COMPARING INDICES OF HAPPINESS DURING TEACHING INTERACTIONS

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The measurement of happiness has received increasing attention in behavior analytic literature. Happiness in individuals with developmental disabilities has been assessed by 1) counting a specific behavior, or 2) sampling constellations of behaviors. The purpose of this study was to examine the two approaches while observing nine child and teacher dyads at an autism treatment center. Results showed that, overall, a constellation of behaviors can yield similar patterns when compared to a specific behavior count. However, the affect of one person did not predict the affect of the other and similar instructional conditions did not predict affect either. The implications of these results and future directions are discussed.
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INTRODUCTION

According to the *Merriam-Webster Online Dictionary* (2009), happiness is “a state of well-being and contentment; a pleasurable satisfaction.” While happiness is generally considered one of the most important goals in life, ensuring that individuals with developmental disabilities experience enjoyment or happiness has not always been a focus in the behavior-analytic literature. This is partly due to the fact that early research with this population concentrated on the prediction and control of behavior and the possibility of behavior change for people deemed “untreatable.” For example, Fuller (1949) showed that behavior modification (i.e., raising an arm) was possible with a man in a vegetative state. Later studies built on this earlier research and focused on producing more complex behavior change, including affect (Cooke & Apolloni, 1976). More studies were then able to target and measure such goals as increasing the “happiness” in the lives of individuals with disabilities (Reid, Phillips, & Green, 1991).

Even with a shift toward producing more complex behavior change, gaps in the literature remained. In 1993, Meyers and Evans (as cited in Green & Reid, 1999a) stated that the “lack of research on happiness and related variables has resulted in pointed criticism of the field of behavior analysis and modification for not focusing on important indicators of quality of life among people with severe disabilities” (p. 281). The degree to which individuals experience happiness or unhappiness proved to be one of these important indicators, and measuring affect rose as an important component of assessing, and even increasing, quality of life (e.g., Reid et al., 1991; Green & Reid, 1996; Koegel, Bimble, & Schreibman, 1996; Broome, 2007). In this regard, it has been found that measures of indices of happiness can aid with programming (e.g., Dillon &
Carr, 2007), indicate preferences for a client (e.g., Green & Reid, 1996; Favell, Realon, & Sutton, 1996; Ivancic et al., 1997; Green, Garner, & Reid, 1997), facilitate person-centered programming (e.g., Green & Reid, 1999; Dillon & Car, 2007), and assist in monitoring the development of social interactions (e.g., Favell, Realon, & Sutton, 1996; Logan et al., 1998). This trend of assessing important indicators of quality of life was perhaps articulated best by Wolf (1978) when discussing the importance of social validity. Wolf noted how rarely behavior analytic programs questioned the social importance and quantification of their program's goals, procedures, and effects. Because of this, he stated that “if we aspire to social importance, then we must develop systems that allow our consumers to provide us feedback about how our applications relate to their values, to their reinforcers” (p. 213).

Table 1 presents an overview of the research measuring affect, primarily among individuals with developmental disabilities or autism. Analyzing and systematically changing the frequency of smiles was the first step toward an experimental analysis of happiness. Hopkins (1968) analyzed the effects of several variables controlling the frequency with which two children with mental retardation smiled. Smiling was defined as “a slight opening of the lips, a turning up of the corners of the mouth, and an increase in the protrusion of skin over the cheek bones” (p. 122). It wasn’t until almost a decade later that the next study regarding happiness appeared. Cooke and Apolloni (1976) taught four handicapped children positive social-emotional behaviors (smiling, sharing, positive physical contacting, and verbal complimenting), and used Hopkin’s (1968) definition to measure occurrences of smiling.
There is some argument on whether particular facial expressions and their meanings are universal or culture-specific (Ekman & Freisen, 1982; Klein & Chen, 2002; Chen, 2006). Smiling is generally considered one of the simplest, most recognizable facial expressions and it may be possible that measuring smiling alone will portray the important dimensions of someone’s affect (Ekman & Friesen, 1982). After Cooke and Apolloni’s (1976) study, measuring and assessing the affect of individuals with disabilities took the form of rating scales. Koegel and Egel (1979) developed one of the first affect rating scales as a supplementary intervention measure, which they titled the Enthusiasm Scale. The scale ranged from 0-5, and included negative enthusiasm, neutral enthusiasm, and positive enthusiasm. Several studies adapted Koegel and Egel’s Enthusiasm Scale (Dunlap & Koegel, 1980; Schreibman, Kaneko, & Koegel, 1991; Koegel, Bimbela, & Schreibman, 1996; Vismara & Lyons, 2007), or appeared to develop similar scales independently (e.g., Fordyce, 1988).

Kochanska and Aksan (1995) and Green and Reid (1996) took a different approach and recorded affect in discrete intervals over the course of an observation. Kochanska and Aksan studied the affect of mothers and children in relation to child compliance. Affect was measured by recording whether the mother or child’s affect was highly positive, neutral/pleasant, neutral/negative, or highly negative during 20-second intervals. “Highly positive affect” was defined as “laughing out loud, singing happily, jumping with joy” (p. 242). Green and Reid specifically explored procedures to define, measure, and produce indices of happiness. In a three-phase investigation, the authors introduced and validated a method for measuring indices of happiness and unhappiness. “Happiness” was defined as “any facial expression or vocalization
typically considered to be an indicator of happiness among people without disabilities including smiling, laughing, and yelling while smiling” (p. 69). The investigators scored 10-minute intervals of occurrence and nonoccurrence of indices of happiness within a 10-minute observation. In current behavior-analytic literature, Green and Reid’s definitions are the most widely used definitions of happiness and unhappiness (Green, Gardner, & Reid, 1997; Ivancic, Barrett, Simonov, & Kimberly, 1997; Green & Reid, 1999a; Green & Reid, 1999b; Parsons, Reid, & Green, 2001; Lancioni, O’Reilly, Campodonico, & Mantini, 2002; Lancioni, O’Reilly, Singh, Oliva, & Groenneweg, 2002; Lancioni, O’Reilly, Singh, Oliva, Campodonico, & Groenneweg, 2003; Lancioni, Singh, O’Reilly, Oliva, & Groenneweg, 2004; Davis, Young, Cherry, Dahman, Rehfeldt, 2004; Singh, Lancioni, Winton, Wahler, Singh, & Sage, 2004; Green, Reid, Rollyson, & Passante, 2005; Moore, Delayney, & Dixon, 2007).

The majority of the studies using Green and Reid’s (1996) definitions have specifically focused on increasing indices of happiness among individuals with disabilities. For example, researchers have analyzed the relationship between indices of happiness and the presentation and/or withdrawal of preferred and non-preferred stimuli. In general, indices of happiness consistently accompanied the presentation of preferred stimuli (Green & Reid, 1996; Green, Gardner, & Reid, 1997; Ivancic, Barrett, Simonow, & Kimberly, 1997; Lancioni, O’Reilly, Campodonico, & Mantini, 2002; Davis, Young, Cherry, Dahman, Rehfeldt, 2004; Lancioni, Singh, O’Reilly, Oliva, & Groenneweg, 2004; Lancioni, O’Reilly, Singh, Oliva, Piazzolla, & Groenneweg, 2004). Similarly, Green and Reid (1999a) and Green, Reid, Rollyson, and Passante (2005) analyzed the relationship between indices of unhappiness and the presentation of highly
preferred stimuli before, during, and after nonpreferred activities (e.g., therapeutic exercise routines). Results showed overall decreases among indices of unhappiness during those nonpreferred activities. Currently there are several studies showing highly preferred items consistently accompanying high levels of happiness, and vice versa (e.g., Green, Gardner, & Reid, 1997; Green & Reid, 1999a; Davis, Young, Cherry, Dahman, & Rehfeldt, 2004).

The relationship between indices and/or ratings of happiness in relation to other events is also addressed in the literature. For example, Hopkins (1968) analyzed the relationship between smiling and various types of reinforcement and instructions. More specifically, the study used candy contingent on smiling and a sign instructing others when to interact with the children. Hopkins concluded that the smiling responses of the children could be environmentally controlled. Similarly, Cooke and Apolloni (1976) applied Hopkins’ definition of smiling to aid in the analysis of the relationship between a package of teaching procedures (instructions, modeling, and praise) and positive social-emotional behaviors (including smiling).

