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UNIVERSITY OF CALIFORNIA

Los Angeles

Supporting Language Access:

Teaching Talk without Words

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

by

Gail Fox Adams

2014

ABSTRACT OF THE DISSERTATION

Supporting Language Access:

Teaching Talk without Words

by

Gail Fox Adams

Doctor of Philosophy in Applied Linguistics

University of California, Los Angeles, 2014

Professor John H. Schumann, Co-Chair

Professor Tanya Stivers, Co-Chair

In neuro-typical infants, genetically-specified attachment/attention mechanisms underpin the motivation to interact, which enables the acquisition of socio-cultural norms for language and accounts for the efficacy of socialization processes (Lee et al., 2009; Schumann, 2013). In children with autism, as in second language acquisition, neuro-developmental differences in attachment/attention mechanisms may result in a diminished drive to interact, thus hindering the acquisition of socio-cultural norms for language and limiting the efficacy of language socialization (Lee et al., 2009; Schumann, 2013). This dissertation applies this theory of an “interactional instinct” (Lee et al., 2009), beginning with a review of its relevance in societies that predominately practice polyadic and often subdued infant-caregiver interactions when compared to dyadic, face-

to-face interactions that are typical in Western societies. It offers evidence that the uniformity of primary language acquisition can be explained because the language socialization that infants experience is commensurate with what they need in order to become competent language users in their communities. Three qualitative studies then follow. In the first study, infant language acquisition is analyzed in terms of a clean-up routine at a daycare. A close examination of non-vocal and vocal exchanges between a teacher and a neurotypical 14 month old demonstrates how affiliative cues may help to sustain the infant's on-going opportunities for language learning. In the second study, the efficacy of a language intervention for minimally-verbal older children with autism is presented. How conversational and discursive structures relate to desired therapeutic outcomes are described, especially in terms of eliciting and increasing boys' participation in play routines with therapists. In the third study, the experiences of parents and their children with autism who attend a basic-skills training program in India are examined. The core components of the training link to neurobiological accounts of language acquisition, and participants' experiences in these areas suggest instructional strategies for those providing support to individuals with autism, even in under-resourced areas, as well as second language teachers for older individuals. The review and the three studies address the topic of language access, or opportunities to participate in community activities, that language learning requires. In particular, they describe how affiliation in everyday interactions between teachers/therapists and learners promotes language access, regardless of age or ability.

This dissertation of Gail Fox Adams is approved.

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DEDICATION AND THANKS

The completion of this work is dedicated to Dr. Ruth Mills because she helped to make it possible for me to receive the care, guidance and support from my loved ones, colleagues, mentors, and project participants that this effort required and to Dr. Teddy Bofman because she illuminated my academic path. Thank you to Laura Amador and David Jerez-Gomez, Michaela Shopland and Sil Mitchell, Sarah Jean Johnson, Lisa Mikesell, Rachel Brezis, Catherine and Ronald Fox, Shawne and Kevin Doré, Patti and Travis Kingery, Stan Nevin, Deana Burrows, Perry Krilis, Merry Barua, Nidhi Singhal, Christine O'Donnell, and Clare Schaecher and Michael Birch for literally giving me shelter during my dissertation “year.” Thank you to Myke Adams for giving me the years of encouragement and support that you did. Thank you to my research assistant, Nu Ree Na, for your great questions and unparalleled commitment—working with you was such a privilege. Finally, thank you to my committee members, John Schumann, Tanya Stivers, Candy Goodwin, Connie Kasari, Elinor Ochs and Tom Weisner, for the incredible experience of learning from you and knowing you as both people and scholars.

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ACKNOWLEDGMENTS

Funding for this work was provided by the Foundation for Psychocultural Research-UCLA Center for Culture, Brain & Development-Mental Health, the UCLA Graduate Division, and the UCLA Department of Applied Linguistics. I would like to express my gratitude for this financial support, which made this collaborative, interdisciplinary and international effort possible.

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PUBLICATIONS

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- 2012 *The language socialization of minimally-verbal boys with autism in a language treatment program*, Paper on panel with Jennifer Guzman and Anna Corwin-Magarian, American Anthropological Association (Nov.), San Francisco, California.
- 2012 *Selecting what to play at the start of language therapy sessions for boys with autism: Proposal sequences that predict co-participation*, Paper, 5th Inter. Conf. of Language, Culture & Mind (June), Lisbon, Portugal.
- 2011 *How narrative difficulties build peer rejection: A case study of a girl with Asperger's syndrome and her female peers*, Poster with Michelle Dean, Inter. Meeting for Autism Research (May), San Diego, California.

INTRODUCTION

Toward a unified perspective of language acquisition

The interactional instinct theory integrates perspectives that prioritize the role of co-construction, co-operation, co-participation and shared intention in language emergence and use (Atkinson & Heritage, 1984; Bruner, 1983; Goodwin, 2000; Levinson, 2006; Kasari et al., 2008; Kasari et. al., 2010; Kendon, 2004; Iverson & Thelen, 1999; Ochs & Schieffelin, 1984; Ochs & Sheiffelin, 2011; Pruden, Hirsh-Pasek & Golinkoff, 2006; Tomasello, Carpenter, Call, Behne & Heinrike; Trevarthan, 2009; Iverson & Thelen, 1999). It affords a cross-cultural and unified perspective of primary and second language acquisition that can be useful in terms of understanding language learning and teaching across ability levels and ages (Adams, 2013; Amador & Adams, 2013; Schumann, 2013). It is premised on the claim that the ubiquity of language rests not on a grammar gene, but on typically-developing infants' innate abilities to attach and attend to their primary caregivers and affiliate with others in their families and communities.

According to the theory, neuro-typical infants use innate attentional-motivation mechanisms to seek out and bond with caregivers, who adjust their own discursive and grammatical exchanges to the child and to cultural norms. The claim is that dopamine (a neurotransmitter responsible for initiating behaviors), oxytocin and vasopressin (hormones/neuromodulators responsible for bonding behaviors), and beta endorphins (a peptide responsible for feeling pleasure) are produced in infants and possibly their caregivers during social interaction, and that they hardwire the infant's nervous system

for the attentional, motivational and declarative/procedural knowledge systems on which language depends.

The components of primary language acquisition (PLA) include this interactional instinct as well as pattern/frequency detection abilities and opportunities to interact, and the equivalent components of adult SLA include affiliative/integrative motivation, pattern/frequency detection abilities and opportunities to interact (Schumann, 2013). For typically-developing infants, these three components can account for language acquisition's ubiquity. For adults, in whom it is hypothesized that the interactional instinct is diminished, they contribute to language variability. In this way, individuals with autism may be more like adult SLA learners, for whom individual differences in affiliate/integrative motivations, aptitudes and opportunities to interact will all contribute to widely variable language outcomes.

Although linguistic abilities (and related behavioral labels, i.e. "low-communicating," "low-functioning," "non-verbal," etc.) for individuals with autism are often inconsistently categorized in research studies, an integrated review of their findings demonstrates that: (1) outcomes among individuals on the autism spectrum are variable, with difficulties ranging from subtle to severe, and (2) sub-groupings may occur in terms of phonology/syntax and semantics/pragmatics (which may suggest distinct underlying causes) (Groen, Zwiers, van der Gaag & Buitelar, 2008). Furthermore, it appears that no matter the "functioning" level of the individual, pragmatics remain consistently problematic across the spectrum. This contrasts with phonology and syntax, for example, where skills of an individual with autism may match those of neuro-typical individuals. These findings are consistent with theories from a variety of disciplines that link

differences in the coordination of non-verbal and social behaviors for infants later diagnosed with autism to later language problems (Bernier, Webb & Dawson, 2006; Mundy, Sullivan & Mastergeorge, 2009; Trevathan, 2000; Whetherby, 1986).

It is estimated that a slight majority of individuals who are diagnosed with autism enter late childhood and possibly adulthood without acquiring speech (Anderson, Lord, Risi, DiLavore, Schulman, Thurm, Welch and Pickles, 2007). Although some older minimally-verbal individuals have made significant gains in verbal expression over time (Pickett, Pullara, O'Grady & Gordon, 2009) and mastered augmentative and other forms of expression (Mukhopadhyay, 2000; Wurzburg, 2004), most have not achieved this, and the accounts of older children and adolescents who have done so are limited (Pickett et al, 2009). Experimental studies, from which much of our understanding of autism is derived, have often needed to exclude those who are minimally-verbal from studies because they may not make measurable gains on standardized assessments (i.e. grammar), meet eligibility requirements (i.e. IQ), or tolerate study methods well (i.e. hypersensitivity) (Kasari, 2010). As such, minimally-verbal individuals with autism represent a neglected sub-grouping in autism research (Eagle, 2000). Furthermore, there is little research to suggest why certain children are minimally-responsive or even non-responsive to the early language intervention in which they have been involved or how their current language learning needs may best be met (Kasari, 2010).

Children with autism who enter middle childhood and later developmental stages with little to no verbal expressive abilities – whether alternative, augmentative or signed/spoken – require intensive instruction, intervention and support from important adults in their lives to build their linguistic (discursive and grammatical; Ochs, 1997)

skills. This means they must rely more on domain general learning mechanisms to learn their primary language/s, much as adults who learn a foreign or second language do. For adults, this is an effort that second language acquisition (SLA) theorists have likened to being as difficult as learning to conduct a surgery or perform a ballet and that requires sustained motivation and time-commitment (Schumann, Crowell, Jones, Lee, Schuchert, & Wood, 2004).

Importantly, this also means that these children are excluded from most accounts of PLA, in which the process of acquiring a language is considered to be distinct from learning it (Krashen, 1982). Nativist accounts would locate language differences in autism as related to a genetically-based disturbance of a computationally-recursive ability (Hauser, Chomsky & Fitch, 2002) or of grammatical ability itself (Pinker, 1994; Pinker, 2008) and as such offer little insight to those involved in mediating the language learning of older children and individuals. More inclusive and practical, however, are social interactionist accounts that suggest that the neurobiological ability and motivation to interact may be diminished in infants those with autism, similarly as it may be for adult SLA learners, which has a dynamic and detrimental affect on their long-term exposure to language and inclusion in ever-more complex social interactions (Lee et al., 2009).

Conceptualizing engagement

As described, all children with autism have pragmatic difficulties and children with minimally-verbal autism also have limited or absent expressive grammatical ability. To approach the difficult topic of how older children continue to build these skills – or from a different angle, how these skills are taught – it is important to bring together the

research of educational psychologists, educational anthropologists, language acquisition/learning/intervention/socialization researchers and social interaction researchers because all have contributed important findings and/or methods to either minimally-verbal autism and/or PLA-SLA theory and/or language learning environments and exchanges. It is also important to select the best empirical methods for investigating these processes. Researchers from these fields who consider the role of social interaction and motivation in language often refer to, assess, and describe *affiliative/integrative motivation, engagement* and *co-participation* and may or may not mean the same things by these terms.

Recasting these broad terms as compatible concepts is one step toward translating these studies across the various disciplines and considering when to apply their methodologies. This can be accomplished by turning to the work of appraisal theorists, who claim that the human nervous system contends with cognitive, emotional and social states in dynamic, simultaneous and situated ways by a neurobiological process of stimulus appraisal (Schumann, 1997; Schumann, 1999; Schumann, 2001). Therefore, *affiliative/integrative motivation* or the drive to engage or co-participate will be conceptualized in this dissertation in terms of stimulus appraisal.

Although chapters could be dedicated to this topic, stimulus appraisal theory here will be offered as a way to conceptualize *affiliative/integrative motivation, engagement* and *co-participation* in order to loosely hold the three concepts together and permit interchangeable use of these terms throughout this study. Stimulus appraisal is responsive to what is: (1) novel, (2) pleasant, (3) compatible with personal needs with goals, (4) compatible with self/social image, and (5) physically/psychologically manageable, and it

is controlled by the amygdala, hypothalamus, orbital frontal cortex (possibly the insula; Schumann, personal communication) and the body itself (Schumann, 1997; Schumann, 1999; Schumann, 2001). Because the stimulus appraisal system functions like a complex adaptive system, it is likely that emerging patterns at the level of the nervous system become manifested as behaviors such as the drive to interact with others. As a result, the most suitable research methods for examining these behaviors are those that allow for the process of social interaction to be closely inspected. In terms of language acquisition, this includes analyzing discursive and grammatical exchanges in terms of whether “agents or events in the learning environment ... are appraised as enhancing or detrimental to ... attention, effort, and thus learning” (Schumann, 2001, p. 95). Of course, these analyses can be accomplished in different ways, but ethnographically-informed video-documentation plays an important role in understanding the pre-requisites of language.

Investigating engagement

Naturalistic videos of spontaneous behaviors in social settings provide a way for researchers to explain their findings in relation to the varied expression of lived experience across cultures. Videos collected by researchers who apply ethnographic or ethno-methodological theories to their work function as a form of documentation of everyday life. Phenomena of interest can be transcribed in terms of non-vocal and vocal features, scrutinized in terms of the resources that individuals use to make sense of a given social moment, and compared across settings. Ochs, Kremer-Sadlick, Sirota & Solomon (2004), for example, demonstrate that video analysis conducted within an overall ethnographic study can be used to further investigate how specific individuals,

whether neuro-typical or not, cope with aspects of social functioning that are culturally and historically situated. They apply conversation and discourse analysis, provide detailed descriptions of social organization, and identify how the features of conversational sequences, specific situations, and implied cultural norms can either provide support or barriers for individuals with autism. Similarly, Ochs, Solomon & Sterponi (2005) apply the same style of video microanalysis to a cross-cultural comparison of autism therapy. They find that treatment outcomes can be affected by body positioning, speech tempo, voice pitch and other features of communication that are often culturally specific and subconsciously enacted. In a later study, Ochs & Solomon (2010) provide an “autistic sociality algorithm” model that can be used for analyzing various features of interaction by and with individuals with autism. This includes: domain parameters of social coordination, language, conversational sequences, topics, corporeal arrangements, mediation of interaction, communicative medium, and emotional intensity.

In the same analytic tradition, Kremer-Sadlick (2004), demonstrates in part how caregivers use question and answer sequences and reformulations of speech to enhance the participation of their children with autism in family activities. Similarly, Maynard (2005) analyzes the administration of a standardized assessment of commonsense reasoning. He demonstrates how an apparently straightforward question that is presented by examiners to children with autism is actually underpinned by different types of practical logic that impact children’s responses and the meaning of the exam’s results. Such studies represent an effort to particularize human experiences and they typically focus on very few cases or individuals at a time.

Naturalistic video can also be used to generalize, though sometimes the social situations may be somewhat structured. In such cases, spontaneous interactions may be transcribed as in the above studies and then verbal features may be quantified and statistically analyzed. Or, the behaviors of larger groups of individuals or sample may be coded frame-by-frame, in specific categories or intervals, or for specific durations or frequencies and then statistically analyzed. For example, Tager-Flusberg, Calkins, Nolin, Baumberger, Anderson & Chadwickdias (1990) compared the language acquisition of six children with autism and six with Down Syndrome by analyzing one hundred samples of their spontaneous speech while playing with their mothers at home over a span of fourteen months. In part, they measured lengths of utterances, word order, and word usage and found that the children in the study followed the same developmental trajectory for language as neurotypical children.

Similarly, Capps, Losh & Thurber (2000) compared the language of thirteen children with autism, 13 with Down Syndrome, and 13 neurotypically developing while telling stories from a book and participating in a semi-structured conversation with an interventionist. They applied a pre-existing transcription system to analyze speech structures and an original coding system to analyze evaluative practices in story telling. After a statistical analysis, they determined that the discrete components did not significantly differ between the groups, but how children with autism linked them did. Similarly, from transcripts, Losh and Capps (2006) coded emotional experiences recounted by neuro-typical children and those with autism during the administration of a conversation-based emotion elicitation procedure. Using a discourse analysis perspective in combination with a 0-3 scale situational appropriateness, they identified statistical

differences in aspects of how the two groups interpreted and represented their emotional experiences. Swensen, Kelley, Fein & Naigles (2007) also used video documentation to investigate the relationship between gaze and word-order comprehension in very young children with autism and those with neuro-typical development. Such studies seek to find general patterns of behavior within more natural settings in order to produce findings that may have universal implications.

The role of language socialization methodology

While there can be no one way to best support language access (Schumann, 1997), there is good reason to concentrate on the role of motivation, just as a recent panel of language in autism experts (represented by Tager-Flusberg, U.S. Department of Health and Human Services Interagency Autism Coordinating Committee meeting, 2010) and the aforementioned studies suggest. This dissertation proposes that a language socialization framework provides the best way to analyze the dynamic process of teaching and learning. It prioritizes video-based conversation and talk-in-interaction analysis methods (Atkinson & Heritage, 1984; Goodwin, 2000; Goodwin & Duranti, 1992; Goodwin & Goodwin, 1999/2001; Sacks, Schegloff & Jefferson, 1974) that are situated within an overall ethnographic approach. In addition to allowing for social activity, or “at least two coordinated, situated actions and/or stance displays by one or multiple persons” (Ochs, 2002, p. 109) to be an important unit of analysis for this study, it allows for the examination of micro- and macro-levels ecologies of language use (Ochs & Schieffelin, 1984; Ochs & Schieffelin, 1989; Ochs & Schieffelin, 2011; Peters & Boggs, 1986; Weisner, 2002; Weisner, 2008; Weisner, 2009). It also compliments the

aforementioned perspectives, which account for why most caregivers and children are motivated to interact and how engagement in the context of natural interaction promotes expressive communication.

