

University of California

Santa Barbara

Improving Conversational Communication in Mexican-American Children with Autism  
in Their Native Language via Parent-Implemented Self-Management.

A dissertation submitted in partial satisfaction for the requirements for the degree of  
Doctor of Philosophy in Education

by

Mario Orlando Bucio

Committee in charge:

Professor Mian Wang, Chair

Professor Amy Kyratzis

Professor Melissa Morgan-Consoli

September 2016

The dissertation of Mario Orlando Bucio is approved.

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Amy Kyratzis, Ph.D.

---

Melissa Morgan-Consoli, Ph.D.

---

Mian Wang, Ph.D.

Committee Chair

September 2016

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Mario Orlando Bucio

## **Dedication**

I would like to dedicate this paper to all the families who participated in this study. Without your willingness to participate, this study would not have been possible. You have allowed the doors to be open to a line of research that has not been investigated, providing some evidence for best practice for working with Mexican-American children with autism. Thank you for being brave, willing, and interested in making a difference in developing best practice for our culture. I would also like to thank all the families that I have had a pleasure working with throughout the past 8 years. Being a part of your family has allowed me to develop important life skills needed to work in the field of behavioral therapy. And to all the children whom I had the pleasure of working with, thank you for the all joy and laughs that you have brought to me over the years. I will forever be grateful and will continue my efforts to provide more to your community and culture.

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Vita of Mario Orlando Bucio

August 2016

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**Education**

---

**Ph.D., Education, *Expected August 2016***  
**Special Education, Disabilities & Risk Studies**  
University California Santa Barbara

**M.A., Education, May 2014**  
**Special Education, Disabilities & Risk Studies**  
University California Santa Barbara

**B.A., Sociology, June 2009**  
**Minor Applied Psychology, June 2009**  
University California Santa Barbara

---

**Clinical & Supervision Experience:**

---

February 2012-present **Behavioral Consultant**

Alegria Developmental & Behavioral Consultants  
Santa Barbara, CA  
Supervisors: Rosy Matos, Ph.D., BCBA-D &  
Sharon Elmensdorp, Ph.D., BCBA-D

August 2013-Present **Coach (Basketball, Soccer, Football)**

Marymount of Santa Barbara  
Santa Barbara, CA  
Supervisor: Gary Messineo

June 2014-  
February 2015

**Behavioral Therapist**  
Holdsambeck & Associates  
Santa Barbara, CA  
Supervisors: Leasha Barry, Ph.D., BCBA-D & Meagan  
Stollmeyer, M.A.

February 2013-  
June 2014

**Behavioral Therapist & Mentor**  
Koegel Autism Center  
Santa Barbara, CA  
Supervisors: Lynn Kern Koegel, Ph.D., & Whitney Detar, Ph.D.,  
BCBA-D

October 2012-  
July 2014

**Reading Specialist**  
McEnroe Reading Clinic  
Gevirtz Graduate School of Education



University of California, Santa Barbara  
Supervisor: Yenna Lam & Tina McEnroe, M.A.

- July 2011-Jan. 2013 **Behavioral Interventionist & Mentor**  
Alegria Developmental & Behavioral Consultants  
Beverly Hills, CA  
Supervisor: Rosy Matos, Ph.D., BCBA-D &  
Sharon Elmensdorp, Ph.D., BCBA-D
- Oct. 2010-Jan.2013 **Full Inclusion Specialist**  
Echo Horizon Elementary School  
Culver City, CA  
Supervisor: Rosy Matos, Ph.D., BCBA-D
- Oct. 2010-Oct. 2011 **Bi-Lingual Program Supervisor**  
Koegel Autism Consultants  
Santa Barbara, CA  
Supervisor: Lynn Kern Koegel, Ph.D. &  
Rosy Matos Fredeen, Ph.D.
- 2008- Oct. 2011 **Bi-Lingual Parent Educator & Clinician**  
Koegel Autism Consultants  
Santa Barbara, CA  
Supervisor: Lynn Kern Koegel, Ph.D. & Rosy M. Fredeen Ph.D.
- 2009-June 2011 **Full Inclusion Specialist**  
Montecito Union & Marymount of Santa Barbara  
Santa Barbara, CA  
Supervisor: Lynn L. Koegel, Ph.D. & Crystal Carrillo, M.A.
- Jan- Mar. 2009 **Counselor/Facilitator**  
Boys and Girls Club  
Goleta, CA  
Supervisor: Richard Duran Ph.D.
- Sept.-Dec. 2008 **Instructional Assistant**  
Elwood Elementary School  
Santa Barbara, CA  
Supervisor: Michael Gerber, Ph.D.

---

**Publications:**

---

**Using Individualized Reinforcers and Hierarchical Exposure to Increase Food Flexibility in Children with Autism Spectrum Disorders.** Koegel, R.L., Bharoocha, A. A., Ribnick, C.B., Ribnick, R.C., Bucio, M.O., Fredeen, R.M., Koegel, L.K. (2011), *Journal of Autism and Developmental Disorders*.

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## Research Experience:

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- 2016 **Training Latino/a Parents to Use Self-Management to Improve Social-Conversations in Spanish with their Children** Co-Authors: Mario O. Bucio, M.A., & Mian Wang, Ph.D.
- 2013-2015 **Improving Conversational Communication in Young Mexican-American Children with Autism in Their Native Language** Co-Authors: Mario O. Bucio, B.A., & Mian Wang, Ph.D.
- 2011-present **Bridging the Gap: Applying Empirical Behavioral Interventions with Latino/a Children with ASD**
- 2009-September 2010 **Using Stimulus Fading and Reinforcers to Decrease Restricted Food Intake in Children with Autism** Co-Authors: Rosy M. Fredeen, Ph.D., Amber Barhoocha, B.A., Mario O. Bucio, B.A., Lisa Rini, M.Ed., Ryan Ribnick, B.A., Courtney Ribnick, B.A., & Robert L. Koegel, Ph.D.
- 2008-2009 **Expanding Peers' Knowledge about ASD** Co-Authors: Sarah E. Smith M.A., George Singer, Ph.D., Rosy Matos Fredeen Ph.D., & Mario O. Bucio, B.A.
- 2008-2009 **Improving the IEP Process for Latino/a Families** Co-Authors: Elia Jimenez, M.A., Bob Koegel Ph.D., & Mario O. Bucio, B.A.
- 2008 **Research Assistant**  
UC, Santa Barbara  
Principle Investigator: Michael Furlong, Ph.D.
- 

## Presentations & Posters:

---

- Jan. 2014 Improving Conversational Communication in Young Mexican-American Children with Autism in Their Native Language. Mario O. Bucio, B.A., & Mian Wang, Ph.D. Annual University of California, Special Education Disabilities and Risk Studies (UCSPEDDR) Conference. Santa Barbara, CA.
- Nov. 2010 Circle of Friends: Increasing Peers Awareness on the Symptoms of ASD for Junior High Students. Lynn Kern Koegel, Ph.D., Mario O. Bucio, & Erik Bromberg. Marymount Middle School, Santa Barbara, CA
- Sept. 2009-2010 Individualized Reinforcers for Food Acceptance in Children with ASD. Authors: Bharoocha, A., Koegel, R. L., Ribnick, C. B., Ribnick, R., Bucio, M. O., & Fredeen, R. M. Annual University of

California, Special Education Disabilities and Risk Studies  
(UCSPEDDR) Conference. Santa Barbara, CA.

---

**Awards:**

---

2014-2015    **GOF Diversity Fellowship**, UC Santa Barbara  
2012-2013    **SIFF Fellowship**, UC Santa Barbara  
2012-2013    **Block Grant**, UC Santa Barbara  
2008-2009    **Dean's List Recipient**, UC Santa Barbara

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## ABSTRACT

Improving Conversational Communication in Mexican-American Children with Autism  
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by

Mario Orlando Bucio

Conversational skills are a part of every day life, however, children with Autism Spectrum Disorder demonstrate extensive difficulties engaging in these skills (Koegel & Koegel, 2006; Marans, Rubin, & Laurent, 2005). One intervention approach that has demonstrated effectiveness in improving conversational skills is self-management (Boettcher, 2004; Doggett, Krasno, Koegel & Koegel, 2013). To date, little is known in the literature about the effectiveness of self-management with children with ASD from culturally and linguistically diverse backgrounds. As such, this study used a multiple baseline design across participants to assess the effects of parent-implemented self-management on the conversational skills of Spanish-speaking children with ASD. Specifically the study aimed to investigate whether parent-implemented self-management would improve the ability of children with ASD to ask on-topic questions during conversations in their native language. Results documented an increased rate in contingent on-topic question asking during conversations for all three children, as well as, collateral gains in self-initiations. Each participating parent also increased the number of conversational opportunities they provided to their children during conversations in their native language. Finally, gains were maintained over a 1-month follow-up.

## Table of CONTENTS

Curriculum Vitae.....	vii
Abstract.....	xii
Chapter 1: Introduction.....	1
Statement of the Problem.....	2
Research Questions.....	3
Significance of Study.....	4
Chapter 2: Literature Review.....	5
Social Conversation in Autism.....	5
Underlying Theoretical Foundations.....	7
Self-Management.....	12
Parent Education.....	16
Cultural/Linguistic Diversity.....	18
Chapter 3: Method.....	20
Participants.....	20
Setting and Materials.....	25
Experimental Design.....	26
Procedure.....	26
Baseline Phase.....	27
Intervention Phase.....	28
Follow-up.....	31
Fidelity of Implementation.....	31
Dependent Variables.....	31

Social Validity.....	35
Reliability.....	38
Chapter 4: Results.....	40
Contingent On-topic Queries.....	40
Self- initiated On-topic Queries.....	44
Parent-Presented Leading Statement Conversational Opportunities.....	47
Social Validity.....	51
Chapter 5: Discussion.....	59
Summary of Findings.....	59
Effects of the Parent-Implemented Self-Management Intervention in Native Language Conversations.....	60
Collateral Gains.....	62
Self-Management.....	64
Parent Impact.....	67
Intervention Effect At Follow-up.....	70
Impact on Parent Outcomes.....	71
Limitations and Future Directions.....	73
Implications for Research.....	75
Implications for Practice.....	78
Conclusion.....	80
References.....	82
Appendices.....	103

## LIST OF FIGURES

Figure 1. Contingent On-Topic Queries During Conversations in Spanish.....	43
Figure 2. Rate of Self-Initiated On-Topic Queries During Conversations in Spanish.....	46
Figure 3. Rate of Leading Statement Conversational Opportunities Provided Parents During Conversations in Spanish.....	50
Figure 4. Observed Parent Confidence, Stress and Enjoyment Across Parents.....	52
Figure 5. Parent Education Self-Report Ratings Across Parents.....	56

## LIST OF TABLES

Table 1. Child Characteristics.....	21
Table 2. Parent Characteristics.....	22
Table 3. Intervention Procedures.....	30
Table 4. Data Analysis .....	34
Table 5. Observed Parent Confidence Rating.....	36
Table 6. Observed Parent Stress Rating.....	37
Table 7. Observed Parent Enjoyment Rating.....	38



## LIST OF APPENDICES

Appendix A Table 8. Parent Semi-Structured Interview Highlights.....	103
Appendix B Parent Semi-Structured Interviews Transcripts.....	108

## **Chapter 1: Introduction**

Research in behavioral intervention for children with Autism Spectrum Disorder has made great strides in the past four decades. Originally, children with autism were considered a population that was uneducable (Thompson, 2013). However, researchers have proven this not only untrue, but study after study has demonstrated how much can be done for children with autism (Rosenwasser & Axelrod, 2001; Thompson, 2013). Currently, a big focus of intervention for children with ASD is on social interaction development, particularly in the area of social conversational skills (Koegel & Koegel, 2012; Koegel, Talebi, Koegel & Carter, 2006). The ability to engage in conversations is a central feature of human interaction, both communicatively and socially (Bates, 1979; Gleason, 2001; Landa, 2007; McTear, 1985). Conversations are part of the social use of language (i.e., pragmatics) and are a common thread across human interaction irrespective of gender, ethnicity, religious affiliation, socio-economic status or education. On a daily basis, conversations are a fundamental part of our everyday experiences as human beings (Sacks, 1992). Simply put, social conversations are a vehicle for navigating ourselves through interactions with others and our environments. Through social conversations we are able to share information, present and discuss ideas, exchange knowledge and opinions, create a context for bonding, engage in humor (e.g., playful bantering), convey sentiments (e.g., affection and emotion), and so forth (Gleason, 2001; Grice, 1975; Landa, 2007).

In many cultures, social-communication in the form of conversation is highly valued and seen as a way of encoding and preserving culture (Carbaugh, 2005; Fast,

Heath & Wu, 2009). Overall, people seem to prefer talking about information they have in common with others (Stalnaker, 1978) and this serves as a mechanism for sharing and maintaining cultural components. In other words, common ground in conversations allows people to connect and bond with one another, fostering and reinforcing culture (Fast, Heath & Wu, 2009). This is very much true for Mexican-American families. Moreno & Pérez-Granados (2002) details how conversations within Mexican-descent families provide children with opportunities to learn about their native language, as well as, cultural expectations. As adults (parents, teachers, pediatricians), we often take for granted the development of conversational abilities until we need to support children who exhibit struggles communicatively and socially. What is more, we often fail to recognize that children whose disabilities inherently challenge their ability to develop conversational skills are at risk for losing access to their native language and culture.

### **Statement of the Problem**

Researchers have dedicated countless hours investigating strategies aimed at improving social communication development in children with autism and have documented some modest progress. Current evidence based strategies that have documented success in the literature include script fading (Krantz & McClannahan, 1998), video modeling (Charlop & Milstein, 1989) social skills training curriculums (Chin & Bernard-Opitz, 2000) and self-management (Boettcher, 2004). Although each of these evidence-based interventions vary in implementation procedures and document some limitations, their cumulative findings provide hope and guidance in addressing conversational deficits experienced by children with ASD. More recently, self-management has gained more support for its use, because of its effectiveness in targeting

communication skills, but also it puts the child in the control of evaluating their own behaviors. Several studies have used self-management to target conversation with children with autism. To the knowledge of the researcher, to date there is not a single conversational study done exclusively with Latino/as in their native language, or any minority groups in their native language. Boettcher (2004) and Doggett et. al (2013) both found great results in improving conversational skills using self-management with children with autism. However, neither one conducted intervention in a language other than English for the participating children, even though some of their participants did include Latino/a children who came from Spanish-speaking homes (Doggett et al., 2013). Therefore, the purpose of the current study was to evaluate the effectiveness of a parent-implemented self-management intervention on the native-language conversational skills of Mexican-American/children with ASD. Additionally, this study assessed whether the implementation of this intervention would result in collateral gains in child self-initiations in the family's native language and meaningful family variables such as parents providing more conversational opportunities to their child. Specifically, the following questions were addressed.

### **Research Questions**

1. Will the parent-implemented self-management intervention result in Mexican-American children with autism learning to ask contingent on-topic queries during conversations in their native language of Spanish?
2. Will Mexican-American children with autism demonstrate any collateral gains in their abilities to *self-initiate* appropriate on-topic queries during social conversations in their native language of Spanish?

3. Will the parent implemented self-management intervention result in parents increasing their rate of leading statement conversational opportunities to their children with ASD during conversations in Spanish?
4. Will Mexican-American children with autism and parents maintain any gains made during intervention at follow-up?
5. Will the parent-implemented self-management intervention also lead to improvements in observed parent confidence, parent stress, and parent-child enjoyment?

### **Significance of the Study**

While in the past couple of decades there are great improvements in conversational interventions for individuals with ASD, relatively few have included children from culturally and linguistically diverse communities, such as Mexican-Americans. Given that ASD impacts children indiscriminately it seems essential for all families, irrespective of cultural background, to have the opportunity to support their children's abilities to use conversational skills. In other words, English-speaking families with children with ASD should not be the only ones to benefit from the advances made in conversational intervention. Mexican families with children with ASD should be equally empowered with tools to support their children's conversational development in their native language. As such, this study attempted to address this critical area of need by teaching Mexican parents how to use self-management to improve their children's conversational abilities, namely contingent on-topic question asking.

## **Chapter 2: Literature Review**

### **Social Conversation Deficits in ASD**

First discovered by Leo Kanner in 1943, autism is a neurobiological developmental disorder characterized by impairments in social interaction, verbal and nonverbal communication, and restricted/repetitive interests and patterns of behavior (American Psychiatric Association [DSM-IV-TR], 2000). The autism epidemic has reached new heights with now an estimated 1 in every 68 children in the United States being identified on the autism spectrum (Centers for Disease Control and Prevention, 2014). Researchers across the country and globe have worked ceaselessly to develop a better understanding of this developmental disability and design interventions that ameliorate symptoms. In spite of progress in many areas related to autism (e.g., epidemiology, treatment approaches, prognosis) relatively little knowledge about implementing intervention with Latino/a children currently exists in the literature. As such, research and treatment of autism for minority groups continues to be of critical importance.

Children with ASD are commonly known for major impairments in their ability to initiate and maintain social conversations with others (Koegel, Koegel, Green-Hopkins, & Barnes, 2010; Marans, Rubin, & Laurent, 2005; Weiss & Harris, 2001). By the nature of their disability and diagnosis, the conversational challenges children with autism demonstrate are extensive and without direct intervention these children struggle all their lives (Forde, Holloway, Healy & Brosnan, 2011; Jones & Schwartz, 2009; Koegel & Koegel, 2006; Marans, Rubin, & Laurent, 2005). The impairments children with ASD experience include difficulty-asking questions, making comments, maintaining topics,

and responding reciprocally (Boettcher, 2004; Hurtig, Ensrud, & Tomblin, 1982; Jones & Schwartz, 2009; Koegel, Koegel, Green-Hopkins, & Barnes, 2010). In comparison to typically developing children and even children with mild intellectual disabilities, children with ASD are less likely to initiate conversations with others, engage in reciprocal mutually rewarding conversations, and ask on-topic questions (Forde, Holloway, Healy & Brosnan, 2011; Landa, 2007; Wetherby, Woods, & Allen, 2004). In fact, extreme delays or the complete absence of question asking in children with autism has long been documented and targeted in research studies (Koegel & Koegel, 2012; Koegel, Koegel, Shoshan, & McNerney, 1999). If children with autism do demonstrate some conversational skills (including on-topic question asking), they tend to be restricted and/or perseverative in nature (e.g., will have conversations only about succulent plants) (Boettcher, 2004).