A different line of analysis was pursued by Koegel and Egel (1979), in which ratings of happiness were used as a supplementary measure in relation to children’s motivation to respond to correct vs. incorrect tasks. Dunlap and Koegel (1980) also used Koegel and Egel’s happiness rating scale to assess the collateral effects of two methods for presenting discrimination tasks when teaching children with autism.

Following Koegel and Egel (1979), Dunlap and Koegel’s (1980) modified happiness rating scales were used sporadically. For example, Schreibman, Kaneko, and Koegel (1991) and Koegel, Bimbela, and Schreibman (1996) analyzed the relation
between the affect of parents and two different parent-training programs. It wasn’t until 2007 that Dunlap and Koegel’s happiness rating scale was used again in order to examine the relationship between child affect and the type of stimuli presented to children (perseverative interest stimuli vs. nonperseverative interest stimuli) (Vismara & Lyons, 2007).

Studies have found that the display of positive affect during interactions is important in a parent-child relationship (Comfort, 1988; Rosenberg & Robinson, 1988). This could also be extended to other dyads (e.g., teacher-child relationships). However, social impairment is one characteristic among children with autism, and one of the major features of their social impairment is the lack of affective responsiveness to other people. Research has shown that children with autism display significantly lower amounts of positive affect while looking at others (Dawson, Hill, Spencer, Galpert, & Watson, 1990; Trad, Bernstein, Shapiro, & Hertzig, 1993; Gena, Krantz, McClannahan, & Poulson, 1996). Because of this, other studies have focused on increasing the positive affect between a child and his/her parent. For example, Solomon, Ono, Timmer, and Goodlin-Jones (2008) sought to increase shared positive affect between children with autism and their parents through parent-child interaction therapy. Parents and child behaviors were coded for positive, neutral, and negative affect and aloofness. Results showed improvements in the level of shared positive affect for all participants involved in the parent-child interaction therapy. However, it has also been found that in other contexts (e.g., a structured interaction with a familiar person in a familiar environment), children with autism did not demonstrate affective responsivity towards others (Joseph & Tager-Flusberg, 1997).
Overall, the literature suggests the benefits of examining the affect between children and their caregivers. Earlier research has primarily included children or adults, and occasionally teachers or caregivers. Furthermore, a review of this research suggests the benefits of different approaches to measurement. It is unclear what, if any, differences exist between the various measures. The purpose of the current analysis was to create an observation system measuring affect and to evaluate (1) whether measuring affect as a constellation of behaviors (smiles, laughter, voice tone, and expressions) versus a specific behavior (smiles) yields similar patterns, (2) if the teacher and child’s affect related to one another in any way, and (3) if similar instructional conditions (same child, programs, data collection, etc.) predict affect.
METHOD

Participants

The participants in this study included three children with autism and eight teachers, resulting in nine teacher-child dyads. All children were male whose ages ranged between 3 and 5 years old. Each child received an independent diagnosis of autism. All children were currently enrolled in a center-based treatment program for children with autism, and were receiving between 8 and 20 hours of treatment per week. Skill levels varied across children, ranging from non-vocal to vocal utterances consisting of several words. Child A was a 4-year-old male with 3-5 word vocal utterances; learning targets included expressive language and pre-academic skills. Child B was a 3-year-old male using sign language and a Picture Exchange Communication System (PECS) as his primary mode of communication; learning targets included learn-to-learn skills such as imitation and instruction following. Child C was a 5-year-old male with beginning vocal utterances; learning targets included eye contact for functional communication along with imitation and receptive language. See Table 2 for a detailed overview of each child’s age and learning targets.

All teachers were female whose ages ranged from 23 to 30 years old. All teachers were employees of the autism treatment program, providing applied behavior analytic treatment interventions to young children with autism. Experience levels varied between each teacher, ranging from no experience to seven years in the field of autism or applied behavior analysis. Teacher 1 had one month of direct autism and applied behavior analysis experience, along with four years of undergraduate experience in behavior analysis. Teacher 2 had seven years of direct autism and applied behavior
analysis experience, along with two years of graduate course work in behavior analysis. Teacher 3 had five years of direct autism and applied behavior analysis experience, along with two years of graduate course work in behavior analysis. Teacher 4 did not have any direct autism or applied behavior analysis experience. Teacher 5 had six months of direct autism and applied behavior analysis experience, along with two years of undergraduate and graduate course work in behavior analysis. Teacher 6 had five years of direct autism and applied behavior analysis experience, along with three years of undergraduate course work and two years of graduate course work in behavior analysis. Teacher 7 had four years of direct autism and applied behavior analysis experience, along with two years of undergraduate course work and two years of graduate course work in behavior analysis. Teacher 8 had two years of direct autism in a special education program with some applied behavior analysis experience. See Table 3 for a detailed overview of each teacher’s age and intervention experience.

Setting and Materials

The present study was conducted in a non-profit treatment program in the southwest region of the United States. In its initial stages, this program was designed to provide services to promote the independence of individuals with disabilities and other special needs. All children enrolled in the program were between 3 and 8 years old, and were eligible for behavioral, speech, occupational, and physical therapy. The mission of the autism program was to provide services to children and families who were underserved and economically disadvantaged. The program consisted of board certified behavior analysts and senior and junior applied behavior analysis (ABA) coaches, who all took part in creating and implementing individualized treatment plans for each child.
This study was conducted in one of five therapy rooms at the center, which ranged from 88 to 280 square feet in size, with an occupational therapy gym, a physical therapy gym, and outside play equipment available. Each room consisted of age-appropriate toys, and a small table and chairs. Materials used during the study included a video camera, datasheets, pencils, paper, timers, and an electronic spreadsheet program.

Measurement

Several teacher and child behaviors were recorded using both event and interval recording. Behaviors were recorded from each sample. The data sheet concerned the child and teacher’s affect within the sample. This datasheet is included in Appendix B. The first set of measures consisted of occurrences of smiling. Smiling was defined as any instance in which the teacher or child assumed a facial expression indicating pleasure, favor, or amusement, characterized by an upturning of the corners of the mouth. Examples included the teacher’s mouth turning upward while saying, “You did it!” or the child’s mouth turning upward while laughing.

The second set of measures included intervals of favorable, unfavorable, or neutral affect. Favorable affect was defined as follows: “The child or teacher emits a vocalization or assumes a facial expression indicating pleasure, favor, or amusement. This is sometimes characterized by an upturning of the corners of the mouth. Also includes child or teacher’s open mouth together with eye brows/furrows high on forehead. The child or teacher emits a vocalization such as a laugh, giggle, or high-pitched shriek indicating pleasure, favor, or excitement.” Examples included instances in which the child laughs while the teacher is tickling him or the teacher saying “Great job!”
and although it doesn’t appear that the corners of her mouth are turned upward, the tone of her voice is high.

Unfavorable affect was defined as follows: “Child or teacher engages in vocalizations such as yells, whines with a distress (example include but not limited to pain, fear, etc.), or screams which may or may not be accompanied by physically retreating or protesting or assumes a facial expression including a grimace (child or teacher assumes a facial expression indicating disapproval/dissatisfaction or disgust, characterized by stretching of mouth backwards or forward [pucker of lips], crunching upward of cheeks and nose), smirk (teacher assumes a facial expression indicating unsureness, self consciousness, doubting, characterized by an upturning of one side of the mouth, usually accompanied with a sigh, or “uh”), or eye roll (teacher rolls eyes by raising eye brows and diverting eyes from child, usually following an undesirable event).” Examples included the child crying while playing with blocks or the teacher crunching her cheeks and nose upward when the child is not engaging with the teacher.

Neutral affect was defined as follows: “The child or teacher assumes a facial expression or emits vocalizations indicating indifference. The child or teacher does not appear to be decidedly happy or particularly unhappy. There are no obvious signs of favorable or unfavorable affect.” Examples included the teacher saying, “Good job” but the corners of her mouth do not turn upward and the tone of voice is impartial, or the teacher tickles the child but the child does not show any favorable or unfavorable affect. See Appendix A for the full observation code, which includes a complete list of definitions and examples for each behavior, and Appendix B for the datasheet.
Procedures

Six video samples were collected of each teacher-child dyad. All video samples were collected approximately one week apart over the course of two months for each teacher. Video samples were collected at least thirty minutes into a typical session, at which time the teacher was told to conduct the session as she normally would. All video samples were 15 minutes long, with no feedback given during the video. However, agency staff training and feedback were conducted as usual. After each taping was complete, the video was put on computers for the student recorders to analyze.