The use of conversational/discourse analysis (CA/DA) in language socialization research highlights the claim that language is a cultural artifact, where linguistic forms are products of social interaction, tools for shaping it, and indices of features of social organization (i.e. affiliation, hierarchy, ideology, identity and stance) (Ochs, 1996; Ochs, 2002; Ochs & Schieffelin, 2011). For example, Goodwin & Goodwin (1999) demonstrate that emotion is socially organized through embodied gestures, intonation, postures and timing as well as through (and not separate from) syntax. Goodwin (2006) also demonstrates how action sequences in conversational exchanges between neuro-typical children and their parents break and build norms for directives/responses. Using video footage of everyday family interactions and CA/DA methods, she identifies a variety of strategies—such as facing formations, mutual orientation, forms of directives, format typing, repetition, accounts of why directives should be followed and stance—that determine whether or not these sequences are completed. Similarly, in the study by Ochs et al (2005), object-focused activities, side-by-side formations, and subdued affective cues proved most likely to sustain the engagement of a minimally-verbal boy with autism. This CA/DA analytic focus on sequential actions recurs in each study of the dissertation, allowing for the production of detailed, locally-situated descriptions of what hinders and promotes engagement between caregivers/teachers/therapists and their children/learners.

Overview

Three claims underlie the review and studies that comprise this dissertation. First, primary language acquisition, governed by the interactional instinct, depends on attachment/affiliation, pattern matching and social opportunity. In autism, as in second language acquisition, these factors may be diminished. Considering these from a unified perspective may inform our understanding of language learning and teaching across the lifespan and for individuals with different abilities. Next, basic-skills training and language intervention programs for those with autism permit a close examination of language access processes. They present possible ways that caregivers, teachers and therapists ameliorate the bio-social effects of autism and, as a result, test the interactional instinct theory and its claims about language acquisition. Finally, language socialization, which includes CA/DA methodologies, provides an optimal way to study these topics because it prioritizes analyses of social interactions within everyday routines.

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CHAPTER 2

Infant Attachment and Language Exposure across Cultures

The purpose of this chapter is to examine the cross-cultural applicability of the interactional instinct theory, an evolutionary and neurobiological account of language acquisition (Lee et al., 2009). The theory argues in part that typically-developing infants have an instinct to interact with other humans, especially primary caregivers, and that primary caregivers may also have an instinct to respond to infants' efforts. The theory positions attachment as a neurobiological outcome of these very early social interactions, claiming that it drives an infant to affiliate, bond, and identify with members of the family and community and to participate with them in the social routines that are foundational for language mastery and use (Ochs, 2002; Ochs and Schieffelin, 2011).

Although decades of infant research supports the claim of an interactional instinct, it predominantly comes from studies that position the mother-child dyad as the primary model of childcare. Schumann (1997, citing research by Shore, 1994) convincingly describes how face-to-face exchanges between a "child and caregiver ... foster the development of the child's stimulus-appraisal system"; however, many societies do not follow a dyadic model. According to Weisner and Gallimore (1977) nearly 40 percent of infants across cultures receive primary care from someone other than their mother. As the following review of studies of childcare practices in India, the Ivory Coast, Kenya, Peru, and the United States will also demonstrate, there are contrasts between dyadic and polyadic caregiving practices from which infant attachment arises. A question then

becomes whether this variation broadens or provides counterevidence to the interactional instinct theory.

A broader theory would include a range of possible interaction styles that an infant could engage in with a variety of caregivers, and not only an infant-mother, face-to-face, intensely verbal style. It would include the possibility that attachment could occur between infants and mothers as well as other important caregivers because the same neurobiology is at work. It would mean that across cultures, infants demonstrate strong enough emotional bonds with others to produce the sustained attention and motivation that language acquisition requires. If it appears that infants and/or caregivers do not interact in a way that suggests an underpinning of attachment, then there would be no way to argue that infants would de facto learn language. The interactional instinct theory posits that an infant's desire to become like those with whom he or she has an emotional bond is crucial to this process.

It has been established that this desire to interact exists for infants who receive dyadic care. It has not been well established that this desire exists for infants who receive polyadic care. Nor has the desire to respond by caregivers in these environments been well explored. As described, evidence suggests that caregiver-child interaction varies considerably across cultures. Is it then possible to claim that an instinct to interact exists? And if it does, how would variation in the expression of this instinct and in resulting attachment affect infant language exposure? This analysis addresses these questions.

Ethnographic Studies of Polyadic Care

Ethnographic studies are reviewed in this chapter to provide a cross-cultural perspective on the issues of infant attachment and language exposure in settings where polyadic care is provided. Specifically, societal norms, caregiving norms, and interactional norms are considered, especially as they relate to infant initiations of social interaction and caregiver responsiveness to these efforts. For this analysis, each researcher's and society's definition of infancy is followed, since it reflects that of the society in question. This means that if the source defines a stage as infancy, this analysis does the same. Of course, the sources in question still reflect typical biological courses of infant maturation.

Information about Gusii practices in Kenya is from the LeVine et al. (1994) book, *Childcare and Culture: Lessons from Africa*. Information about Beng practices in the Ivory Coast is from Gottlieb's (2004) book, *The Afterlife Is Where We Come From: The Culture of Infancy in West Africa*. Information about Indian practices is from Seymour's (1999) book, *Women, Family and Child Care in India: A World in Transition*. Information about Chillihuani practices in Peru is from Bolin's (2006) book, *Growing Up in a Culture of Respect: Child Reading in Highland Peru*. These four sources constitute a majority of the content of the review because they include detailed descriptions of infant caregiving practices from a child socialization perspective.

Information about practices from the United States is also drawn from these sources when possible, as the researchers often incorporate cultural comparisons between the childcare practices in the countries where they conducted research and the United States. Information about Brazilian practices is drawn from the Scheper-Hughes (1990)

article, “Mother Love and Child Death in Northeast Brazil.” While this article does not discuss polyadic care, it does discuss attachment in the face of extreme poverty. Because poverty influences the interactive behaviors of caregivers in the study, elements from it are briefly included in this chapter. Finally, as an interesting point of contrast, information about Quichua practices in Ecuador is drawn from Rindstedt’s (2001) book, *Quichua Children and Language Shift in an Andean Community: School, Play and Sibling Caretaking*. While it is acknowledged that no one source represents an entire culture, the studies nevertheless reveal that infants experience a range of interactions and resulting attachments and subsequent affiliations that affect their language exposure.

Norms in Four Societies with Polyadic Childcare

The societies considered in this analysis practice polyadic childcare. This means that multiple people are responsible for providing care for an infant. Unlike a dyadic model where a primary caregiver, usually the infant’s mother, provides regular childcare, infants receiving polyadic care may move from caregiver to caregiver within a day and from day to day. These infants may spend significant amounts of time away from their mothers and, likewise, spend significant amounts of time being cared for by siblings, extended families, and sometimes neighbors. Mothers still often remain central to infants’ care, but they do not practice exclusive care to the degree that dyadic mothers do. Other caregivers also play significant caregiving roles. Ultimately, what polyadic care looks like and why it occurs depend on environmental factors that shape cultural practices. Some of these practices and factors are discussed in the following descriptions of the four selected societies.

Kisii District, Kenya, East Africa

Based on a 17-month study of 26 families and 28 children, LeVine et al. (1994) describe the traditional, agrarian environment in which childcare occurs among the Gusii in Western Kenya. Gusii mothers live on their own homestead in a domestic hierarchy with multiple children. Polygyny influences Gusii domestic life, and fathers are often not present in the home. Children are a mark of prosperity and confer “wealth, security, prestige and immortality—virtually everything valuable—on parents” (LeVine et al., 1994, pp. 32). As a result, a high priority is placed on having children, and Gusii women typically give birth every 2 to 3 years throughout their childbearing years. With an intermediate infant mortality rate on the world scale (at 9 percent in 1983, compared to 1 percent in the United States at that time, pp. 93–94), Gusii women can reasonably expect their infants to survive.

Because most Gusii women’s homes are relatively isolated and because they must be away from the home for significant parts of the day to run errands, trade goods, or work in their fields, caregiving for infants of about 5 months and older is primarily provided by female siblings of the infant or, if there are no siblings available, other related female children who are often between 5 and 11 years old. The researchers acknowledge that “in Western countries . . . (if no adult is present), [child-provided care] would be considered maternal neglect punishable under the law” (LeVine et al., 1994, pp. 39). Child-provided care is the norm for the Gusii; however, Gusii mothers, who are working for the livelihood of their families, do not neglect their infants. Mothers are known to stay home with a sick infant and even hold the infant all day, if necessary, to

ensure his or her survival. There are also some mothers who tend to the homestead and care for their infants themselves. According to LeVine et al. (1994), no matter who is providing childcare, “they are not considered a substitute for the real mother” (pp. 145). Children are still under the moral and parental direction of the mother.

LeVine et al. (1994) compare Gusii mothers’ responses to “infant vocalizations, cries and looks” (pp. 200) with those of white, middle-class mothers from Boston, but they do not generally compare the quantity of initiations made by Gusii and Bostonian babies. By the nature of their response-analysis, however, they identify both Gusii and Bostonian infants as using eye contact, crying, and vocalization to initiate interactions with their caregivers. They also present a statistical distribution of infant behavior (conducted from birth to 6 months, using coded, naturalistic observations) where Bostonian infants seek eye contact 8 percent of the time and Gusii infants seek it 9 percent. This similarity is interesting because it is virtually identical for the infants even though Bostonian mothers look at their infants much more—28 percent of the time compared to 9 percent of the time for the Gusii mothers.

Although Gusii infants are not rewarded with the return of eye gaze as much as the Bostonian infants, they still seek eye gaze in this study in similar amounts. The difference in mothers’ gaze responses may relate to the fact that Gusii infants are expected to learn through calm and quiet observation of ongoing social interaction whereas American infants receive alternations of intense child-directed attention and complete social separation (often during sleep time). Levine et al. (1994) suggest that in the first 6 months a Gusii infant becomes habituated to the comparatively higher rates of holding and physical contact and lower rates of eye contact and vocalizations from

mothers, resulting “on the average in a quiet baby” (pp. 221). This “cool or subdued style of social interaction and affective expression” (LeVine et al., 1994, pp. 223) matches Gusii interactional norms of avoiding eye contact and limiting face-to-face verbal exchange, especially between those of unequal status. There is some evidence, then, that Gusii infants are born with a range of interactive behaviors that change in relation to the demands of their environment and thus begin to differ from their American counterparts within the first year of life.

Gusii mothers instruct child caregivers to keep infants soothed, believing that this is best for their health. Caregivers carry infants close to their bodies at all times and mothers co-sleep with infants to keep them in a balanced parasympathetic state. Gusii mothers respond so quickly to even minimal signs of distress by infants that breastfeeding occurs almost continuously. LeVine et al. (1994) explain that “Gusii mothers tend to consider all forms of infant excitement, positive (joy) or negative (distress), as being equally distant from the calm state they seek” (pp. 252) and note that mothers consistently averted their gaze from their infants’ partially for this reason. Additionally, fear of provoking sorcery or witchcraft by displaying too much engagement with or pride in a child also prevented excessive maternal responsiveness. These combined factors ultimately mean that Gusii caregivers and mothers practice moderate levels of emotional engagement with infants.

Kosangbé, Ivory Coast, West Africa

In a 12-month study of 100 families, which included intensive observations of one infant male and one infant female, Gottlieb (2004) examined the limits of the “model of a

mother being the exclusive or even major caretaker of her own young children—the normative model in the American public imagination” (pp. 137) by describing a highly social environment of caregiving among the Beng in Kenya. Like the Gusii, the Beng traditionally have an agrarian, polygynous society that values childbearing. Beng women typically give birth every 2 to 3 years throughout their childbearing years. For infants of about 2 months and older, mothers primarily depend on childcare that is provided by daughters or other female children. A complex blend of matriarchal and patriarchal ties is represented in the extended family that lives and works together. Since dwellings are closely situated, children who get tired of providing care frequently pass infants to additional caregivers. Thus, the infants have multiple caregivers throughout the day and are welcome to dry or wet nurse spontaneously at “any woman’s breast” (Gottlieb, 2004, pp. 206). Mothers, in anticipation of this occurrence, bathe, decorate, and give early morning enemas to infants to ensure their attractiveness to caregivers. As a result, Gottlieb notes, infants form attachments with mothers and many other caregivers. Given that a Beng woman’s life typically involves extensive and intensive labor, this intensive assistance with childcare is essential.

Socially distributed care is not just practical or social, though; it is also spiritual. It relates to the Beng’s belief in an afterlife called *wrugbe* where ancestors exist and where infants live in comfort until they are born. Infant mortality, which is slightly higher than among the Gusii (in 2001, 11 percent of infants under 1 year died, compared to .07 percent in the United States: Gottlieb, 2004, pp. 329), is often attributed to an infant’s desire to return to *wrugbe*, a place it is presumed that the infant remembers and prefers. One way to ensure that an infant will choose to stay with his or her new family is to have

the infant meet as many community and family members as possible. As a result, even within hours of an infant's birth, great efforts are taken to introduce the infant to as many people as possible and to integrate the baby quickly into a loving and warm social life. Gottlieb notes that Beng infants were often engaged with three or more people at a time. Polyadic childcare practices reinforce this cultural value of sociability.

Gottlieb (2004) also discusses the innate expressiveness of Beng infants, which aligns with that summarized by Joaquin in *The Interactional Instinct* (Lee et al., 2009). She describes them as having agency and a social life, speculating that they may even “actively shape the lives of those around them” (pp. 60). For example, in the days and months following birth, Beng caregivers engage their infants in face-to-face greeting exchanges with a large number of relatives in which their bodily movements (i.e., kicking legs, waving arms), facial expressions (i.e., grimaces, smiles) and noises (i.e., gurgles, squeals) are accepted as appropriate communication. Because the Beng believe that infants have recently arrived from the afterlife, they also believe that infants “are driven to communicate, but that adults are too unenlightened to understand” (Gottlieb, 2004, pp. 53). In fact, infants are considered to understand all languages and, more importantly, to speak the language of *wrugbe*, which is unintelligible to average humans. Therefore, when the Beng feel especially limited in understanding what an infant is trying to communicate—for example, in some instances when the infant is babbling, crying, or not eating—a diviner will be called upon to interpret for the child. This reveals that the Beng have a cultural concept of infancy that includes a memory, a mental life, and a will that they must attend to.

Beng children and other nonmaternal caregivers maintain close physical contact with infants and actively involve them in bodily games, face-to-face engagement, and playing and talking. Mothers, however, avoid this level of heightened engagement with their babies. While they practice co-sleeping and nursing “on demand,” they also frequently, purposely disengage (by blowing in a baby’s face to make her avert her gaze, for example). This prevents a mother-child attachment that is too strong and could interfere with the mother’s daily responsibilities or cause jealousy and related witchcraft. It also makes infants responsive to all members of the community rather than just focusing on the mother. These factors mean that Beng mothers have a more moderate level of emotional engagement with infants, but child caregivers and nonmaternal caregivers, including some fathers, have a heightened level of emotional and even face-to-face engagement.

Orissa, North India

Polyadic childcare is also practiced in Bhubaneswar, Orissa, North India, where Seymour (1999) conducted a 30-year longitudinal study, mostly around women’s and children’s issues in 24 households. Although Seymour’s more recent observations reveal that dyadic care is becoming more common in the area of town called New Capital, polyadic care provided by the extended family is still the norm in more traditional settings. Women of all castes in the area called Old Town participate in arranged marriages, which results in their joining the household of their husband’s extended family. This often comprises a set of related men, who participate in a variety of occupations depending on caste affiliation, living together in one household with their

wives and children. Children are considered sacred, and infertility is a legitimate reason for a man to have more than one wife. Though Seymour does not provide specific birth or infant mortality rates, she notes that families in poverty and, hence, mostly from the lowest castes have higher infant mortality rates than others.

Orissan infants, who live in large, extended families, receive constant care, especially from female siblings, aunts, the mother, and the grandmother in the home. Most women share childcare and other domestic responsibilities with girls—starting at about the age of 6—and other women in their household. Unlike a standard ideal in the United States to raise children to be independent, the Oriya raise children to be interdependent. Seymour (1999) explains that “close dyadic bonds are discouraged and even considered dangerous” (pp. 6) because they could prove disruptive to the extended family that depends so intensely on one another and lives in such close proximity. As a result, she notes, infants attach to their mothers and also to others in their household.

Seymour describes how, from birth, a child in Old Town is socialized to be cooperative, which is in line with the Orissan cultural value of interdependence. In general, caretaking is “constrained by the belief that children’s basic needs should be tended to but otherwise children should not be the focus of attention” (Seymour, 1999, p. 78). Seymour analyzes the practice of this belief, which provides indirect information about Orissan infant-initiated behaviors. She looks at “nurturant acts” (Seymour, 1999, pp. 78) that were provided by a variety of caregivers to infants in order to respond to their basic needs. According to this criterion, as the interactional instinct theory predicts, Orissan infants cry, follow, and reach for their mothers in an effort to interact and especially to initiate nursing. One could argue, additionally, that the Orissan belief that a

child doesn't need specific nurturance beyond having basic needs met implies that the child is perceived as possessing the innate desire to develop and grow.

Orissan mothers are not highly responsive to infants for a variety of reasons. They permit nursing on demand, but, according to Seymour, frequently interrupt the infant before he or she is satiated. As children become more mobile, Seymour (1999) notes, they "become more active 'seekers' of food and attention" (pp. 76) despite their sometimes frustrated efforts at obtaining it. In terms of the Orissan mothers, Seymour (1999) again emphasizes the contrast with notions of Western parenting, writing, "the expression 'to rear children' made little sense in a context in which children were expected simply to grow up" (pp. 41). This is consistent with studies that have made a distinction between societies where children orient toward others versus societies where others orient toward children (Ochs and Schieffelin, 1984; Rindstedt, 2001).

Accordingly, Orissan infants receive a more diffuse attention from caregivers and family members. In fact, the Oriya believe that too much attention could draw negative forces to the infant, potentially resulting in his or her illness or death. Like the Gusii and Beng, however, Orissan infants receive a significant amount of bodily contact from caregivers. They are carried, hand-bathed and -fed, and they co-sleep with their mothers. As mentioned previously in the breastfeeding example, however, Orissan infants do not get all their needs satiated. Seymour includes observations about infants being allowed to cry or being removed from the breast while still hungry, as an effort to reinforce the cultural value of interdependence. She explains: "Here the child must learn early to value the pleasures of group membership over those of intense dyadic relationships" (Seymour, 1999, pp. 83). Ultimately, Orissan mothers and other caregivers in Old Town develop a

more moderate level of emotional engagement with infants, and infants and children are taught to privilege group over dyadic interaction.