The conversational struggles of children with ASD have also been documented in the context of the family. In a noteworthy study by Jones and Schwartz (2009), the authors found that children with ASD tended to respond less than typical developing children to family members' attempts for communication, including initiating interactions and engaging in conversational turn-taking. In this study, the researchers also found that the children were less likely to comment when speaking to family members. In their 2001 publication, Adamson, McArthur, Markov, Dunbar, & Bakeman found that children with autism frequently ignored, declined, and at times actively rejected their mothers' bids for communication at a higher rate than typically developing peers. These findings hold true for high functioning children with autism (Jones & Schwartz, 2009). Unlike their typically developing counterparts, the interactions patterns of children later diagnosed

with ASD and their caretakers are marked by disorganization, lack of synchrony (Trevarthen & Daniel, 2005) and overall limited responsiveness (Landa, 2007).

In light of the well-documented challenges in this area faced by children with ASD and their families (Jones & Schwartz, 2009; Mundy et. al, 1990), targeting social conversational skills within the context of family interactions is without doubt a necessity. Research has shown that children who have positive experiences interacting with their parents tend to be more cooperative, have better social skills with other adults and children, and are more capable at regulating their emotions (Richters & Waters, 1991). While a substantial amount of knowledge is known about the social conversational deficits experienced by children with ASD, there is a paucity of information when it comes to children from culturally and linguistically diverse populations, such as Mexican-Americans. This lack of information and subsequent treatment knowledge puts entire groups of families and children whose primary language is Spanish at risk of not developing conversational abilities that other families take for granted. As such, this study aimed not only to document the conversational experiences of Mexican-American children with ASD and their families but also to provide an evidence-based solution for improving specific skills (i.e., contingent on-topic question-asking)

### **Underlying Theoretical Foundations**

The need to address the current gap in ASD research orientated toward culturally and linguistically diverse families is clear. Families who come from non-English speaking homes, such as monolingual Spanish-speaking Mexican families, deserve as much evidence-based strategies at targeting the ASD needs of their children as English-speaking families in the United States. In order to develop scientifically sound



intervention approaches to teach skills such as social conversations, it is critical to understand theoretical and underlying foundations. In terms of teaching conversational skills to children with ASD, three specific areas seem to warrant special consideration: ecocultural theory, naturalistic behavioral interventions (such as Pivotal Response Training), and parent-child interactions.

Ecocultural theory is a development of the last part of the twentieth century that is deeply rooted in ecological, family systems and cultural theories (Gallimore, Weisner, Kaufman, & Bernheimer, 1989; Gallimore, Weisner, Bernheimer, Guthrie, & Nihira, 1993). In the field of autism intervention, eco-cultural theory has garnered more attention recently as intervention approaches have begun to focus more on external validity and dissemination beyond university research settings and into the broader community contexts. The uniqueness of ecocultural theory is that its focus is on applicability to all families in all cultures because it is constructed from cross-cultural research (Bernheimer, Gallimore & Weisner, 1990). Bernheimer, Gallimore, & Weisner, (1990), highlights how ecocultural theory is an effective framework when working with diverse families for three primary reasons. First, ecocultural theory aims to help families understand what influences the structure and interactions of their family dynamics through their perspectives, while being proactive responders to their situations in a meaningful manner. Second, it uses activity settings as a unit of analysis to measure ecology influences that impact the individual, families, and the interactions of ecocultural forces. Third, what makes ecocultural theory unique is that it can be applicable to all families from all cultures, as it was designed from earlier cross-cultural research (Weisner, 1984). Additionally, several studies in the literature have focused their intervention treatment

programs for children with autism and their families on ‘contextual fit’, an important component of ecocultural theory. Specifically, the studies by Moes & Frea (2002), Brookman-Frazee & Koegel (2004), and Lucyshyn et al. (2007) focused on tailoring their treatment programs to the families’ needs, values, goals, and to the ecology of the family system. Contextual fit is a key component for working with families from culturally diverse backgrounds in the literature because it addresses the need of ensuring cultural sensitivity and collaboration with parents (Brookman-Frazee & Koegel, 2004). In theory, this model fits best practices for working with children with autism spectrum disorder (ASD) since early intervention models for ASD are known to be more efficient when family involvement is an integral part of the process (Kaiser & Hancock, 2003; Wehman, 1998). In sum, this theory provides guidance and inspiration for evidence-based practices for families of children with ASD who come from linguistically and culturally diverse backgrounds.

Naturalistic behavioral interventions, including Pivotal Response Training, are deeply rooted in addressing underlying motivational challenges in children with ASD. Specifically, PRT studies have long documented that children with ASD frequently engage in avoidance responding, disruptive behaviors, and exhibit low levels of motivation to participate in interactions that require social engagement (Baker, Koegel & Koegel, 1998; Koegel, Dyer & Bell, 1987; Schreibman, Stahmer & Pierce, 1996). To address social deficits, PRT studies have spent decades developing motivational procedures, including child choice, natural reinforcement, highly preferred items, interspersing maintenance with acquisition tasks, and self-management (which will be discussed later in detail) (Koegel, Camarata et al., 1998; Koegel et al., 1987; Koegel &

Frea, 1993; Pierce & Schreibman, 1997a). In terms of social conversation, Koegel, et. al., (1998) note that this area “may not be sufficiently improved unless variables associated with severe motivational problems are considered” (p. 356). As such, PRT researchers attempted to improve conversational deficits by focusing on the application of motivational procedures into intervention packages. The results are consistently positive, documenting significant gains when motivational variables are utilized. For example, Koegel, et. al., (1998) used motivational procedures to teach children with autism to ask WH-questions (i.e., “What’s that?”) and not only documented gains in appropriate question asking but also demonstrated that the participating children mastered and generalized their newly acquired skills to novel items, settings, and people. Shortly after this study, Koegel, Koegel, Shoshan, & McNerney, (1999) documented how social-verbal initiations were associated with long-term positive outcomes, thereby outlining the prognostic importance of self-initiations. As part of this study, the authors once again utilized motivational procedures to help children with ASD learn to make expressive initiations and again not only recorded that the participating children could learn to self-initiate spontaneously but maintained gains once intervention was faded. The overarching finding is that motivational procedures are indeed effective at improving social-communicative behaviors in children with ASD and as such should be utilized in intervention design. While these and other studies (Koegel & Frea, 1993) have documented the important of naturalistic motivational procedures in teaching social communication skills to children with ASD, relatively few have expanded their application to culturally and linguistically diverse populations, such as Mexican parents and their bilingual children.

Lastly, the area of parent-child interactions warrants attention. Families consistently report that deficits in communication are a leading cause of their parental stress (Bristol, 1984; Koegel, Bruinsma, & Koegel, 2006). It has also been shown that the quality of parent-child interaction patterns is overall extremely important (McIntyre & Phareuf, 2008) and a strong predictor of behavior (Campbell, 1995). For example, McIntyre and Phareuf (2008) documented that a prognostic indicator of treatment outcomes is the frequency of negative parent-child interactions. Finally, parents who are less responsive to their children's communication attempts are less likely to know when to be responsive to their child's positive behavior (Delaney & Kaiser, 2001). The lack of not knowing and not being responsive to communication attempts may be a significant factor in both language deficits and problem behaviors. To address these findings, researchers such as Koegel, Bimbela, and Schreibman (1996) used PRT to train parents and found that the parent training procedures resulted in not only improvements in parent-child communication but parent-child interactions being rated as happier, parents being more interested, the interaction being less stressful, and the communication pattern between the child and parent as being more positive. Factors that may contribute to positive parent interactions that facilitate development in social communication and behavior include parents' ability to contingently be responsive to communication attempts, linking language to experience, differential feedback for child behavior, and joint attention (Delaney & Kaiser, 2001). It seems very appropriate that researchers begin such investigations within the area of communication for Latino/a families.

## **Self-Management**

Self-management is a motivational intervention that has a robust history in helping children with Autism learn a variety of skills (Koegel & Frea, 1993; Koegel, Harrower & Koegel, 1999; Stahmer & Schreibman, 1992). Researchers have successfully used self-management to improve specific behaviors such as attending/ remaining on-task (Koegel, Harrower et al., 1999) and social skills (Koegel & Frea, 1993), as well as, decrease reliance on disruptive behaviors (Koegel, et. al., 1992). Self-management interventions have been applied across natural environments, including school and home, which is important for children with ASD. That is, interventions conducted in the child's natural environment help with learning, maintenance and generalization (Koegel & Koegel, 2000). In a recent meta-analysis, Carr (2016) found that self-management interventions are highly effective for decreasing disruptive behaviors in children with ASD between the ages of 4 and 18. The meta-analysis also documented that self-management is effective for both high-functioning children, as well as, children with ASD with more significant symptoms.

With its long history of effective behavioral change, it is not surprising that researchers started applying self-management intervention to treat conversational impairments (Doggett, Krasno, Koegel & Koegel, 2013; Lvinger, 2013; Park, 2013). Given the extensive nature of conversational deficits in children with autism and the impact that having such skills has on long-term quality of life, it is imperative to directly teach conversational skills to this population group (Koegel, Bradshaw, Ashbaugh & Koegel, 2014). Without conversational skills (including initiating questions), children with autism may be at greater risk for poor relationships and decreased quality of life

(Koegel, et. al, 2010). To address these concerns, a number of researchers have turned to self-management as a successful intervention approach for teaching a number of conversational skills to this population (Boettcher, 2004; Doggett, et. al., 2013; Levinger, 2013). Self-management is a motivational intervention that has a long history in particular with naturalistic interventions such as Pivotal Response Training (Baker, Koegel & Koegel, 1998). For years, naturalistic interventions such as PRT have utilized self-management as a type of motivational procedure for teaching children with autism a variety of skills, including but not limited to play skills (Stahmer & Schreibman, 1992), on-task responding (Koegel, Harrower et al., 1999), and social skills (Koegel & Frea, 1993; Koegel et al., 1992; Ninness et al., 1991).

Specifically, with self-management interventions, children with ASD identify their reward/reinforcer for participating in intervention and are taught how to self-evaluate their own behavior versus relying on adults/teachers. Unlike most models of intervention where adults are responsible for evaluating behavioral responses and delivering reinforcement, self-management puts children in the driver's seat of their own progress where they must be able to identify the correct implementation of the target behavior and know when to deliver reinforcement (Koegel, Koegel, Hurley, Frea, 1992). For a population that quite frequently becomes prompt dependent, self-management is one of those rare interventions that from the outset promotes independence and self-awareness, making it an especially useful intervention approach for this group of learners. In fact, the impact of self-management is so critical that it is considered a pivotal area of intervention for the treatment of children with autism (Koegel, Koegel, & McNerney, 2001).

Self-management interventions have demonstrated success repeatedly in the literature (Gregory, et.al., 1997; Koegel, Frea, & Surratt, 1994), with more application in the area of social-conversations since the mid 2000s (Boettcher, 2004; Doggett et. al., 2013; Levinger, 2013). Several studies have used self-management to target conversation with children with autism. Boettcher (2004) was the first study in the literature to incorporate motivational procedures and self-management to specifically target conversational skills in children with autism. In this study, children with autism were taught first how to use self-management while asking different on-topic questions during conversations with adults that were neutral, not necessarily incorporating their perseverative topics of interest. In the beginning of the intervention, participants had to be prompted not only with examples of an on-topic question but also required prompting to self-manage. However, all participating children learned how to self-manage independently and accurately by the end of the study.

Overall, Boettcher (2004) found that by using self-management and motivational procedures she was able to teach her participating children to respond to contingent leading statements (e.g., “I went on the best vacation ever!”) versus just queries (e.g., “Do you like candy?”). In fact all children improved their conversational skills by increasing their ability to ask on-topic questions. Not only did all the children in her study improve their skills, but Boettcher (2004) also demonstrated that all participants generalized their skills to new settings and new conversational partners, which maintained after intervention.

Similarly, Doggett et. al., (2013) conducted a conversational study with two Latina children with autism that built on Boettcher (2004). Specifically, Doggett et. al.

(2013) found that self-management intervention was effective for teaching concurrent acquisition and discrimination of three social questions in the context of conversation. Doggett and colleagues (2013) suggested that the marginal presence of appropriate questions during baseline and the swift improvement during intervention support previous theories that the lack of appropriate question-asking in this population might be motivational-based rather than skill-based.

Another effective use of self-management has been to improve the general non-verbal pragmatic conversational skills. Levinger (2013), paired self-management with video modeling to target the child's non-verbal pragmatic conversation skills, and found success in improving not only the targeted nonverbal pragmatics but also maintaining the verbal pragmatics through the use of self-management.

While all three of these studies found great success in the effectiveness of self-management, Levinger (2013) was the only one to incorporate parent education and, Doggett et. al., (2013) is one of the few studies in autism intervention where all participants were of Latino/a descent. To date, there is not a single conversational study done exclusively with Mexican-Americans in their native language, or any minority groups in their native language. It is imperative that procedures be developed and validated for minority families, in this case Mexican-American, so that they have the same opportunity for meaningful and quality interactions with their children as English-speaking families. However, even though there has been a great strides in teaching social conversation to children with ASD in English, to date there is no study that attempts to teach social conversational skills to Mexican-American children with autism in their native language who come from monolingual Spanish-speaking families.



This is troubling because of how interconnected language is to culture. Without Mexican-American/a children with autism having the ability to have social conversations with their family and other members of their community, these children are not only at risk for poor relationships within the context of the family, attachment security, mutual responsiveness, and positive affect with their parents, but also at risk for losing out on traditional values, history, and relationships related to their culture, all of which are important for families that come from a Latino/a/a descent (Hardin, Mereoiu, Hung, & Roach-Scott, 2009; Aranda & Knight, 1997; Correa, Bonilla, & Reyes-MacPherson). The present study was specifically designed to address these glaring omissions in the literature and provide a first step in how to address the conversational needs of Spanish-speaking children with ASD and their families.

### **Parent Education**

It is well documented that all parents experience some level of challenge during the course of their child's development, including parents of typically developing children and children with special needs (Moes, 1995). In response to the challenges of parenting, parent education research and programs emerged to become part of the parent-child development landscape. In terms of ASD intervention, there has been an ever-growing body of evidence documenting the effectiveness and importance of parent education (e.g., parents as interventionists) (McConachie & Diggle, 2007; Schopler & Reichler, 1971). The National Research Council (2001) highlighted that in terms of best practice, parent education is critical both for swifter gains and for consistency (i.e., maintenance and generalization) across settings. Parent education research has documented that families who have children with autism can learn strategies taught to

them by professionals across an assortment of areas, including decreasing problem behaviors (Strain, 1987; Koegel, Koegel, Hurley, & Frea, 1992; Lutzker, Steed, & Huynen 1998), reducing restricted and repetitive behaviors (Bahng, 2010), improving communication (Anderson & Romanczyk, 1999; Koegel, Koegel, Shoshan, McNERney, 1999; McGee, Morrier, Daley, 1999), improving social skills (Sofronoff, Leslie, & Brown, 2004) and improving self-help skills (Kroger & Sorensen, 2010). Overall, studies that included parents as active participants in their child's intervention obtained results with greater child development and generalization of treatment gains (Koegel, Koegel, & Schreibman, 1991).

Not only have parent-training programs led to therapeutic achievements for children with disabilities, but these programs have also been found to produce collateral gains in other areas of family life by increasing positive parent-child interactions (Koegel, Bimbela, & Schreibman, 1996). It has been established in naturalistic interventions that children with autism tend to respond better to therapeutic interventions when they are highly motivated and when they have repeated positive interactions with the adult(s) delivering the therapeutic interventions. For example, it has been found that the frequency of positive parent-child interactions is a great prognostic indicator of treatment outcome, making it an important and socially relevant measure to investigate and target (McIntyre & Phareuf 2008). This is especially important in light of the research suggesting that in comparison to families of typically developing children and children with other disabilities, families of children with autism experience higher levels of parenting stress (Silva & Schalock, 2012; Bitsika & Sharpley, 2004; Donenberg & Baker, 1993). Some researchers have found that stress of families with children ASD is

related to parenting behaviors (Osborne & Reed, 2010) and that high levels of stress are often connected to an increase in disruptive behaviors for children with autism (Floyd & Gallagher, 1997). By incorporating parent education into intervention models across target areas, researchers and interventionists are not only strengthening important behaviors for children with ASD but also addressing meaningful variables related to parent and family quality of life.

In spite of many gains and advances, the domain of social conversation intervention has failed to incorporate much parent education. To date, very few studies in the United States have taught parents how to use self-management to improve their children's social conversational abilities and none have included families from culturally and linguistically diverse populations. Therefore, training parents how to directly implement conversational interventions could potentially allow for even greater development of skills because of the consistent practice within the home. Thus, the present study incorporated a parent-implemented self-management intervention with Mexican families as a means to investigate this area.

### **Cultural/Linguistic Diversity**

Another seemingly glaring omission in the current literature is the fact that almost no studies in the United States provide detailed information about how to address the conversational needs of children with autism who come from culturally and linguistically diverse populations. Overall, there are only 2 conversational studies that include culturally and linguistically diverse children (i.e., Doggett, et. al., 2013; Vaughn, 2014). Both Doggett, et. al, (2013) and Vaughn (2014) included children with ASD who were Mexican-American and came from Spanish-speaking families, but the intervention was

done in English. To date there is no study that attempts to teach social conversational skills to Mexican-American/a children with autism in their native language via parent-implemented self-management. This is troubling because of how interconnected language is to culture. Without Mexican-American/a children having the ability to have social conversations with family and other members of their community, these children are at risk of losing out on traditional values, history, and relationships related to their culture, all which are important for families that come from a Mexican-American/a descent (Hardin, Mereoiu, Hung, & Roach-Scott, 2009; Aranda & Knight, 1997; Correa, Bonilla, & Reyes-MacPherson, 2011). Furthermore, historically minority children are not only under-reached but also under-served making this group ideal for further investigation (Arcia et al., 1993; Ginsberg, 1992). It is imperative that procedures be developed and validated for minority families so that they have the same opportunity for meaningful and quality interactions with their children as English-speaking families. Teaching conversational skills in children's native language could have numerous implications for the quality of life of families. That is, families consistently report that deficits in their child's communication are a leading cause of their parental stress (Bristol, 1984; Koegel, Bruinsma, & Koegel, 2006). Research has also shown that a strong predictor of child behavior is the quality of parent-child interactions (Campbell, 1995). Therefore, targeting conversational skills for minority children in their native language would allow for more opportunities for meaningful interactions between parents and children.