Interobserver Agreement

One sample was scored for each of the teacher-child dyads to calculate interobserver agreement. I trained each observer on the observation code first, and discussed examples and non-examples along with any questions the observers had. After learning the observation code, the observers were trained on how to use each datasheet. Once the observer felt comfortable with both the code and datasheet, she practiced using the datasheet and code with videos of teaching interactions that were not part of the study. When the observer achieved 90% or higher interobserver agreement on the first of two practice tapes, she was considered ready to score the tapes relevant to the study. See Tables 4 and 5 for total interobserver agreement for each measure. The interobserver agreement for affect ranged from 83% to 100%.

Data Analysis

Digital video footage was transferred to DVD format and stored on hard drives. All data were collected from the samples that were taken in each of the six sessions. The samples were converted into QuickTime to be scored and analyzed. Data derived
from direct observation of the samples were recorded onto datasheets. The raw data from each sample was then transferred to linear scale files using an electronic spreadsheet program.
RESULTS AND DISCUSSION

Figure 1 presents the smile count and favorable intervals of each child and teacher. The left column displays the smile count and the right column displays the favorable intervals of each child and teacher. Each row represents the specified measures for each teacher-child dyad. Along the abscissas of each graph is the number of consecutive 15-minute sessions (1-6). The y-ordinate for the left column displays the frequency of smiles. The y-ordinate for the right column displays the percentage of 15-second intervals in which favorable affect occurred. Closed black circles indicate the teacher’s behavior while closed grey circles indicate the child’s behavior. Unfavorable and neutral affect are not displayed due to consistent levels across teachers and children (low to no occurrences for unfavorable affect and high occurrences for neutral affect). Also, it should be noted that differences in level are not relevant due to the comparison of a frequency versus interval recording and for that reason all data are discussed with regard to trends and bounce. What follows are the three research questions, and how the data answered or related to those questions.

Question 1: Do a Constellation of Behaviors (Favorable Intervals) vs. Specific Behavior (Smile Counts) Yield Similar Patterns?

Overall, there are similar trends and bounce between smile count and the favorable intervals for all the children. This was not true for the teachers. Four out of the nine teacher dyads displayed different trends and bounce between smile count and the favorable intervals. For example, with smile count for Child A (top, left graph), the general trend is stable with a drop of 22 in the fourth session. With the favorable intervals (top, right graph), the general trend is also stable with a drop of 40% in the
fourth session. While there are similar patterns among most teachers, the trend and the bounce between smile count and favorable intervals for Teachers 1, 2, and 3 are different. For example, with the smile count for Teacher 1, the trend increased in the third session followed by a downward trend for the remaining sessions. With the favorable intervals, there is an upward jump at the third session, which remains stable at approximately 60% until the last data point, which decreases to 48%.

It should be noted that the data for Teacher 3 is unusual for several reasons. Along with being the only teacher observed across two different children, her behavior across those children is different as well. For example, with Child B the frequency of smiles between child and teacher are closer with similar levels, but with Child A there is a big discrepancy between the frequency of child and teacher smiles (with the exception of the first session). Because the nature of this study was not to determine every variable controlling the teacher or child’s affect, only whether they follow similar patterns, future research may address possible variables influencing these differences. Even so, the fact that this was an experienced teacher who worked with two very different children should be considered.

In general, results from Figure 1 indicate that when obtaining indices of happiness and unhappiness, a constellation of behaviors (smiles, laughter, voice tone, and expressions) can yield similar patterns as compared to a specific behavior count (smiles). However, this study also suggests this may not be consistently the case, especially with typically developing adults. Typically developing adults may have more sophisticated and developed affective repertoires. Because of this, smiles may not completely capture indices of happiness or unhappiness. Along with smiling, typically
developing adults’ repertoires include other behaviors like laughter, words expressing happiness, raised eyebrows and lifted and melodic voice tones. In this case, a constellation of behaviors might be more useful in detecting a wide range of behaviors associated with happiness to measure affect.

Along these same lines, research has shown that children with autism have less sophisticated and developed affective repertoires compared to children with other developmental disabilities and children with typical development (Dawson, Hill, Spencer, Galpert, & Watson, 1990; Trad, Bernstein, Shapiro, & Hertzig, 1993; Gena, Krantz, McClannahan, & Poulson, 1996). Even if a child with autism smiles frequently, he/she may not have learned to display other affective behaviors, like differentiation in voice tone and facial expressions. In this case, smiles may be just as an appropriate measure as a constellation of behaviors. At the same time, studies have found that affective displays of individuals with autism can be modified with the introduction of treatment (Gena, Krantz, McClannahan, & Poulson, 1996). Therefore, if specific interventions are being utilized to increase appropriate affective behaviors, it may be more appropriate to measure affect as a constellation of behaviors to ensure a greater range of affect is captured.

On a related note, the differences between the repertoires of typically developing adults versus children with autism may explain what may have set the occasion for selecting rating scales versus smile counts in developing indices of happiness and unhappiness. In general, the rating scales that were first introduced by Koegel and Egel (1979) and Dunlap and Koegel (1980) measured either the children and their parent’s affect, or the parent’s affect exclusively. The direct observation system developed by
Green and Reid (1996), which primarily includes instances of smiling and laughing, measured the affect of children with autism or other individuals with profound multiple disabilities. In fact, one of the main purposes of Green and Reid’s study was to develop an observation system that measured indices of happiness experienced by individuals with profound multiple disabilities who had little or no verbal or mobility skills. Similarly, Hopkins (1968), who only measured occurrences of smiling, examined the affect of children with mental retardation. In focusing on this population, it may have been prudent to operationalize and measure indices of happiness and unhappiness as just a smile. When measuring the affect of typically developing parents/adults, it may have been more appropriate to use rating scales so that more behaviors, aside from smiling and laughing, could be captured.

Question 2: Are the teacher and child’s affect related to one another in any way?

Overall, and regardless of the measure used (smile counts vs. favorable intervals), these measures do not show any consistent relationship between teacher and child affect. Child A and Teacher 3 showed the most consistent trend and bounce when measuring with the favorable intervals. The favorable intervals for Child A ranged from 63% to 92% with an average of 78%, with a slight decreasing trend and some initial bounce (23 in either direction). The favorable intervals for Teacher 3 ranged from 57% to 92% with an average of 80%. The general trend was steady with some bounce (ranging from approximately 15% to 30% in either direction). All data from the other teacher-child dyads displayed either a partial relationship (e.g., the last three sessions for Child C and Teacher 8 for either measure), or no relationship at all (e.g., Child C, Teacher 6 for either measure).
While previous research has placed importance on the positive affect in a parent-child relationship (Comfort, 1988; Rosenberg & Robinson, 1988), the positive affect between a child and his/her teacher is also important. Although the affect of one person did not predict the affect of the other, these results should be interpreted within the context of naturalistic observations employed in this study. The data obtained are similar to Joseph and Tager-Flusberg’s (1997) study, in which children with autism showed an overall deficit in the positive affect during interactions with both researchers and mothers. Both this study and Joseph and Tager-Flusberg’s study sought to obtain a naturalistic sample of the children and teachers’ behaviors given their respective settings. Conversely, the one study that experimentally intervened to increase shared positive affect between children with autism and their parents did show a quantifiable relationship between child and adult affect (Solomon et al., 2008).

It should be noted, however, that in the present study the teachers had, to differing degrees, received training in rapport building, reinforcement delivery, and maintaining neutral responses during challenging behaviors. Presumably, each of these training modules incorporated some degree of instruction on affect. This could be seen in Figure 1, which shows that the least experienced teacher (Teacher 4) had considerably lower levels of affect when compared to the most trained and experienced teacher (Teacher 2), and lends support to the notion that interventions to specifically target mutual affect may increase dyadic sensitivity.

Although these measures do not show a consistent relationship between teacher and child affect, it should be noted that these are preliminary data within an autism treatment program where many variables were not controlled. For example, the time of
day the video samples were taken and the materials and reinforcers used within each session varied across child-teacher dyads. The experience of each teacher and skills of each child also varied, and the rapport between each child and teacher was unknown before collecting the video samples. All of these variables, including others, could have played a role in the data obtained.