Chillihuani, Cuzco, Peru

In a setting of “high altitude, rugged environment, and isolation” of the Andes mountains in Peru, Bolin (2006) conducted a 13-year study of the Chillihuani community and intensive observation of four families (pp. 4). Herding and pastoralism provide their primary livelihood and, as a result of the need for sufficient land for animals and crops, result in the Chillihuani living in “widely dispersed settlements” (Bolin, 2006, pp. 16). Sociability, however, is highly valued. As Bolin (2006) notes, “most public activities occur in the open, and private activities take place in a one-room house” (pp. 36), which results in close contact between members of one household or settlement. Children are also highly valued. In fact, because it is believed that an Earth Mother named Pachamana gives life to a child, his or her birth and life is considered sacred. Birth rates and infant-mortality rates are not reliably tracked among the Chillihuani, but Bolin refers to one study that estimates both rates to be high.

The Chillihuani believe that life begins with conception. Immersed in a culture where “respect is not only given to other people and the deities, but is conveyed to all forms of life—both animate and inanimate” (Bolin, 2006, pp. 33), Chillihuani infants, much like Beng infants, are constantly provided with affection, attention, and care by a variety of caretakers. Although care is usually provided by a variety of female family members, including the infant’s mother, infants may also receive care from fathers, male adults, and male siblings. Therefore, it is likely that infants develop attachments with

their mothers and with other caregivers in the settlement. While specific infant-initiated behaviors beyond breastfeeding are not mentioned, Bolin (2006) does describe the Chillihuani's cultural expectation that children are curious and energetic and that "they should develop at the pace they set for themselves" (pp. 37). Like Gusii and Orissan caregivers, the Chillihuani do not perceive their infants as needing to be raised as much as cared for, especially in terms of survival.

Chillihuani infants are seldom left alone. For the Chillihuani, close physical contact and co-sleeping help to ensure an infant's survival, but they also reflect "a particular fondness for children" (Bolin, 2006, pp. 38). Breastfeeding on demand is a part of their generally "permissive way of upbringing" (Bolin, 2006, pp. 37). Bolin notes that very young children are permitted to tirelessly engage their variety of caregivers by playing on their laps and with their clothing, hair, and personal items. It does not appear that Chillihuani caregivers attempt to avert their attention or gaze in order to prevent the formation of too strong an attachment. While Bolin does not specifically address this issue one way or another, she does say that children are never neglected because the Chillihuani are very sensitive to protecting one another from a feeling of loneliness and to showing one another respect. Ultimately, the Chillihuani value individual respect as well as sociability, and all ages of their society correspondingly receive a high level of emotional engagement.

Evidence of an Interactional Instinct in the Four Societies

Attachment

From an eco-cultural perspective, different environments demand different levels of attachment (Weisner, 2005). This analysis considers four societies where polyadic care is the norm. In these environments, according to the four ethnographies reviewed, infants still form attachments with their mothers. Additionally, they form attachments, affiliations, and/or bonds with siblings, extended family members, and sometimes neighbors as well although this may occur later, at around 2 years of age (LeVine et al., pp. 210). Mothers in the Gusii, Beng, and Orissan (but not the Chillihuani) studies, however, put effort toward having a more moderate emotional attachment to their infants than is typically seen in dyadic care environments. As described, this is a result of practical and social demands. However, this effort does not prevent the infant from attaching to his or her mother—especially since the infant breastfeeds on demand and co-sleeps with her—but it does almost always prevent an overly intense and more exclusive attachment as regularly seen in dyadic models. Notably, these studies indicate that efforts must be made to prevent too strong an attachment.

Source of Attachment, Source of Early Language Exposure

Infants in these studies, like those in dyadic care, display innate behaviors as they try to get their survival and social needs met. They do not randomly make this effort. They often seek out their mothers, the caregivers who typically provide their nourishment and protection. However, they also learn to find care and comfort from other caregivers.

Attachment ensures that caregivers' actions and mediations are attentionally and emotionally salient for infants and, as such, effective tools for socializing their behaviors, including those related to discursive and grammatical exchanges (Lee et al., 2009). Informal learning could not take place without a powerful motivation to pay attention as attachment provides. Quinn (2005) proposes that universal cultural models of caregiving accomplish their task of raising children to become a certain kinds of adults by utilizing mechanisms of experiential constancy, emotional arousal, evaluation, and predispositional priming—all processes that fundamentally rely on attachment. As the studies in this analysis demonstrate, Gusii, Beng, Orissan, and Chillihuani infants form attachments with one or more caregivers as well as attachments and close affiliations with various society members. As a result, they are likely to attend to the actions of various caregivers. It is also likely that they receive as much—if not more—linguistic input as their dyadic counterparts. In terms of language, then, this suggests that infants in polyadic care receive sufficient exposure to meet their acquisition and learning needs. Though their participation is often peripheral instead of direct, they are still emotionally engaged with their caregivers and, as a result, attend to the intricacies of the social activities in which they participate.

Routines and Related Infant Language Exposure

Peters and Boggs (1986) recommend that to understand language learning, routines of a society be identified, checked for the linguistic information that they make available to children, and then checked for how children employ this information. This framework is useful because it puts a spotlight on the “the practices the participants are

using to position themselves toward each other as consequential actors, and how in doing so they build a shared cognitive, social and moral world in concert with each other” (Goodwin, 2006, pp. 453). Such a focus permits the analysis of the social organization of human interaction, which itself is cultural (Erickson & Mohatt, 1982). Arguably, social routines may serve the additional purpose of making interaction more predictable and, therefore, more emotionally safe (Goffman, 1955). This may be significant to language acquisition and learning, if not learning in general. In fact, Weisner (2008) argues that no pattern at all is actually harmful.

This perspective on routines and the linguistic exposure they provide can be considered in terms of the Gusii, particularly because the related ethnography provides more details about these topics than the other three. According to LeVine et al. (1994), the Gusii economic structure depends on a domestic hierarchy into which children are trained to show obedience. Direct instruction is not provided to children; rather, they experience a “learning sequence” (LeVine et al., 1994, pp. 90) of observing, imitating, and being corrected while becoming ever-more competent participants in domestic responsibilities. As noted, infants primarily get carried on the backs of young female siblings during the day and, as a result, participate peripherally in domestic routines such as carrying water, cleaning, cooking, and washing. This often occurs alongside other siblings—the average number of siblings in a Gusii household is five—and cousins, and “it is assumed that the child’s motivation for learning comes from wanting to do what the older children do” (LeVine et al., 1994, pp. 216). Mothers are expected to make themselves available to infants as much as possible, and they do so upon returning to the home, especially when they are engaged in light labor and rest. In combination with more

“proximity seeking” (Levine et al., 1994, pp. 207) behaviors by infants being directed toward mothers versus other caregivers, this results in mothers providing an additional source of important language exposure.

Carrying and holding are common Gusii caregiver behaviors. LeVine et al. posit that these behaviors, combined with caregivers’ preferences for restraining verbal interaction with infants, relate to a decline in Gusii infants’ crying and vocalization behaviors at around 9 months. Similarly, because a primary goal of Gusii child rearing is to create and maintain domestic hierarchy, a proper caregiving style is calm and emotionally neutral with an “avoidance of eye contact particularly between those of unequal status” (LeVine et al., 1994, pp. 222). While gaze exchange and verbal interactions are not common in earlier stages, they begin to increase as infants become more mobile. Caregivers begin to direct talk toward infants when they are weaned at about 15–17 months, at which time they are perceived as being “capable of conversing” (LeVine et al., 1994, p. 151). Interestingly, LeVine et al. found remarkable consistency between the childcare that mothers and child-caregivers provided.

Of course, variation within Gusii societal practices provides special instances of language exposure. LeVine et al. (1994) note that during the first 6 months of an infant’s life he or she participates in a “custom of greeting” (pp. 157) that results in extensive holding by adults and special attention and language exposure from them as well. Additionally, lastborn children, called *omokogooti*, are permitted extra maternal attention because another child will not follow in the birth order and, thus, divert attention from the comparatively coddled child. LeVine et al. also generally found that if infants were perceived by caregivers to be vulnerable in some way—because they were ill, irritable,

reactive, or small, for example—then they received more proximal stimuli from caregivers. Conversely, if they were perceived as stronger or more capable, they were held less and, as a result, they received slightly more distal stimuli.

In comparison to more typical language practices in the United States, Gusii interactions are described by LeVine et al. as emotionally and verbally restrained. Adults avoid face-to-face interactions, preferring more often to converse by sitting side-by-side or even back-to-back. This in part prevents eye contact, which helps to preserve domestic hierarchy and to prevent signaling disrespect or inappropriateness. Accordingly, as described, caregivers avoid eye contact with infants and do not typically respond to their nondistress vocalizations. If Ekegusii, the Gusii language, is directed to an infant (this occurred rarely, in 18.5 percent of the data) it is almost always in the imperative. This is consistent across all stages of infancy, but it increases as the child begins to walk and thus encounters potential physical harm. Between the ages of 1 and 3, imperatives, threats, and warnings (such as stop, you'll get burned, and get away) are the most common language directed toward the child, often delivered with a negative emotional tone. According to LeVine et al. (1994), the “form and content of utterances reflect Gusii assumptions about what infants need and the domestic hierarchy in which they are [the lowest] participants” and “vocal exchange is not a goal” (pp. 221). Gusii caregivers expect a child to follow commands, display obedience, and fit easily and respectfully into the established authority structure. Children do in fact appear to be willing and able to follow caregiver instructions and they do not typically initiate conversations with adults.

Children's language learning pathways are divergent and include dyadic and/or polyadic as well as diffuse and/or intense engagement practices between infants and

caregivers depending on eco-cultural and social variables (Ochs and Schieffelin, 2011; Rindstedt, 2001). The examination of the Gusii routines and related language practices demonstrates this. It is significant, however, that the sources of language exposure are primarily caregivers with whom the infant is attached or affiliated and to whom the infant attends and entrains his or her attention. As such, these caregivers provide infants with opportunities to peripherally and/or directly participate in routines and, as a result, linguistic exchanges that meet the demands of the society in question.

A review such as the one provided for infant language exposure among the Gusii is not feasible for all the societies in this analysis, in part because the researchers do not focus intensively on language development. However, a few highlights prove useful as points of comparison. As mentioned, Beng caregivers believe their infants speak wrugbe, understand all languages, and need to be coaxed to remain away from the afterlife. As a result, multiple caregivers provide infants with a highly social and stimulating environment, which includes direct and intensive exposure to the Beng language, called Beng. This is also the case for the Chillihuani, who speak Quechua and are influenced by cultural values of sacredness, sociability, and respect. While multiple caregivers of various ages also surround Orissan infants, they are not usually provided with intensive attention or exposure to Oriya, except in the case of learning kinship terms, where instructions are explicit and highly repetitive in another effort to ensure the infant's interdependent socialization. These points again emphasize the variability of infant language exposure and the driving influence of eco-cultural factors on infant-caretaker interactions and, therefore, infant language acquisition. Interactional instinct theory would predict that some level of attachment occurs between typically developing infants

and caregivers and underpins language acquisition. According to the theory, this is because the emotional bond provides the motivation for infants to try to emulate the actions and behaviors of their caregivers. Future studies that provide microanalysis of interactions between infants and caregivers (and peers) from various societies, especially in terms of the source of language exposure, the linguistic (discursive and grammatical) and participatory context of infant language acquisition and learning, and infants' subsequent use of what they have learned, are necessary to further explore this idea.

Findings of Infant Initiatedness and Caregiver Responsiveness

Infant Initiation of Interaction

A primary claim of the interactional instinct theory is that infants are born ready to interact with caregivers, using a repertoire of innate behaviors to fulfill their survival and social-affiliation needs (Schumann, 1997; Lee et al., 2009). A review of studies in dyadic care environments provides evidence that infants initiate interactions through nonverbal (i.e., body posturing, eye contact, gestures, smiles) and verbal means (i.e., babbling, cooing, crying, vocalizing) more frequently than their caregivers do (Lee et al., 2009). This review indicates that infants in polyadic childcare environments employ a repertoire similar to that of their dyadic counterparts, using crying, eye gaze, and vocalizations to elicit care and sometimes beginning to show a preference over time for seeking bodily contact by following caregivers and reaching for them (Gottlieb, 2004; LeVine et al., 1994; Seymour, 1999). Additional studies in polyadic childcare environments also highlight the active role of infants in seeking out their caregivers (de León, 2000; Haviland, 2000).

Especially in terms of breastfeeding “on demand,” the mothers in these studies expect and receive infant-initiated behaviors. Scheper-Hughes (1990) provides a dramatic account of the expectation of infant-initiated behaviors in the Alto do Cruzeiro of Northeast Brazil, where extreme poverty and scarcity dictate that an infant either demands attention and nourishment or dies (pp. 558). Her study highlights how factors such as health and temperament can mediate infant initiations. According to Scheper-Hughes, an infant in the Alto is more likely to survive if he or she is healthy and assertive and therefore able to demand a caregiver’s response. As the previous descriptions have indicated, these expectations appear to extend to other infant nonverbal and verbal behaviors, which may be more fixed as they relate to survival needs and more variable as they relate to social-affiliation needs.

Caregiver Response to Infant Initiations

A review of dyadic childcare studies reveals that mothers are highly responsive to infant initiations for interactions (Lee et al., 2009). This analysis demonstrates that Gusii, Beng, Orissan, and Chillihuani mothers as well as other caregivers are responsive to infant initiations in polyadic care, though in ways that sometimes differ from dyadic care. The Beng, Orissan, and Chillihuani infants live in highly social environments where siblings, extended family, and neighbors, and not just mothers (or fathers) are primary care providers. Comparatively higher infant mortality rates may contribute to caregiving preferences for keeping the baby in a calm, soothed state versus an emotionally excited one. Fear of jealousy and related sorcery and witchcraft or simply promoting connectedness to others relate to deliberately decreased attentiveness to an infant. Pulling

an infant away from the breast before being satiated helps to instill interdependence, the idea in this case being that not only does the child have needs to be fulfilled but so do others. Some general comparisons between dyadic and polyadic care emerge and are shown Table 2.1:

TABLE 2.1, Common Comparisons of Dyadic and Polyadic Care

Dyadic Care	Polyadic Care
attachment to primary caregiver, usually mother	attachment to multiple caregivers, includes mother
“raising” children	“letting” children grow
others often orient to children	children often orient to others
distal cues (i.e., eye gaze and vocal exchanges) may be more salient	proximal cues (i.e., body contact, breastfeeding) may be more salient

While there is variation in the intensity and style of responsiveness from caregivers, there is no known study that provides evidence that infants are entirely excluded from discursive and grammatical exchanges (although Scheper-Hughes’s [1990] account demonstrates that in some extreme cases a lack of infant initiation can result in a lack of caregiver response, which can lead to the infant’s death). Existing variation in infant-caretaker interactions emerges out of caregiving relationships that reflect local ideologies and norms. Variation springs from adaptation. It is evidenced in individual, personality differences that infants and caregivers possess. It is co-constructed by infants and caregivers who have an emotional investment in one another that is connected to the past, present, and future. Rather than refuting the existence of an

interactional instinct, variation in fact supports it. An infant's culturally appropriate development could not occur in just one way, nor could it occur in isolation.

Discussion

Dyadic childcare studies already provide support for the interactional instinct theory. Intense (direct eye contact, face-to-face, highly verbal) caregiver-infant interactions define dyadic care. It is interesting that the researchers for most of the societies considered in this analysis noted that caregivers were becoming more dyadic in their childcare as they were becoming more industrialized and urbanized. Infant mortality is relatively high in these studies, though, especially when compared to statistics from the United States. In part, this may produce what LeVine et al. (1994) refer to as a "pediatric model" of care versus a "pedagogical model" of care (pp. 249). An overarching goal of the pediatric model is to ensure an infant's survival and to protect him or her. As a result, intensive effort is given to keeping an infant soothed, and distress signals, but not general vocalizations, are responded to immediately. As the child ages, the effort to protect the child decreases and the model is less applicable. In contrast, an overarching goal of the pedagogical model is to actively engage the infant. As a result, intensive effort is given to stimulating the infant, and babbling, in particular, is responded to as important, while distress signals, in comparison to the pediatric model, are responded to less rapidly.

A dyadic caregiving style may result from a need for educational attainment that is required in industrialized and urban societies. (LeVine et al., 1994, refer to responses to babbling seen in the dyadic care or pedagogical models as "deliberately educational interventions," pp. 251.) As shown in this review, however, it may also result from eco-

cultural factors such as ideas of the nature of the infant, living arrangements, low-fertility/low-mortality rates, social values, and spiritual beliefs. Caregivers are engaged in maintaining a child's current well-being as well as his or her future well-becoming (Frones, 2007). Caregiving practices help to ensure a child's survival. They also shape a child's developing emotional and social behavior so that it is appropriate for the cultural environment in which it is occurring. There may be one factor that produces a dyadic model of interaction, but it is more likely that there are multiple factors that account for it.

Neurobiology may also play a role in the formation of dyadic versus polyadic interaction. If we return to the interactional instinct theory, which details attachment formation as a neurobiological process, then it is possible to say that environmental factors in fact affect neurobiological development. One theme of the societies analyzed here that contrasts with what is typical in dyadic care is the maintenance of high physical contact with infants. For example, Gusii infants are held 100 percent of the time, often in wraps on a caregiver's back, until they are at least 6 months old and then up to 42 percent of the time during the early walking stages. Beng infants are constantly carried close to their mothers' bodies in wraps until they are about 4 months old, and then carried on the hip or in a wrap by caregivers a majority of the time until they can walk. Orissan infants are almost constantly carried or held until they are about 2 years old. Likewise, Chillihuani infants predominantly stay next to caregivers' bodies in slings until they can walk. This high level of physical contact may obviate the need for the intensive seeking of distal stimuli seen in infants and the related responses of caretakers that define dyadic interactions. Assuming that infants have innate behaviors that allow them to get their

survival and social needs met and that caregivers mediate these behaviors, then infants who are kept in close physical contact with caregivers may at least initially develop a stimulus-appraisal system more strongly attuned to proximal than to distal stimuli.