## Chapter 3:Method

### Participants

Three bilingual Mexican-American children diagnosed with autism participated in this study. All children were diagnosed with autism according to diagnostic criteria outlined in the *Diagnostics and Statistical Manual – 4th Edition Text Revision* (DSM-IV-TR; American Psychiatric Association, 2000) by an independent agency. For all participants, pseudo-names were used. The children's ages ranged from 9 to 11 years, as this is an age when typically developing children are expected to be able to ask on-topic questions during social conversations. All children spoke in complete sentences and had a documented history of difficulties with conversational and social skills, corroborated by parents and previous behavioral intervention programs. Inclusion criteria to participate in this study were (1) Mexican-American children with ASD who were bilingual (Spanish/English), (2) had the ability to ask on-topic queries during conversations in English, but had not generalized these skills to their native language of Spanish, and (3) had monolingual Spanish-speaking parents. Furthermore, all parents had reported difficulty engaging in conversations with their children in their native language and asked for help in addressing this deficit. Children represented both genders.

For each child, one parent volunteered to participate in the study and receive parent training in implementing the self-management intervention (discussed below). The participating parent was selected on the basis of availability and level of involvement in his or her child's intervention program. For each child, the mother participated. None of the participating parents had experience implementing self-management nor ever received parent training in conversation development for their children. All three mothers

were monolingual Spanish-speaking. Child and parent characteristics are listed in Tables 1 and 2.

Table 1

*Children Characteristics*

	Child 1	Child 2	Child 3
Age	10:4	9:6	11:1
Gender	Male	Female	Male
Ethnicity	Mexican-American	Mexican-American	Mexican-American
	Vineland Adaptive	Behavior Scales	
	Standard Score*	Standard Score	Standard Score
Communication	74	75	77
Daily Living	73	76	69
Socialization	68	75	68

\* Standard Score (mean = 100, standard deviation = 15)

**Child 1.** Marco was 10 years 4 months at the start of intervention. A local psychologist from a state agency in the Central Coast of California diagnosed him with Autism Spectrum Disorder when he was 2 years 8 months old. Marco lived with his parents and younger brother. His parents were both monolingual Spanish speaking although his Mother reported that she could understand some English. Marco’s younger brother was 4 years old and typically developing. The primary language spoken at home was Spanish. Since his diagnosis, Marco had been receiving behavioral intervention from a community agency specializing in services for children with autism. In terms of school, Marco spent was fully included a general education 4<sup>th</sup> grade class without any

Table 2

*Parent Characteristics*

	Parent 1	Parent 2	Parent 3
Age	31	39	41
Gender	Female	Female	Female
Ethnicity	First	First	First
	Generation	Generation	Generation
	Mexican	Mexican	Mexican
	Immigrant	Immigrant	Immigrant

paraprofessional support. Communicatively, Marco spoke in full sentences in both English and Spanish, although he explained that he preferred speaking in English. His mother reported serious concerns about Marco's conversational skills and behavioral disruptions that seemed to impact his ability to communicate with his younger siblings in their native language. His mother reported that although Marco could speak in full sentences and would ask questions when he needed something (e.g., find his video game controller, ask for a treat) he would never ask questions when having conversations with others in Spanish. This was particularly frustrating for Marco's mother because he had participated in behavioral intervention that specifically targeted question-asking during conversations. During that point in time, Marco learned to ask on-topic questions and make comments during English conversations; however, the family did not see him generalize any of the gains he made to his native language.

**Child 2.** Alejandra was 9 years 6 months at the start of intervention. A psychologist at a local state agency in the Central Coast of California diagnosed her with Autism Spectrum Disorder right before she turned 3 years old. Alejandra lived with both her parents and two brothers. Alejandra's mother was monolingual Spanish speaking, while her father spoke very limited English. Alejandra had one older brother who was 14 years old and a younger brother who was 7 years old. Both brothers were also diagnosed with autism and were being raised bilingually. Alejandra had been receiving behavioral intervention since the age of 2 years 6 months, with the majority of intervention being done in English. Intervention had been conducted by community agencies that specialize in Applied Behavior Analysis for children with Autism Spectrum Disorder. Alejandra was fully included in a third grade class, with some paraprofessional support. Alejandra spoke in sentences of 5-8 words in both English and Spanish. During previous comprehensive intervention in English to address conversational deficits, Alejandra learned to ask on-topic questions and make on-topic comments during conversations with familiar adults. Despite making progress in conversational skills in English, Alejandra did not generalize the ability to ask on-topic questions to conversations in Spanish. Alejandra's mother reported that her daughter regularly asked questions in Spanish, but that these questions were related to requests (e.g., "Can I watch television?) or protests (e.g., "Why do I have to do that?") and seldom, if ever, occurred during conversations in Spanish. This greatly concerned her parents because it limited her ability to engage in meaningful communication with family members. Alejandra's mother reported that it was a blessing that her child had learned to have conversations in English, but that it had not translated to their home language. Her mother also reported that Alejandra frequently



brought up perseverative and restricted topics during social interactions (e.g., princesses, Disney, cats); these types of topics often caused her interactions with others to be terminated at social family events because she could not engage in appropriate conversations in Spanish. This information indicated that Alejandra would benefit from a conversation skill-building program focused on teaching her how to ask appropriate contingent on-topic queries in her native language. Finally, not only did Alejandra speak in complete sentences in both Spanish and English, but she would also switch languages depending on the person with whom she was speaking to (i.e., would speak Spanish to someone using Spanish and would speak English to someone using English words).

**Child 3.** Eduardo was 11 years 1 month at the start of intervention. A psychologist at a state agency in the Central Coast of California diagnosed him with Autism Spectrum Disorder shortly before 3 years of age. Eduardo lived with both his parents and younger sister. Eduardo's parents were both monolingual Spanish speaking and reported having great difficulties understanding and speaking English. Eduardo's younger sister was 4 ½ years old and typically developing. Eduardo had received behavioral intervention services for Autism Spectrum Disorder since age 3. Communicatively, Eduardo was bilingual and could easily speak in English and Spanish, as indicated by parent report and direct observation. Eduardo was fully included in a fifth grade general education classroom at his neighborhood elementary school with paraprofessional support less than 50% of the school day. His mother reported serious concerns about his lack of conversational skills in his native language in spite of having undergone conversational skill building in English. Specifically, Eduardo's mother explained that Eduardo understood everything in Spanish and regularly spoke in

complete sentences of 6-8 words in his native language, including question asking. However, she did note that the majority of Eduardo's communication in Spanish was related to requesting (e.g., requesting food, preferred play activities) and protesting (e.g., asking why he needed to comply with homework requests) and that he had very limited abilities in reciprocal conversations. Her concerns included difficulties with making on-topic comments, asking on-topic queries, and maintaining reciprocal interactions with his father, sibling, and other members of their family who came to the house. In terms of question asking, Eduardo's mother reported that her son would ask questions in Spanish for things he wanted (e.g., Where is my DS?) but that he did not ask questions during conversations in his native language even though she had heard him doing so in English conversations. Eduardo had participated in an intervention program for social-conversations in English 2 years prior to the commencement of this study, but according to his parents, he did not generalize any of the gains he made to his native language of Spanish. This lack of improvement greatly concerned both of his parents because it limited his ability to have meaningful and appropriate social conversations with family members. For example, Eduardo's grandparents and uncles made annual visits to the family from Mexico, however, they were unable to engage with him because Eduardo demonstrated limited interest, as well as, limited ability to engage in conversations with his extended family.

### **Setting & Materials**

For children-parent dyads, all phases of the study (baseline, intervention and follow-up) were conducted within the family's home. Materials consisted of an iPad used with the program iRewards for self-management. The iPad was also be used for games

and activities that were child-preferred and individualized for each participant as self-management reinforcement. Other materials that were used included a video camera to record all sessions for data analysis at a later time, as well as, a notebook and pen to record data and observations.

### **Experimental Design**

A non-concurrent multiple baseline across participants experimental design (Barlow & Hersen, 1984) was employed to investigate the effectiveness of the intervention program. This was done to show that the dependent variable changed because of the intervention and not maturation. The independent variable of the study was using parent implemented self-management intervention to increase contingent on-topic queries in Spanish. *Baseline* measures were systemically staggered across all three participants in order to control for confounding variables related to maturation, habituation, and history (Campbell, Stanley, & Gage, 1963) for 3, 5, and 7 sessions respectively. Data was collected throughout baseline, intervention and follow-up phases of the study.

### **Procedures**

Throughout all phases of the study (baseline, intervention, follow-up), data was collected on an ongoing basis using both video recordings and pencil-to-paper documentation. This is done for the purpose of scoring dependent measures. Additionally, procedures were consistent with Bahamondes (2012) and Boettcher (2004) for providing leading statements. “Leading statements were statements that gave the listener some information but did not tell the listener all the information, therefore eliciting a contingent query” (Bahamondes, 2012). Finally, it should be noted that data

for contingent on-topic queries and self-initiations were be collected during each phase of the study.

### **Baseline Phase**

All baseline sessions were conducted in the children's homes and lasted approximately 30 minutes. During baseline, no self-management materials, direct instruction or prompting were provided to the parents or the participating children. During baseline probes, the parent had a 5-10 minute conversation with the child on one or more neutral topics. Neutral topics were defined as any child-friendly and age-appropriate topic (other than the child's specific perseverative interest). Topics included subjects such as school or weekend activities, friends, family, movies, upcoming events, vacations, food, and holidays. The parent was given no instructions other than to have a conversation with their child about child-friendly topics, avoiding his or her perseverative interests. Parents had the choice to speak on any topic they had in mind during the conversations. Data was collected on all of the child's question-asking and self-initiation behaviors. In addition, parents were not be provided with any guidance or feedback on how to support or guide their child's conversational skills since this was a baseline measure and an accurate measure of the child's abilities was needed prior to the implementation of intervention. Finally, data was also directly collected on the number of leading statement conversational opportunities the parents provided to their child during each conversation. Criterion for a stable baseline was that variability was not more than +/- two behaviors for at least 2 consecutive sessions.

## **Intervention Phase**

Intervention occurred twice a week for approximately 30 minutes for a total of 8 sessions. The independent variable for this study was the use of parent- implemented self-management to teach contingent on-topic question asking during social conversations in Spanish. Initially on the first intervention session, self-management was explained to each parent and the procedures for how to teach their child contingent on-topic queries were reviewed in detail. After this overview, a brief series of role-playing was conducted to help each parent become familiar with the intervention procedures and the iRewards program on the iPad that was used for self-management. After role-playing and the parents reporting that they understood how to teach their child the intervention procedures, a discrimination phase was introduced with each child. Discrimination training was done for two reasons. First, in order to make sure that the participating children could indeed distinguish what was an appropriate contingent on-topic query and what was not. Second, to help parent understood how to provide leading statement conversational opportunities to their child. The discrimination training procedures used in this study were consistent with the ones utilized by Boettcher (2004) and Bahamondes (2012). Discrimination training was discontinued once children correctly distinguished between contingent on-topic queries and off-topic queries 100% of the time for 3 consecutive probes. Once children completed the discrimination training, parents (with assistance from the researcher) taught their children how to self-manage (see example Table 4). That is, parents instructed their children how to correctly identify (i.e., self-evaluate) when they asked an appropriate contingent on-topic query by giving themselves a star on the application iRewards on the iPad or by using pencil-to-paper. In other

words, each time the child asked an appropriate contingent on-topic query, they gave themselves a star on iRewards as indication that they self-managed their behavior. Following role-playing and discrimination training, direct intervention with the child was started. The parents all understood that coaching, modeling, and practice-with-feedback would be provided throughout intervention. At the beginning of each intervention session, the parent had their child choose a location to practice having a conversation in their native language (e.g., backyard, living room, kitchen table). Once at the location, the parent reminded the child of the objective of the session; that they would be working on asking contingent on-topic queries in their native language (e.g., Spanish) using self-management. Self-management procedures were taught in Spanish according to the manual, *How to Teach Self-Management to People with Severe Disabilities: A Training Manual* (Koegel, Koegel, & Parks, 1992). The parent then had the child choose a reinforcer and reminded the child how many stars they needed to earn in order to obtain their reward (e.g., “Remember to give yourself a star after each contingent on-topic query you ask. Once you have all 5 stars then we can play Sonic for 5 minutes”). Intervention goals were set on an individual basis at the beginning of each session for each child. Once a reward and goals (i.e., how many stars they needed to earn in order to obtain reinforcer) were chosen, the parent was instructed to start the conversation in Spanish. The parents chose topics of conversations, with instructions being the same as baseline measures. During each Spanish conversation, the researcher coached the parent as needed to provide the child with leading statement conversational opportunities to allow the child to ask on-topic queries. If the child failed to ask a contingent on-topic query or failed to self-manage, the researcher coached the parents how to prompt their child to do so. Once

the child completed the number of stars on the iPad self-management application, the parent provided their child with the predetermined reinforcer. The researcher informed the parents to repeat the previous steps for a minimum of three times per session (see Table 3). Self-management was faded for all three children once the child was able to Table 3

### *Intervention Procedures*

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The following steps will be used for all participants:

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1. At the beginning of each intervention session, the child will choose a preferred location to practice having a conversation in Spanish with their parents.
2. The parent will remind the child what the objective of the session is (e.g., Practice asking on-topic questions in Spanish).
3. The parent will have the child choose a reinforcer and remind the child how many stars they need to earn in order to obtain their reward (e.g., “Remember to give yourself a star after each on-topic question you ask. Once you have all 5 stars then we can play Sonic for 5 minutes”).
4. During the Spanish conversation, the parents will provide the child with leading statements as opportunities for the child to ask a contingent on-topic query. Parents will be coached as necessary.
5. If the child fails to ask a on-topic query or fails to self-manage, the parent will provide a prompt for the child. Parents will be coached as necessary.
6. Once the child completes the 5 stars on the self-management iPad application, the parent will provide them with the predetermined reinforcer.
7. The parent will repeat steps 1-6 for a minimum of three times per session.

8. Parents will be provided with coaching and/or modeling on all necessary steps as needed.

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maintain 80% accuracy in responding with an appropriate on-topic query for 3 consecutive sessions.

### **Follow-up**

Follow up data was collected 1-month after intervention to ensure that the participants maintained the skills developed during the study. There was no additional feedback during follow-up and instructions were the same as at baseline.

### **Fidelity of Implementation**

One intervention session was randomly selected for each participant and scored for fidelity of implementation. This was done to ensure that the parent was implementing the intervention as per the study's protocol, and not giving the child additional prompts during the conversation. Parents 1, 2, and 3 were all observed to implement the intervention with 100% fidelity during the selected probes.

### **Dependent Variables**

To assess the effectiveness of parent implemented self-management in teaching children with autism to ask contingent on-topic queries during conversations in their native language of Spanish, several dependent measures were recorded: (a) the total percentage of contingent on-topic queries the child made in Spanish in each session; (b) the rate of self-initiated queries made during a ten-minute probe in each session; and (c) the rate that parents provided leading statement language opportunities during each



session probe. All data were collected via videotapes or pencil-to-paper forms and scored using a 15-second interval recording system.

**1. Percentage of Contingent On-Topic Queries.** The percentage of contingent on-topic queries per session was calculated in order to determine whether the participants learned to ask contingent queries independently. A contingent on-topic query was operationally defined as an independent question the child formulated that was directly related to the adult's leading statement without any prompting. An opportunity/trial occurred each time the adult provided a leading statement to the child. At the end of each 15-second interval each opportunity/trial was scored as either correct (i.e., the child provided an independent contingent on-topic query) or incorrect (i.e., the child did not ask a query, asked an incorrect or off-topic query, or needed any sort of prompting). For example, if the parents said, "Yo tuve un gran desayuno esta mañana." (Translation: "I had a great breakfast this morning.") that leading statement would be considered an opportunity for the child to ask a contingent on-topic query. If the child asked a contingent on-topic query related to the leading statement that trial would be scored as correct. For instance, if the child asked their parent, "¿Qué comiste?" (Translation: "What did you eat?") to the leading statement mentioned above, then it would be scored as a contingent on-topic query because it was directly related to the leading statement made by their parent. For each session, the percentage of contingent on-topic queries made by the child was calculated by the total number of contingent on-topic queries made in Spanish divided by the total number of opportunities provided by the parent to ask an on-topic query in Spanish multiplied by 100.

**2. Rate of Self-Initiated On-Topic Queries.** The rate of self-initiated on-topic

queries was measured in order to determine whether any collateral gains were made in the children's conversational skills. Self-initiated queries were not directly targeted or taught during intervention; therefore any changes in this behavior would be collateral gains. Self-initiated on-topic queries were operationally defined as any appropriate on-topic query that was related to the ongoing conversation but did not require a leading statement. For example, if the parent provided their child with the leading statement "Hoy yo fui a un lugar divertido." (Translation: Today I went to a fun place.), the child's contingent on-topic query would be "¿A dónde fuiste? (Translation: "Where did you go?") The parent would then respond to the child "A la playa." (Translation: "To the beach.") If the child subsequently asked their parent "¿Con quién fuiste? (Translation: "Who did you go with?") The query would be considered a self-initiated on-topic query because it did not require a leading statement from the parent. The rate of self-initiated on-topic queries made by the child in Spanish was calculated by the total number of self-initiated on-topic queries made in Spanish divided by the total amount of time of the probe then multiplied by 10 to standardize it to a rate per 10-minute probe.

**3. Parent-Presented Leading Statement Conversational Opportunities.** To assess whether the parent training treatment facilitated the overall number of leading statement conversational opportunities parents' presented to their children, event recording was used to determine the total number of leading statement conversational opportunities presented for each probe. The rate of leading statement conversational opportunities made by the Parent in Spanish was calculated by the total number of leading statement conversational opportunities made in Spanish divided by the total amount of time of the probe then multiplied by 10 to standardize it to a rate per 10-

minute probe. A leading statement language opportunity in this study was defined as the parent providing a leading statement to their child, which elicited a query from their child. For example, Parent: “Yesterday I went somewhere with your brother.” Child: “Where did you go with Jesus?”