Question 3: Do similar instructional conditions (same child, programs, data collection, etc.) predict affect?

When measuring the smile counts for the teachers’ affect, there are no consistent trends, levels, or bounces among any of the teachers. When measuring the favorable intervals for the teacher’s affect, two of the three teachers for both Child A and Child C displayed higher levels of favorable intervals across all six sessions, although teachers with Child B did not display any similar levels of affect. None of the teachers displayed similar trends or bounces while with the same child.

In general, results from Figure 1 indicate that teachers do not display similar affect under what appear to be similar instructional conditions (e.g., they are working with the same child, implementing the same instructional programs with that child, and are using the same data collection procedures). While research has shown that a variety of human emotional behaviors are operants, including smiling (e.g., Hopkins, 1968), determining the numerous variables controlling affect can be difficult and complicated. One of these variables may be cultural differences. While smiling seems to be a universal body language, and is considered one of the simplest, most easily recognized facial expressions, there are still cultural differences (Ekman & Friesen, 1982). For example, some research has shown that while Chinese smile as much as
Americans do, the amount of smiling may vary among situations (e.g., interactions between strangers and between superiors and inferiors) (Chen, 2006). Other research has shown that in other cultures, the context that behaviors such as eye contact, smiling, and body contact occur may cause them to be considered differently (Klein & Chen, 2002). This is highlighted by clinicians, researchers and lay people. For example, the French philosopher, Jean Baudrillard, noted cultural differences in smiling. In writing about his trip to America, Baudrillard (1988) stated, “Whether I am right in all this or not, [Americans] certainly do smile at you here, though neither from courtesy, nor from an effort to charm. This smile signifies only the need to smile” (p. 33). The difference between Americans and Poles was also mentioned by Laura Klos Sokol, an American linguist: “Americans smile more in situations where Poles tend not to” and “don’t initiate an exchange of smiles in a quick or anonymous interaction” (p. 119). These issues are brought forth here because two of the eight participants in this study had different ethnicities (Participant 5, who was Japanese, and Participant 4, who was Indian), and it is possible that cultural differences may be involved in the frequency and stimulus control of smiling. In addition to culture, experience, and direct training, there are also numerous other variables that could have influenced the different affect the teachers displayed, ranging from different materials, varying durations that each teacher worked with the child, and levels of rapport between the child and teacher.

Conclusions

The purpose of this study was to create an observation system measuring affect and evaluate (1) whether measuring affect as a constellation of behaviors (smiles, laughter, voice tone, and expressions) versus a specific behavior (smiles) yielded
similar patterns, (2) if the teacher and child’s affect related to one another in any way, 
(3) and if similar instructional conditions (same child, programs, data collection, etc.)
predict affect. The study included eight teachers and three children with autism, each 
with various backgrounds and skill levels. The set of measures consisted of 
occurances of smiling, and intervals in which the teacher or child’s affect was 
favorable, unfavorable, or neutral.

The results from this study indicate that when obtaining indices of happiness and 
unhappiness, a constellation of behaviors can yield similar patterns as compared to a 
specific behavior count (smiles). Even so, a constellation of behaviors may be more 
preferred in both clinical and experimental settings due to practicality and the broader 
scope it provides us. However, previous research has shown that interval recording may 
over or under represent, specifically for high-rate responding, and frequency recording 
may produce data much more indicative of responding (Repp, Roberts, Slack, Repp, & 
Berkler, 1976). Because of this, it would be ideal to have separate frequency counts of 
each of the measures in the favorable interval, although such recording may prove 
impractical in many situations.

While the affect of one person did not predict the affect of the other, and similar 
instructional conditions did not predict affect, these results should be taken with caution. 
Because this study was primarily methodological and did not seek to control many 
variables within the autism treatment program, many extraneous variables could have 
influenced the results, including cultural differences (Ekman & Friesen, 1982; Klein & 
Chen, 2002; Chen, 2006). Because of this, a future direction for this research is 
controlling more variables both within and outside an autism treatment program.
Overall, caution is still warranted in interpreting the results. Not only are these preliminary data assessing only three children and eight teachers, but the presented data are only correlations at this point. It would be beneficial for future research to measure and analyze the affect of children and teachers in more typical settings and across a wide array of treatment programs while holding particular variables constant. The autism treatment program for this study may not represent a typical sample of other treatment programs. Most of the teachers involved either had, or were working towards, advanced degrees related to behavior analysis. Along with this, all of the teachers included in this study were performing in accordance with what scholars reviewing the autism intervention outcome literature recommend. For example, all the teachers’ teaching opportunities (learn units) were clearly above the 150 per hour recommendation, ranging between 200-300 per hour (Greer, 1994; Howard, Sparkman, Cohen, Green, & Stanislaw, 2005; Geving, 2009). Because of this, it would be interesting to see if similar results are obtained in other programs.

Measuring affect across a wider array of programs, and across different populations, would also aid in identifying benchmarks for adequate levels of happiness and unhappiness. There are currently no benchmarks for indices of happiness and unhappiness, primarily because most research is interested in increasing indices of happiness or decreasing indices of unhappiness rather than assessing affect within a given setting. Observing and measuring the affect of typical children may be the next step to aid in identifying such benchmarks.

An additional future direction may be to examine happiness as a collateral measure and/or index of the types of contingencies in effect. For example, do primarily
positive reinforcement contingencies lead to increases in favorable affect, while positive punishment and negative reinforcement produce increases in unfavorable affect and/or other behaviors like running away? Such research may increase our understanding of the social validity of various teaching contingencies.

Although indices of happiness/unhappiness should always be interpreted with caution, measuring affect can still assist us in understanding if we are producing meaningful changes for our clients. There is a continuing need to better understand the complex relationships between parents/adults and children and how this interacts with our interventions. Further enhancing the quality of life for individuals with developmental disabilities and their families and teachers may be increased significantly if this type of research is pursued across a wide variety of populations and settings. After all, “measuring indices of happiness assists people in their pursuit of happiness” (p. 38, Broome, 2007).
Figure 1. Measures comparison across teachers and children.
Table 1

Overview of Affect Research

<table>
<thead>
<tr>
<th>Reference</th>
<th>Purpose</th>
<th>Population</th>
<th>Setting</th>
<th>Affect Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hopkins (1968)</td>
<td>Examined the effects of candy and social reinforcement, instructions, and reinforcement schedule leaning on rate of smiling</td>
<td>Children with mental retardation</td>
<td>School</td>
<td>Smiling: a slight opening of the lips, a turning up of the corners of the mouth, and an increase in the protrusion of skin over the cheek bones</td>
</tr>
<tr>
<td>Cooke &amp; Apolloni (1976)</td>
<td>Teaching four handicapped children four positive social-emotional behaviors</td>
<td>Children with learning disabilities</td>
<td>School</td>
<td>Hopkin’s (1968) definition of smiling</td>
</tr>
<tr>
<td>Koegel &amp; Egel (1979)</td>
<td>Investigate the influence of correct versus incorrect task completion on children’s motivation to respond to such tasks</td>
<td>Children with autism</td>
<td>Unclear</td>
<td>Interest/Enthusiasm Scale</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Negative enthusiasm (e.g., Tries to leave the room, throws tantrums, kicks, screams, throws material around the room, cries, pushes the task away, or refuses to perform the task)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Neutral enthusiasm (e.g., Generally complies with instructions, but tends to get fidgety; there are moments of staring or inattention, “toying” with stimulus materials, wiggling feet, and so on)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Positive enthusiasm (e.g., Performs task readily and frequently attends to clinician or stimulus materials between trials)</td>
</tr>
</tbody>
</table>

*(table continues)*
Table 1 (continued)

