3: Basic Descriptor Change

AAC Board Construction

The creation of AAC boards post intervention supported the hypothesis that AAC boards

constructed after the STEPS intervention would reflect the label, reasoning, solution model

presented to parents during the STEPS intervention. In the AAC board shown below, there are AAC symbols that include a labeling emotion, reasoning for the labeled emotions, and a solution symbol. These symbols reflect the emotion communication strategies implemented with the STEPS intervention.
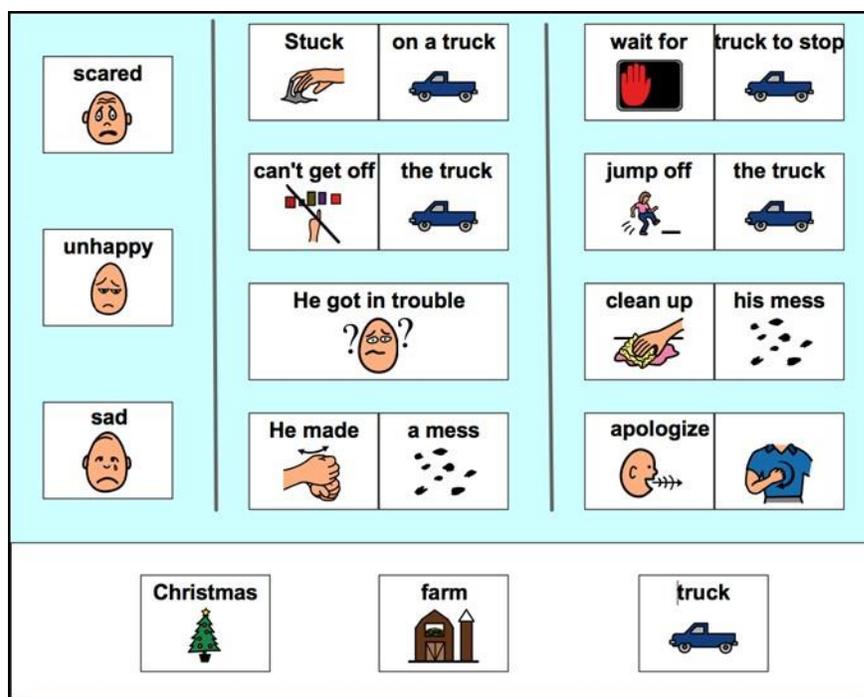

Figure 4: Post intervention AAC board

During the steps intervention, the above AAC board was created based upon the STEPS instruction page also shown above. The AAC page was created for the storybook *Merry Christmas Curious George.* In the blue AAC page, the symbols before the first black division line reflect step one of storybook reading, labeling of emotions. After the first line, symbols were created to reason why the character is presenting the labeled emotions. Finally, after the second line the third step of storybook reading is reflected; solutions for emotions. Here symbols were created to explain why the character could do to remediate their emotion based upon the first two steps of storybook reading.

Prompting

While it was expected that parents would increase their prompting quantity after the intervention, this was not what was found during the post-intervention interview. In the initial pre-intervention interview parents responded to the question, "Different families/caregivers may vary in how they prompt their children's verbal labeling of emotion. How often do you try to get [name] to label his/her own emotions using words, signs, or symbols?" with varying responses. Parent MIF discussed how they didn't directly prompt their child, but rather they just communicated about emotion. F2M claimed that they prompted their child's discussion regarding emotion most of the time. FIF claimed that their child is empathetic and easily perceives others emotions. For this reason, FIF stated that they didn't feel it was necessary to prompt their child's emotion. In the post intervention interview, MIF, F2M, and FIF responded to Section II question 6, reporting that they sometimes prompted their children's discussion of emotion. While it was thought that parents would tailor their prompting to the form used within the STEPS program, it was found that prompting opportunities were still person dependent. For example, MIF claimed they mainly prompted their child's emotional responses during thunderstorms, and FIF prompted their child's emotions when they got home from work. Overall it was found that prompting changed post intervention, but it didn't always increase or model the prompting presented within the STEPS intervention.

Expressing Emotions

Contrary to the hypothesis, after the STEPS intervention had been implemented, parents still reported withholding the expression of anger in front of their children. Prior to intervention

the EDEC tool found that the three parents of children with Down syndrome, as a whole, expressed that they are comfortable with expressing most emotions except for anger. After the post intervention, both MIF and FIF claimed that they either concealed anger from their children or tried to tone down the intensity of expression in front of their children. Only parent F2M claimed they would still express anger in certain situations, post intervention.