If specific, innate social initiations are not relevant or rewarded in interaction, an infant will likely decrease these behaviors. If these behaviors decrease because they have been mediated by caregiving practices, they in turn may affect the emerging dynamic between infant and caregiver. It is feasible, then that the more diffuse caregiver style often seen in polyadic versus dyadic environments is not only related to eco-cultural factors but—over time—also to a decrease in infant-initiated, more distal behaviors such as gaze-exchange and vocalization. LeVine et al. (1994) note such an occurrence, finding that after 6 months Gusii infants reduce their seeking for eye-contact from mothers and begin to show a comparative preference for bodily contact. This would, for example, result in the more frequent release of oxytocin in the infant and the caregiver when physical contact occurs, potentially making it a more emotionally rewarding stimulus. As Joaquin notes: “oxytocin is one of the neurochemicals that appears to make social interactions rewarding and may aid in the creation of a neuro-pathway for social attachment and social recognition” (Lee et al., 2009, pp. 319). A caregivers’ bodily movements, then, could have a powerful instructional effect on infants who are continually carried on caregivers’ backs or held on their hips. Additionally, experiences that result in a release of dopamine get transformed into preferences by memory-formation processes and then cyclically repeated. Such paths of neurobiological development may produce long-term memories that impact relationship formation and,

therefore, interactional and learning preferences over the life span. These memories would include salient nonverbal and verbal language practices.

Take, for example, the Quichua of Ecuador (Rindstedt, 2001), an Andean society like the Chillihuani. The Quichua are agriculturalists and practice polyadic care. They have an economic and social structure that looks like the other societies in this analysis. Mothers breastfeed on demand, carry infants on their backs, and co-sleep with them. One might expect to see a more diffuse interactional style between caregivers and infants, yet the Quichua live in nuclear-family households and mothers often care for infants until they are about 5 years old, when siblings begin to provide care. It is fascinating that the Quichua interact with their infants in a style that is typical for dyadic interactions. It is possible that the heightened contact between the infant and the mother, supported by the societal freedom to form significant attachment to infants, creates an environment where the infant's drive to interact in effect captures the will of the mother to respond, intertwining them in an emotional dance that establishes a face-to-face and intense interaction style that is the same as typically seen in industrialized societies.

Conclusion

This analysis reveals that the interactional instinct theory is reasonably applicable to cultures where polyadic caregiving is the norm. There is evidence that infants initiate interactions with caregivers and receive responsive, culturally appropriate engagement from mothers and other significant caregivers. This is significant to our understanding of language acquisition. The theory proposes that the neurobiological processes that make attachment possible provide a heightened state of attention and emotion in infants and

caregivers, which facilitates the transmission of culture, including oral language (Lee et al., 2009). Furthermore, attachment and language may actually be acquired through the same neurobiological pathways (Schumann, 1997, citing Locke, 1995, pp. 193). This review provides some evidence that, like those in dyadic care, infants in polyadic care receive the social interaction that is fundamentally required for both.

This analysis also demonstrates that infants are capable of seeking care from their mothers as well as other caregivers. It is likely, however, that infant initiations are more fixed in terms of seeking out survival needs and more malleable in terms of seeking out social-affiliation needs. In fact, this analysis suggests that caregiver responses mediate these initiations, especially in terms of social affiliation. According to these studies, having multiple caretakers doesn't decrease or prevent mother attachment. In the Gusii, Beng, and Orissan societies, however, an intense mother-child relationship is often avoided for practical and social reasons. Significantly, mothers often have to make efforts—such as averting their own gaze, blowing in an infant's face to avert his or her gaze, preventing satiation, and teaching sociability—to prevent too intense an attachment. These cross-cultural findings suggest that infants and mothers do in fact have an instinct to interact. Sometimes, in fact, it appears that the instinct to interact can promote too strong an attachment for what is socially appropriate if mothers are not careful.

This analysis shows a range in the focus and the intensity of infant attachments, but not an absence of attachment or a denial of interaction from caregivers. In the societies analyzed here, multiple caretakers with a variety of styles, in a variety of settings are involved in the language exposure that infants across cultures experience. Talking directly to infants or treating them as co-equal interlocutors, as is often seen in

dyadic care settings, for example, is not appropriate or relevant in some societies. In fact, caregivers in the societies reviewed in this analysis expect that children will develop and grow by observing and participating in valued social activities, not by direct instruction. Even though attachment is eco-culturally and socially moderated, the uniformity of primary language acquisition can still be explained because the language socialization that infants experience is commensurate with what they need in order to become competent language users—in fact, competent individuals—in their societies.

Acknowledgments

The author would like to thank Dr. Anna D. L. Joaquin, Dr. John H. Schumann, and Dr. Thomas S. Weisner for inspiring and reviewing this text. Sincere thanks is also given to the UCLA Department of Applied Linguistics for funding this effort.

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CHAPTER 3

Affiliation as a Means of Sustaining Social Participation

Language learning emerges from social interaction, but how this occurs is still being explored (Meltzoff et al., 2009). Learning in general is mediated by cultural and environmental factors, within a time and place, between individuals with emotional lives (Cazden, 2001; Erickson, 2011; Erickson and Shultz, 1981; Rogoff, 1998; Schumann, 1997; Weisner, 2013), and early language learning in particular is aided by interactional routines (Peters & Boggs, 1986). In this video-based discourse analysis, the interactions of a 14 month old, Donatelo, and his teachers are analyzed as they participate in a classroom routine. This study demonstrates that Donatelo monitors the non-vocal and vocal cues of the primary, but not his secondary teacher. It suggests that he attends to his primary teacher because he has an affiliation with her, and that she subsequently has a stronger mediating effect on his behaviors. Donatelo's competent participation in a classroom routine with an emotionally-significant other appears to be deeply implicated in his on-going social interaction opportunities and related language exposure.

The motivation to participate

Arguing that language evolved between brains and to fit brain capabilities, Lee et al. (2009) proposed the interactional instinct theory. According to the theory, typically-developing infants have an instinct to interact with other humans, especially primary caregivers. Infants use innate expressive, sensory and perceptive abilities and social

behaviors to ensure that caregivers meet their basic survival and social affiliation needs. Reviews of studies in dyadic childcare environments demonstrate that typically-developing infants initiate interaction with caregivers more often than the reverse (Kidwell & Zimmerman, 2006; Lee et al., 2009). Studies in polyadic childcare environments also highlight the active role of infants in attending to and seeking out their caregivers (Adams, 2013; de León, 2000; Haviland, 2000; Paradise & Rogoff, 2009).

These perspectives challenge the notion that infants are merely passive eavesdroppers, and demonstrate that they are active social participants, even if they are pre-verbal, and even if adults do not frequently direct their language to them. They are typically born ready to pay attention, emotionally and perceptually, to practices that are valued in their communities. Rogoff (1998) refers to this process of “becoming a member of a community” (p. 729) as critical to understanding the trajectory of human development. She argues that an individual must make changes in order to appropriately participate in social activities over time, and that these changes, situated in eco-cultural and individual terms, index the collaborative construction of cognition (Rogoff, 1998; Wooten, 1997).

Interactional routines as central to language acquisition

Ochs (2002) and other scholars (de León, 2000; Goodwin, 1996; Tulbert & Goodwin, 2008; Haviland, 2000; Kidwell & Zimmerman, 2007; Paradise & Rogoff, 2009; Rogoff, 1998; Tomasello, 2003) recognize social activity as central to learning in general and language learning in particular. Peters and Boggs (1986) recommend that *routine* social activities of a society be identified, checked for the linguistic information

that they make available to children, and then checked for how children employ this information. They write:

Interactional routines may serve to promote language learning because they are so predictable: Specific configurations of time, place, participants, and goals tend to recur, leading the child to expect particular verbal and nonverbal behaviors (p. 84).

They suggest that as children mature and the routines in which they take part evolve, their language also evolves. They also acknowledge that participation may be peripheral or direct (de León, 2000; Haviland, 2000; Ochs & Schieffelin, 1984), depending on eco-cultural factors (Weisner, 2005).

Peters' and Boggs' (1986) framework is extended here to include the affective (Ochs & Scheffelin, 1989), conversational (Sacks et al, 1974) and semiotic resources (Goodwin, 2000; Goodwin & Goodwin, 1999) that caregivers and infants use to create meaning together. These include discursive, kinesic/proxemic and linguistic aspects of communication. This extension is important because, as C. Goodwin (2006) notes, we must analyze "the practices the participants are using to position themselves toward each other as consequential actors, and how in doing so they build a shared cognitive, social and moral world in concert with each other" (p. 453). This allows for the theoretical consideration of all of the resources that go into language learning and use, not just those that are conceptually isolated within one individual's brain.

Infants inevitably engage in routines with caregivers to whom they are attached or affiliated, making language learning an emotionally-driven process (Lee et al., 2009). Goffman (1971) highlights this relationship of emotion, language and predictability, writing: "without such mercies [of ritual support], conversation would want of its

fundamental basis of organization ... and everywhere unsatisfactory persons would be left to bleed to death from the conversational savageries performed on them" (p. 68). Routines reduce the likelihood of information overload for an infant and they may also serve the purpose of making interaction more predictable and, therefore, more emotionally safe. This is significant to language learning, if not learning in general.

Evaluations and mediations by caregivers

Cognition can in part be discussed more concretely in terms of sensory perception. Referencing the ecological realist J.J. Gibson, who proposed that "knowing is a direct noticing of what the world affords for action" (pp. 201), including the "natural laws manifested through perceptual structure ... [and] detected across modalities" (pp. 239), Zukow-Goldring claims that caregivers attend to the understanding that infants visibly display and correspondingly direct infants' attention toward what is important to the task at hand. This is especially true in terms of affordances, or the action potential of an object, and effectivities, or the capabilities of an individual's body, culture or environment. These directions from caregivers are usually an overlap of non-vocal and vocal input, or amodal invariant relations, which unintentionally capitalize on infants' emotional attachment to caregivers and incrementally "nurture [their] perceptual learning" (Zukow-Goldring, 1997, pp. 206). According to Zukow-Goldring (1997), this is a process of "educating attention" (as Gibson and others have called it), and it is fundamental to language learning. This and, by extension, another similar process of "educating the body" or "sheparding" (see Burdelski, 2010; Cekaite, 2010; and Moore, 2010) highlight the co-constructed nature of language (Goodwin, C., 2007; Kidwell & Zimmerman, 2007; Wittgenstein, 1958), in which language itself eventually plays a role

in shaping the on-going development of communicative practices (Peters & Boggs, 1986; Goodwin, C., 1996; Ochs & Schieffelin, 1984; Wooten, 1997).

An interactional instinct in typically-developing infants ensures affiliation and participation in cultural practices (Lee et al., 2009), which is crucial to informal learning (Paradise & Rogoff, 2009). In order for language learning to occur, however, infants must at a minimum focus their attention on meaningful language practices (Adamson et al., 2004; Lee et al., 2009; Tomasello, 2003, p. 6). Significantly, these language practices do not occur in a void. Interlocutors display and monitor them within a specific environment (de León, 2011; Goodwin, 2000; Goodwin & Goodwin, 1999; Kidwell & Zimmerman, 2006; Ochs, 2002; Peters & Boggs, 1986; Weisner, 2005). The purpose of this analysis, then, is to determine how the infant in this analysis is attending to and producing meaningful language practices and how caregivers and the environment affect this process.

Sustaining participation in an infant classroom

Approximately two and a half consecutive hours of video footage were recorded at the beginning of the day in an infant daycare center located in a university on the West Coast of the United States.¹ Eight children between the ages of 5 months to almost 3 years and five adults were recorded. The children went about their typical routines, which included eating, napping, and playing according to their individual needs and preferences. The adults—interns, teaching assistants, and teachers (hereafter, teachers)—provided care and support, accordingly. A video clip of “snack time,” lasting just over 17 minutes, was selected for a broad analysis of a routine social activity. Eating was initiated by a 14-

month-old bilingual (Spanish-English) boy, Donatelo. His teachers, Carrie and Pam, assisted him during this time. Carrie is Donatelo's assigned primary teacher. Pam is a trainee who is not regularly scheduled to work in the daycare room. Importantly, Carrie is unable to move freely in this activity because she is also feeding an infant who is sitting in her lap.

A 1-minute, 20-second portion of "cleaning up," which concludes the larger activity of "eating a snack," was selected for microanalysis and transcribed. "Cleaning up" required that Donatelo put his dirty dishes in a bin and then wipe his hands and face with a cloth. Carrie reported that Donatelo frequently attempted to leave the kitchen without completing this final step (Lead teacher ["Carrie"], personal communication, April 21, 2009). She often had to monitor him so that he complied with this classroom norm, which he omitted, Carrie speculated, both because he forgot about it and did not like to wipe his face. Thus, the routine yet socially strained nature of the activity and the presence of two teachers with whom Donatelo had different levels of closeness (Center Director ["Stacey"], personal communication, February 18, 2010) made the selection relevant for this analysis. "Get a cloth," a 29-second clip, begins just after Donatelo has finished putting all his dirty dishes in a bin. As the exchange below begins, Donatelo turns his body and gaze to Carrie and uses Baby Signs, a standardized form of sign language used in this setting with pre-verbal infants, to let her know that he is *all done*.

1 DON: all done ((*signing*))=((*orienting body, gaze to Carrie*))=

2 CAR: =can you get a cloth((*exchanging gaze, pointing*))=Donete:lo,

After Donatelo announces that he has completed his expected clean up in line 1, Carrie does not respond with agreement. Instead, in line 2, she immediately disagrees. She does this by offering a counter-proposal, which is in the form of the mitigated, or softened, directive of *can you get a cloth*. As she says this, she maintains the gaze exchange that Donatelo initiated in line 1, points repeatedly in the direction of the cloths, and stresses the referent, *cloth*. She also completes her directive by saying Donatelo's name and elongating the vowel of the penultimate syllable. Finally, she ends her turn with a continuing intonation.

Although Carrie is making structurally dispreferred moves (Schegloff, 2007) by counter-proposing and disagreeing, respectively, she employs affiliative cues that may ease the seeming strain of the moment. Exchanging eye contact with Donatelo, she frames her directive as a request, as something that he can control, and clarifies it by pointing and by emphasizing the key lexeme. Her pronunciation of Donatelo, which includes vowel elongation (Donate:lo) versus none (Donatelo), or instead of syllable stress (Donatelo), is potentially, comparatively more gentle in its delivery. Additionally, her "continuing" intonation (Atkinson & Heritage, 1984; Sacks, Schegloff, & Jefferson, 1974) on the last syllable of her utterance may indicate in part that she remains interactionally available to Donatelo into the next turn. Despite Carrie's efforts, however, Donatelo does not respond by getting a cloth. Donatelo is not immediately successful in his exchange with Carrie, but he still remains engaged with her in the ongoing activity. As is shown in the following excerpt, he understands that Carrie expects a response from him and appears to try to provide it.

3 DON: ((*orienting gaze, body in the direction of Carrie's pointing*))=

4 CAR: =cloth.

In line 3, Donatelo follows the trajectory of Carrie's pointing by turning his body and gaze in the same direction. As he does this, Carrie supports his effort by repeating *cloth* in line 4. Also, her downward intonation, which occurs simultaneously with Donatelo's appearing to locate the cloths with his gaze, projects an end to the directive sequence. However, as the next excerpt shows, the exchange is not over yet.

5 DON: ((*continues to turn past the direction of the pointing*))

6 CAR: **can you get uh wet clo:th**=(*pointing*)=**Donete:lo?**

7 DON: u:::n↑uhhnneow.=(*turning toward the bin again*)

Just at the moment when it appears that Donatelo has located the cloths that are needed to complete his cleanup responsibilities, he overextends the turn of his body in line 5. At this point, his back is to Carrie and he is no longer looking in the direction of the cloths. In response to Donatelo's visible loss of joint attention, Carrie then repeats her mitigated directive, *can you get a cloth*, in line 6. As before, she couples this action with pointing and follows it with Donatelo's name. However, she now also stresses the added adjective *wet* and elongates the vowel of *cloth*. Arguably, these features are in the service of providing Donatelo with clarifying information that may aid him in understanding and hence completing the task. At the same time, instead of a continuing intonation, she now

uses an upward intonation. This unmarked, rising intonation effectively increases the interactional pressure for Donatelo to answer (Atkinson & Heritage, 1984), which in fact immediately occurs in line 7. Donatelo responds with the vocalization *u::nuhhnneow* while turning around again toward the original location of Carrie's pointing. Donatelo's vocalization, which can reasonably be heard as a proto-version of "I don't know," is his longest vocalization in the two and half hours of footage, and it appears to be a result of confusion and/or frustration.

Carrie has now requested two times for Donatelo to get a cloth, and he has yet to do so. When it appears that the exchange is about to stall, Carrie changes her communication strategy, as is shown below.

8 CAR: Pam, will yo:u sh:owim=*((pointing))*=the wet cloths.=

9 DON: =u:n?=*((touching bin))*

10 PAM: Donatelo.

11 DON: *((orients body to pam and gaze to cloths))*

Unable to move because of the infant sitting in her lap, Carrie requests that Pam show Donatelo the cloths in line 8. In line 9, Donatelo quickly links his vocalization *u:n?* to the end of Carrie's utterance. At the same time, he touches the bin that he successfully used earlier to clear his dishes, appearing to think that the bin—located just above the cloths—is somehow involved in the task. Interestingly, even though Pam is already looking at and moving toward Donatelo, he does not shift his gaze to her. Instead, he continues to watch Carrie. As a result, Pam attempts to elicit Donatelo's attention by

calling his name in line 10. Just as she is getting closer to him in line 11, Donatelo pivots his torso toward her and briefly shifts his gaze in the direction of the cloths. As described by Goodwin (2006), this physical disalignment enables him to propose an entirely new course of action, as shown below.