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Research Description</th>
<th>Participants</th>
<th>Adapted From</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fordyce (1987)</td>
<td>Review of research using the Happiness Measures (HM) in relation to the general progress of well-being measurement efforts</td>
<td>N/A</td>
<td>Happiness Measures: (1) 11-point happiness / unhappiness scale and (2) a question asking for the time spent in happy, unhappy, and neutral moods 0-10, where 0 = extremely unhappy (utterly depressed, completely down) and 10 = extremely happy (feeling ecstatic, joyous,)</td>
</tr>
<tr>
<td>Schreibman, Kaneko, &amp; Koegel (1991)</td>
<td>Conduct a comparison of parental affect across two parent training programs (DTT or PRT)</td>
<td>Parents of children with autism, Two California Universities</td>
<td>Adapted from Koegel &amp; Egel (1979): Likert format, 6-pt scale to assess happiness - Negative affect (0 and 1): Parent appears to be discontented, disappointed, or frustrated and seems not to be enjoying self - Neutral affect (2 and 3): Does not appear to be decidedly happy or particularly unhappy. May smile or frown occasionally but overall, seems rather neutral in this situation - Positive affect (4 and 5): Smiles, laughs appropriately; seems to be enjoying self (table continues)</td>
</tr>
<tr>
<td>Study</td>
<td>Methodological Approach</td>
<td>Populations/Settings</td>
<td>Observations/Measurements</td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Kochanska &amp; Aksan (1995)</td>
<td>Motivationally distinct forms of child compliance, mutually positive affect, and maternal control observed and examined.</td>
<td>Dyads of mothers and their children</td>
<td>Children's homes - Highly positive affect: laughing out loud, singing happily, jumping with joy - Neutral/pleasant: no clear “full-blown” joy, but the mood nevertheless pleasant or neutral - Neutral/negative: no clear signs of negative affect, but some indication of irritation, impatience, boredom, apprehension, an impression that he or she “would rather be elsewhere” in the overall neutral “aura” - Highly negative: clear signs of distress, anger, fear, sadness</td>
</tr>
<tr>
<td>Favell, Realon, &amp; Sutton (1996)</td>
<td>Four preliminary studies conducted to develop and demonstrate methodologies for measuring happiness</td>
<td>Individuals with severe or profound mental retardation</td>
<td>Intermediate Care Facilities - Positive facial expression (e.g., smiles and laughter) and “Happiness Index”</td>
</tr>
<tr>
<td>Green &amp; Reid (1996)</td>
<td>Operationalize, measure, and increase happiness</td>
<td>Adults with profound disabilities</td>
<td>Adult education classroom - Observation system and 7-point Likert scale - Happiness: any facial expression or vocalization typically considered to be an indicator of happiness among people without disabilities including smiling, laughing, and yelling while smiling - Unhappiness: any facial expression or vocalization typically considered to be an indicator of unhappiness among people without disabilities such as frowning, grimacing, crying, and yelling without smiling - Likert Scale: From extremely unhappy (1) to extremely happy (7)</td>
</tr>
<tr>
<td>Study</td>
<td>Methodology</td>
<td>Setting</td>
<td>Coding Adaptation</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
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<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Joseph &amp; Tager-Flusberg (1997)</td>
<td>Examine child’s visual attention and facial affect for six young children with autism and six children with Down syndrome in structured play</td>
<td>Children with autism and Down syndrome</td>
<td>Child’s home Coding adapted from Bloom, Beckwith, Capatides, &amp; Hafitz (1988) (1) Neutral/interested; (2) negative; (3) positive; and (4) mixed (positive and negative/ambiguous)</td>
</tr>
<tr>
<td>Koegel, Bimbela, &amp; Schreibman (1996)</td>
<td>Assessed collateral effects of two different parent training paradigms (ITB and PRT)</td>
<td>Interactions between children with autism and their families</td>
<td>Families’ homes Interaction rating scale adapted from Koegel &amp; Egel (1979) and Schreibman et al. (1991) - Negative affect (0 and 1): Adults appear discontent with the ongoing activities; seem not to be enjoying themselves - Neutral affect (2 and 3): (Same as Schreibman et al., 1991) - Positive affect (4 and 5): (Same as Schreibman et al., 1991)</td>
</tr>
<tr>
<td>Green, Gardner, &amp; Reid (1997)</td>
<td>Increase indices of happiness and conduct component analysis of program</td>
<td>Adults with profound multiple disabilities</td>
<td>Adult education classrooms Green &amp; Reid (1996) observation system and 7-point Likert scale</td>
</tr>
<tr>
<td>Ivancic, Barrett, Simonov, &amp; Kimberly (1997)</td>
<td>Replicate Green &amp; Reid (1996), except of using caregiver reports instead of preference assessments</td>
<td>Adults with profound multiple disabilities</td>
<td>State residential facility Identical definitions of happiness/unhappiness as Green &amp; Reid’s (1996) definitions</td>
</tr>
<tr>
<td>Logan, Jacobs, Gast, Murray, Daino, &amp; Skala (1998)</td>
<td>Evaluate the effect of the type of peer group on behaviors associated with happiness</td>
<td>Children with profound multiple disabilities and typical children</td>
<td>Elementary classroom Individualized definitions of happiness Examples: - Smile: lips open and curved upward and both teeth showing, lasting for at least 3 sec. - Smile: Top teeth visible, corners of mouth stretched wide, with continuous smile line visible on right side of mouth - Eyes open: Eyelids more than half open with pupil entirely visible and at least 2/3 of iris visible</td>
</tr>
<tr>
<td>Study</td>
<td>Intervention Description</td>
<td>Participants Description</td>
<td>Setting</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>Green &amp; Reid (1999a)</td>
<td>Evaluate a program developed to reduce indices of unhappiness</td>
<td>Adults with profound multiple disabilities</td>
<td>Adult education classrooms</td>
</tr>
<tr>
<td>Green &amp; Reid (1999b)</td>
<td>Evaluate a behavioral means of identifying sources of happiness/unhappiness</td>
<td>Adults with profound multiple disabilities</td>
<td>Adult education classroom</td>
</tr>
<tr>
<td>Parsons, Reid, &amp; Green (2001)</td>
<td>Evaluate the use of situational assessment for identifying work task preferences</td>
<td>Adults with multiple severe disabilities</td>
<td>Local company</td>
</tr>
<tr>
<td>Lancioni, O’Reilly, Campodonico &amp; Mantini (2002)</td>
<td>Assessed the effects of stimulation on indices of happiness and positive engagement in 4 persons with profound multiple disabilities</td>
<td>Adults with profound multiple disabilities</td>
<td>Rehabilitation center</td>
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<tr>
<td>Lancioni, O’Reilly, Singh, Oliva, &amp; Groeneweg (2002)</td>
<td>Assess whether the impact of a microswitch-based program on indices of happiness would be comparable with that of a stimulation program.</td>
<td>Adults and one adolescent with profound multiple disabilities</td>
<td>Center for individuals with multiple disabilities</td>
</tr>
<tr>
<td>Lancioni, O’Reilly, Singh, Oliva, Campodonico &amp; Groeneweg (2003)</td>
<td>Assessed whether stimulation and microswitch-based programs maintained their positive impact on indices of happiness over time</td>
<td>Adults and one adolescent with profound multiple disabilities</td>
<td>Center for individuals with multiple disabilities</td>
</tr>
<tr>
<td>Lancioni, Singh, O’Reilly, Oliva, &amp; Groeneweg (2004)</td>
<td>Assessed the effects of automatically delivering favorite stimulation on engagement and indices of happiness during the use of a stationary bicycle</td>
<td>Adults with profound multiple disabilities</td>
<td>Center for individuals with multiple disabilities</td>
</tr>
<tr>
<td>Lancioni, O’Reilly, Singh, Oliva, Piazzolla, &amp; Groeneweg (2004)</td>
<td>Assessed the influence of favorite stimuli on indices of happiness and aberrant behavior</td>
<td>Adults with profound multiple disabilities</td>
<td>Unclear</td>
</tr>
</tbody>
</table>

*(table continues)*
<table>
<thead>
<tr>
<th>Study Authors</th>
<th>Research Question</th>
<th>Participant Group</th>
<th>Setting</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davis, Young, Cherry, Dahman, Rehfeldt (2004)</td>
<td>Compared happiness of individuals and the effectiveness of presenting preferred item with social interaction vs. social interaction alone</td>
<td>Adults with profound mental retardation (PMR)</td>
<td>Rehabilitation facility</td>
<td>Green &amp; Reid (1996) definitions</td>
</tr>
<tr>
<td>Singh, Lancioni, Winton, Wahler, Singh, &amp; Sage (2004)</td>
<td>Evaluate whether increasing mindfulness of caregivers results in increased happiness</td>
<td>Adults with complex medical/physical problems and PMR</td>
<td>Adult institution</td>
<td>Green &amp; Reid (1996) definitions + individual additions</td>
</tr>
<tr>
<td>Examples: grinning, eyes opened wide in excitement, open mouth together with furrows high on forehead, etc.</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Green, Reid, Rollyson, &amp; Passante (2005)</td>
<td>Evaluate teaching program for reducing resistance and indices of unhappiness during teaching sessions</td>
<td>Adults with profound multiple disabilities</td>
<td>Residential center for adults</td>
<td>Green &amp; Reid (1996) definitions</td>
</tr>
<tr>
<td>Moore, Delayney, &amp; Dixon (2007)</td>
<td>Evaluate indices of happiness before, during, and after residents exposed to environmental enhancement activities</td>
<td>Adults with Alzheimer’s</td>
<td>Nursing facility</td>
<td>Green &amp; Reid (1996) definitions</td>
</tr>
</tbody>
</table>