Chapter 7 Discussion

Throughout this paper, I have sought to explain the correlation between emotional and communicative development and the impact the STEPS intervention had on emotional and communicative development, realized through the responses to the EDEC and the construction of AAC boards. In total, the EDEC tool revealed some interesting implications about the STEPS intervention in terms of media, temperament, and sensitivity. It was expected prior to the implementation of the STEPS intervention that the usage of media after the STEPS intervention would increase because the intervention was implemented through a storybook medium. The results reported by parents to the EDEC revealed that media usage increased after the intervention. Moving forward, I would hypothesize that the intervention would change the opportunities for discussing emotions with children. While the EDEC doesn't specifically reveal the impact on children, only the parents' perception to change, future research could examine if, properly modeled, emotional discussion opportunities offered to children with Down syndrome would increase their emotional and communicative competence.

A change in responses to the EDEC questions regarding the temperament of the child revealed an increased quantity of in between responses after the STEPS intervention in comparison to a larger quantity of decisive answers prior to intervention. I hypothesize that this change detected by the EDEC, reveals a change in the parents' perception of their child's temperament; not a change in the child's temperament itself. Temperament is not expected to change significantly over the course of one's lifetime; despite environmental changes (Lombard-Vance, 2011). Due to this fact, it is appropriate to theorize that the STEPS intervention resulted in a change in the parents' perception of their child's temperament, and not a change in temperament itself.

One of the most significant changes seen after the STEPS intervention was the change between the pre-intervention and post intervention AAC boards. The AAC boards created after the implementation of the STEPS intervention revealed that parents had a more detailed board following the intervention. More specifically, the board followed the emotional label, discussion and solution steps presented throughout the intervention. This result leads to my hypothesis that the intervention served as a direct model for the parent's changes in the creation of AAC boards. Moving forward it appears as though the STEPS intervention would prove useful in developing instructional strategies for teaching parents and/or caregivers how to create and implement AAC boards for storybook reading with children with complex communication needs.

While the intervention reveled some telling findings about the EDEC tool and STEPS intervention it is necessary to address some concerns of the study while analyzing the results presented above. First, the study above only examined the results of three parent child dyads. More participants would need to be added to the study before more definitive results could be made. Also, the parents and children were all English-speaking individuals living within the same area. This brings up concerns of similarity among the individuals in terms of education, culture, and SES. Thirdly, the results of this study can only be applied to individuals with Down syndrome, no other groups of disabilities have been analyzed with the tool. Finally, there has been no long term follow up of the participants of the study. While the aforementioned results were found in the short term follow up, it is unknown if the changes mentioned have a long lasting effect.

The EDEC has been translated into other languages including Korean, Mandarin Chinese and Spanish. The EDEC, translated into Spanish, was used in a study by Neumaier (2017) to gain responses from a sister of an adult man with Down syndrome. This study allows for a view

into differences in communication about emotions between languages and cultures in relation to

individuals with complex communication needs. Spain is a collectivist culture, which is a

culture that focuses on the needs of the group over the needs of the individual (Neumaier, 2017).

This culture is in direct contrast to the individualistic nature of America, in which the data used

in my paper comes from. Responses to the EDEC gathered by Neumaier (2017) found that the

individual with Down syndrome expresses joy, affection, and surprise. Neumaier (2017) notes

that these results deviate from the expected results. It is typical in collectivist cultures to express

anger; however, it was found that this individual did not find it easy to express anger. These

results noted a difference that could stem from typical traits of individuals with Down syndrome,

despite the typical expression of emotions in a collectivist culture. An interesting connection

between Neumaier's (2017) study and my own is found between the emotions that caregivers

express in front of their children or siblings with complex communication needs. In my study, it

was found that parents tended to withhold expressions of anger in front of their children;

however, in Neumaier's (2017) study it was found that the sister withheld worry or sadness.

While both studies revealed caregivers withholding emotions from their family members with

Down syndrome, the emotions withheld differed. Does this difference reflect the typical

emotion words used in various cultures? As mentioned above, anger is expressed frequently in

collectivist cultures, so it may be possible that this emotion is used in collectivist cultures but not

individualistic cultures, and emotions like worry and sadness are expressed in individualistic

cultures, and are withheld in collectivist cultures.

 Moving forward with the EDEC it is important to tailor the questions and the

STEPS intervention to the culture in which the individual with complex communication is a

member of. AAC devices are only successful if they reflect the emotional communication words

used in that culture (Na, et. al, 2016). Therefore, it is important to have accurate tools to reflect

the typical communication patterns of members of that culture in order to develop storybook

interventions to aid parents create meaningful AAC boards to communicate about emotion.

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