12 DON: [((*walking to snack table*))=all done ((signing))

13 CAR: [No: you nee↑:d to get a wet CLOTH Do:ni:.

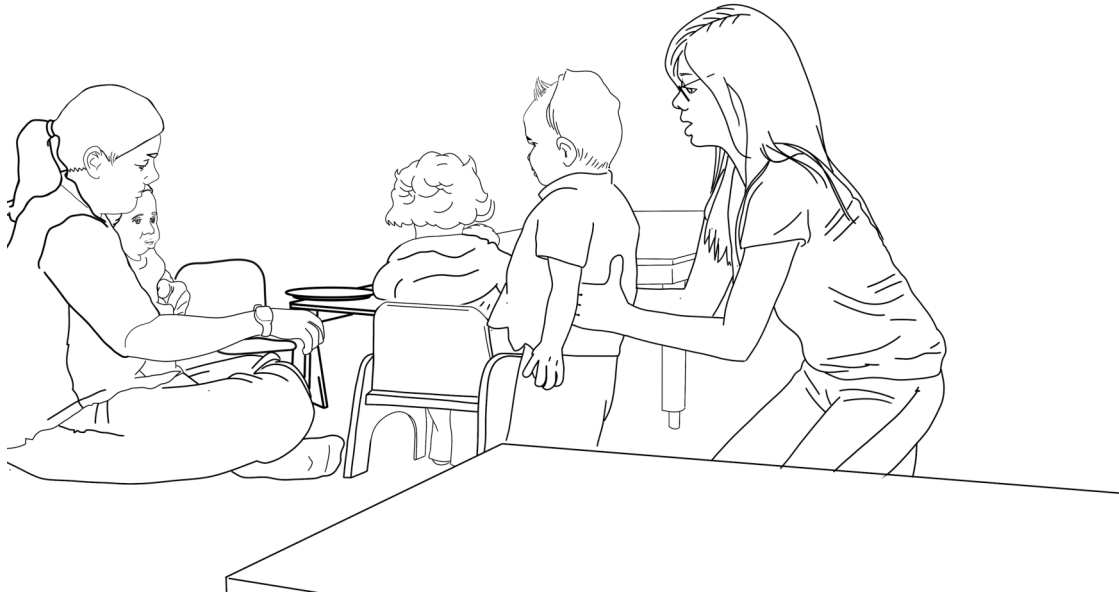
Rejecting Pam's assistance *and* Carrie's directives in line 12, Donatelo walks back toward the table and repeats the sign *all done*. This counter-proposal to the entire activity sequence of getting a cloth is not acceptable to Carrie. In line 13, with Pam silently observing, she immediately responds to Donatelo's escape move with a disagreement marker *no*. Instead of a request, she then uses an imperative, *you need to get a wet cloth*, in line 13. For the first time in this exchange, she also employs a pitch increase (on *need*) and volume increase (on *cloth*). Arguably, this change of form and increase in intensity heightens the interactional expectation that Donatelo comply. At the same time, Carrie also softens the comparatively more aggravated delivery of her directive by now referring to Donatelo by his nickname, *Doni*. The use of such an endearment term is a classic marker of affection within discourse (Ochs & Schiefflin, 1989). Nevertheless, Donatelo is still moving away from Pam and Carrie, so Carrie persists with the exchange by again changing her directive strategy.

- 14 CAR: ((*to Pam*)) **can you stop his bo:dy?** [and help him.
- 15 DON: [((*orienting body/gaze to Carrie*))
- 16 PAM: ((*positioning Donatelo*))=**i'm gonna get you a wet clo:th.**
- 17 [((*picking up cloth*))
- 18 DON: [ha:h hh.((*gazing at cloth*))

In line 14, Carrie stops directing her talk toward Donatelo and—as a proxy for what would be her own literal moves—asks Pam to *stop his body* and *help him*. As is common in interactions between caregivers and noncompliant and/or situationally unskilled children, Carrie makes it explicit that a physical positioning of Donatelo will aid his participation in the routine (Burdelski, 2010; Cekaite, 2010; Goodwin, 2006). When Carrie's intonation rises after saying *body*, Donatelo turns to Carrie in line 15 and fully orients both his gaze and body to her (Figure 3.1). He does this even though Pam is trailing close behind him.

FIGURE 3.1

Donatelo remains focused on Carrie as Pam steps in to help.



Pam then crouches near Donatelo and wraps her arm around his torso, gently turning him away from Carrie and toward the cloths in line 16. As she does this she nominates herself as the person to help Donatelo by saying *i'm gonna get you a wet cloth* with a breathy voice (on *cloth*). In this transformative move, she grants Carrie's request to help, treats Donatelo as if he made the request, and models an appropriate response for him. Continuing to cradle Donatelo against her torso, Pam reaches for a cloth in line 17. Just as she picks up a cloth and begins to move it closer to his line of vision in line 18, Donatelo deeply exhales and makes a surprised facial expression (Figure 3.2). This display of relief and sudden comprehension suggests that, more than simple resistance,

Donatelo was also coping with confusion and possible stress throughout this exchange in his effort to meet his teachers' expectations.

FIGURE 3.2

As Pam helps, Donatelo locates the cloth and appears relieved.



Discussion

This sequence describes how Carrie and Pam ensure Donatelo's participation in a classroom routine. As a part of the norms of the setting, there is an expectation that Donatelo should use a cloth to clean his hands and face after snack time. Unlike other activities related to cleaning up (i.e., clearing the table, putting his dishes in the bin), Donatelo does not initiate this step, and he even uses sign language to tell Carrie that he has finished with the cleanup routine as a whole. Because of this, Carrie provides him with a series of verbal directives and, eventually, Pam provides him with a physical prompt to ensure his ongoing participation. When they make these moves, they employ affective cues that may reduce Donatelo's seeming confusion and potential stress.

Beyond “supportive” (Goffman, 1971) grammatical formulations, specific affiliative cues that Donatelo’s teachers use in this sequence appear to include gaze exchange, elongated vowels, continuing intonation, an endearment term, a breathy voice, and physical proximity/touch. These cues may function in part to display the teachers’ ongoing social availability to Donatelo. As described, “Get a cloth” begins in part with Donatelo seeking out Carrie’s gaze, which she returns and sustains. Then, Carrie’s first two directives (i.e., *can you get a cloth*, *can you get a wet cloth*) are structured as requests, and they provide Donatelo with the interactional (although not necessarily actual) option of either choosing to grant or deny them. Carrie couples these requests with “attention-gathering” (Zukow-Goldring, 1997) (versus affiliative) cues such as bodily orientation and pointing toward the cloths; furthermore, she repeats and stresses the key referent *cloth*, making it more salient to Donatelo and, therefore, potentially more comprehensible to him. She also elongates vowels on *donatelo* related to the first request and *cloth* and *donatelo* related to the second.

Interestingly, when Donatelo then attempts to prematurely end the exchange by walking away from Pam, she elongates all the vowels of *no*, *need*, and *doni*, related to the more aggravated, imperative form of *you need to get a cloth*. As she continues to amplify her expectation with additional potential attention-gathering (versus affiliative) cues of increased pitch and volume, she then completes her utterance by using a more affectionate nickname for Donatelo instead of his full name. While the use of nicknames is sociolinguistically complex and their use may serve a range of functions within different discursive environments, calling the infant by a nickname in this instance is interpreted as a marker of closeness (Wierzbicka, 1992), especially given that it occurs

just as the interactional tension builds within the discursive and grammatical features of the exchange. It is also immediately followed by Carrie's request for Pam to assist Donatelo, which she explicitly says should involve moving *his body*. Because Carrie is holding an infant in her lap and cannot help Donatelo herself, Pam then functions as a proxy for Carrie. Speaking with a breathy voice, Pam moves closer to Donatelo, positions his body, and then places the cloth in his line of vision, which helps him to finally complete the activity.

Conclusion

It appears that as this sequence gets prolonged and Donatelo's participation becomes less guaranteed, Carrie shifts from more mitigated to more aggravated grammatical forms and, at the same, time increases the frequency of her vowel elongations and the use of overtly affectionate actions (i.e., using an endearment term, using touch and bodily positioning via Pam). These affiliative behaviors appear to occur in relation to the potential stress of the exchange and may serve to reduce it. They may also index a bond between Carrie and Donatelo (Center Director ["Stacey"], personal communication, February 10, 2010) as well as a subconscious reinforcement of this bond during a moment of heightened classroom expectation. There is additional evidence that Donatelo shows a preference to interact with his primary teacher Carrie. He frequently monitors her nonvocal and vocal actions, but not Pam's. As a result, she arguably has a stronger effect on his learning, linguistic and otherwise. As shown in Figure 3.1, despite Pam's first efforts to assist Donatelo, he moves away from her and returns to face Carrie. He does this even though Carrie is distracted because she is feeding a baby in her lap.

Additionally, throughout this prolonged sequence, he never meets Pam's gaze. This is in sharp contrast to the almost continual gaze exchange he shares with Carrie.

Donatelo's attention to Carrie's actions and his desire to participate in community activities may be supported by an exchange of affiliative cues that are underpinned by the neurobiology of attachment and affiliation (Lee et al., 2009). This is important because an increased monitoring of cues by learners equates to increased opportunities for their learning (Erickson & Shultz, 1981). In other words, like Donatelo, a primary language learner within a classroom must simultaneously be motivated and willing to take a risk in moments that are potentially confusing, strained, or uncertain. A teacher's affiliative behaviors during linguistic exchanges at these times can meet both of these needs and, as result, minimize threat, maximize trust, and promote learners' sustained engagement in classroom activities and interactions. This process is likely to continue well past the early stages of language acquisition (Amador & Adams, 2013).

Acknowledgments

The author would like to thank the director of the childcare center for hosting and facilitating this study and Dr. Frederick Erickson and Dr. Marjorie H. Goodwin for assisting with the development this text. The author is grateful to the teachers, teaching assistants, and all of the participants for making this study possible and to Mick Smith for creating the terrific figures on pages 61-62. Sincere thanks is also given to those who provided funding for this project: The UCLA Graduate Division and the UCLA Department of Applied Linguistics.

Note

1. Video footage for this study was collected in line with Institutional Review Board protocol (IRB #G09-10-071-01).

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CHAPTER 4

Play Initiations in a U.S. Autism Language Treatment

This study is one component of a language socialization and conversation/discourse analysis (CA/DA) project about minimally-verbal boys with autism who are participating in a play-based language therapy. It aims to address the language learning needs of this neglected sub-group in autism research (Eagle, 2000) in part by introducing a new coding scheme developed from a video-based analysis of social interaction. Using a mixed-methods design, the researchers investigated how therapists engaged boys in play and how this related to opportunities for language learning. From the opening segments of videotaped therapy sessions, boys' and therapists' initiations of play routines were analyzed. Three types of initiations, or *proposals for play-selection* (n=45), were described and coded based on CA/DA findings. The start and duration of play routines were also coded according to definitions in the Routines Coding manual (Goods, Kreuger, Kabab & Kasari, 2012).

Results indicate that when boys propose play-selections and when therapists retroactively transform boys' solitary play actions into "proposals", shared play routines occur more frequently and last longer compared to when therapists propose play-selections. Thus, boys' initiations of shared *and* solitary play in this setting relate to increases in their opportunities for language learning (Erickson & Shultz, 1981; Ochs & Schieffelin, 2011). These findings suggest that autism therapists may best promote language access by responding to, rather than prompting, boys' actions. Thus,

transformative proposals can and should be systematically introduced into autism language therapy as a way to achieve more successful shared play options.

Background

This study is about how therapists in an autism clinic are using a newly-developed, play-based intervention to increase children's expressive communication. The children in this study have been in a variety of therapies since being diagnosed with autism as toddlers, but now, at 5 to 8 years old, they are using fewer than 20 words and few, if any, gestures. They are not alone. It is estimated that over half of those with autism who receive traditional interventions at age 2 remain minimally-verbal at age 9 (Anderson, Lord, Risi, Shulman, Thurm, Welch & Pickles, 2007). It is unclear why this is the case.

Therapy through attentive play

Designed in response to priorities set by the National Institute of Mental Health (2004; Kasari, 2010, CCNIA proposal) to address the largely neglected issue of language-intervention for older, minimally-verbal children, JAE/EMT was developed. JAE/EMT is the combination of two research-based treatments. The first, JAE, or Joint Attention-Engagement, targets building social interaction skills through play. Therapists emphasize these skills because studies have shown that joint engagement in particular predicts children's long-term increases in grammatical complexity and vocabulary (Kasari, Freeman and Paparella, 2006; Kasari, Paparella, Freeman, & Jahromi, 2008). The second treatment, EMT, or Enhanced Milieu Training, targets building communication skills

through therapists' use of minimal speech and highly-responsive behaviors (Hancock & Kaiser, 2006; Kaiser, 1993). It emphasizes facilitating social initiation and not just responsive behaviors from children with autism, which contrasts with more dominant, applied-behavioral interventions.

Eight boys and one or more of their parents enrolled in this study. The boys come from a range of economic, ethnic, and linguistic backgrounds, although all were born and raised in Southern California, in the United States. The boys' therapists (7 in total) also enrolled in this study. They are all female graduate students from a range of ethnic and linguistic backgrounds, and they all have experience providing autism intervention services for children. The therapists worked for a major research institution, where families in the study came for 45-minutes, twice a week, for 6 months to participate in free services. Off of the long hallways, there were research offices, conference rooms, playrooms, and observation rooms. JAE/EMT sessions were held in one of two small playrooms, chosen in order to limit excessive movement by children.

A major challenge in the JAE/EMT treatment is that children with autism typically will not play with others, and they rarely initiate social engagement. When a session begins, regular and often sequential pre-requisites to play occur. Boys often choose to get seated or mostly settled in a chair or on the floor. They often select a toy that is on display in the room, having been specifically assessed by their therapist and the treatment team to match the boys' interests and play levels. Boys even often start to play a game with their selected toy alone, but they almost never pursue one of the primary goals of the session, which is to start a shared play routine. This study demonstrates that the different conversational-interactive ways that JAE/EMT therapists' accomplish

helping boys learn to play together in sessions affect project outcomes, including language learning opportunities.

Initiations to play

Instead of focusing on individual language learning problems, this study focuses on the social organization of face-to-face interaction and access to language practices (Cazden et al., 1972; Goodwin, 1980; Watson-Gegeo, 1988). As described, getting into shared play is the primary objective of the therapy sessions since it is used as a means to engage boys in social interaction with therapists and provide them contextualized language exposure. This means that, in order for substantial therapeutic activities to begin, the therapist or the boy had to initiate shared play by making an initiation, or, in conversation/discourse analysis terms, issuing a proposal. As such, proposals became the focal phenomena in this study.

Proposals are communicative actions used to elicit the co-participation or engagement of another (or others) in an activity. They make it relevant for another to provide a response that accepts or rejects (Maynard, 1984) while also enabling endorsement and structural alignment (Stivers, 2008). The term proposal subsumes a variety of linguistic functions such as announcements, invitations, offers and suggestions (Asmuß & Oshima, 2012) and related grammatical forms such as *Look at this! Do you wanna come over?*, *Would you like some?*, and *Let's eat there!* These proposals for play-selection are brief “instances of interaction” (Cazden et al., 1972; Goodwin, 1980; Watson-Gegeo, 1988), or *conversational-interactional actions* that often occur quickly

and over a single turn (Atkinson & Heritage, 1984; Curl & Drew, 2008; Stivers, 2001; Stivers 2002).

Data

In order to capture the quality of interactions (Cazden et al., 1972; Goodwin, 1980; Watson-Gegeo, 1988) between the boys and therapists, this study employed a conversation/discourse analysis (CA/DA) methodology. As described, proposals and the interactional sequences they set in motion related to carrying out shared play were the focal phenomena (Atkinson & Heritage, 1984; Maynard, 1984; Robinson & Stivers, 2001). 48 videos, or 6 videos for each boy from entry, mid, and exit time points were collected by the treatment program¹, and the opening sequences for each video were used to create finely-detailed transcripts (Sacks, Schegloff & Jefferson, 1974). Opening sequences were prioritized because prior studies have shown that how clinical interactions start can affect how they progress (Curl & Drew, 2008). From the 48 videos, 45 proposals were identified and analyzed. The first proposal for selecting a play routine was then identified and marked on transcripts in bold, as the following excerpts will show. While only vocal proposals are typically considered in conversation analysis, this study also includes non-vocal practices. The analysis revealed that there are three main ways that proposals are done in this setting, and each type will now be discussed in turn.

Proposing what to play together

Although proposals in the opening moments of JAE/EMT sessions occur quickly they are critical in this setting. They provide a means for moving into shared play, an

activity that must occur in order for training in this setting, including language exchange, to start and get sustained over a series of coordinated turns. Proposals are also a conversational-interactive mechanism for promoting child choice and initiation, especially in the context of boys picking up toys and beginning play actions with them.

Most commonly in this study, a proposal for play-selection becomes relevant once a boy selects a toy. In a few instances, however, it also becomes relevant when the aforementioned pre-requisites for play are delayed and incomplete (i.e. a boy walks around the playroom, resists getting seated, or refuses to select a toy). Evidence for the proposal types occurs systematically and demonstrates that JAE/EMT therapists do everything they can at every level to respect boys' initiations during their language treatment sessions. As will be described, the context, types, timing and even scarcity of proposals systematically occur because they are interactionally consequential.