#### Table 4

#### *Data Analysis*

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The following steps were used for all phases of this study:

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1. All sessions were video recorded. Pencil-to-paper data was scored for each video clip at a later time.
2. For contingent on-topic queries, data was scored as follows: At the end of each 15-second interval each opportunity/trial was scored as either correct (i.e., the child provided an independent contingent on-topic query) or incorrect (i.e., the child did not ask a query, asked an incorrect or off-topic query, or needed any sort of prompting). At the end of each video a percentage was calculated by dividing the total number of correct contingent on-topic queries by the total number of correct and incorrect contingent on-topic queries.
3. For the rate of self-initiated on-topic queries, data was scored as follows: At the end of each 15-second interval, the total number of self-initiated queries the child made was tallied. The actual rate of self-initiated on-topic queries was calculated by taking the total number of self-initiated on-topic queries made in Spanish divided by the total amount of time of the probe then multiplying by 10 to standardize it to a rate per 10-minute probe.
4. For parent presented leading statement conversational opportunities, data was scored as follows: At the end of each 15-second interval, the total number of self-initiated

queries the child made was tallied. The actual rate of parent presented leading statement conversational opportunities was calculated by taking the total number of parent presented leading statement opportunities made in Spanish divided by the total amount of time of the probe then multiplying by 10 to standardize it to a rate per 10-minute probe.

5. Visual analysis was used with all graphs and figures. (Brossart, Parker, Olson, & Mahadevan, 2006).

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### **Social Validity**

In order to obtain information related to social validity, a number of measures were collected with each participating mother. These measures included observed parent ratings for confidence, stress and enjoyment, as well as, two different self-report measures (i.e., a Likert-scale questionnaire and a semi-structured parent interview).

**1. Observed Parent Confidence Ratings.** An observational parent confidence rating was adapted from similar scales used Brookman-Frazer (2004), and was based on a 6-point rating scale. A rating score was obtained during baseline and follow-up by video-recorded conversation probes, with scores ranging from 0-1 indicating low confidence, scores from 2-3 indicating neutral confidence, and scores from 4-5 indicating high confidence (please refer to Table 5 on page 36).

**2. Observed Parent Stress Rating.** An observation rating scale of parent stress was adapted from similar scales used by Koegel et al. (1996) and was scored using a 6-point rating scale (shown in Table 6). A single rating was obtained during baseline and follow-up video probes with scores ranging from 0-1 indicating low stress, scores from 2-3 indicating neutral stress and scores from 4-5 indicating high stress (please refer to Table 6 on page 37).

Table 5

*Observed Parent Confidence*

Low Confidence (0-1)	Neutral Confidence (2-3)	High Confidence (4-5)
<p>Parent appears unsure of how to have a conversation with the child in Spanish. She may try a number of different things to get the child engaged with little success, look to the clinician for help, wait for the clinician’s instructions, or provide no leading statement opportunities to the child. Parent may make statements that reflect self-doubt in ability to make a positive impact on the child. Score 0 or 1 depending on extent of hesitation and self-doubt.</p>	<p>Parent exhibits neutral behaviors. She does not appear to be uncertain or particularly certain during the conversation in Spanish. Parent may make statements that do not particularly reflect self-doubt or high confidence. Parent may provide a few leading statement opportunities. Score 2 or 3 depending on extent of confidence.</p>	<p>Parent appears certain of how to engage in conversation with the child in Spanish by providing feedback when needed and providing leading statement opportunities with ease. Parent may make statements that reflect confidence in the ability to make a positive impact on the child. Score 4 or 5 depending on extent of certainty and high confidence.</p>

**3. Observed Parent Enjoyment Rating.** During baseline and follow-up periods of the study an observational rating of the levels of enjoyment exhibited by the parents was measured. Enjoyment was scored using a 6-point Likert scale numbered 0-5. Scores from 0-1 indicated low levels of enjoyment, scores from 2-3 indicated moderate levels of enjoyment, and scores from 4-5 indicated high levels of enjoyment (please refer to Table 7 on page 38).

**4. Parent Training Questionnaire.** A parent-training questionnaire was given to parents during baseline and after the intervention in order to information and opinions regarding the parent training. This questionnaire was based on the scales used to collect observational data and was collected by a clinician who was not providing the parent

training in order to control for demand characteristics. This measure was used to gather self-report information regarding parents' views of the parent-implemented self-management intervention and provide the study with some information related to social validity.

Table 6

*Observed Parent Stress Ratings*

Low stress (0-1)	Neutral stress (2-3)	High stress (4-5)
Parent seems at ease and comfortable interacting with the child. Appropriately laughs, smiles or shows humor. Parent may make comments indicating low stress. Score 0 or 1 depending on extent of relaxation and comfort.	Parent does not seem either stressed or relaxed. Parent will correct the child, but the emotions of the parent are not particularly negative or positive. May make statements, which are not characterized, as either stressful or relaxed. Score 2 or 3 depending on extent of stress.	Parent looks frustrated, agitated, tense, or exasperated. He/she may exhibit little patience, be quick to correct, use a loud tone of voice, and/or body posture appears slumped. Parent may make comments of feeling stressed, fatigued or anxious. Score 4 or 5 depending on extent of frustration and tension.

**5. Parent Semi-Structured Interview.** A parent semi-structured interview was given to parents after the intervention was completed in order to gather information and opinions regarding the parent training. The semi-structured interview was collected by a Spanish-speaking clinician who was not providing the parent education in order to control for demand characteristics. Questions brought forth information on parent perceptions on levels of confidence, stress, importance of use of native language and personal comments/suggestions. The semi-structured interview was then analyzed by checking for themes across participants. This measure was used to gather self-report information regarding parents' views of the parent training, as well as, to assess the social

Table 7. Observed Parent Enjoyment

Low enjoyment (0-1)	Moderate enjoyment (2-3)	High enjoyment (4-5)
<p>Parent does not appear to be enjoying herself. Behaviors that characterize this may include: parent presents opportunities in a drill-like format, parent does not often smile, joke, and/or parent does not seem to enjoy activity. Score 0 or 1 depending on extent of low enjoyment.</p>	<p>Parent does not seem to be particularly enjoying herself or not enjoying herself. Score 2 or 3 depending on extent of playfulness.</p>	<p>Parent appears to be enjoying herself. Behaviors that characterize this may include: parent presents opportunities in a cheerful manner, Parent could incorporate jokes into their conversation, and parent seems to enjoy activity. Score 4 or 5 depending on extent of high playfulness.</p>

validity of parent-implemented self-management to teach social conversational skills.

Please refer to Table 8 in Appendix A for themes and Appendix B for full transcript.

### **Reliability**

Two naïve observers independently scored data for at least 30% of all the sessions for the purpose of measuring reliability for contingent on-topic question asking, the number of leading statement opportunities provided by the parent, and number of self-initiations. Sessions scored for reliability were selected randomly from baseline, intervention, and follow-up probes. In order to control for observer drift and experimenter bias the videotaped sessions were scored in random order. All data were recorded via videotape observation and scoring procedures were identical to those described for the dependent variables.

Inter-rater reliability was calculated for each variable by dividing the number of agreements by the total number of agreements plus disagreements. The number was then multiplied by 100 to obtain a percentage of agreement. The average percent of

agreement was then calculated across all three children for each dependent variable. An agreement was defined as both observers recording an occurrence or both observers recording a non-occurrence in the same 15-second interval for each data probe. A disagreement was defined as one observer rating an occurrence while the other observer rated a non-occurrence in the same 15-second interval.

Reliability for contingent on-topic queries averaged 94% (range 80-100%) and 88% for self-initiated queries (range 74-100%). Reliability for parent leading statement conversational opportunities averaged 93% (range 67-100). Reliability for Observed Parent Confidence, Stress and Enjoyment was 100%.



## Chapter 4: Results

This study aimed to address the following questions: (1) Will parent-implemented self-management intervention result in Mexican-American children with autism learning to ask contingent on-topic queries during conversations in their native language of Spanish? (2) Will Mexican-American children with autism demonstrate any collateral gains in their abilities to *self-initiate* appropriate on-topic queries during social conversations in their native language of Spanish? (3) Will the parent implemented self-management intervention result in parents increasing their rate of leading statement conversational opportunities to their children with ASD during conversations in Spanish? (4) Will Mexican-American children with autism and parents maintain any gains made during intervention at follow-up? and (5) Will the parent-implemented self-management intervention also lead to improvements in observed parent confidence, parent stress, and parent-child enjoyment?

### Contingent On-Topic Queries

Throughout the study, data was collected to determine if the children with autism who participated learned to ask contingent on-topic queries as a result of the parent-implemented self-management intervention. Figure 1 documents the results of contingent on-topic queries. As a whole, the data in Figure 1 demonstrates a similar pattern for all three participating children. That is, at baseline none of the children were asking contingent on-topic queries. However, with the introduction of the parent-implemented self-management intervention all three children immediately increased their ability to do so, were able to fade self-management by the end of intervention, and maintained gains at follow-up.

**Child 1.** During baseline, Child 1 demonstrated a complete lack of being able to ask contingent on-topic queries in Spanish when provided with opportunities. At baseline, the child often looked disinterested at his mother's attempts to elicit conversation. Often times the child would just nod his head as an attempt to acknowledge his mother during conversation. The child spontaneously asked contingent queries in Spanish for 0% of the time across baseline probes (M = 0%, range = 0%). Within the first intervention session, Child 1 displayed an increase in percentage of on-topic contingent queries in Spanish for 58.3 percent of the opportunities. Child 1 continued to make progress throughout intervention and consistently asked on-topic contingent queries above 70 percent of opportunities. By the sixth and seventh, the child asked contingent on-topic queries in Spanish 100% of opportunities. Throughout intervention, Child 1 asked contingent on-topic queries in Spanish on average 85.3% of the time (M= 85.3, range= 58-100%).

Improvements maintained during follow-up at similar level to those scored at intervention. Specifically, Child 1 upheld high levels of their target behavior of asking contingent on-topic queries in Spanish (the skill taught using self-management) a month later at 100% of opportunities, which was a fantastic improvement from 0% during baseline conversations.

**Child 2.** At baseline, Child 2 asked contingent on-topic queries in Spanish 0% of the time across all probes (M = 0%, range = 0%). During baseline, Child 2 not only demonstrated difficulty asking on-topic queries in Spanish, but also only responded to direct questions related topics of interest. Immediately during the intervention sessions, Child 2 showed a rapid increase in her percentage of contingent on-topic queries in

Spanish compared to baseline measures. Furthermore, child 2 asked contingent queries in Spanish for 100% of opportunities in all sessions except for the first two sessions using parent-implemented self-management. Throughout intervention, Child 2 asked contingent on-topic queries in Spanish on average 94.5% of the time (M= 94.5, range= 77.8-100%).

During follow-up, gains were maintained. Specifically, Child 2 maintained high levels of her target behavior of asking contingent on-topic queries in Spanish (the skill taught using self-management) a month later at 100% of opportunities. These were remarkable gains made compared to their baseline levels.

**Child 3.** Baseline for Child 3 documented no contingent on-topic queries during Spanish conversations. While his made attempted to engage him in conversation, Child 3 often times would respond by nodding and saying “Si” (translation: “Yes”). The child spontaneously asked contingent on-topic queries in Spanish for 0% of opportunities across baseline probes (M = 0%, range = 0%). Similar to the other children in the study, from the onset of intervention, Child 3 immediately responded to the parent-implemented self-management and increased his percentage of contingent on-topic queries in Spanish compared to baseline measures. In particular, with the exception of the third session, during the course of intervention Child 3 made immediate gains ascending to 100% asking on-topic queries in Spanish to the very last day of intervention. On average Child 3 asked contingent on-topic queries 99% (M= 99%, range= 92-100%) during Spanish conversations. Just like the other two participating children, Child 3 maintained gains during follow-up. Specifically, Child 3 sustained the target behavior of asking contingent on-topic queries in Spanish (the skill taught using self-management) a month later at

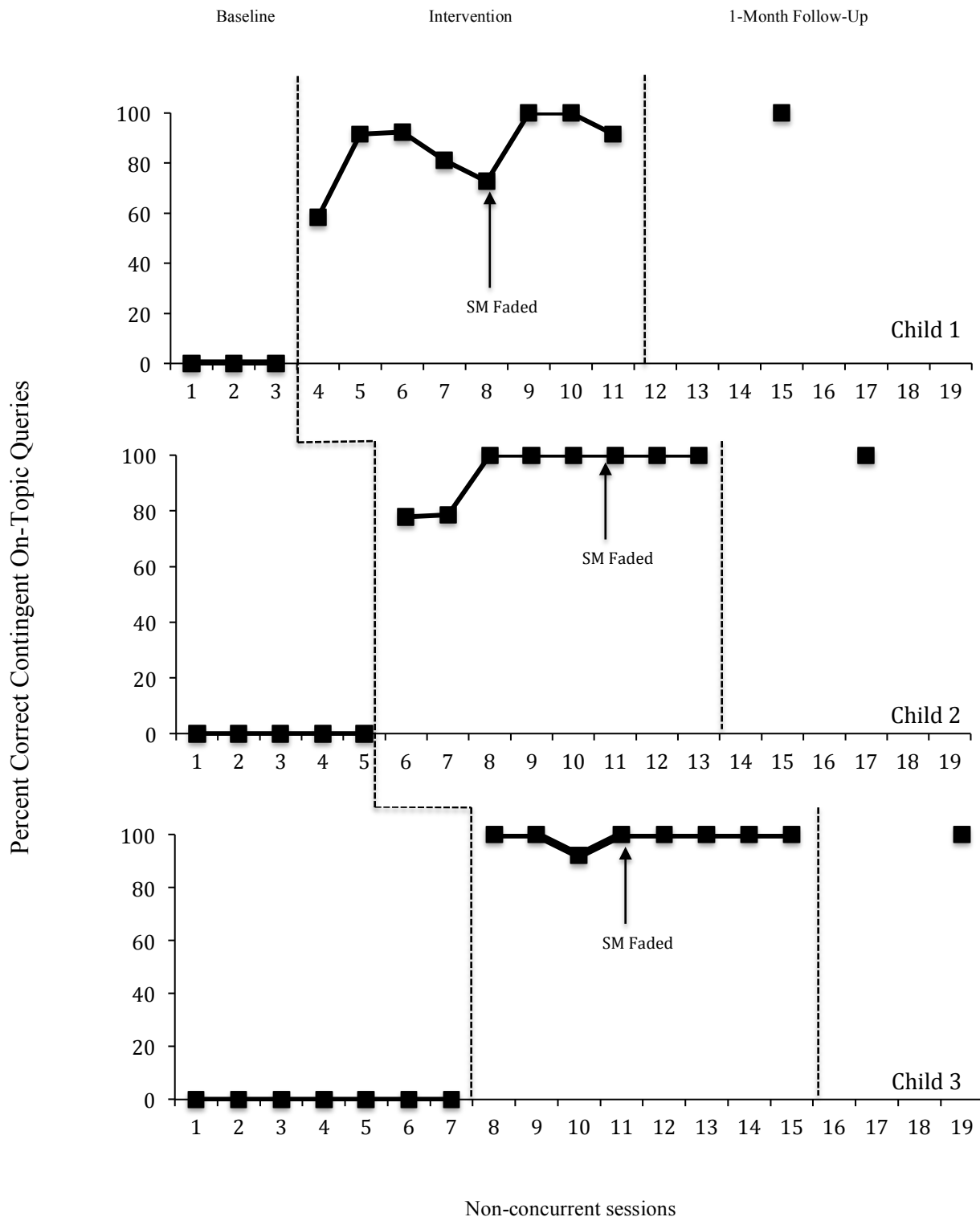


Figure 1. Percent of contingent on-topic queries asked during conversations in Spanish

100% of opportunities, which was a great improvement from 0% during baseline conversations.

### **Self-Initiated On-Topic Queries**

Figure 2 presents the data for collateral gains made by the children in their ability to self-initiate on-topic queries. As can be seen in this Figure 2, during baseline only one child self-initiated queries during their conversation with their mothers, while the other two children did not self-initiate any queries in their native language of Spanish. This area of study was not directly targeted or taught during the intervention nor were parents trained to teach their children to do so. However, all three children developed this skill as shown by the increase in their rate of initiations in a ten-minute interval as the intervention took place. All three children maintained gains at follow-up.

**Child 1.** At baseline Child 1 did not self-initiate any on-topic queries during the Spanish conversations with his mother. As soon as intervention started, Child 1 began initiating on-topic queries in Spanish (the skill not targeted during intervention). Child 1 had an average rate of 13.4 self-initiated on-topic queries in a ten-minute interval ( $M=13.4$ , range=5-21.2) during the intervention phase of the study. As can be seen in Figure 2, Child 1 made the biggest increase in his self-initiated queries during the first three sessions before having a drop in his rate on the fourth session. The drop in this session could be explained by the enthusiasm that the mother began showing during intervention. At times Child's 1 mother would be very descriptive especially after on-topic queries were followed by a self-initiated query, which would mean that the child had less opportunities to initiate during the conversation. Future investigation is needed in order to identify any potential connections between parent's own conversational

behavior (e.g., providing lengthy, time-consuming conversational details) and children's self-initiations. Regardless, Child 1 made incredible gains in self-initiating queries during intervention. Furthermore, this skill was maintained during follow-up, where the child had a rate of 11 self-initiated on-topic queries in a 10-minute period, which was a huge difference from baseline measures. It is also important to note that Child 1 was the only child who had more self-initiations than parent presented leading statement opportunities during their conversation in Spanish.