*(table continues)*
<table>
<thead>
<tr>
<th>Vismara &amp; Lyons (2007)</th>
<th>Examine whether joint attention initiations for social sharing would occur as a collateral effect of utilizing the motivational techniques of Pivotal Response Treatment (PRT) in conjunction with perseverative interest stimuli</th>
<th>Children with autism and primary caregivers</th>
<th>Child's home or clinic</th>
<th>Affect scales adapted from Koegel &amp; Egel (1979)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Negative (0-1)</strong>: Child looks bored, uninvolved, and not curious or eager to participate in the activity or activities with the adult. Appears to be sad, angry, or frustrated. Spends little time attending to the task and adult and may be noncompliant (fidget, squirm, show inappropriate vocal or motor behavior unrelated to task, not respond to task). <strong>Neutral (2-3)</strong>: Child is neither particularly interested nor uninterested in the task or adult. May smile or frown occasionally, but overall seems neutral. May fidget and appear inattentive but is not aggressive or rebellious. Generally complies with instructions or responds to prompts, but may not do so readily. <strong>Positive (4-5)</strong>: Child readily attends to adult or task and seems to be enjoying him- or herself. May smile, laugh, or show other positive emotional behavior under appropriate circumstances. Child is alert and involved in tasks with the adult. Responds to prompts or instructions (is compliant and appears to try to perform successfully).</td>
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</thead>
<tbody>
<tr>
<td>Adapted from Kochanska &amp; Aksan (1995) coding system</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- **Positive affect**: occurs when there is laughing, joking playfully, singing happily, jumping with joy, smiling, saying "I love you," or an affectionate touch (i.e., placing hand on back, arm, or head) from the Parent/Child to the Child/Parent. There is a general sense of happiness. [...] The affect does not need to be expressed directly to each other except for saying "I love you" or the affectionate touch.  
- **Neutral**: Neutral affect occurs when there are no obvious signs of positive or negative affect; however the parent/child is still engaged in the task.  
- **Negative affect**: occurs when there is a display of distress, anger, fear, sadness, frustration, or irritation. [...] The affect does not need to be expressed directly to each other.  
- **Aloofness**: Aloofness occurs when the Parent/Child is tuned out of the situation or focused only on what he/she is doing. There is no interaction with the other person. The Parent/Child appears to be bored, actively in his/her own world or not wanting to interact with partner. There is a general impression that Parent/Child would rather be somewhere else or playing alone with the activity. |
<table>
<thead>
<tr>
<th>Child</th>
<th>Age</th>
<th>Learning Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4 years</td>
<td>Echolalic speech with utterances from 3-5 words. Targets included expressive language, and pre-academic skills such as counting and letter sounds.</td>
</tr>
<tr>
<td>B</td>
<td>3 years</td>
<td>Sign language, PECS, and the beginning of speech sounds. Learn-to-learn skills such as imitation, instruction following, and component training.</td>
</tr>
<tr>
<td>C</td>
<td>5 years</td>
<td>Functional communication targets starting with eye contact and the beginning of vocals. Other targets focus on imitation, instruction following, and receptive language.</td>
</tr>
</tbody>
</table>
Table 3

List of Teacher Participants and Experience

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Age</th>
<th>Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>24 years</td>
<td>1 month of direct autism and applied behavior analysis experience. 4 years of behavior analysis experience in undergraduate study</td>
</tr>
<tr>
<td>2</td>
<td>30 years</td>
<td>7 years direct autism and ABA experience. 2 years of behavior analysis experience in a graduate course of study</td>
</tr>
<tr>
<td>3</td>
<td>24 years</td>
<td>5 years direct autism and applied behavior analysis experience, 2 years of behavior analysis graduate course work</td>
</tr>
<tr>
<td>4</td>
<td>28 years</td>
<td>0 autism and applied behavior analysis experience with a background in speech and language</td>
</tr>
<tr>
<td>5</td>
<td>26 years</td>
<td>6 mos. direct autism experience, 4 years experience with behavior analysis in undergraduate and graduate course of study</td>
</tr>
<tr>
<td>6</td>
<td>25 years</td>
<td>5 years direct autism and applied behavior analysis experience, 5 years behavior analysis experience in undergraduate and graduate course work</td>
</tr>
<tr>
<td>7</td>
<td>23 years</td>
<td>4 years direct autism and applied behavior analysis experience, 4 years experience in behavior analysis undergraduate and graduate course of study</td>
</tr>
<tr>
<td>8</td>
<td>27 years</td>
<td>2 years of autism experience in a special education program with some applied behavior analysis</td>
</tr>
</tbody>
</table>
Table 4

*Interobserver Agreement for Teachers’ Affect*

<table>
<thead>
<tr>
<th>Behavior</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td><strong>Agreement on occurrence</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Favorable (F)</td>
<td>100%</td>
<td>89%</td>
<td>94%</td>
<td>92%</td>
<td>83%</td>
<td>96%</td>
<td>98%</td>
<td>93%</td>
<td>95%</td>
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<tr>
<td>Unfavorable (U)</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Neutral (N)</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>95%</td>
<td>100%</td>
<td>100%</td>
<td>97%</td>
</tr>
<tr>
<td>Off Camera (O)</td>
<td>91%</td>
<td>100%</td>
<td>100%</td>
<td>97%</td>
<td>95%</td>
<td>92%</td>
<td>85%</td>
<td>87%</td>
<td>93%</td>
</tr>
<tr>
<td>Smiles</td>
<td>100%</td>
<td>98%</td>
<td>86%</td>
<td>100%</td>
<td>100%</td>
<td>82%</td>
<td>99%</td>
<td>94%</td>
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<table>
<thead>
<tr>
<th><strong>Agreement on non-occurrence</strong></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>Favorable (F)</td>
<td>87%</td>
<td>83%</td>
<td>86%</td>
<td>100%</td>
<td>98%</td>
<td>91%</td>
<td>83%</td>
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<td>100%</td>
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<tr>
<td>Unfavorable (U)</td>
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<td>100%</td>
<td>100%</td>
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<td>100%</td>
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<tr>
<td>Neutral (N)</td>
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<td>100%</td>
<td>100%</td>
<td>100%</td>
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</tr>
<tr>
<td>Off Camera (O)</td>
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<td>98%</td>
<td>98%</td>
<td>97%</td>
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<td>94%</td>
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Table 5

*Interobserver Agreement for Children’s Affect*

<table>
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<tr>
<th>Behavior</th>
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<th>A2</th>
<th>A3</th>
<th>B3</th>
<th>B4</th>
<th>B5</th>
<th>C6</th>
<th>C7</th>
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<tr>
<td><strong>Agreement on occurrence</strong></td>
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</tr>
<tr>
<td>Favorable (F)</td>
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<td>91%</td>
<td>94%</td>
<td>93%</td>
<td>88%</td>
<td>87%</td>
<td>86%</td>
<td>92%</td>
<td>100%</td>
</tr>
<tr>
<td>Unfavorable (U)</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
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<tr>
<td>Neutral (N)</td>
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<tr>
<td>Off Camera (O)</td>
<td>86%</td>
<td>100%</td>
<td>100%</td>
<td>83%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Smiles</td>
<td>96%</td>
<td>90%</td>
<td>98%</td>
<td>88%</td>
<td>100%</td>
<td>90%</td>
<td>93%</td>
<td>92%</td>
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<tr>
<td><strong>Agreement on non-occurrence</strong></td>
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<td></td>
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<td>Favorable (F)</td>
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<td>89%</td>
<td>93%</td>
<td>85%</td>
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<td>94%</td>
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<td>100%</td>
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<tr>
<td>Unfavorable (U)</td>
<td>100%</td>
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<td>Neutral (N)</td>
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<tr>
<td>Off Camera (O)</td>
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<td>100%</td>
<td>98%</td>
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<td>91%</td>
<td>98%</td>
<td>100%</td>
<td>98%</td>
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</tbody>
</table>
APPENDIX A