Boy-proposes

18% (8/45) of proposals in this collection are child-initiated, which is considered ideal in terms of JAE/EMT objectives. This small number is not a surprise since difficulty with social interaction is a defining behavior of autism and individuals with autism may avoid or have difficulty constructing social bids (American Psychological Association, *Diagnostic Style Manual-IV*, 2000). Notably, only two boys made initiations in this way in the study, and only one boy (Jake) regularly did so. Jake's therapist, Karla, who described him as "rigid, but not behavioral," said that he was only "mildly autistic" and felt that if she "only had six more months with him he would be talking" (Field notes, 9.17.11). Jake's proposals in this context are similar to those in ordinary conversational

exchanges, in that they have an invitation/response structure (Atkinson & Heritage, 1984); however, because Jake has limited speech abilities, they take a combination of two steps in one turn to accomplish. These types have been named *voice-action* and *suspense-action* forms.

Voice-action proposals occur when Jake uses his Dynavox, a speech-generating device, or a vocalization to elicit Karla's attention before he proceeds with enacting a proposal for play-selection. Four of Jake's six proposals take this form. In Example 1, Jake has just selected a plastic corncob from a bin on the table at which he and Karla are positioned side-by-side. Karla begins to grab a food item from the bin but stops when Jake leans in front of her and peers at the Dynavox that is also the table. Holding the corncob in his left hand, he readies his right finger to push a button on the device and begin this exchange.

EXAMPLE 1

III.A.i. Jake-Karla SSN 1

- 5 BOY-D: **food** ((**quickly putting corncob to mouth**, looking away from TH))-
6 TH: -.h^hhh.=((quickly reaching for bread slices))
7 ((putting bread slices to mouth, gazing at/learning toward CH))
8 nm mmm mmm mmm mmm [mmm.
9 BOY: [nm.

Using the Dynavox, Jake says *food* in line 5. With this utterance, he elicits Karla's attention after which he immediately initiates play with the corncob by quickly putting it

to his mouth and pretending to nibble on it. The claim here is that the combination of the vocal announcement *food* and the play-selection (of nibbling food) is a proposal for shared play. This is in part because of Karla's response. Taking a sharp inbreath in line 6, Karla endorses Jake's announcement, which indexes his effort to socially involve her, and quickly reaches into the bin on the table for plastic slices of bread. Because Jake looked away from her in line 5, just at the moment when he pretended to nibble his corn cob, Karla then leans in and gazes at him just after placing the bread to her mouth in line 7. In this way, she accepts Jake's proposal and reinforces its social quality. Furthermore, she continues to show her endorsement of his proposal by animating the nibbling activity in an expression of deliciousness in line 8, with *nm mmm mmm mmm mmm* (Schegloff, 2007). Importantly, Jake then overlaps Karla's utterance with the repetition of *nm*. By employing this grouping of socially-coordinated actions, he ultimately affiliates with Karla's interpretation of his proposal (Jefferson, 1973; Jefferson, 1984a; Jefferson, 1984b), and the play routine continues.

Another *voice-action* proposal sequence with the same discursive structure as above is presented in Example 2. Here, Jake and Karla are sitting on the floor of the playroom. Jake has just picked up a plastic figurine that was on the floor between the two of them when this exchange begins.

EXAMPLE 2

III.A.ii. Jake-Karla SSN 23

14 BOY D^A.=
15 TH =n.hh.
16 BOY ((turning and **placing figurine in roller coaster seat**))=
17 TH =BOY in::::::. ((grabbing another figurine))
18 ((placing figurine in another roller coaster seat))
19 BOY ((grabbing another figurine))
20 ((placing figurine in another roller coaster seat))

Just as in example 1, this *voice-action* proposal sequence begins with an announcement by Jake in the form of *da*, which is vocally produced with an increased volume and a higher pitch onset (delivered in the way that *This!* might be said). Karla, taking a positive stance, immediately endorses Jake's when she takes an inbreath in line 16. Quickly turning, Jake then proposes the play-selection of placing the figurine in a plastic roller coaster, which is sitting on the floor to his left. Glossing Jake's play action as *boy in* and increasing her volume of *boy* and her stress and lengthening of *in*, Karla both accepts and endorses his proposal in line 17. Simultaneously, she also demonstrates her willingness to accept the play-selection by grabbing another figurine off of the floor and then placing it in a different seat of the roller coaster in line 18. Watching her, Jake then grabs another figurine and places it in a seat in lines 19-20. In this way, he again affiliates with Karla's interpretation of his proposal, and the play routine continues as it did in Example 1.

Voice-action proposals, like those shown in Examples 1 and 2, occur when Jake uses his voice, whether electronically or vocally, to elicit Karla's attention and then

quickly enacts a specific play-selection for her (i.e. nibbling on a corn cob, putting a figurine in a roller-coaster seat). Because Jake cannot entirely use speech to formulate a proposal about what to play together or an invitation for Karla to join him in the game of his choice, he must use a vocalization just before or in tandem with his enactment of a play-selection in order to accomplish the shared quality that defines a true proposal. By combining a vocalization and a clear play action, Jake accomplishes a socially-connected “we” moment (Goffman, 1959/2002), which gets sequentially ratified. More subtly, Jake also achieves this interactional feat through *suspense-action* proposals.

Suspense-action proposals are still within the larger category of *boy-proposes* but do not include voicing. They occur when Jake begins a clear play action and then looks at and/or waits for Karla to take a next turn. Two of his six proposals take this form, as is shown in Example 3. When this exchange begins, Jake and Karla are sitting on the floor with a bin of blocks between them.

EXAMPLE 3

III.A.i Jake-Karla SSN 2

10 BOY = ((**suspends a block on the lid of the bin, watches TH**))
11 TH-D ((delayed Dynavox timing)) block.
12 .h^h. ((noticing CH's play actions))
13 BOY ((**slides a block down the lid**))
14 TH ((sliding a block down the lid)) schooo.

This proposal type is accomplished when Jake visibly secures Karla's attention and then proceeds with making a clear play action. In line 10, Jake suspends a block on

the lid of a bin and then pauses to look at Karla. Momentarily preoccupied by the Dyanvox in line 11, Karla looks up in line 12 and takes a sharp inbreath, indexing that she has just noticed Jake's display of readiness. Having received this acceptance and secured Karla's attention, Jake then completes his proposal by sliding his block down the lid in line 13. Karla immediately accepts, repeating the same move in the next turn with a block she is already holding. Comparing this example to those prior, Jake doesn't use his voice to secure Karla's participation before proposing a play-selection. Instead, he visibly suspends his play action and simply watches Karla, until her gaze toward him and her sharp inbreath indicate that she recognizes his proposal to slide blocks down a ramp together.

The *boy-proposes* type is boy-initiated, which is most desired in this setting, and it is presented here as a typical proposal even though it is constructed of vocal or visible and non-vocal actions. Because boys in this study have limited verbal expression, a combination of actions must occur in order for a proposal to be formed and delivered, thus beginning an interactional sequence. In *voice-action* forms, boys' alternative/augmentive and/or oral vocalizations are combined with a specific play-selection demonstration. *Suspense-action* forms are similarly constructed, except that, instead of vocalizing, boys' pause while gazing at therapists in order to get their attention. These *boy-proposes* forms almost always receive an accept-response from the therapists, after which 60% (3/5) move into extended periods of play. There are rare moments, however, when this type of proposal is rejected.

Only two boys use a *boy-proposes* form in these data and then receive a reject-response from a therapist. This is because the therapists anticipate the boys' restricted

turn-taking behaviors within the sequence. 8% (3/8) of proposals in this context [child = +toy action, -proposal] get blocked. In the following case, for example, a boy named Will uses talk in combination with clear play actions to initiate a performance (Will frequently built stages, where his figurines were the only performers allowed; after one session, he also used an iPad to draw a boy standing on a musical score, under which he wrote the title “Performance by Bard”, Field notes, 1.4.12). Based on experience with Will, his therapist, Jessie, tries to prevent him from starting this type of play because it positions her as a spectator and blocks her co-participation. Since playing together must occur in the sessions in order for language and other social-skill instruction to occur, Jessie had to reject these types of proposals from Will.

Before this excerpt in Example 12 begins, Will and Jessie have already been negotiating toy-selection for nearly a minute and a half at the start of the session. Jessie is placing toys, including a treehouse, near where Will is squatting down when this exchange begins.

EXAMPLE 12

III.B.iii Will-Jessie SSN 24

16 CH ((looking at TH)) **café.** ((**twisting knob on treehouse**)) **café.**
 17 TH ((grabbing, pointing at treehouse)) treehouse.
 18 CH whusha^.
 19 TH ((tries to press Dynavox))=
 20 CH =((tries to press Dynavox, pushes TH hand away))

In line 16, Will looks at Jessie and announces one of his favorite performance venues, a *café*. He simultaneously begins a clear play action of twisting a knob on the

treehouse. Knowing that this is a proposal for a performance, or a play-selection that will limit turn-taking opportunities, Jessie does not accept. She rejects Will's play-selection proposal in line 17 by retrospectively treating it as a toy-announcement. She does this by grabbing and pointing at the treehouse while naming it, as if she is both endorsing Will's exciting toy-selection and repairing his utterance. Vocalizing confusion in line 18 with *wuhsha*, Will then rejects Jessie's effort to repeat *treehouse* using the Dynavox by quickly trying to push a button and also pushing Jessie's hands away in line 19. Clearly, Will does not ratify Jessie's interpretation.

In particular, this reject-response example demonstrates the important fact that boys and therapist both must ratify the on-going meaning of proposals in order for play to successfully continue. Still, *boy-proposes* types are unlikely to occur in this setting, due to the nature of autism. Since therapists are trained to try to elicit boys' initiations, but rarely receive them, that means that they are sometimes put in the position to prompt boys to make a play-selection.

Therapist-proposes

Even though an objective of JAE/EMT is to elicit and not direct children's behaviors during TCX sessions, roughly one-third (14/45) of the first proposals for play-selection are done by therapists. In theory, therapists in this lab prefer the *boy-proposes* type over all others because it is an explicit goal of JAE/EMT treatment for children to initiate play activities and, accordingly, for therapists to follow their lead. The *therapist-proposes* type is used, however, when boys have not selected a toy and have not proposed a play-selection. In this context, two proposal forms occur.

Open-options are used by therapists to prompt boys to make a play-selection when they have not selected a toy and show no indication of issuing a proposal. 50% (7/14) of proposals in this context are *open-options*, which means that the therapist directs the boy to make a play-selection by asking an open-ended question (i.e. *what do you wanna play*) or issuing an imperative (i.e. *let's play, we're gonna play with our toys*). These are typical proposals, in which a therapist uses speech to make a bid that is “on the record” (Schegloff, 1991). Through talk, therapists publicly position the boy to provide a response, even if it proves to be some form of non-compliance such as silence (Sacks et al., 1974) as is almost always the case in this setting. Only one of the therapists’ *open-option* proposals leads to play.

In example 4, the session has already been in progress for over a minute while Bryan has been taking his shoes and socks off and repeatedly trying to stack them. He sits for a moment on the floor in the middle of the playroom with this therapist, Janya, before this sequence starts.

III.C.i Bryan-Janya SSN 23

2 BOY ((begins to crawl))=
 3 TH =((**what do you wanna pla^y.**))
 4 BOY eh unn. eh unn.
 5 ((reaching for, grabbing a pan of pizza))=
 6 TH =((reaching for, taking pan of pizza))=
 7 BOY= [((crawling back, following the path of the pizza pan))]
 8 TH [((placing pizza pan on the floor, trying to take a piece out))]
 9 BOY ((pressing piece back down)) NO^=

When Bryan begins to crawl in line 2, it appears that he will neither complete the pre-requisites to play (i.e. getting seated/settled, selecting a toy) nor propose a play activity. Though avoiding play and/or social interaction is common for children with autism, Janya must still get play started in order to for the session to ultimately be successful. Though she waits for nearly two minutes when the session begins for Bryan to set a toy and/or game to play, she eventually proposes that Bryan make a play-selection in line 3. She does so by asking him *what do you wanna play* with an upward intonation. Bryan does immediately respond in line 4, answering the question by vocalizing and grabbing a pizza pan from a shelf in 5. Counter to JAE/EMT training, however, Janya continues to take the lead by removing the pizza pan from Bryan's hands in line 6. After he promptly crawls back in her direction in line 7, following the path of the pizza pan with his gaze and body positioning, Janya places the pan on the floor in front of her in line 8. She then expands play-selection herself by taking a piece of pizza out of the pan. Bryan immediately rejects Janya's move by pressing the piece back in place and saying *no* with an increased volume and pitch in line 9, ending the interaction.

Open-option proposals like these always occur after a significant delay, such as the nearly two minute stretch that started the session between Bryan and Janya. They also consistently occur in a context when boys in sessions are moving their bodies and/or gaze in such a way that prevents getting seated/settled and/or toy-selection, thus indicating an overall threat to the success of the session as a whole. Like *boy-proposes* types, they demonstrate an important pattern in JAE/EMT sessions, which is that therapists orient to boys' initiations as preferable. To the extent possible, they provide boys with as much time as possible to lead interactions, but therapists must still ensure the session's

progress. Interestingly, Janya may have initiated too many times in the above exchange for it to continue to be tolerable to Bryan. In addition to prompting his play-selection, she also removed the toy from his hands and made the first play move, which Bryan rejected.

In example 5, another therapist uses an *open-option* proposal with little success. Lennon is sitting in a chair, a bit slumped, not looking at his therapist, Jessie. She scoots her chair closer to his to the point where their knees are touching and they are sitting face-to-face. After gazing at the camera/camera-person, Lennon briefly looks at Jessie and then appears to vocalize his frustration as this exchange begins.

EXAMPLE 5

III.C.ii. Lennon-Jaime SSN 48

- 1 BOY kkkuh .h=
2 TH =**what do you wanna pla^y.**
3 BOY ((looks away from TH))
4 (5.0)

As with Example 4, this example occurs over a minute after the session started. Lennon is resisting the therapy as a whole. Even though he is sitting still, his affect is flat, and he has not selected a toy. His vocalization and exhalation in line 1 have an exasperated *come on* quality, which Jessie quickly links with her *open-option* proposal in line 2. Like Janya above, Jessie is holding Lennon accountable for making a play-selection. She has asked him a question and it mandates an answer. In the absence of a response from Lennon, he and his therapist are now in an interactionally- and interpersonally-strained moment. Positioned now to respond to Jessie's proposal, Lennon simply averts his gaze and sits silently for 5 long seconds as Jessie continues to gaze at him.

Rejecting proposals in this way is not the only resource Lennon uses in the face of *open-option* types. Involved in five of the seven *open-options*, he also sometimes responds with counter-proposals. More than passively resisting, Lennon puts his rejection of the session on the record. For example, when his first therapist, Dima, proposes *let's play* and *it's time to play*, Lennon responds with *I want to see mommy* and *(go to) elevator*, respectively. These counter proposals capture the tone of the *open-type* proposal sequences, showing them as being treated by boys as a move to business that is resisted. Despite being trained not to prompt the boys, therapists must still deliver a language treatment that can only be accomplished if some type of play begins. Since boys in these exchanges are resisting most, if not all, pre-requisites to play, therapists must eventually prompt them to act. In this context, the *open-options* appear doomed to fail. Boys (and Lennon most frequently), understand the proposals yet frequently respond in ways that register their rejection of that action and/or to the treatment as a whole. Strikingly, however, *therapist-proposes* types that occur after toy-selection has been completed may have a better chance of being accepted.

Candidate-option proposals are used by therapists to give boys a specific suggestion for play-selection. Importantly, they occur *after* a boy picks up a toy. He then simply holds the toy and does not begin to play with it. As a result, after waiting as in *open-option* types, the therapist eventually makes a play action on or with the toy. 50% (7/14) of the proposal types in this context take this form.

In Example 6, Parker is seated on the floor of the playroom with his therapist, Jessie, holding a cloth cake. After he makes a vocalization that Jessie unsuccessfully tries to clarify (lines 1-4), Jessie proposes a *candidate-option* for play-selection.

EXAMPLE 6

III.C.ii. Parker-Jessie SSN 1

1 BOY ((holding a felt birthday cake tier)) ng urs sna:
2 ((looks in TH's direction))
3 TH hmm?
4 ((3.0))
5 TH ((readying the cake tier, **sticking shape on it**))
6 BOY h. happy bi^rthday candle.
7 TH ((pointing)) HAPPY BI^RTHday ca::ke.
8 BOY ((grabs candles, begins to stick candles on cake tier))

Because Parker stalls for over 3 seconds while holding the cake tier (lines 1-4), Jessie proposes a *candidate-option* for play-selection by sticking a Velcro-shape on the cloth cake tier in his hands. Looking down at the newly-placed item, Parker engages with Jessie by looking up at her and making a comment in line 6, which Jessie then partially repeats and also repairs with the insert of *cake* (for *candle*) on line 7. Without re-doing his comment, Parker then selects a candle and proceeds to stick it on the cake tier. In this way, he both accepts the therapist's *candidate-option* proposal of putting toppings on the cake, but clarifies his preference to place candles and not shapes, and the shared play not only begins but also continues for two and half minutes.

Example 7 also begins with the pre-requisites of play in place, but ends less successfully, as most *therapist-proposes* types do. This exchange begins just after Max has gotten seated in a chair at a small table in the playroom.

EXAMPLE 7

III.C.i Max-Emily SSN 24

3 BOY ((grabs alphabet shapes))
4 TH ((moves to join CH at the table)) .hhhah! LE^TTERRRS.
5 BOY ((still holding letters, turning head away from TH))
6 TH ((**pushes felt tree toward CH, places a letter on it**))
7 BOY ((loosening grip on letters, looking away, dropping letters))

Here, Max makes a toy-selection in line 3 by grabbing alphabet shapes from a little box on the table. Moving to kneel across the table from him in line 4, Emily accepts his selection by taking an inbreath and endorses it by saying *letters*. She says *letters* with very high affect, which includes an increased pitch and volume, stress and elongation, and an animated facial expression. In line 5, Max silently turns his head away from Emily. She then proposes a play-selection of placing the letters on a felt tree in line 6. The sequence ends when Max rejects Emily's proposal by not placing any letters on the tree and dropping the letter from his hands.