**Child 2.** Throughout baseline Child 2 did not initiate on-topic queries during the baseline conversational probes in her native language. Once intervention started, Child 2 began initiating on-topic queries in Spanish. Child 2 had a similar but more consistent initiation rate compared to Child 1. From the start of session one, child 2 made a wonderful leap in self-initiations compared to baseline measures, as Child 2 made 12 initiations in a ten-minute probe. As seen in Figure 2, Child 2 made steady growth through the first three sessions, with a slow decline between sessions 4-6. Child 2 demonstrated the highest rate of initiations during intervention during the seventh session with a rate of 18.2 initiations in a ten-minute probe. Overall Child 2 had an average of 11.4 initiations in a ten-minute interval ( $M=11.4$ , range= 6-18.2) during the intervention phase of the study. As can also be seen by Figure 2, not only did Child 2 maintain her rate of self-initiated on-topic queries during follow-up compared to baseline measures, but also had a higher rate of self-initiations compared to her average rate during intervention. Specifically, Child 2 maintained the skill of self-initiating on-topic queries with a rate of 12.5 queries in a ten-minute interval at follow-up

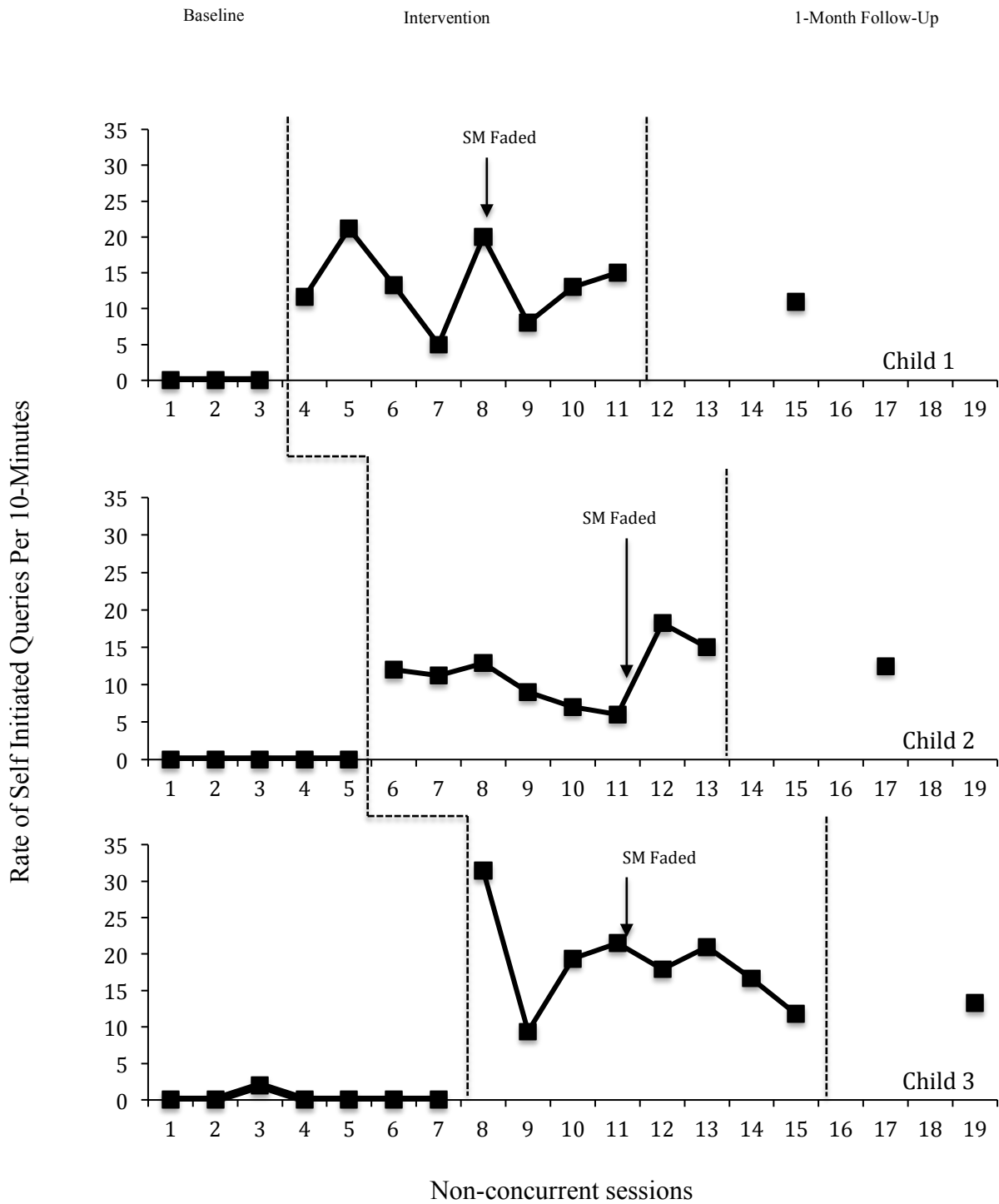


Figure 2. Rate of self-initiated on-topic queries during conversations in Spanish.

**Child 3.** Child 3 also had very similar gains as the other children. Unlike the other two children, Child 3 had two initiations across baseline measures in his conversational probes in Spanish. Child 3 made a rapid increase in session 1 with 31.4 self-initiations per 10-minute probe, his highest in the intervention phase. This similar pattern was seen in all three children, where the children made rapid increases in their initiations compared to baseline levels. Child 3 had an average rate of 18.6 self-initiated on-topic queries (M=18.6, range= 7.4-31.4) during the intervention stage. Of all the children, Child 3 had the highest average of self-initiated queries and consistently initiated in all his intervention probes. Child 3 also maintained this pattern during follow-up as he had the highest rate of self-initiated queries with 13.3 in a ten-minute interval.

### **Parent-Presented Leading Statement Conversational Opportunities**

Figure 3 displays results for the rate of parent provided leading statement conversational opportunities delivered during each session. As can be seen in Figure 3, at baseline none of the parents presented clear leading statement conversational opportunities to elicit a query from their child. Instead, during baseline conversations parents seemed to focus on giving their children information (in the form of telling stories) and/or asking direct questions to their child (e.g., “What did you do at school today?”). During intervention, parents were trained to provide clear leading statement conversational opportunities to their child and were trained to teach their child how to implement self-management for providing on-topic queries during their conversation. All three parents made immediate gains in their abilities to provide leading statement conversational opportunities during conversations with their child and were able to maintain this skill at follow-up at much higher rates compared to baseline measures.



**Parent 1.** As shown in the graph in Figure 3, during baseline measures Parent 1 provided an average rate of 0 leading statement conversational opportunities. During intervention, Parent 1 made immediate improvements during the first session as she provided a rate of 20 clear leading statement conversational opportunities in a ten-minute probe. Parent 1 had a high rate of leading statement conversational opportunities throughout the first four sessions of the intervention with an average of 21.1 leading statements per ten-minute probe. After Parent 1 faded self-management in the fifth session (due to protocol of child reaching his goal of 80 percent of responding with on-topic queries in a ten-minute probe for 4 consecutive sessions) Parent 1's rate seemed to level out at a lower rate compared to when self-management was being used. Even though it was at a lower rate, it was still much higher rate compared to baseline measures. What is more, Parent 1 was able to maintain this rate during follow-up at a rate of 9.1 leading statement conversational opportunities in a ten-minute probe. Overall the average rates of leading statement conversational opportunities were 16.6 in a ten-minute probe (M=16.6, range= 10-28.2) during intervention, which is a dramatic difference from baseline measures.

**Parent 2.** During baseline measurements, Parent 2 also provided an average of 0 leading statement conversational opportunities. Parent 2 had a difficult time engaging her child during the baseline probes, often looking at interventionist for assistance. Just like Parent 1, Parent 2 often just asked questions directly to her child about the child's day. During intervention, Parent 2 made instantaneous growth in her rate of providing leading statement conversational opportunities to 18 in a ten-minute probe during the first session. As can be seen in Figure 3, Parent 2 had a range of rates of leading statement

conversational opportunities during intervention through the first 5 sessions, as she ranged from 11 to 18 leading statement language opportunities. For Parent 2, when self-management was faded in session 6 (due to protocol of child reaching her goal of 80 percent of asking on-topic queries in a ten-minute probe for 4 consecutive sessions) Parent 2 dramatically increased her rate for the last three sessions to an average of 29.6 leading statement conversational opportunities. What is more impressive was that Parent 2 was able to maintain this high rate of leading statement opportunities at follow-up a month later at a rate of 25 leading statement conversational opportunities in a ten-minute probe. Overall Parent 2 averaged 20.4 (M=16.6, range= 11-30.8) leading statement language opportunities in a ten-minute probe during intervention, which is remarkably higher, compared to baseline measures.

**Parent 3.** Parent 3 provided an average of 0 leading statement conversational opportunities during baseline measures. Unlike the other parents, Parent 3 mainly just told stories to her child during the conversational probes during baseline. The child merely just sat and nodded, making the baseline probes very one-sided. Correspondingly to the other parents, Parent 3 also made remarkable gains immediately during the intervention phase of the study. During intervention, she increased her rate to an average of 17.3 (M=17.3, range= 11-23.5) leading statement conversational opportunities. Looking at Figure 3, Parent 3 was pretty consistent in providing leading statements throughout the intervention phase of the study compared to the other parents. Follow-up measures indicate that she maintained her average rate of leading statement language opportunities, as she presented a rate of 17.1 opportunities in a ten-minute probe, which indicates enormous growth compared to baseline measures.

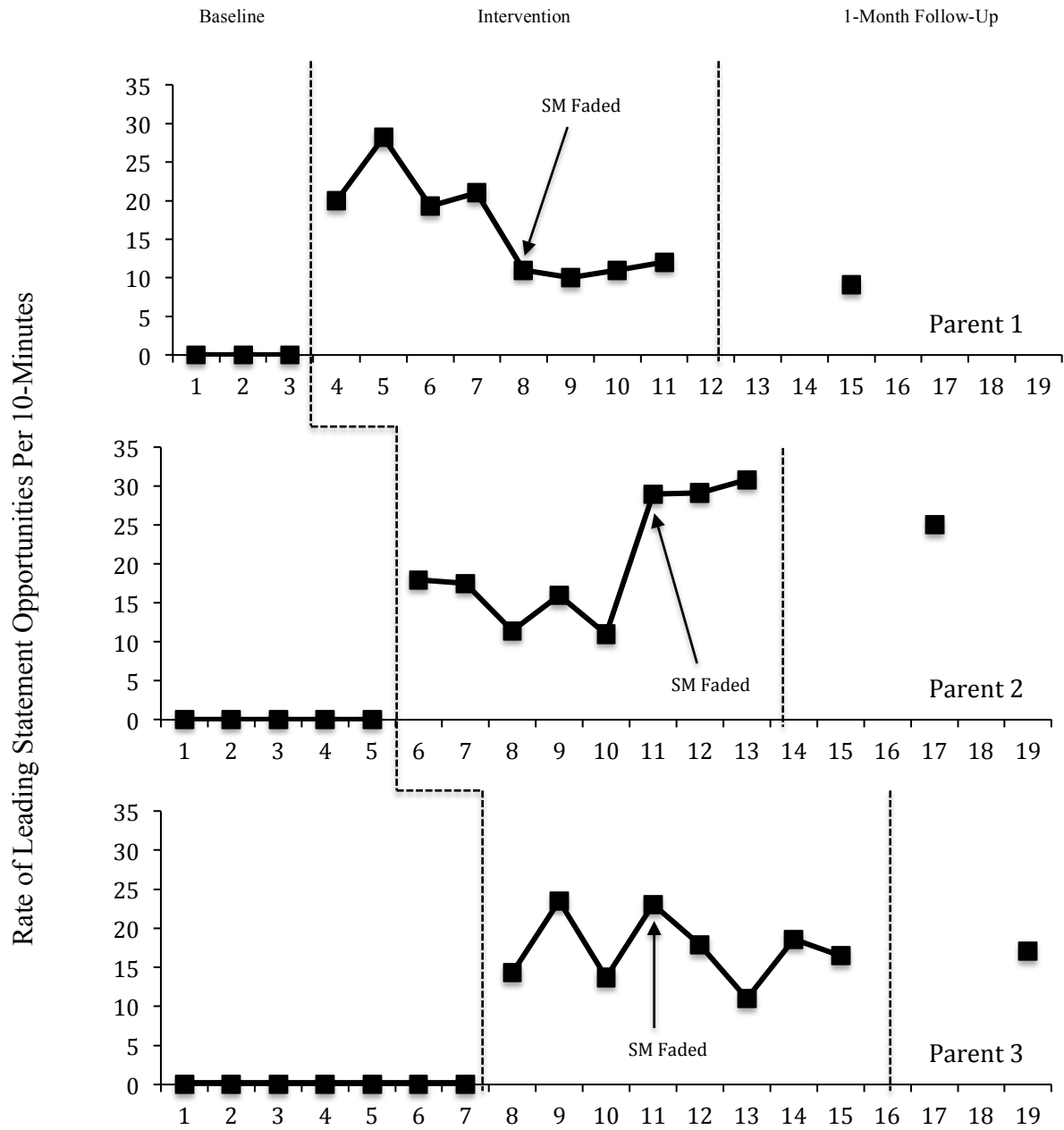
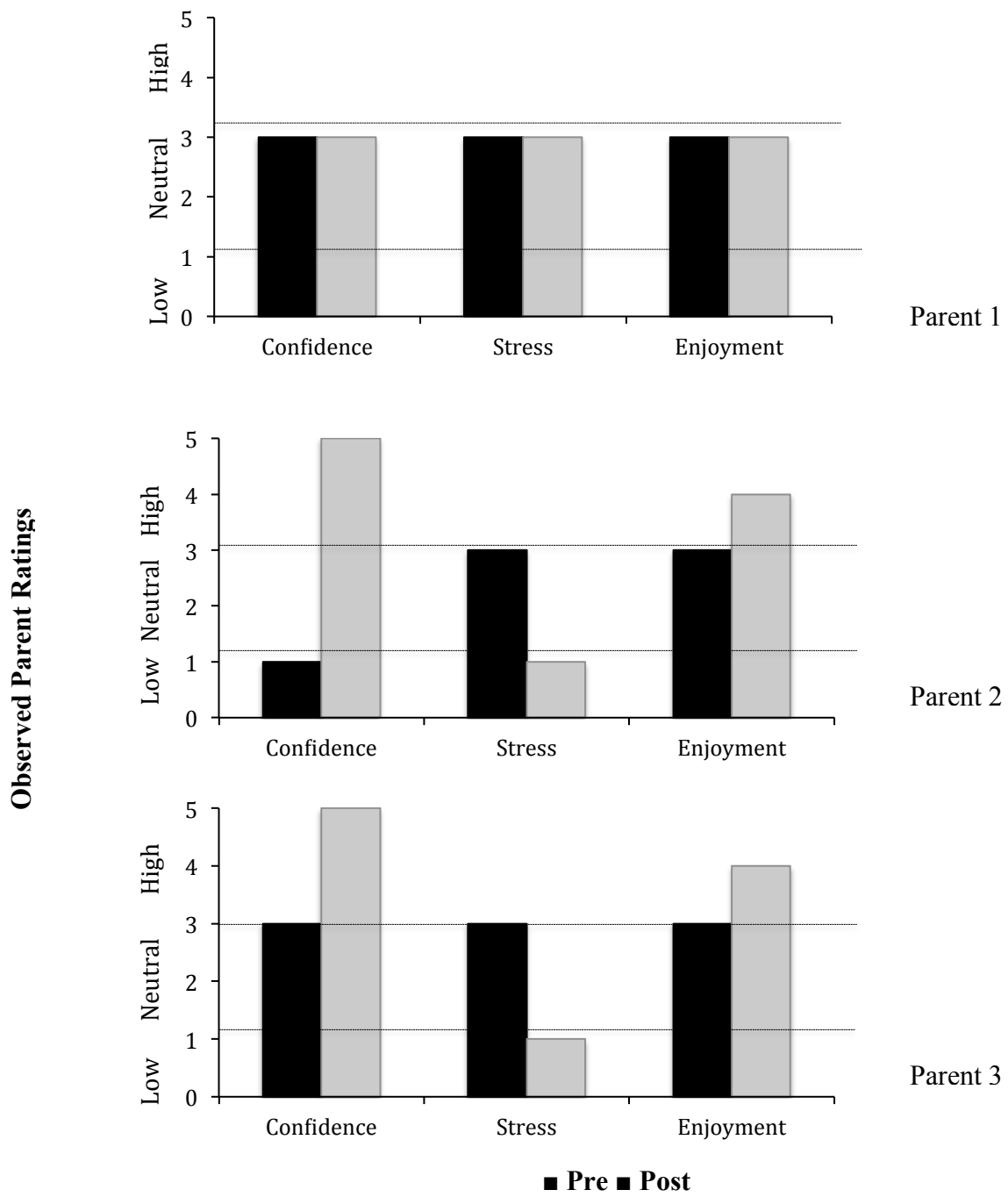


Figure 3. Rate of leading statement conversational opportunities provided by parents during conversations in Spanish

## Social Validity

**Observed parent confidence, parent stress, and parent enjoyment.** Figure 4 illustrates parental levels of observed confidence, stress, and enjoyment pre-and-post intervention. For all histograms, the specific observed ratings are indicated on the x-coordinate of the graph and the individualized parent ratings are shown on the y-coordinate. Data for Parent 1 are shown in the first histogram, followed by data for Parent 2 and Parent 3 in the second and third histogram, respectively. These social validity measures do not illustrate a clear pattern as the graphs shows that two parents demonstrated higher levels of observed confidence post intervention, while one parent exhibited no observable changes pre-to-post intervention. A similar pattern can be seen for observed parent stress and observed parent enjoyment, as the graphs show that two parents exhibited positive changes from baseline, while the other parent maintained previous measures of baseline at follow-up.

Specifically, Parent 1 exhibited neutral confidence, stress and enjoyment both at pre and at post intervention. Parent 2 scored a 1 (which is low observed confidence) on her observed confidence at pre-intervention and a 5 (which is high observed confidence) post-intervention. In the pre-intervention clips, Parent 2 would often look at the researcher as if questioning what to do or when the videotaping would be over. In contrast, during her post-clip she provided leading statement conversational opportunities with total ease, maintained beautiful eye contact with her child, smiled, discussed a variety of topics with ease, and never once referenced the researcher. In terms of observed stress, Parent 2 scored a 3 (which is in the neutral range) at pre-intervention and 1 (which is in the low range) at post-intervention.