OBSERVATION CODE
Comparing Indices of Happiness during Teaching Interactions

Observation Code

Adapted from the Family Connections Observation Code

DRAFT

Faculty Developer: Dr. Shahla Ala’i Rosales
Student Contributors: Claire Anderson
Mandy Besner
Jessica Broome
Sarah Ewing
Megan Geving
Allison Jones
Kate Laino
Andrea Newcomer
Nicky Suchomel
Nicole Zeug
Scoring Instructions

During each 15 s interval, mark the letter that corresponds with one of the following target behaviors (favorable, unfavorable, neutral, and off-screen) if the behavior occurred at any time during the interval. Regardless of how many times the behavior occurs, mark the corresponding letter as long as it occurs just one time within any given interval. More than one letter may be marked in any given interval. In the row below the target behaviors, labeled “Smiles,” tally the number of smiles that occurred within that interval. If no smiles are observed, leave the space blank. If you are not completely sure whether a child’s mouth movement was sufficient to constitute a smile, do not mark it as a smile or favorable occurrence based on that movement. After scoring a 15 m tape, count the total number of intervals in which each of the target behaviors occurred and the total number of smiles.

Converting to percent of intervals:

After viewing a video and tallying the total number of intervals (interval recording data sheet) in which each behavior occurred, divide the total number of intervals in the video (see interval guide on each data sheet) by the total number of intervals in which the behavior occurred and multiply by 100 to convert the raw data to percentage of intervals (e.g. if favorable affect occurred in 17 intervals in a 15 min clip [60 intervals], complete the calculation 17 divided by 60 = .283333 (.28) X 100 = favorable affect occurred in 28% of intervals. Make sure to round each decimal to the nearest hundredths place value. Write the percentage of intervals (28%) right next to the raw data score on the data sheet and circle it.
CHILD AND TEACHER AFFECT
(interval recording)

Favorable (F)

The child or teacher emits a vocalization or assumes a facial expression indicating pleasure, favor, or amusement. This is sometimes characterized by an upturning of the corners of the mouth. Also includes child or teacher’s open mouth together with eye brows/furrows high on forehead. The child or teacher emits a vocalization such as a laugh, giggle, or high-pitched shriek indicating pleasure, favor, or excitement. The laugh can be 1 second or more. Regardless of content, the tone of voice may be high or low pitched, as long as the voice tone indicates excitement, pleasure or favor. If you cannot see the child or teacher’s face, but can hear favorable vocalizations like laughing or praise statements spoken with positive voice tone, still mark the interval as Favorable. Child cannot be protesting and smiling at the same time, however they can both still occur in the same interval.

Child Examples include but are not limited to: the child is playing with a car and his facial expression changes by his eyes brows being raised and the upturning of his lips; the child laughs while the teacher is tickling him; the child giggles at the Tickle Me Elmo; while playing with bubbles you can see the side of the child’s cheek raise and one corner of the mouth raise; one corner of the child’s mouth turns up while looking at the teacher and sitting in the chair.

Teacher Examples include but are not limited to: the teacher smiles and shows her teeth when she says, “Great job playing cars!”; the teacher laughs and smiles while playing tickles; the teacher’s mouth turns upward while saying, "You did it!"; the teacher is turned sideways and you see one corner of the mouth and the cheek raise; the teacher has her mouth open with the corners of the mouth raised while playing with pretend food; the teacher’s mouth is off-screen but you can hear her laugh; the teacher says "Great job!" and it doesn’t appear that the corners of her mouth turn upward but her tone of voice is high.

Child Non-examples include but are not limited to: the child grunts while being tickled; the child bites the corner of his/her mouth; corners of the mouth turn up and eyes squint as child starts to cry; eyes close and turning of lips as a tantrum begins; the child makes a face that creates one corner of the mouth go up and the nose scrunch up like a grimace.
Teacher Non-examples include but are not limited to: the teacher's facial expression and voice tone look and sound content; teacher watches child and it appears to be a pleasant interaction; you see the cheek raise but cannot see the corner of the mouth; the teacher says “Great job” but in a tone that is normal speaking volume and does not reflect excitement/pleasure; while saying “car” and the corners of the mouth do not raise or go down; teacher says “Wow, great job” but in a sarcastic tone; while the teacher says “eeeaatt” the corners of the mouth go up.

Unfavorable (U)
Child or teacher engages in vocalizations such as yells, whines with a distress (example include but not limited to pain, fear, etc.), or screams which may or may not be accompanied by physically retreating or protesting or assumes a facial expression include grimace (child or teacher assumes a facial expression indicating disapproval/dissatisfaction or disgust, characterized by stretching of mouth backwards or forward [pucker of lips], crunching upward of cheeks and nose), smirk (teacher assumes a facial expression indicating un-sueness, self consciousness, doubting, characterized by an upturning of one side of the mouth, usually accompanied with a sigh, or “uh”), or eye roll (teacher rolls eyes by raising eye brows and diverting eyes from child, usually following an undesirable event).

Child Examples include but are not limited to: the child starts crying while playing with blocks; child vocalizes while protesting; child cries while trying to get past a teacher; child makes a whining sound while pushing the trains off the table.

Teacher Examples include but are not limited to, the teacher puckers lips outward while the child is playing alone or the child is retreating from the teacher; teacher crunches her cheeks and nose upward when the child is not engaging with the teacher; the teacher tries to give the child a toy and the child retreats and the teacher then rolls her eyes; teacher says, “Wow, that was great” but in a sarcastic tone; teacher while watching the child play with a toy gives a half smile and her eyebrows and eyes constrict inwards; teacher yells at the child in a as if scolding him/her; teacher is looking for materials and assumes a half smile facial expression; teacher sighs with a half smile and raising of her eyebrows when child is retreating.

Child Non-examples include but are not limited to: child is given a goldfish and he throws it back at the person; child gets excited and vocalizes when being tickled; child sings extremely loudly; child screeches loudly while smiling, and laughing when jumping up and down.
Teacher Non-examples include but are not limited to, the teacher making silly faces with the child; the teacher crunches her face after a favorable event accompanied with a smile; teacher raises her eye brows in excitement when playing with the child; teacher while watching the child play gives a half smile but it is a smile of approval or contentment.

Neutral (N)

The child or teacher assumes a facial expression or emits vocalizations indicating indifference. The child or teacher does not appear to be decidedly happy or particularly unhappy. There are no obvious signs of favorable or unfavorable affect.

Examples include but are not limited to: the teacher says “Good job” but the corners of the mouth do not turn upward and there the tone of voice is impartial; the teacher tickles the child but the child does not show any favorable or unfavorable reaction.

Non-examples include but are not limited: the teacher says “That was awesome” and while the corners of her mouth are not turned upward, her tone of voice is raised and high-pitched; the child says “Stop tickling me!” but the corners or his mouth are turned upward and he is laughing while saying it.

Off Camera/Can’t See Mouth

Score this when you cannot see any part of the person’s mouth you are taking data on or they are off camera for more than 5 seconds.

Examples include but are not limited to: the teacher turns head away from the camera and all you can see is their check; the teachers back is facing the camera and all you can see is the back of their head.

Non-examples include but are not limited to: the teacher turns around and you see their mouth for 1 sec; the teacher is turned sideways and you can see one side of the mouth that is turned up (score as smile); the teacher turns their face and you think you saw their lips but are unsure.
(Tally each occurrence that the child or teacher smiles.)

**Smile**

The teacher or child assumes a facial expression indicating pleasure, favor, or amusement, characterized by an upturning of the corners of the mouth.

*Examples* include but are not limited to: the teacher/child smiles and shows her teeth when she says, “Great job playing with the balls!”; the child’s mouth turning upward while laughing; the teacher laughs and smiles while playing tickles; the teacher’s mouth turns upward while saying, “You did it!”