The *therapist-proposes* type is comprised of *open-option* and *candidate-option* forms. *Open-option* proposals occur as the first-pair part of an adjacency pair and mandate a proposal from the boys (Atkinson & Heritage, 1984). This makes the boy accountable for producing a play-selection proposal, even though he may not yet be seated or have selected a toy. In these sessions, they never lead to shared play. *Candidate-option* forms, on the other hand, create a different sequential trajectory. Though usually only initiated non-vocally by therapists, these forms make it possible for boys to simply respond to a therapist's move by accepting or rejecting. This

comparatively easier sequence may partially account for why *candidate option* forms lead to shared play more often than *open-option* forms.

Two main types of proposals have been described, so far. *Boy-proposes* types are preferred in this setting because it means that boys are initiating shared play, which is a primary goal of the treatment sessions so that language training can begin; however, they rarely occur. *Therapist-proposes* types are avoided, if possible, since therapists are trained to follow children's leads. Still, they must be issued if boys in the sessions are engaging in long stretches of stalling or other activities instead of play-selection. So, given the scarcity of boys' initiations but also the preference against therapists' initiations, what do therapists in this setting do when a boy doesn't or won't initiate playing together?

Therapist-transformations

Facing the near absence of *boy-proposes* types and preferring to avoid *therapist-proposes* types, therapists largely make efforts to transform boys' relevant actions with toys into shared play. This follows JAE/EMT training protocol of using "imitation" (Field documents, JAE/EMT manual). Included here as proposals, *therapist-transformations* types nevertheless exist in a social flux. In these cases, boys never invite therapist to play. Therapists simply join in the boy's activity, inviting themselves. It is a hybrid type in which neither the boy nor the therapist make a true proposal for play-selection; instead, the therapist assigns a social meaning to a boy's solitary play activity. Where the boys have failed to initiate a play activity, *therapist-transformations* occur

over 51% (23/45) of the time, and they almost always lead to shared play. Six of the seven therapists (i.e. all but Karla) use this form.

Therapist-transformations occur when a boy initiates a clear solitary play action and a therapist treats it as a proposal, though it truly isn't. Potential transformations begin with a solitary, not social, play action by a boy. In these moments, boys often move their bodies very closely to their selected toys and/or away from the therapist. From a sequentially responsive position, and while observing the boy very closely, a therapist then treats the boy's play action as a proposal (i.e. a social bid) for what they should play together. She does this by quickly enacting the same play action as the boy, as near as possible to his line of sight. The claim here is that the therapist uses the turn-taking system to "accept" the boy's "proposal" to play together. Though this sequential act of accepting, the therapist is almost always able to transform the meaning of the boy's just prior action from something solitary to something social. 83% (19/23) types in this context [child = +play action, -proposal] take this form. In the remaining 4 cases, therapists are either not yet seated/settled or finished arranging toys and, as a result, they simply miss the boys' first play-selection proposal.

When compared to *boy-proposes* and *therapist-proposes* types, *therapist-transformations* are a good option for facilitating shared play while respecting boys' initiations in JAE/EMT sessions. As described, *boy-proposes* types are unlikely to occur and *therapist-proposes* types generally end in interactional failure. Comparatively, *therapist-transformations* frequently lead to sustained, shared play, as will be described. They provide evidence that by responding to and not directing boys' actions, therapists can successfully ease the boys into shared play and ultimately increase their language

learning opportunities. Additionally, like *boys-proposes*—and very much *unlike therapist-proposes*—types, *therapist-transformations* occur rapidly and often at the very start of the session.

Example 8 provides a good example of this type. As the session begins, Devi crouches down on the playroom floor near a plastic pig. From a standing position, his therapist, Jessie, who is still walking into the playroom, quickly moves to join him on the floor as this exchange begins.

EXAMPLE 8

III.B.ii.a. Devi-Jessie SSN 2

- 1 BOY ((selecting a plastic pig, **putting coins in the slot** on top))
- 2 TH ((joining CH, grabbing a coin, **putting it in the slot**)) i::::n?
- 3 TH-D ((pushing Dynavox)) in.
- 4 BOY ((completes putting a coin in)) eh.

In line 1, Devi initiates a clear play action of putting coins in the slot of a plastic pig. Jessie joins his solitary play activity in line 2 by grabbing another coin that is near Devi on the floor and putting it in the slot like he just did. At the same time, Jessie glosses Devi's play action by saying *in* with an upward intonation, which has the effect of seeking confirmation. In the next turn she also presses the Dyanvox, a move which therapists in this setting use to give voice to a boy's intentions (Field notes, 8.12.11). In line 4, Devi accepts Jessie's interpretation by vocalizing *eh*, a seeming approximation and repetition of *in*. This response to Jessie's question in line 2, which is combined with his continuation of the play routine, demonstrates that Devi's solitary play has just become

more shared. From a response position in line 2, Jessie manages to transform Dezi's prior action into a proposal.

Example 9 is structured like the previous example. Here, Bryan and Janya are sitting on the playroom floor, facing a barn. Bryan looks down at a plastic sheep in his hands and then makes a clear play move.

EXAMPLE 9

III.B.i. Bryan-Janya SSN 24

10 BOY ((places sheep in barn))
11 TH [((-placing sheep in barn)) sheep i^:::n.]
12 BOY [((looking for, selecting a cow]]
13 co^w. ((placing cow in barn))

Without looking toward Jayna or vocalizing, Bryan initiates a clear play action by placing his sheep in the barn. In line 11, Janya also places a sheep in the barn and simultaneously endorses the game by saying *sheep in*. In effect, Janya exploits the turn-taking system that is inherent in interaction. She uses it to respond to Bryan's solitary play move and accept his proposal to play the game of putting animals in the barn together. Her recast of Bryan's action of putting sheep in the barn as a social bid sets the stage for a transformation of meaning, but it must also be taken up by Bryan in order to be complete. In line 12, Bryan does not visibly or vocally acknowledge Janya's actions, and he appears to simply be preparing for his next, possibly solitary, play move. In line 13, however, Bryan says *cow*, and his stress on *cow* and the rising then falling intonation with which it is delivered give it a comment-like quality. At the same line time he continues the same play activity by placing the cow in the barn. Bryan's comment and

on-going play actions demonstrate that he is oriented to his continuing activity as now shared. Just as in the prior example, Bryan ultimately accepts her more social interpretation and, with this, the retroactive transformation of his solitary play move into a proposal to play together is accomplished.

Example 10 is structured like the previous examples, except that the therapist is delayed a few moments as she reaches for toys that she needs. Here, Max is sitting on the playroom floor with spongy blocks scattered around his outstretched legs, making it difficult for Emily to sit near him. Nevertheless, Emily is watching Max, who is intently looking at the items in his hands, when this proposal sequence begins.

EXAMPLE 10

III.B.i. Max-Emily SSN 2

```

1 BOY      ((pushing rod through square))=
2 TH       =((quickly searching through bag for rod and square))
3          .hhh ((moving rod and square toward boy's line vision))
4          ((pushing second rod through different square)) pu^sh.
5 BOY      un. ((pushing rod again))=

```

In line 1, Max begins his play activity by pushing a rod through a square. Moving quickly, Emily selects a rod and square from a bag in line 2 and attempts to secure Max's visual attention by taking a sharp inbreath, leaning forward, and then placing the items closer to his line of vision. In line 4, Emily repeats Max's play move by pushing a rod through a square while synchronizing her action with an announcement of *push* and a rising and falling intonation. In the next turn, Max pushes the rod again and simultaneously vocalizes *un*, thus answering Emily with a visible and vocal agreement.

In the final example of the *therapist-transformation* type, David has just picked up a pegboard and dumped the pegs on the floor between himself and his therapist, Kate. This exchange follows.

EXAMPLE 11

III.B.i. David-Kate SSN 2

1 BOY ((places shapes on peg))
2 TH ((positions shape over different peg))=
3 BOY =((edges shape over TH's intended peg, placing it))
4 TH ((places shape on boy's newly placed peg))
5 BOY ((places another shape))

In this sequence, David initiates a clear play activity by placing a shape on a peg. As Kate tries to place another shape on a peg in line 2, David contests her effort. He edges his shape under Kate's, blocking her move in order to continue with his own. In this way, he reasserts his intention to play alone or at least to resist Kate's move. Persisting, Kate then places a shape on David's newly placed peg in line 4. David then accepts Kate's interpretation by placing a shape in line 5 and continuing to take turns with her like this for over a minute.

In sum, *therapist-transformation* proposals build off of boys' current play actions to create the opportunity for shared play. From a sequentially-responsive position, therapists' treat boys' just prior play initiations as if they are actual proposals. They do this by "accepting" the boys' solitary play actions as if they are social bids, and thus retroactively change the meaning of the whole exchange. If boys continue with the play

activity, as they almost always do in these cases, the retroactive transformation of a mere solitary play action into a social exchange is complete.

Evidence that participants themselves orient to proposal types

As described, evidence for the three proposal types occurs systematically and demonstrates that JAE/EMT therapists do everything they can at every level to respect boys' initiations during their language treatment sessions. The designations of *boy-proposes*, *therapist-proposes* and *therapist-transformation* types are not random. The frequent, context and timing of the proposals occur in patterned ways because they are interactionally consequential.

In terms of frequency, *boy-proposes* and *therapist-proposes* types occur the least, at 18% and 31%, respectively. While it may at first appear incorrect to claim that therapists prefer *boy-proposes* types over *therapist-proposes* types using evidence of frequency, it is important to remember that children are in this play-based treatment specifically because they are being taught ways to initiate social exchange. Therefore, it would be expected that boy-proposes types would seldom occur. In comparison, the best option in this setting for creating shared play that builds on boys' play initiations are *therapist-transformations*. They occur 51% of the time, making up over half of the session starts. Additionally, it is possible to consider *boy-proposes* and *therapist-transformations* as two types that respect and enhance boys' initiations (hereafter, when combined, termed *child-initiations*). If they are combined, the types that support boys' social initiations in JAE/EMT sessions occur nearly 70% of the time. This means that

therapists give boys' in sessions the opportunity to initiate shared play a large majority of the time.

In terms of context, as in frequency, *boy-proposes* and *therapists-transformation* types are similar. They occur quickly, at the very start of sessions, after a boy has already picked up a toy. Though the boy may not necessary be seated or completely settled, his focus on the toy in his hand keeps him relatively stationary, facilitating the co-participation of the therapist. The only difference between *boy-proposes* and *therapists-transformation* is that in the former, boys (mostly just Jake) truly invite therapists to play a particular game with them. In the latter, therapists act as if boys invite them and, by joining in the game, attempt to transform the boys' solitary behaviors into shared play. In contrast, *therapist-proposes* types regularly occur many minutes after sessions have gotten started. Half of the time, the pre-requisite to play of selecting a toy is not complete, and boys may also be moving around the playroom versus being seated or relatively settled. Though they delay when possible, showing their preference for boy-initiations in general, they must eventually prompt boys to sit, select a toy and/or select a play activity if it appears that the session is in jeopardy of failure.

So far, it is reasonable to claim that *if a therapist in this setting can (wait for and) accept a play-selection that a boy initiates she will*. Conversely, *if a therapist in this setting can avoid issuing a proposal for play-selection she will*. As described, these claims are supported by frequency counts and when the proposals occur (Shultz & Erickson, 1981). There is also interactional evidence that *therapist-transforms* and *boy-proposes*—or more broadly, *boy-initiated*—types are similarly preferred by therapists. 23 (of 24) *therapist-transforms* types begin early enough in the video to reasonably measure

the timing between when toy-selection is completed and play-selection proposals are made. The six therapists who use *therapist-transforms* wait an average of 5 seconds before a proposal is offered. Their timing is close to that of *boy-proposes*, where therapists wait an average of 7 seconds. This similar preference makes practical sense. In line with JAE/EMT training, therapists can use such *boy-initiated* types to actually or purportedly follow a boys' lead. Furthermore, when combined, *boy-initiated* types appear to be preferred over *therapist-proposes* types because therapists wait an average of 11 seconds—or an average of 5 seconds longer—between when toy-selection is completed and play-selection proposals are made. It is therefore reasonable to make the claim that *if a therapist in this setting can accept a play-selection that a boy initiates she will*. What *therapist-transformations* share with *boy-proposes* types is that in all cases the boy is treated as the originator of the play activity. In such cases, we see more play and longer play.

Effect of proposals on play

These alternative practices for proposing shared play are important not only because of the ways that play is established but because they might be expected to shape play outcomes (Curl & Drew, 2008; Stivers, 2001; Stivers 2002). This section tests this hypothesis.

To answer the question, *What linguistic exchanges (i.e. interactional, not psychological) predict the start and duration of shared play?*, transcripts were coded in preparation for statistical modeling. As described, proposals emerged as the linguistic exchange of interest and thus who initiated them became the independent variable (IV)

(*proposal type: boy-proposes=1; therapist-transforms=2; therapist-proposes=3*, later collapsed into a measure of boys' initiation, or *boy-initiates: boy-proposes+therapist transforms=yes=1; therapist proposes=no=0*). Because theory predicts that co-participation increases language-learning opportunities (Cazden, 2001; Goodwin, 1980; Erickson & Shultz, 1981; Kasari et al., 2008; Kasari et al., 2010; Ochs & Schieffelin, 2011), dependent variables (DV) of interest were whether or not boys started playing with therapists and, if so, how long they played. Based on the definition of a play routine provided in the Routines Coding (RC) manual (Goods et al., 2012), a boy was considered to be co-participating if he started playing with a therapist (*starts to play: yes=1, no=0*). Using ELAN software (Brugman & Russel, 2004) as well as a definition of play-completion from the RC manual (Goods et al., 2012), how long the boy played with his therapist once play started was then also measured (*duration of play: continuous*). Logit (IV=*boy initiates*; DV=*starts to play*) and linear regression (IV=*boy initiates*; DV=*duration of play*) analyses were then conducted and related inferences were made, respectively.

In terms of moving into play routines or not, nearly all *boy-initiates* types lead to shared and sustained play. 60% (3/5) of permitted *boy-proposes* types lead to shared play, which have an average duration of 3 minutes, 28 seconds. Similarly, 83% (19/23) of *therapist-transforms* types lead to shared play, which has an average duration of approximately 33 seconds. Notably, therapists *accept-response* transformations always lead to joint play (100%, 19/19), while their *miss-responses* never do (0%, 0/4). These *boy-initiates* types sharply contrast with *therapist-proposes* types, which almost never lead to play (7% or 1/14). Therefore, it appears that a key predictor of moving into play is

a boy's own initiation of play *whether or not that begins with a proposal for shared play or simply with a solitary play action*. Importantly, getting into and sustaining shared play is a primary objective of JAE/EMT therapist because it is only after that has been accomplished that language training can begin.

As described in the methodology section, proposal types, play starts and play duration were coded and entered into STATA in order to answer questions about the relationship between proposals and predicted play outcomes using statistical modeling. In STATA, the logit command was used to regress play starts on proposal types. Using an additive logit model, the net effects of proposals for play-selection on the log odds of starting to play were estimated (shown below). Based on the results of a coefficient t-test (t-test=3.38), the researchers reject the null hypothesis that the coefficient for proposal type equals zero (p=.001). Thus, the researchers interpret the estimated effect of proposals from this model: a proposal being *boy-initiated* rather than *therapist-initiated* adds 3.80 to the log odds that play starts. Another way of saying this is that *boy-initiated* proposals comparatively increase the odds of play starting by 45% (display $\exp(3.8) = 44.7$). Therefore, the predicted probability of *boy-initiated* proposals leading to play = 64% (display $1/[1+\exp(2.56 + 3.8)]$ or display $1/[1+.12+.45] = .64$). In contrast, the predicted probability of *therapist-initiated* proposal leading to play = 7% (display $1/[1+\exp(2.56 + 0)] = .07$).

Additionally, the regress command was used in STATA to analyze play duration on proposal types. Using a linear regression model, the effect of moving from *therapist-initiated* to *boy-initiated* proposal on play duration (in seconds) was estimated. Based on the results of a coefficient t-test (t-test=1.95), the researchers fail to reject the null

hypothesis that the coefficient for proposal type equals zero ($p=.057$). Practically speaking, however, given the near statistically significant of the t-test result with such a small sample, an interpretation may still be warranted. Thus, the researchers cautiously interpret the estimated effect of proposals from this model: moving *therapist-initiated* to *boy-initiated* proposals may increase playtime by approximately 76 seconds.

Overall, *boy-initiated* proposals play-selection are significantly associated with the occurrence of shared play in TCX sessions and they may also be associated with an increase in its duration. This suggests that *boy-initiated* proposals can and should be used to improve therapeutic outcomes in social interaction for boys with autism.

Discussion

Micro-interaction

There are three practices or ways of doing proposals for play-selection at the opening of TCX sessions: *boy-proposes*, *therapist-proposes* and *therapist-transformations*. Although these specific “instances of interaction” (Cazden et al., 1972; Goodwin, 1980; Watson-Gegeo, 1988) within the TCX sessions occur quickly, they are critical in this setting. Proposals provide a means for moving into shared play, an activity that must occur in order for social-skills training, including language exchange, to start and get sustained over a series of coordinated turns. They are also a mechanism for promoting child choice and initiation—especially in the context of boys picking up toys and beginning play actions with them. Though often occurring within a single conversational-interaction turn (Atkinson & Heritage, 1984), the proposals described and modeled in this study appear to directly relate to the duration of play and, therefore,

treatment outcomes (Curl & Drew, 2008; Stivers, 2001; Stivers 2002). Future studies should also consider the quality of play, and options for that include applying Routines Coding (Goods et al., 2012) and, from a CA/DA perspective, counting the number of play turns—as an indicator of increased tolerance for social interaction and turn-taking.