*Figure 4.* Observed Parent Confidence, Parent Stress, and Parent Enjoyment across parents.

For enjoyment, Parent 2 scored a 3 (i.e., neutral enjoyment) at pre-intervention and a 4 (i.e., high enjoyment) at post-intervention. The observed scores for Parent 3 are similar to those of Parent 2, with the exception of confidence. For Parent 3, she received a score of 3 (i.e., neutral confidence) at pre-intervention and a score of 5 (i.e., high confidence) at post-intervention. The scores for stress and enjoyment for Parent 3 are identical to Parent 2. That is, Parent 3 received a score of 3 (which is in the neutral range) at pre-intervention and a score of 1 (which is in the low range) at post-intervention for stress. For enjoyment, Parent 3 scored a 3 (i.e., neutral enjoyment) at pre-intervention and a 4 (i.e., high enjoyment) at post-intervention.

**Parent education questionnaire.** After baseline and at follow-up of the study, parents were asked to complete a questionnaire regarding their opinions of parent education sessions and parent training. They were asked to rate their child's level of Spanish abilities on a 0-5-point Likert Scale (*0 = bad; 1 = not good; 2 = below average; 3 = average; 4 = good; 5 = excellent*) as well as to rate their child on being able to ask on-topic questions in Spanish on a 0-5-point Likert Scale (*0 = never; 1 = almost never 2 = rarely; 3 = occasionally; 4 = often; 5 = always*). They were asked to rate their level of perceived confidence in implementing intervention procedures during parent education sessions on a 0-5-point Likert Scale (*0 = not at all; 1 = a little 2 = somewhat; 3 = neutral; 4 = confident; 5 = very confident*) and indicate the level of enjoyment during parent education sessions on a 0-5-point Likert Scale (*0 = never; 1 = not really; 2 = a little; 3 = somewhat; 4 = enjoyable; 5 = very enjoyable*). They were also asked to rate the level of stress they felt during parent education sessions on a 0-5-point Likert Scale (*0 = not at all; 1 = neutral; 2 = a little; 3 = somewhat; 4 = stressed; 5 = very stress*). Finally, they

were asked to rate their overall level of difficulty they felt having conversations with their child in Spanish on a 0-5-point Likert Scale (0 = not difficult; 1 = a little difficult; 2 = somewhat difficult; 3 = *difficult*; 4 = *very difficult*; 5 = *impossible*).

Figure 5 displays the results of this pre/post parent questionnaire regarding parent education sessions. For all histograms, the specific self-report components are indicated on the x-coordinate of the graph and the individualized parent ratings are shown on the y-coordinate. Data for Parent 1 are shown in the first histogram, followed by data for Parent 2 and Parent 3 in the second and third histogram, respectively. Overall, the results demonstrate a clear pattern. All parents reported positive changes to their child's conversational abilities in Spanish, felt more confident implementing the intervention and having conversations in Spanish with their child. Parents also reported being less stressed, while finding the parent training in their native language highly enjoyable. These gains were noteworthy considering baseline self-reports of the parents at the beginning of the study.

**Parent 1.** As shown in Figure 5, Parent 1 reported negative ratings across all components during baseline. Specifically, she noted in this questionnaire that during the baseline component of the study she felt stressed because she did not know how to engage her son in conversation because he would just look at her, nod or say ok. She also said that it was hard for her to find ways for him to speak back to her. Parent 1 also rated her child's ability to have a conversation in Spanish as bad, rated her child's ability to ask on-topic queries in conversation as never, and did not really find the conversation in Spanish with her child enjoyable. She also rated it difficult to have a conversation in

Spanish and rated herself as being a little confident in being able to converse in Spanish with her child.

After intervention, Parent 1 reported positive ratings across all of the components of the study as can be seen in Figure 5 at follow-up. This was a huge difference from baseline measures as she rated herself as being confident having a conversation in Spanish with her child, reported her stress as being neutral, and expressed that sessions were “very enjoyable.” This parent did rate having a conversation in Spanish as somewhat difficult. Parent 1 elaborated in her interview that this was because of not knowing exactly how many leading statement opportunities to provide. Finally it is important to note that Parent 1 rated her child’s ability to have conversations in Spanish and ask on-topic queries in Spanish as good and often respectively.

**Parent 2.** Parent 2 reported that during baseline sessions she felt a “little confident,” found it “extremely difficult” to have conversation in Spanish with her child, felt “stressed,” and expressed that sessions were “a little enjoyable.” At follow-up, Parent 2 increased her positive ratings across the components of confidence, difficulty, stress and enjoyment. What is more, this parent’s perceptions of her child’s ability also changed, as she viewed her child’s ability to have conversation in Spanish and ask contingent on-topic questions as “excellent” and “always.”

**Parent 3.** Parent 3 showed moderate ratings across self-report components during pre-intervention, with none of the components receiving low negative rating with the exception of the child’s ability to ask on-topic questions, which she rated as “almost never.” Specifically, she reported that during baseline sessions she felt “neutral” in terms



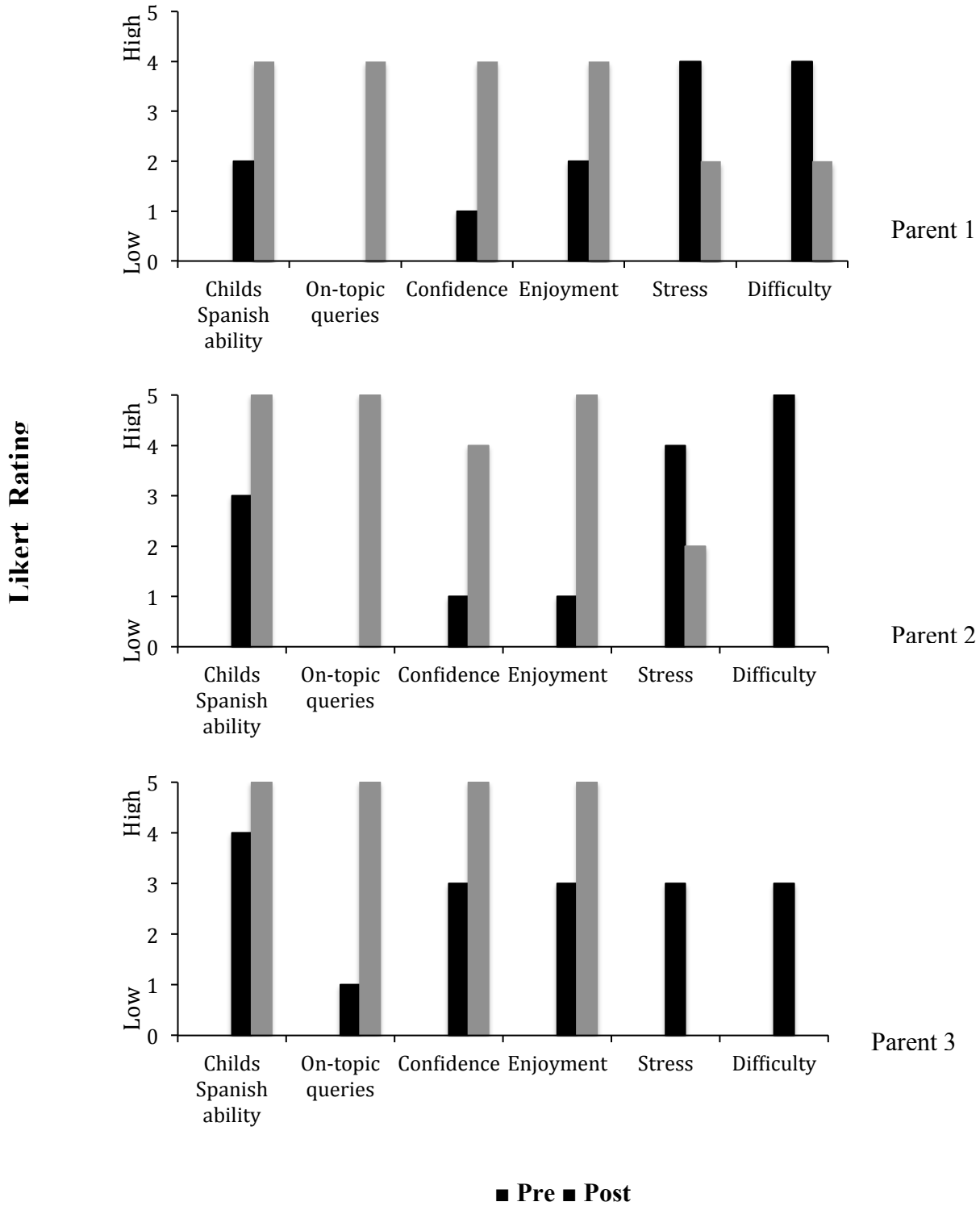


Figure 5. Parent education self-report ratings across parents

of her confidence, felt it was “somewhat difficult” to have conversations in Spanish with her child, expressed a little stress, and overall found the sessions “somewhat” enjoyable. On the other hand, following intervention, all of Parent 3’s ratings increased. At that time, she felt very confident, did not feel it was difficult to set up conversations in Spanish with her child, did not feel at all stressed, and noted that parent education sessions were overall “very enjoyable.” More importantly, Parent 3 rated her child’s ability to have a conversation and ask on-topic queries in Spanish as “Excellent” and “always” respectively.

**Parent education semi-structured interview.** A semi-structured interview was given at the end of the study to parents in order to obtain their opinions about the parent training sessions. This measure was used to gather self-report information regarding parents’ views of parent training, as well as, to assess the social validity of the parent-implemented self-management intervention. Table 8 covered some of the highlights and common themes covered in the semi-structured interview. Overall, all parents stated in their interviews that the study was very enjoyable, helped build confidence, and felt their stress ease up as the intervention went by. (See Table 8 in Appendix E)

Another common theme that was stated by all parents was that they felt that their children gained motivation to speak in Spanish and used it more consistently during conversations with them. They also reported that their children really learned how to ask on-topic queries in Spanish and felt that their child’s conversational abilities improved. All parents reported in one way or another that the parent training sessions really helped them develop a tool/ technique for them to use to facilitate conversations with their child in Spanish. Parent 2 stated “With the conversations we had in Spanish, I felt like I was

able to help her develop her language and share my experiences with her. She was really focused and interested, which made me happy.” This illustrates the purpose of the study, which made the parent feel empowered to be able to help her daughter develop a skill she did not have before in her native language.

Another noteworthy topic that was presented by parent 1 was the idea of conversations being something that occurred naturally. Parent 1 said, “At first I thought conversations were something natural that would eventually happen, but its not, especially for him who has struggled with it. This gives you a tool to use to support your child and helped us teach him how to have a conversation in Spanish. Without this study, I would have never known that there is something I can do to help him have conversations in Spanish, I really just thought before this study that he would grow and learn how to do it. I would have never known that something so small could make the biggest difference for him to be able to have a conversation in Spanish.” Overall parents felt like they have learnt a way to help with communication, which is import for them to keep traditions and communication going with their family. Similarly, parent 3 said, “Because if I don’t I feel like I will miss out on important things, he is already getting older and his interests are changing. It’s hard for me to know how things are going and share important things about our family with him if I am not able to communicate in a language that we both understand.” As can be seen, parents really felt strongly about having a method to be able to work on conversations in Spanish with their children. See Appendix F for full semi-structured interview transcripts.

## **Chapter 5: Discussion**

### **Summary of Finding**

There is long standing research documenting the conversational deficits of children with Autism Spectrum disorder and the progress that can be made with behavioral intervention (Chin & Bernard-Opitz, 2000; Doggett, et. al., 2013). While a number of studies using self-management (Boettcher, 2004; Doggett, et. al., 2013) have documented successful improvements in conversational skills for children with ASD, to the knowledge of the researcher, to date there has not been a study that has focused on teaching Mexican-American children with autism to develop these skills in their native language. There is even less research on teaching native Spanish speaking parents how to implement intervention in their own language. With limited research in the area of training parents to teach their child how to develop social communication skills in their native language, this population is at high risk of losing out on their heritage, traditions, culture, and family relations.

The findings of the current study indicate that parent-implemented self-management intervention is an effective intervention for teaching Mexican-American children with autism to ask contingent on-topic queries during conversations in their native language of Spanish. All three participating children and parents responded to the self-management intervention used in this study and made substantial progress. More specifically, the results of this study demonstrate the following: 1) the children's ability to ask contingent on-topic queries during conversations in Spanish improved as a result of the parent-implemented self-management intervention, 2) overall the children's ability to self-initiate queries during conversations in Spanish increased as a collateral effect of

targeting contingent queries, 3) all parents provided more leading statements as conversational opportunities compared to baseline measures, 4) additionally, the intervention was associated with all parents reporting higher confidence, lower stress, better perceptions of their children's social conversational skills in their native language of Spanish, and found the study enjoyable as result of the self-management intervention.

These findings suggest that parent-implemented self-management conducted in the family's native language is an effective intervention for targeting social conversation skills in Mexican-American children with autism. Moreover, this intervention appears to have a positive effect on both the child and parent, and perhaps most importantly, on their ability to have conversations in their native language. Results of the study were observed to maintain at follow-up a month after intervention ended. This finding could signify that lasting changes may have occurred in the matter that children interact and communicate with their parent in their native language.

### **Effect of the Parent-Implemented Self-Management Intervention on Native Language Conversations**

Parent implemented self-management was associated with marked improvements in the children's ability to ask contingent on-topic queries during conversations in Spanish for all three participants. Prior to the intervention, none of the participating children were able to ask on-topic questions during conversations in their native language. This was particularly interesting given that all three children had previously participated in social-conversation training and learned to ask on-topic questions, however, only in English conversations. Previous intervention had been exclusively conducted in English with English-speaking therapists. Parents had not been trained in

how to use the intervention procedures. None of the three children in this study generalized any of the gains they had made previously in English conversations to conversations in their native language of Spanish. During baseline clips it was very difficult for the child and parent to continue any element of the conversation. The majority of conversations at baseline consisted of the parents asking their children questions (e.g., “How was school today?” “What did you do with your friends at Girls Inc?”) and the children responding. If parents weren’t directly asking their children questions, they would turn to telling them stories. The children would often answer the question, but the conversation would stop at the end of the child’s answer unless the parent changed the topic or asked another direct question. This was a similar pattern for all of the participating parents, who often looked at the researcher as if inquiring when the baseline video probe would be done. As soon as the parents were trained and intervention started, all three children made rapid gains in their abilities to ask contingent on-topic questions.

The rapid improvement observed in the results of this study are consistent with other research indicating that self-management is an effective tool for targeting social conversation skills in children with autism (Boettcher, 2004; Levinger, 2013; Koegel & Frea, 1993). Similar to Doggett, et. al., 2013 and Levinger, 2013, all of the participating children in this study made gains, were able to have self-management procedures faded, and maintained gains at follow-up. Not only did each of the participating children immediately improve their ability to ask contingent on-topic queries in their native language but also these gains did not extinguish once self-management was faded. This is very important to note because children with autism are found to exhibit significant

prompt dependence. The fact that self-management was successfully faded without complications speaks to the internal validity of this intervention approach. The present study also extends the existing literature by focusing on training parents to implement the self-management intervention. Previous studies have not focus on parent-implementation of self-management for conversation training, nor focused on culturally and linguistically diverse families. The importance of training parents to implement intervention strategies has a robust history in autism research (Lovaas, et. al., 1973; Lucyshyn, et. al., 2007), however, in terms of conversation interventions, to the researchers knowledge, no studies have focused on teaching Mexican parents to use self-management in their native language. The current study adds to the parent education literature by including Mexican parents, a culturally and linguistically diverse population that has seldom receives specific attention in ASD research.

### **Collateral Gains**

Not only did these children learn to ask contingent on-topic queries when their parents provided a leading statement conversational opportunity, they also simultaneously increased their ability to self-initiate on-topic queries during neutral conversations in their native language. In particular, at baseline only Child 3 had two self-initiations across his entire baseline, while the rest of the children did not have any self-initiated queries. This corroborates findings from previous research documenting children with autism are less likely to initiate conversations with others (Landa, 2007; Wetherby, Woods, & Allen, 2004). What is interesting about the initiations Child 3 made during baseline is that these questions were directed towards a question that the father had asked the mother. Specifically, the father came into the room and asked the mother

where the present was for a party. After hearing his father's questions, Child 3 proceeded to ask his mother where the present was and then followed it up with what was in the box? What this shows is that the child was motivated to ask an on-topic query when the topic was of high interest, but not when the conversation topics were neutral. This is consistent with previous research which show that children with autism are capable of learning and exhibiting appropriate behaviors when motivated (Koegel, Carter & Koegel, 2003), thus why it is important to find strategies like self management to help raise motivation in children with ASD. As self management allows children not only the opportunity to evaluate their own behavior, but are rewarded with a predetermined reinforcer by doing so. Which not only increases the target behavior, but also makes it motivating to earn their reward.

Despite making few initiation attempts during baseline, within the onset of the self-management intervention targeting contingent on-topic queries, all three children exhibited gains in both of these behaviors. These results are significant because self-initiated queries (those not requiring a leading statement) were not directly taught or targeted during the self-management intervention and emerged collaterally. This is a significant finding because of the difficulty children with autism generally have with initiating in neutral conversations with their parents in their native language.

The importance of self-initiations has been discussed in depth in the autism literature (Koegel, et. al., 1999; Weiss & Harris, 2001) and other studies have documented the meaningful impact of collateral gains (Koegel, Koegel & Brookman, 2005; Koegel, Green-Hopkins, Barnes, 2010). The results of this study support these previous findings. Additionally, the ability to self-initiate during conversations in their



native language could potentially allow the children to seem more interested and have better manners when conversing with adults and peers in their native language. As Arcia, Reyes-Blanes, and Vazquez-Montilla (2002) discuss, “manners” is a set of behaviors that is valued in the Latino/a culture. Specifically, the authors found that Latino/a parents expect their children with a disability to be responsible and respectful, to be close to the family, and to be curious/ask questions (“*preguntón*”). Often it is thought of that if a child does not initiate then he is not interested in engaging, which in Latino/a cultural could be thought of as rude and poor manners. These cultural values are typically expected in children of many Mexican-American homes, and reflect the idea of being well mannered/well-educated (“*bien educado*”). “*Bien educado*” (i.e., being well mannered/well educated) signifies having a strong moral standard of social comportment that parents expect from their children (Valdes, 1996). Having the skill set of initiating on-topic queries could hypothetically fit the cultural value of this population in terms of being “*un preguntón*” (i.e., curious or asking questions) and having manners. Studies such as this one could potentially begin to bridge the gap between what is currently known about goodness of fit, cultural values and autism behavioral intervention for linguistically and culturally diverse populations.