*Non-examples* include but are not limited to: the teacher’s facial expression and voice tone look and sound content; teacher watches child and it appears to be a pleasant interaction.
APPENDIX B
DATASHEET
**Child Name:**

**Name of Scorer:**

**Teacher Name:**

**Date of Tape:**

**Date Scored:**

**Scoring Instructions:** Indicate the affect of both the child and teacher within each 15-second interval. During each interval, mark if the interval was favorable (F), unfavorable (U), or neutral (N). If you cannot see any part of the person’s mouth you are taking data on, or he/she is offscreen, mark O for offscreen. Tally the number of smiles for the child and teacher within each 15-second interval.

<table>
<thead>
<tr>
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<th>0-15</th>
<th>15-30</th>
<th>30-45</th>
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<tr>
<td>14</td>
<td>F</td>
<td>U</td>
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<td>O</td>
</tr>
</tbody>
</table>

**Child:**

**Teacher:**

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45
APPENDIX C

CONSENT FORMS
Title of Study:
The Development of an Observation System to Aid in the Evaluation and Implementation of Early Intervention Programs for Children with Autism

Principal Investigator:
Megan Geving, University of North Texas, Department of Behavior Analysis

Purpose of the Study
Your child is being asked to participate in a research study that is designed to develop an observation system for supervisors to monitor and give feedback to staff working with young children with autism. The goal is to design a standard way of assessing staff performance so that feedback is tailored to their teaching. More efficient training should ensure a more positive and beneficial experience for your child at Easter Seals. To conduct this study your child will be video taped during regular sessions with the Easter Seals staff (who have given consent for participating). Your consent will allow the data to be presented and thus allow the research findings to be disseminated more widely.

Study Procedures:
Your child and their therapists will be video taped for 15 minutes each week for 2 months. The video segments will occur during a regularly scheduled session and will provide a view of a typical session with the therapist and your child. Data will be collected on the therapist’s teaching (such as learning opportunities, delivering a desired toy or activity following correct responding, smiles and/or cries, and what activities are occurring during the session). These specific behaviors help managers understand how time is being spent during sessions, whether that time is being spent as productively as possible, and if there are areas where the therapist may need additional training and/or support.

Voluntary Participation:
Participation in this research study is voluntary. Refusal to participate or a decision to discontinue participation will not involve a penalty or loss of benefits to which your child is otherwise entitled.
Foreseeable Risks:

No foreseeable risks are involved in this study. Previous clinical and research reports have identified no harm and substantial benefit from participation in the type of training associated with this study. We will take precautions to be sure that your child does not experience discomfort during the training.

Benefits to the Subjects or Others:

This observation system will allow the managers at Easter Seals to more effectively monitor and give feedback to the applied behavior analysis coaches. Not only will it be more feasible to give feedback, but the feedback will be in direct relation to how the applied behavior analysis coach interacts with your child. This will benefit your child by insuring that their programs are being run as correctly and efficiently as possible.

Procedures for Maintaining Confidentiality of Research Records:

All records including signed consent forms and video tapes will be kept in a locked filing cabinet at the Easter Seals North Texas Carrollton site. For the purposes of data analysis, an additional copy of the videotapes will be kept in the Family Connections Project lab in Chilton Hall Rm. 361E. All research participants will be given a pseudonym that will be used when referring to that participant’s data and will be maintained throughout the course of research. Following the research study, all personally identifiable data will be marked with the participant’s pseudonym and will remain in The Easter Seals records for at least 3 calendar years. In addition to the principal investigator, additional graduate students may assist with data analysis. All of these graduate students are staff of Easter Seals and/or The Family Connections Project and have completed the NIH clinical research training. Personally identifiable data will not be disclosed to anyone outside of The Easter Seals North Texas Autism Treatment Program Team. The confidentiality of the participants’ personal information will be maintained in the master’s thesis defense and in any public dissemination, such as appearance in academic journals and/or academic conferences.

Questions about the Study:

If you have any questions about the study, you may contact Megan Geving or the faculty advisor, Dr. Shahla Ala’i Rosales.

Review for the Protection of Participants:

This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.
For the Research Participants’:

Your signature below indicates that you have read or have had read to you all of the above and that you confirm all of the following:

- Megan Geving has explained the study to you and answered all of your questions. You have been told the possible benefits and the potential risks and/or discomforts of the study.
- You understand that your child do not have to take part in this study, and your refusal to allow your child to participate or your decision to withdraw your child from the study will involve no penalty of loss of rights or benefits. The study personnel may choose to stop your child’s participation at any time.
- You understand why the study is being conducted and how it will be performed.
- You understand your child’s rights as a research participant and you voluntarily consent to your child’s participation in this study.
- You have been told you will receive a copy of this form and that at the conclusion of the study Megan will meet with you to describe the findings and the outcomes.

________________________________________
Printed Name of Child

________________________________________
Printed Name of Parent

Signature of Parent Date

For the Principal Investigator:

I certify that I have reviewed the contents of this form with the participant signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

________________________________________
Printed Name of Principal Investigator

Signature of Principal Investigator Date
University of North Texas Institutional Review Board

Informed Consent Form

Before agreeing to your participation in this research study, it is important that you read and understand the following explanation of the purpose and benefits of the study and how it will be conducted.

Title of Study:

The Development of an Observation System to Aid in the Evaluation and Implementation of Early Intervention Programs for Children with Autism

Principal Investigator:

Megan Geving, University of North Texas, Department of Behavior Analysis

Purpose of the Study:

You are being asked to participate in a research study that is designed to develop an observation system for supervisors to monitor and give feedback to staff working with young children with autism. The goal is to design a standard way of assessing staff performance so that feedback is tailored to their teaching. More efficient training should ensure a more positive and beneficial experience for you and the children you serve at Easter Seals. To conduct this study you will be videotaped during regular sessions with the children in your caseload. Your consent will allow the data to be presented and thus allow the research findings to be disseminated more widely.

Study Procedures:

You and the children will be videotaped for 15 minutes each week for 6 weeks. The video segments will occur during a regularly scheduled session and will provide a view of a typical session with you and the child. Data will be collected on your teaching (such as learning opportunities, contingencies, affect, and material engagement). These specific behaviors help managers understand how time is being spent during sessions, whether that time is being spent as productively as possible, and if there are areas where you may need additional training and/or support.

Voluntary Participation:

Participation in this research study is voluntary. Refusal to participate or a decision to discontinue participation will not involve a penalty or loss of benefits to which you are otherwise entitled.
Foreseeable Risks:

No foreseeable risks are involved in this study. Previous clinical and research reports have identified no harm and substantial benefit from participation in the type of training associated with this study. We will take precautions to be sure that your child does not experience discomfort during the training.

Benefits to the Subjects or Others:

This observation system will allow the managers at Easter Seals to more effectively monitor and give feedback to the ABA coaches. Not only will it be more feasible to give feedback, but the feedback will be in direct relation to how the ABA coach interacts with the children served. This will benefit the treatment fidelity of programs as well as the ABA coaches and children’s time being spent more efficiently at Easter Seals North Texas.

Procedures for Maintaining Confidentiality of Research Records:

All records including signed consent forms and video tapes will be kept in a locked filing cabinet at the Easter Seals North Texas Carrollton site. For the purposes of data analysis, an additional copy of the videotapes will be kept in the Family Connections Project lab in Chilton Hall Rm. 361E. All research participants will be given a pseudonym that will be used when referring to that participant’s data and will be maintained throughout the course of research. Following the research study, all personally identifiable data will be marked with the participant’s pseudonym and will remain in The Easter Seals records for at least 3 calendar years. In addition to the principal investigator, additional graduate students may assist with data analysis. All of these graduate students are staff of Easter Seals and/or The Family Connections Project and have completed the NIH clinical research training. Personally identifiable data will not be disclosed to anyone outside of The Easter Seals North Texas Autism Treatment Program Team. The confidentiality of the participants’ personal information will be maintained in the master’s thesis defense and in any public dissemination, such as appearance in academic journals and/or academic conferences.

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• You understand why the study is being conducted and how it will be performed.
• You understand your rights as a research participant and you voluntarily consent to your participation in this study.
• You have been told you will receive a copy of this form and that at the conclusion of the study Megan will meet with you to describe the findings and the outcomes.

___________________________    ______________________
Printed Name of Participant

___________________________                     _________________
Signature of Participant                 Date

For the Principal Investigator:

I certify that I have reviewed the contents of this form with the participant signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

________________________________________
Printed Name of Principal Investigator

________________________________________                     _________________
Signature of Principal Investigator                 Date
REFERENCES