### **Self-Management**

The findings of this study provide additional evidence for the effectiveness of self-management for improving conversational skills in children with autism. Although there are dozens and dozens of empirical studies targeting conversational deficits in children with autism (Krantz & McClannahan, 1998; Sheer, et. al., 2001) relatively few have utilized self-management (Boettcher, 2004; Doggett, 2013; Koegel, Koegel, Hurley,

& Frea, 1992). Self-management is a very useful and practical intervention tool for a number of reasons. For example, unlike other commonly used interventions for improving conversations, such as script-fading procedures or video-modeling, self-management does not require extensive preparation or material development. With both video-modeling and script-fading procedures, perhaps the two most common types of conversation intervention in the autism literature, countless hours must be spent putting together the video examples and scripts making this type of intervention labor intensive and potentially reducing its application in non-clinical settings (e.g., schools, community-based programs, families). Self-management on the other hand requires very little labor and material development, making it very practical and easy-to-implement for school staff, behavioral interventionists, and family members in community settings. In fact, the only preparation and/or material development for self-management consists of identifying the documentation strategy (e.g., pencil-paper, markers, ipad) and collecting a list of reinforcement items participating children can choose from to earn at the end of each self-management period. Furthermore, a common theme parents reported in the semi-structured interview was how easy and uncomplicated it was to implement this procedure. Like Parent 1 said, “ I would have never known that something so small could make the biggest difference for him to be able to have a conversation in Spanish.”

In this study, since all three participating children loved technology, an iPad and a self-management application where children could “tap” a box to give themselves a star each time they asked a contingent on-topic query were the only necessary materials. Given that all three children also chose to earn time playing games on the iPad as their reward for completing the self-management task, no additional reinforcers/rewards

needed to be collected. It is important for researchers to consider variables such as material development and preparation time when developing behavioral interventions because of their potential application in “real world” settings. That is, if interventions are inherently expensive, labor, or time intensive then the likelihood that they will be used in community or natural settings by professionals and families could be greatly reduced.

Second, and especially noteworthy, the current study not only corroborates previous self-management research for teaching conversational skills (Bahamondes, 2012; Boettcher, 2004; Doggett et. al., 2013) but also extends its application to culturally and linguistically diverse populations that are often under-represented in the literature. Prior this study, incredibly few empirical studies have included Latino/a children, much less focused on applying previously established intervention strategies to this under-represented group of special education students in their native language of Spanish. (Bahamondes, 2012; Doggett, et. al., 2013). The children who participated in this study had all received years of autism-specific behavioral intervention services, including conversation skill building interventions. Even though all the children had received previous conversation training in English and could ask contingent on-topic queries in English, none had generalized these skills to their home language, causing great concern to their parents and families. What is more, the mothers of all three participating children had sought out intervention that would attempt to remediate this disparity. The social validity data collected in this study details how all three mothers perceived significant improvements in their child’s conversation skills in Spanish and reported how meaningful their child’s progress was for their family. This study begins to address the

existing gap in the literature by providing detailed empirical evidence supporting the use of self-management intervention for culturally and linguistically diverse populations.

### **Parent Impact**

There has been an ever-growing body of evidence documenting the effectiveness and importance of parent education (e.g., parents as interventionists) (McConachie & Diggle, 2007; Schopler & Reichler, 1971; Schultz, Schmidt, & Stichter, 2011). In this study, the main purpose for the parents was to be trained to implement self-management with their children as means to teach them how to ask contingent on-topic questions during conversations in their native language. Something that stood out from baseline clips was that all parents were not providing any leading statement opportunities during the conversation probes. All three parents would instead engage with either telling a story or asking direct questions to their child. The conversation was then very lopsided and not reciprocal at all. Therefore, what proceeded were parents seeming unsure of how to move the conversation forward and looking at the researcher every so often to see if the conversation was long enough for the video probe. In the parent questionnaires and semi-structured interviews parents commented about feeling stress and lack of knowledge in how to support their children's conversational development. Previous research has documented how the feelings of parents who have not participated in a parent education program are frequently highlighted by frustration, stress, depression, helplessness, and overall dependence on the service provider (Brookman-Frazee & Koegel, 2004). With one of the criteria for the study being that the child must be able to ask contingent on-topic questions during English conversations (meaning that they have had conversational training in English before), it was surprising to see how much all three

parents struggled during baseline. In other words, even though each family in this study had intervention services for their child for at least four years, none were able to provide leading statement opportunities to elicit contingent on-topic queries from their child during conversations in Spanish. What this could show is that parents have not generalized the skill of providing leading statements to their child in English to their native language of Spanish. It could also mean that the parents just did not pick up the skill when it was translated to them. Another possible explanation could be about who is training parents to learn intervention techniques. As policy changes occur in the area of the service providers, this greatly affects whom these providers send to the households to conduct interventions. This element varies by location and thus depends on the service provider. A family could get a M.A./ Ph.D. level clinician/educator or they could also get a B.A. to A.A. level interventionist. It would be interesting to investigate how this phenomena impacts minority families. Consistent with previous studies, it is important to continue this line of research to determine how applicable certain intervention models are when training minority groups or if those interventions are culturally appropriate for them (Brookman-Fraze & Koegel, 2004; Chiang, 2014; Santarelli, Koegel, Casas, & Koegel, 2001).

After determining that the child did not have the skills to ask contingent on-topic queries in Spanish during conversations, parents were trained how to use self-management and provide leading statement conversational opportunities during Spanish conversations. The overall objective remained the same; the goal was for parents to learn skills and techniques known to be effective with their child so that intervention gains could continue at home in the absence of direct professionals (Steiner, Koegel, Koegel, &

Ence, 2012). Hypothetically, this would not only allow for continuous learning, but also increase the child's rate of progress (Moes, 1995). During the start of intervention, all three parents made swift gains in their ability to provide leading statement opportunities during their conversations with their child in Spanish. This was done while receiving training to teach their child how to self-manage when they provide a contingent on-topic query in Spanish during their conversation.

More specifically, with the introduction of the parent implemented self-management intervention, Parent 2 and Parent 3 increased the rate of leading statement opportunities during their conversation in Spanish with their child, in which they consistently made gains or maintained the leading statement opportunities provided to their child throughout intervention. These gains were like night and day compared to baseline measures. On the other hand, Parent 1, initially made tremendous improvement in the first probe, but then slowly started to have downward trend until leveling out in the seventh probe. In comparison to the other parents, Parent 1 seemed to have the most difficult time transitioning after fading self-management with her child. Even though there was a downward trend with Parent 1, it should be noted that she maintained levels throughout intervention and during follow-up that were higher than baseline measures.

Another noteworthy finding that could explain why Parent 1 showed a decrease in the rate of leading statement opportunities provided pertains to her son's use of self-initiated queries. When examined in detail, it became apparent that Child 1 initiated at a slightly higher rate than his mother provided leading statement opportunities. This may suggest that Parent 1 had a reduced need to provide leading statement opportunities because her son was independently initiating on-topic queries. In other words, as Child 1

began self-initiating queries at higher rates during their conversations in Spanish, the need for Parent 1 to present him with language opportunities diminished. As for Parent 2 and Parent 3, both parents provided more leading statement opportunities than their children self-initiated. Further examination revealed that Parent 2 was providing leading statement opportunities almost at double the rate than her child was initiating on-topic queries. In contrast, Parent 3 was providing leading statement opportunities at a closer rate to her child's self-initiations. From an observational point of view, the conversations of Parent 1 and 3 seemed to be more reciprocal towards the end of intervention and at follow-up because the ratio of parent provided opportunities to child self-initiations were in closer proximity.

### **Intervention Effect At Follow-Up**

Finally, it is important to discuss all three children maintaining high levels of contingent on-topic queries at follow-up. More impressively, all children also maintained the ability to self-initiate during a conversation in Spanish at follow-up, which was a collateral gain from the study. Parents also maintained high levels of providing leading statement conversational opportunities. These follow-up results further substantiate the effectiveness of parent implement self-management for improving the conversational question-asking skills of children with ASD in their native language. If either the children or parents had lost skills at follow-up then there would be questions about the long-term implications of doing such a study. Given that both children and parents maintained gains at 1-month follow up, future studies should collect follow-up data at longer intervals.

The follow-up data in this study is consistent with other studies that have utilized self-management procedures to improve social conversations (Doggett, et. al., 2013).

That is, self-management intervention is well associated with gains being maintained at follow-up (Boettcher, 2003). Unlike most other studies, this study not only documented gains being maintained for the participating children but also for the parents who served as interventionists. This is important because both parents and children had important roles in the objective of the study. Future studies should consider conducting follow-up measures at longer intervals to assess long-term sustainability of treatment gains.

### **Impact on Parent Outcomes**

Studies examining parent education programs have found a variety of major findings, including decreases in parenting stress, increase in parental confidence, greater ability in implementing specific skills and intervention components, and better quality of life after participation in parent education programs. (Blackledge & Hayes, 2006; Todd et. al., 2010). While primary purpose of this study was to examine whether parent-implemented self-management could lead to Mexican-American children with ASD learning to ask contingent on-topic queries during conversations in their native language, it was also important to obtain information directly from the parents about their experience. There is so little information specifically related to Mexican families in the ASD literature that conducting the pre/post questionnaire and the semi-structured post-intervention interview seemed to be a valuable opportunity to start gathering room information from this underserved population. The results from these social validity measures are important because all three mothers found the intervention helpful, effective, and easy to learn. What is more, all three parents either demonstrated (through the pre/post observed ratings of stress/confidence/enjoyment) or reported (through the semi-structured interview) feeling less stressed, more confident, and enjoying their



conversations in Spanish with their children after the conclusion of the study. Parent satisfaction should not be under-rated. All three parents also expressed how happy they were that their children could now engage in conversations with family members. Parent 3 was particularly enthusiastic about her son's gains because her mother was coming from Mexico to visit the family over the summer. For the first time, her son would be able to engage in conversations with his grandmother and this was meaningful and important to them all. She even joked about how her son might not be too happy because now he didn't have an excuse for avoiding conversations. For the Mexican culture, as it is for many other Latino/a cultures, family is the bedrock (Steidel & Contreras, 2003; Morgan Consoli, & Llamas, 2013). The fact that each mother in this study felt better about their child's gains in their native language and how this made life better because there was direct access to culture should not be underscored. Future research could include qualitative analysis about how developing culturally and linguistically appropriate social-communication interventions impact the entire family.

The current literature points out that an empowered parent typically is able to demonstrate competency in many aspects including confidence in effectively teaching their child, improved participation and engagement with service providers, and accessing resources (Koren, DeChillo, & Friesen, 1992). All three parents that participated in this study accomplished a significant task. They each learned how to teach their child to use self-management so that their conversations in Spanish could improve. The success of this parent implemented self-management study is a significant contribution to the existing knowledge we have about serving families from linguistically and culturally diverse backgrounds. Several studies in the literature have focused their intervention

treatment programs for children with autism and their families on ‘contextual fit’, an important component of ecocultural theory. Lucyshyn et al. (2007) focused on tailoring their treatment programs to the families’ needs, values, goals, and to the ecology of the family system. Contextual fit is a key component for working with families from culturally diverse backgrounds in the literature because it addresses the need of ensuring cultural sensitivity and collaboration with parents (Brookman-Fraze & Koegel, 2004). More recently, Lucyshyn, Horner, Dunlap, Albin, and Ben (2002) provided a clear definition for collaborative partnerships with families who are receiving services for their children with special needs. The authors described the importance of having a reciprocal relationship in which family members and interventionists offer corresponding expertise and solve challenges together. It has been recommended by the literature that proper cultural intervention programs are ones in which there is clear identification of the target behavior, the language used, and corrective practices that are consistent with the cultural customs of the family (Osher & Osher, 2002). The results of this study add valuable knowledge to the ASD parent education literature by having focused on such an underserved group of minority families and documenting the effectiveness of parent implemented self-management.

### **Limitations and Future Directions**

While the present study provides evidence for the effectiveness of parent-implemented self-management on the native conversational skills of children with ASD, it is not without some limitations. One limitation of this study is that it just focused on examining if self-management could help bilingual children with autism improve their contingent on-topic queries in their native language. Contingent on-topic question asking

is just one element that is important to have in conversations. Other important features of conversations include on-topic commenting, transitioning between topics, sharing opinions, complimenting, etc. (Landa, 2000; McTear, 1985). Given that very few studies have included culturally and linguistically diverse population, this study nevertheless accomplished a very important first step. Additional work is necessary in this topic area and our historically underserved populations will only benefit from on-going research.

Since the data in this study indicate that self-management is indeed a useful intervention for teaching conversational skills in Spanish, future studies should go beyond this and examine larger variables related to quality of life, including generalization and qualitative variables such as parent satisfaction and feelings. This study conducted a semi-structured interview for the purpose of eliciting parent opinions. However, future studies should investigate and use this tool to further gather qualitative information that could help organize culturally appropriate intervention models. Moreover, although this study recorded follow-up data between the child and their participating parent, it did not measure generalization to other family members. This limitations should be addressed in future studies and examine how parent implemented self-management could be used to support generalization of conversation skills to other family members.

Also the study would have benefitted from having a bigger sample size. Having a bigger sample size would definitely be needed in order to make further interpretations, but it's noteworthy to start the discussion to determine if there is a relationship between parent provided opportunities and how that may impact initiations made by children. In addition the study used a non-concurrent treatment design. If future single subject

research studies were to be done, then the field would benefit from a concurrent research design. Furthermore, a group design study would add valuable information because it would validate the effectiveness of the intervention design.

Finally another area that would be exciting to investigate would be conducting this intervention to children with ASD first in their native language before conducting in English. By doing this, it would gather several findings important for minority families. First, it could show if children who learn how to ask on-topic queries in their native language, generalize to English. This would have huge implications because this study showed that children who had been taught to ask on-topic queries in English did not generalize to do so in their native language of Spanish. Secondly, by conducting such intervention first in the parent's native language, parents could feel more comfortable and have more confidence when implementing it in English if it did not generalize. Having such knowledge would add invaluable guidance to treatment protocols.

### **Implications for Research**

Not only did the current study contribute to the existing literature as discussed above, several implications for future research seem to stand out as a result of these findings. It is imperative that procedures be developed and validated for minority families, in this case Mexican-American, so that they have the same opportunity for meaningful and quality interactions with their children as English-speaking families. As previously mentioned, the families who participated in this study indicated that it was a struggle to converse with their child in their native language because all of their child's behavioral interventions are taught in English.

Teaching conversational skills in Latino/a children's native language could have numerous implications for the family's quality of life. That is, families consistently report that deficits in their child's communication are a leading cause of their parental stress (Bristol, 1984; Koegel, Bruinsma, & Koegel, 2006). Research has also shown that a strong predictor of child behavior is the quality of parent-child interactions (Campbell, 1995). This study showed that it is possible for Mexican-American children to learn how to ask on-topic queries in their native language using parent implemented self-management, creating new avenues for conversations with family members and improving parent-child interactions. Therefore, targeting conversational skills for Latino/a children in their native language would not only allow for more opportunities for meaningful interactions between the parent and child, but also hypothetically could improve generalization to other family members (e.g., grandparents, uncles, aunts) and be a preventative tool for disruptive behaviors.

Traditionally, research on children with disabilities and their families has dealt with the pathology (Bernheimer, Gallimore, & Weisner, 1990). However, in the last several decades there has been a shift looking into more positive characteristics and adaptive interventions for supporting families raising children with disabilities (Turnbull, Patterson, Behr, Murphy, Marquis, & Blue-Banning, 1993; Schneider & Gearhart, 1988). Moreover, studies have shown interventions are more likely to be implemented by family members and sustained over time if the interventions fit into daily routines, lead to positive effects for the family as a whole, and are compatible with the goals and values of the parents (Albin, Lucyshyn, Horner, & Flannery, 1996; Bernheimer & Keogh, 1995). In the present study, all three mothers used "story telling" to some degree during baseline.

To build on the parents' existing conversational routines, parents were taught how to provide leading statement conversational opportunities into their story telling during intervention. Anecdotally, parents reported liking knowing how to incorporate leading statement conversational opportunities, however, this was just one of many ways that parents were taught how to provide leading statements. As researchers have shown, family daily routines have been found to be vital for the organization of completing daily tasks, social engagement, and sustainability of family and cultural expectations. Thus family-centered approaches to behavioral support include an analysis of the routines in the home that are important to the family (Lucyshyn, Blumberg, Kayser, 2000).

Future studies need to investigate how to incorporate conversational intervention into family daily routines with Mexican families with children with autism because families vary in how their daily routines unravel (Bernheimer & Keogh, 1995). Depending on the family, routines might be more hectic, while others are more rigid. For example, comparing a family where the parents are professionals who have a child with a disability to a family from a low socio economic background that has three children (one with a disability), the households might look different in terms of the movement and pace of family routines. In the family with one child, the household might look more rigid compared to the family of three children just based on numbers alone. However, when looking at their daily activities, it will become clearer how each family has had to adjust or accommodate in order to fit the needs or challenges of everyone that is included in their family in order to make their family function. Sustaining a meaningful, congruent daily routine has been a point of emphasis in research because of the difficulty families with children with disabilities have adapting to the ecological factors (e.g., cost of

services, time for intervention) that impact their family routines (Bernheimer & Keogh, 1995). Furthermore, it is important the future studies put an emphasis on creating interventions that are sustainable within the daily routines of Mexican families because of its holistic nature. For example, practicing conversations during meal times could possibly be a routine that fits targeting conversational goals. As it is a time and routine that happens most days where families sit down to eat and chat. Many interventions that have been found to be successful and accomplish their objectives, have been designed, and embedded in a manner that is consistent with the everyday routines of families.

### **Implications for Practice**

Stress is particularly important for families of children with autism because of the unique experiences of this population. In comparison to families of typically developing children and children with other disabilities, families of children with autism experience higher levels of parenting stress (Silva & Schalock, 2012; Bitsika & Sharpley, 2004; Donenberg & Baker, 1993). Some researchers have found that the stress of families with children with ASD is related to parenting behaviors (Osborne & Reed, 2010) and that high levels of stress are often connected to an increase in disruptive behaviors (Floyd & Gallagher, 1997). Although parent stress level is identified as one of the most important outcomes in parent education programs (Moes, 1995) few studies in the current literature measure both parent skill gain and reduction in stress. The broad implication of this is that practitioners and families are provided with unclear parameters of how behavioral parent training can impact family stress or what can be done to address family stress. In the current study, parents discussed components related to their stress both in their self-report questionnaire and in the post-intervention semi-structured interview. Additionally,

pre/post data was collected for all parents on observed stress, confidence, and enjoyment. While these sources provided the study with some complimentary information that added social value to the intervention, these were simple and by no means comprehensive qualitative measures. Future research should develop qualitative studies in this area to address these limitations. Determining more clearly what variables are likely to increase stress and which ones are likely to decrease stress could shed light on goodness of fit, allowing parents to be matched with the most optimal model and format of parent education to meet their particular needs.

In terms of social validity, it is imperative for researchers to begin to document established interventions with under-reached populations and the impact that doing so can have for those groups. Given the current information in the literature, it is essential that interventions not only address the needs of the individual with the disability, but also the larger context of the family. This study showed how children who at baseline had conversational skills in English but not in their native language were able to develop the skills necessary to allow them to continue practicing conversations with their monolingual Spanish-speaking family members. This has huge implications not only for the child but also for the family, particularly as several studies have found that family support and interaction are really important to some Latina mothers (Aranda & Knight, 1997; Correa, Bonilla, & Reyes-MacPherson, 2010; Bodin, 2011). By design, Latino/a families are very interconnected and family life is at the center of interactions. Researchers have found that *“familismo”* is an important factor of resilience for the Latino/a culture (Morgan Consoli, & Llamas, 2013). *“Familismo”* is the belief that family members



have strong commitment to their family relationships (Steidel & Contreras, 2003; Bodin, 2011) and is typically demonstrated by dedication to the collective needs of the family prior to individual needs. The current study could have benefitted from gathering such detailed information about parental values pre-and-post intervention. More specifically, future studies should not only collect data on the impact of self-management on the quantity and quality of parent-child conversations in Spanish but also measure broader constructs such as “*familismo*”. Doing so could shed light on additional protective factors for children with autism who come from Latino/a families.

### **Conclusion**

To the knowledge of the researcher, to date there have been no studies in the field of autism and parent education that have focused their training with monolingual Spanish speaking families to address conversational needs. Some factors that contribute to the slow pace of disseminating research to this minority group include the lack of bilingual professionals and trained interpreters; communication barriers, and contradictory procedures that do not build collaborative relationships with parents of English language learners (Hardin, Mereoiu, Hung, & Roach-Scott, 2009). To address this, future research not only needs to extend existing findings to culturally and linguistically diverse populations in order to address external validity, but also needs to be more proactive in incorporating minorities and linguistically diverse populations into on-going studies. The current study is a solid starting point for this area of research and could lead to a programmatic line of research in autism intervention.

In conclusion, the present study effectively provided both parents and children with strategic tools for producing behavior change through a parent implemented self-management program, thus empowering both members of the parent-child dyad to be active agents in the treatment process. As mentioned above, there is importance in not only creating long-term positive outcomes for individuals with ASD, but also creating something that can be sustainable and meaningful to their families. The final hope of the author is that it will lead to additional research in this very important area.

## Chapter 6: References

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## Appendices

### Appendix A

#### Parent Semi-Structured Interview Highlights

*Highlights and Common Themes From Semi-Structured Interview.*

Question	Highlights	Common Themes
Are having conversations in Spanish important for your family and yourself?	<p><b>P1:</b> I think it's important for my son to understand me. It's also important for me to be able to understand him.</p> <p><b>P2:</b> We would love if our children would be confident speaking to us, using Spanish vocabulary.</p> <p>This brings us together.</p> <p><b>P3:</b> Yes, because it's a way for me to better connect with my son and easier for me to find out what is going on in his life.</p>	<p>Speaking in Native language is really important.</p> <p>Important to understand and be able to speak to their children and vice versa.</p> <p>Builds connections</p>
Why is it important for you to develop this line of communication in your native language of Spanish?	<p><b>P1:</b> It is always going to be the language that unites us as a family.</p> <p>It's important for the relationship between parent and child.</p> <p><b>P2:</b> It is always going to be the language that unites us as a family.</p> <p>I think it makes her feel like she has another way to talk to me.</p> <p><b>P3:</b> I will miss out on important things.</p>	<p>Unites them as a family.</p> <p>Creates a direct line of communication.</p>



	<p>It's hard for me to know how things are going and share important things about our family with him if I am not able to communicate in a language that we both understand.</p>	
<p>Have you notice any changes to your child's use of his native language of Spanish?</p>	<p><b>P1:</b> Yes. I have been told by friends and family that Marco's Spanish has improved.</p> <p>He is more confident speaking in Spanish than before, he will even speak with others in Spanish now.</p> <p><b>P2:</b> Yes, she has improved speaking in Spanish. She tells me things that happen at school in Spanish when she gets home.</p> <p><b>P3:</b> Yes, he doesn't seem as annoyed when I try him to speak in Spanish. He seems happier and more comfortable.</p>	<p>Children use the native language more often to speak in conversations.</p> <p>Children are more confident speaking in native language.</p>

**Continue Table 8**

*Highlights and Common Themes From Semi-Structured Interview.*

Question	Highlights	Common Themes
<p>Would you recommend this study to other families?</p>	<p><b>P1:</b> Yes. It helps maintain a conversation in Spanish.</p> <p>I thought a conversation was something natural that would eventually happen, but its not.</p> <p>Gives you a tool to use to support your child and helped us teach him how to have a conversation in Spanish.</p> <p><b>P2:</b> Yes. Shows us how we as parents could communicate with our children.</p> <p>Gives a technique that makes her interested and wanting to have conversations in Spanish with us.</p> <p>This makes me feel more connected to her because when she struggles she now can see that I can help her.</p> <p><b>P3:</b> Definitely, because parents need to know how to teach things to their child as well. Our family talks a lot, we spend a lot of time with our family and we travel a lot to México. It is important that our kids are able to connect with our family.</p>	<p>Provides tool to engage in conversation in Spanish.</p> <p>Intervention helps to teach how to have a conversation.</p> <p>Allows for family to be connected.</p>

<p>Additional Comments?</p>	<p><b>P1:</b> This intervention was a good teaching tool for me.</p> <p>It was done in a motivating way; he was able to connect to learning to speak in Spanish.</p> <p>At the beginning it was really hard for me, because I didn't realize that I wasn't providing opportunities for him. I am so used to just providing him with all the information, because I think I need to give it to them because they do not know yet. Now, I know that there is way to provide them with answers, but still practicing how to communicate in our language.</p> <p><b>P2:</b> It helps the Hispanic community to believe that there is research.</p> <p>It also shows us a way to make learning fun. Helped us know a way to work on our language with our children.</p> <p>This will help us maintain our language, cultural history, and hopefully our children will remember this when they are older and teach their children as well.</p> <p><b>P3:</b> I am really happy I was able to this. My husband was really surprised how well this worked. I cant wait to have my mother come visit this summer, although</p>	<p>Teaches communication in a motivating way.</p> <p>Belief that communication in native language is connected to language development.</p> <p>Communication is important to learn about culture.</p>
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	Eduardo might not be happy because now he doesn't have an excuse to not have conversations with his grandma.	
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## Appendix B

### Parent Semi-Structured Interviews Transcripts

#### Parent 1 Interview

**Interviewer:** Can you tell me if having conversations in Spanish is important for your family and yourself? Why?

**Parent 1:** Yes its very important. It's the language I speak. I think it's important for my son to understand me. It's also important for me to be able to understand him.

**Interviewer:** Why is it important for you to develop this line of communication in your native language of Spanish?

**Parent 1:** It is always going to be the language that unites us as a family, it's the language we speak and it's important for the relationship between parent and child.

**Interviewer:** Do you feel like this study helped with your child's confidence in speaking in Spanish?

**Parent 1:** Yes, he is more confident and I believe he is only going to keep gaining confidence because he seems to be more willing to speak in Spanish than before. I think it gives him another way to talk to me, especially about things that happen in school. I believe if he can speak to me in Spanish, I will be able to have more opportunities to help him.

**Interviewer:** In your opinion, what do you think about having your child's interventions done in your culture's native language?

**Parent 1:** It's really great. It gives me great support in how to have a conversation in Spanish, but it also shows Marco that Spanish conversations are really important because a teacher came and helped show him. Marco is really motivated to speak in Spanish because of participating in this study.

**Interviewer:** Have you notice any changes to Marco's use of his native language of Spanish?

**Parent 1:** Yes, he has improved speaking in Spanish. I have even been told by friends and family that Marco's Spanish has improved. He is more confident speaking in Spanish than before, he even speaks with others in Spanish now.

**Interviewer:** Would you recommend this study to other families? Why?

**Parent 1:** Yes, it helps maintaining a conversation. At first I thought conversations were something natural that would eventually happen, but its not, especially for him who has

struggled with it. This gives you a tool to use to support your child and helped us teach him how to have a conversation in Spanish. Without this study, I would have never known that there is something I can do to help him have conversations in Spanish, I really just thought before this study that he would grow and learn how to do it. I would have another knew that something so small could make the biggest difference for him to be able to have a conversation in Spanish.

**Interviewer:** Have you had interventions that include goals corresponding to your cultural? Would you like if they did? YES or NO?

**Parent 1:** Well the teachers that have come, help us with Marco and try to create routines for him that will help him. This helps us a lot. I have never thought about creating interventions based on our cultural. For the most part people who have come in are respectful and hear us.

**Interviewer:** Have you had interventions carried out in your culture's native language?

**Parent 1:** No, I have had a couple of Spanish speaking therapist before, but its always done in English. They often translate after they work with my son, but I feel like they give me a quick version of what they are working on. I understand the main ideas of their work, but I feel like I am missing some of the things, because I struggle with my son when they are not here when I try to do what they do.

**Interviewer:** Do you believe that your child main gains in his ability to have conversations in his Culture's native language?

**Parent 1:** Yes he has main big gains. He even was concerned about Mario not coming. Marco asked, "I am not going to be learning Spanish anymore?" I assured him he would. This made me very happy.

**Interviewer:** Did you experience any stress during this study?

**Parent 1:** At the beginning I was really stressed out because when I started to talk to Marco he would just look at me, and it was hard for me to find ways for him to talk back to me. I actually never realized that the times I have engage in conversation with him has always been with me telling him to do something or him asking me for something. I think this is why it was hard for me at the beginning. When you taught me how to get Marco engaged it felt more comfortable. I still was a little stressed, but more about making sure I was providing conversational opportunities.

**Interviewer:** Describe your confidence in implementing the conversational strategies from this study:

**Parent 1:** I got more confident when we started the intervention. I had something to help me with the conversations I was having with Marco. I still did feel a little nervous about when to provide a leading statement, so that is why I probably wasn't more confident.

**Interviewer:** Any other Comments?

**Parent 1:** This intervention was a good teaching tool for me. It gives me something to work when communicating with my son in our language. It was done in a motivating way; he was able to connect to learning to speak in Spanish. I think it was important for him to see someone outside the family come in to our home, so that he saw that others Speak Spanish too and that it was important. At the beginning it was really hard for me, because I didn't realize that I wasn't providing opportunities for him. I am so used to just providing him with all the information, because I think I need to give it to them because they do not know yet. Now, I know that there is way to provide them with answers, but still practicing how to communicate in our language.

#### Parent 2 Interview

**Interviewer:** Can you tell me if having conversations in Spanish is important for your family and yourself? Why?

**Parent 2:** Yes, yes it is very important, because it's our native language and we feel comfortable speaking in this language. We would love if our children would be confident speaking to us, using Spanish vocabulary. This brings us together.

**Interviewer:** Why is it important for you to develop this line of communication in your native language of Spanish?

**Parent 2:** It is always going to be the language that unites us as a family, it brings more confidence to my daughter, and I think it makes her feel like she has another way to talk to me. I felt like I was able to help her develop her language and share my experiences with her. She was really focused and interested, which made me happy.

**Interviewer:** Do you feel like this study helped with your child's confidence?

**Parent 2:** Yes, she is more confident and I believe she is only going to keep gaining confidence because she speaks in Spanish to me a lot more now.

**Interviewer:** In your opinion, what do you think about having your child's interventions done in your culture's native language?

**Parent 2:** I think it is important. Doing this intervention in Spanish was so much easier for me because I was able to pick it up faster and I knew exactly why everything was happening; I feel I did not lose any steps.

**Interviewer:** Have you notice any changes to Amanda's use of his native language of Spanish?

**Parent 2:** Yes, she has improved speaking in Spanish. She tells me things that happen at school in Spanish when she gets home.

**Interviewer:** Would you recommend this study to other families? Why?

**Parent 2:** Yes, I think it's a great study that shows us how we as parents could communicate with our children. This intervention allows for a technique that makes our children interested and wanting to have conversations in Spanish with us. This makes me feel more connected to her because when she struggles she now can see that I can help her.

**Interviewer:** Have you had interventions that include goals corresponding to your cultural? Would you like if they did? YES or NO?

**Parent 2:** No. I think this affects the kids more, because they do not feel it's a need since everything is in English. I would like it if they did because I feel like it would allow for my kids to know how important it is to maintain their heritage.

**Interviewer:** Have you had interventions carried out in your culture's native language?

**Parent 2:** Not really. Up to this point we have had therapist come work with our kids mostly in English. I know it's important to work on things in English but I would like to know what they are working on 100% of the time. When I have a question, it's hard for them to help me or understand me when everything happens so fast. We have had bilingual therapist come too, but interventions are done in English and I feel they just tell his quick versions of the techniques, so we lose some steps for the intervention.

**Interviewer:** Do you believe that your child main gains in his ability to have conversations in his Culture's native language?

**Parent 2:** Yes, a lot because she sees that speaking in Spanish, is a great way to speak to me. I feel like she getting more of a love of the language. She is consistently asking questions on how you say certain words in Spanish. The practice has helped in her feeling confident in speaking in Spanish. She is even translating for me to speak to her younger sibling.

**Interviewer:** Did you experience any stress during this study?

**Parent 2:** I experienced a little stress at the beginning when you were gathering clips of our conversations. I felt a little awkward because I was being video taped, and I was not sure what to talk to her about. I just felt unprepared especially because Amanda was so short with her responses.

**Interviewer:** Describe your confidence in implementing the conversational strategies from this study?



**Parent 2:** Well I definitely feel comfortable having a conversation with my child now. I feel as I started to understand how to engage and teach her correct responses, the more I felt confident. It was pretty easy to engage with my daughter during the intervention. I feel like she really tries and it motivated her to talk to me because she sees how much happier I am when we talk in Spanish.

**Interviewer:** Any other Comments?

**Parent 2:** The study is a great idea and has been great because it helps the Hispanic community to believe that there is research. It also shows us a way to make learning fun. The technique that this study has shown us, has helped us know a way to work on our language with our children. This will help us maintain our language, cultural history, and hopefully our children will remember this when they are older and teach their children as well.

### Parent 3 Interview.

**Interviewer:** Can you tell me if having conversations in Spanish is important for your family and yourself? Why?

**Parent 3:** Yes, because it's a way for me to better connect with my son and easier for me to find out what is going on in his life.

**Interviewer:** Why is it important for you to develop this line of communication in your native language of Spanish?

**Parent 3:** Because if I don't I feel like I will miss out on important things, he is already getting older and his interests are changing. It's hard for me to know how things are going and share important things about our family with him.

**Interviewer:** Do you feel like this study has helped with your child's confidence?

**Parent 3:** Yes, very much. Before I couldn't tell if he was just not interested in speaking with me in Spanish because he says he prefers speaking in English or if he just didn't know how to.

**Interviewer:** In your opinion, what do you think about having your child's interventions done in your culture's native language?

**Parent 3:** I would love it. We have never really had that. We have had a couple of therapist who spoke in Spanish but it was mainly scheduling sessions and not really for teaching me. I would watch what they did with my son in English and tried to do in Spanish, but wasn't the same as having some one doing the training in Spanish with me. I know we live here in the United States and my children go to school in English, but it would make me sad that Eduardo never had intervention in our language.

**Interviewer:** Have you notice any changes to Eduardo's use of his native language of Spanish?

**Parent 3:** Yes, he doesn't seem as annoyed when I try him to speak in Spanish. He seems happier and more comfortable.

**Interviewer:** Would you recommend this study to other families? Why?

**Parent 3:** Definitely, because parents need to know how to teach things to their child as well. Our family talks a lot, we spend a lot of time with our family and we travel a lot to México. It is important that our kids are able to connect with our family.

**Interviewer:** Have you had interventions that include goals corresponding to your cultural? Would you like if they did? YES or NO?

**Parent 3:** No. I think that is very important for goals to relate to us as a family. I would like it if possible, but ultimately I want what is best for me child. I want both my kids to know about their cultural, including my son who has autism.

**Interviewer:** Have you had interventions carried out in your culture's native language?

**Parent 3:** No we have not.

**Interviewer:** Do you believe that your child made gains in his ability to have conversations in his Culture's native language?

**Parent 3:** Yes.

**Interviewer:** Did you experience any stress during this study?

**Parent 3:** No, not really. At the beginning it was definitely harder to talk to him and the recording seemed to take a a long time, but I understood why we had to do that.

**Interviewer:** Describe your confidence in implementing the conversational strategies from this study:

**Parent 3:** I feel very confident now. I did not know there were things that I could do to help him in this area. My daughter has conversations with me all day long, so I thought that this would be very hard because of his autism. But strategies i learned were actually very easy to use. They were very simple.

**Interviewer:** Any other Comments?

**Parent 3:** I am really happy I was able to this. My husband was really surprised how well this worked. I cant wait to have my mother come visit this summer, although Eduardo

might not be happy because now he doesn't have an excuse to not have conversations with his grandma.