Applying methodology that permits close analysis of social interaction as was done in this study provides a good fit for the “social turn” that autism language intervention is taking (for an overview in SLA see: Kramsch & Whiteside, 2007; Mori, 2002). Intervention researchers have identified an important link between children’s joint attention behaviors and their grammatical abilities. Anderson and colleagues (2007) found that 55% of their subjects with autism remained only minimally verbal by age 9, and that, in part, children’s joint attention scores predicted these language outcomes. Similarly, Kasari, Freeman and Paparella (2006) determined that pre-school children’s gains in joint-attention and symbolic-play skills related to higher assessed language skills when the children were assessed three years later. In follow up studies, however, Kasari and her colleagues began to posit that the gains related more to joint *engagement* than discrete skill building, suggesting that the socio-emotional dimensions of interaction were as—or even more—important to language learning as was co-attention to an object (Kasari et al., 2008; Kasari, Gulsrud, Wong, Kwon, & Locke, 2010). While this engagement, or drive to interact with others, is innate in neurotypical children, it is diminished in those with autism—as it is for older adolescents and adults (Amador & Adams, 2013; Lee et al., 2009; Schumann, 2013). In this setting, therapists teach basic social interactional skills to the children in their program. In particular, JAE/EMT allows therapists to use play to co-opt children’s more restricted interests in toys and solitary

games and convert them into tolerable and even enjoyable moments of playing together. Teaching children to gradually find aspects of social interaction (i.e. eye contact, side-by-side mutual activities, turn taking, vocalizations) to be meaningful and even pleasurable ultimately increases the number of available social opportunities, which is critical for language acquisition. As in SLA—and unlike in PLA—these opportunities for individuals with autism must be actively cultivated in order to for learners to receive sufficient language exposure (Schumann, 2013).

Building co-participation

As shown in Examples 8-11, *therapist-transformations* begin with a solitary play action by a boy. From an immediate or near-immediate responsive position, a therapist then treats the boy's initiation as a proposal (i.e. a social bid) for play-selection. Through the sequential act of accepting, the therapist attempts to transform the meaning of the boy's just prior action. In a moment of social suspense, the therapist then waits: Will the boy ratify her interpretation? When he does, as almost always occurs, his initial play action gets ascribed a social meaning that he may have never intended and a true transformation of meaning occurs. In this way, therapists in JAE/EMT sessions begin to socialize the boys to experience co-presence as co-participation (Goffman, 1959/2002). They use language in its broadest—discursive and grammatical—sense to “*constitute*² some social structure in the immediate situation at hand” (Ochs, 1996, pp. 416). By exploiting the turn-taking system to retrospectively (Goodwin, 2006; Goodwin, 2007) change the social meaning of the boys' prior actions from “me” to “we,” therapists offer the boys an opportunity to be social on their own terms. The boys ultimately get to

maintain control of the progression of and the overall meaning assigned to the exchange, which may ultimately capitalize on the tendency of those with autism to prefer fixed, predictable and/or repetitive actions (APA, DSM IV, 2000). In this way, as a feature of autism, restricted behaviors in the JAE/EMT setting provide therapists with the means to harness children's attention in order to promote more successful social exchanges over time.

Access to language practices

There are at least two ways to consider language teaching and learning in a clinical and/or pedagogical setting such as this. One is to focus on the individual language-learning needs of the boy. Another is to focus on how face-to-face interaction affects a boy's access to language practices and to consider the structure of discourse at the level of turns (Cazden et al., 1972; Goodwin, 1980; Watson-Gegeo, 1988). This study, taking the latter approach, examined proposals and proposal sequences between minimally-verbal boys with autism and their therapists and demonstrated a potential predictive relationship between desired play outcomes, which has implications for language learning. If "learning is a change of participation in a local community of practice" (Erickson in Johnson & Amador, 2011, pp. 95), then the moments when boys "accept" therapists' transformations of their play moves can index learning in this setting. Additionally, the number of these accepted moves and the duration of the turn-taking that follows (or, perhaps, the literal number of turns that follow [personal communication, E. Ochs, 10.27.11]) may index an increase in engagement.

In terms of language learning, this is important in numerous ways. In line with language socialization and learning theory, as the boys' learn to engage in shared play and to sustain those exchanges with their therapists, they increase their opportunities for social interaction and related discursive and linguistic mastery (Erickson & Shultz, 1981; Ochs & Schieffelin, 2011). Additionally, as the interactional instinct theory predicts, increasing the joint engagement, or the affiliation, between the boys and their therapists over time may bolster the attentional and motivational mechanisms that language acquisition requires. For neurotypical children, PLA is guaranteed because the neurochemicals of bonding and affiliation increase the likelihood that interactions with primary caregivers and others are pleasurable and continually pursued (Lee et al., 2009; Schumann, 2001). For children with autism, however, any number of attentional, physical, sensory or other developmental differences can make interactions too aversive for children to prioritize them over time, thus diminishing their opportunities for social engagement and related language exposure (Ochs, Solomon & Sterponi, 2005).

Conclusion

As a language treatment, JAE/EMT stands in sharp contrast to the widely-used (read widely-funded) Applied Behavioral Analysis (ABA) methods. Where ABA treatments often aim to teach children with autism to make appropriate conversational-interactive responses, JAE/EMT aims to teach children to initiate an exchange. In JAE/EMT sessions, the ideal interaction begins with a child inviting a therapist to play. Therapists are trained to prefer this above other relevant alternative activities, including a child initiating solitary or side-by-side playing, because it means that a child is pursuing

social interaction and, thus, ultimately increasing his or her opportunities for learning and using speech. Accordingly, therapists avoid overtly taking the lead in JAE/EMT sessions, as they strive to follow children's interests, which most often take the form of selecting, holding or handing a toy (and rarely takes the form of proposals for play-selection). This means that, in addition to minimizing distractions in a playroom and maximizing its appeal to prevent children from rejecting a session's activities all together, therapists deliberately limit their use of directive behaviors and language. Furthermore, since only one boy in the study ever invited a therapist to play, therapists frequently needed to find ways to suggest to boys how to socially engage during play without dominating the exchange. They primarily accomplish this through transformative moves, which are largely sequentially ratified by boys in the study. These moves consist of therapists treating a boy's just prior move as an invitation to play (i.e. the boy strikes places two magnets together, so, in the next turn, the therapist does the same thing with two additional magnets while animating her move with facial expressions and vocalizations), which consistently leads to shared play that gets sustained. Thus, *therapist-transformations* can and should be systematically introduced into autism language therapy as a way to achieve more successful shared play outcomes.

Considering features of social interaction such as conversational sequences, corporeal arrangements, emotional intensity and topics from an analytical standpoint in addition to a clinical perspective, may allow autism researchers and practitioners to continually enhance individual learning experiences (See: "autistic sociality algorithm" in Ochs & Solomon, 2010). In this way, language learning variation in autism is more like SLA than PLA, and JAE/EMT methods and strategies are important because they attempt

to “recapitulate the attentional and motivational power of first language acquisition” (Schumann, program abstract, UCLA-FPR CBD Presentation, 2007; Schumann, 1997) though pleasurable, predictable and sustained exchanges between therapists and children. As such, SLA findings would aid autism intervention researchers as they progressively focus their efforts on providing social interaction training and support.

Acknowledgments

The author would like to thank the principle investigator of the research and treatment center for hosting and facilitating this study and Dr. Tanya Stivers for the related hands-on training, individualized guidance, writing feedback, and incredible mentorship. The author is grateful to the research team members and all of the participants for truly making this study possible. Sincere thanks is also given to those who provided funding for this project: The Foundation for Psychocultural Research-UCLA Center for Culture, Brain and Development-Mental Health, the UCLA Graduate Division, and the UCLA Department of Applied Linguistics.

Notes

1. Data for this study were collected in line with Institutional Review Board protocol (IRB #10-001743).
2. The italics are from the original text.

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CHAPTER 5

What Autism Training in India Offers Language Teachers

Set in a non-governmental organization in New Delhi, India, this study uses qualitative methods to describe three core strategies that are taught in a parent-child training program (PCTP) for autism in order to enhance children's basic skills¹. It links participants' experiences with the attainment, integration and mastery of these strategies to what is known about the neurobiology of language in the areas of attentional-motivational mechanisms, pattern-matching, and opportunities for social interaction (Schumann, 2013). Participant observation and semi-structured interviews, modeled after an abbreviated version of the Ecocultural Family Interview (Weisner et al., 1997), were used to determine strategies of the program from PCTP staff and parent perspectives, as well as how these are accomplished and why they are valued. This includes insights that may be specific to Indian perspectives. How fundamental components of socialization processes in the PCTP program relate to language acquisition in later life is then discussed, focusing specifically on potential classroom applications.

The PCTP coordinator, three PCTP assistants, twenty-two mothers, and twenty-two children (ages 2.5 – 12 years) participated in center-based observations over a period of three months (the length of the training). The PCTP coordinator and seven mothers participated in one-on-one interviews, three of which were conducted in participants' homes (one nuclear, one joint, and one single-mother in temporary housing). The majority of participants came from middle income, Hindu families with a nearly even

mixture of nuclear and joint structures, where mothers had at least a high school degree and some hired domestic help. A majority of the children were minimally-verbal boys, who were brought in by concerned and stressed parents and/or referred by an educational or health care professional. PCTP staff members observed children as they participated in the program and referred them to research team members within the organization for additional assessments if their behaviors and/or needs did not fit the profile for autism.

This observational study is significant because minimally-verbal children with autism frequently participate in this training program, yet they represent a neglected sub-grouping in autism research (Eagle, 2000). Furthermore, few studies consider cultural context in autism in Non-Western countries, including India (Daley, 2002). In societies where eco-cultural factors necessitate more polyadic caregiving styles, it is common for caregivers to operate as if children are going to “develop naturally” (without explicit instruction) to do what others around them are doing (Seymour, 1999). Neurotypical children are driven and equipped to do this, but children with autism need accommodations to make such learning gains, especially in terms of language. How children with autism are taught these skills is an important part of the story of language acquisition across the lifespan, one that is often relegated to the margins. As such, this study positions the basic skills training that occurs in this program as useful for providing insights to language teachers. This is because both groups must adopt similar strategies to facilitate access to everyday social routines in order to promote language use.

Background

When any of us, language teacher or not, consider the magnitude of words and their structures, we are awed. How does it work? How do we ever learn it all? In a parent-child training program (PCTP) at a non-governmental organization in New Delhi, India, it is common to observe parents who visibly slump with the idea of taking on such a weighty task. Of course they do. It is not possible to teach someone every word he or she might ever need to express himself or herself meaningfully, but it is also not necessary. Individuals with autism—and all language learners—use their individual aptitudes, interests, interactional abilities, and physical capacities to engage with others and communicate what matters to them.

First-hand accounts by self-advocates and their caregivers provide a personal perspective of autism (Grandin, 1996; Grinker, 2007; Mukhopadhyay, 2000; Nazeer, 2007; Kozak, 1986; Tammet, 2007; Williams, 1992; Wurzburg [written by Rubin], 2004). Despite the variety of experiences, the authors often describe a common quest to use whatever means necessary to be understood for their individual ways of being or to provide that understanding. Communication barriers are the primary obstacles to achieving this, and it is often unclear what instructional and/or support methods might help. While PCTP does not present itself as a language-learning program, it provides the basic-skills training for the linchpins of this process. Language acquisition occurs within everyday social routines (Ochs & Schieffelin, 2011), and trainers in the PCTP program teach parents the steps to follow to help their children participate more fully in them. Over a period of three months, every weekday, mothers (mostly, but sometimes fathers) from across India and surrounding countries are guided in English and Hindi by trainers

to teach their children a range of skills using *reward*, *highly-structured social routines*, and *individualized learning tasks*². Reflecting on these core strategies that mothers learn can be helpful for language teachers, no matter if there are individuals with autism in their classrooms or not.

Aligning training strategies and language acquisition theory

While there is no best way to teach language (Ochs et al., 2005; Schumann, 1997b) —the process is as individualized as is the experience of autism—there are three components that are essential for language acquisition. These are *attention-motivation mechanisms*, *social participation*, and *pattern-matching abilities* (Lee et. al., 2009; Schumann, 2013), and, practically speaking, they align with the core strategies of the PCTP program (TABLE 5.1). Linking usage and theory within the context of the PCTP program may help to inform our understanding of language in autism, to be sure; however, it may also inform our understanding of the language learning and teaching process in general. How this may happen for each component-strategy will now be discussed in turn.

TABLE 5.1, *Core program strategies aligned with language acquisition components*

Core program strategies	Language acquisition components
reward	attention-motivation mechanisms
highly-structured social routines	social participation
individualized learning tasks	pattern-matching abilities

Reward <=> Attention-motivation

In terms of preparing mothers to teach their children, the first two to three weeks of the three-month PCTP program are largely dedicated to the practice of enhancing the bond, enjoyment and trust between each mother-child pair and identifying children's "reinforcers," or any food and/or toy to which individual children respond especially positively (i.e. looking at mom and/or the item at hand, reaching for the item at hand, laughing/smiling, waiting attentively with a relaxed posture, etc.). These topics have been placed under the broad category of *reward* for a specific theoretical reason: There is evidence suggesting that the same neurobiological processes that support affiliation and bonding, pleasure, and sustenance seeking, also support language learning (Schumann, 2001a/2001b). In particular, the amygdala, insula and orbito-frontal cortex of the brain, as well as the body itself, regulate the transmission of neuropeptides and neurotransmitters³ that appear in part to link the experience of reward to social interaction (Lee et al., 2009). One way to think about motivation, then, especially in terms of its role in harnessing attention when working with individuals with idiosyncratic communication patterns, is to closely observe what key stimuli are responded to negatively/positively and then avoid/enhance them to the extent possible.

Training in the PCTP program exemplified the relationship between rewarding experiences and attention-motivation. Based on how children hugged, looked to, and reached for mothers (and not others) and how mother's consoled, cuddled, and fretted over their children, there was clear evidence of an attachment between the pairs. During interviews, mothers described their children's affiliative ties with other family members,

too, including siblings, fathers, grandmothers and affectionate housekeepers. Still, during group discussions and interviews, mothers expressed having “forgotten” to foster this connection and enjoy everyday exchanges with their children, favoring instead a pull toward children’s behavioral control and academic progress. Having come to better understand the nature of autism by attending PCTP, as did the other mothers, one mother described a shift in her relationship with her son, saying: “I understand him more. I used to feel stressed with him, I used to feel so stressed. I used to feel that, *oh, I have a son who has autism*, now I feel okay about it. It’s okay if he is autistic, what’s the big deal? He’ll learn, surely he will.” (Sarala-Akshan, Interview in English, 9/10/13). In part through acceptance of autism, mothers in the program re-established and strengthened their bonds with their children. This was an important first step in enhancing their children’s ability to tolerate and eventually even enjoy PCTP activities.

During daily discussion and feedback time, which occurred during the last 60 to 90 minutes of each meeting day, trainers talked with the group of mothers about trust as an important outcome of positive interactions between them and their children. They positioned it as critical for building children’s confidence and reducing their anxiety so that the reward process could become more and more predictable⁴ (See also: Bond et al., 1996). As described, the mothers reported learning to “attach” to and/or “enjoy” their children again, which they felt helped to boost their children’s confidence during training sessions. One of many successful outcomes driven in part by the reward of an emotional connection was described by a mother, as follows: “I have seen Tarranu when she can’t sit on this bare floor, there has to be cot lying or a rug or a carpet, only then she used to sit. Now with physiotherapy and the way we are motivating her that, *you can do, you just*

try, give a try. So now she is able to sit on a base surface. She has got the confidence, *yeah I can do this.* ... That motivation is working on her.” (Mahi- Tarranu, Interview in English, 9/11/13). She went on to rephrase this point as “motivation coming from emotions [her father and I] share with her” (Mahi-Tarranu, Interview in English, 9/11/13).

After mothers were given opportunities in the program to bond with and enjoy their children, they were then trained over a period of weeks to quickly and reliably link individualized “reinforcers” to children’s responsive behaviors during specified one-on-one work times. This created an important positive-feedback loop for the children as well as the mothers (Siller & Sigman, 2002). In one instance, after a series of attempts to reach for chocolate in her mother’s hand and being prompted to use a picture card⁵ to make the request (and then immediately receiving the treat), an 8-year old girl hesitantly picked up the card and then smiled when she shifted her gaze to her mother’s genuinely elated face. This was the first time the mother had experienced her daughter making a clear request (Vithikia-Unnati, Field notes). In another case, a mother elicited an imitation—a hand pat on the table—from her daughter during their one-on-one work time. She said, “I was going on doing that for six or seven times, then I thought *okay she won’t do, she is not following that.* I gave her reinforcers, and I was about to get a structured activity, then I saw she was tapping the table. *Oh my God,* I was so overwhelmed with that, I just can’t tell you, you know. *Come on she can do this, oh then I can teach her, I can teach her.* That is the confidence level that I got on that day, that Tarranu can also be taught” (Mahi-Tarranu, Interview in English, 9/11/13). Experiences such as these that feel rewarding will be those that are attended to and, with sustained exposure, remembered (Schumann,

1997a). In PCTP, what children (and their mothers) began to progressively attend to, with more and more focused attention, included new skills such as imitating actions, following instructions, knowing when and how to wait, and making requests. These skills are fundamental in the larger scheme of social participation, another critical component of language acquisition (Ochs, 2002; Schumann, 2013; Weisner, 2008).

Highly-structured social routines <=> Social participation

Language learning and use occur within social routines, and in PCTP, these routines are highly regularized and repetitive, visually represented, and mandatory (though accommodations could be made). This helped to make participation expectations clear and consistent for all participants in the program. In training sessions, the PCTP coordinator described these highly-structured social routines as especially important because of the limited usefulness of verbal instructions for almost all of the children in the program. Interestingly, children who were particularly adept at mastering program routines could be perceived as following verbal instructions, which often was not actually the case. After debating this point with the PCTP coordinator, as mothers often did in daily group discussions, one mother changed small elements of a home-based routine to check her son's comprehension. She discovered that her son's knowledge of a given activity surpassed his speech comprehension, saying: "I told [Isha, the PCTP coordinator] many times ... he is following no doubt. But every child is a special one. I think I am 100% satisfied with Isha that he is not listening to the instruction, he is listening to that instruction which is in the daily routine. Like for wrapper, if you are giving him a wrapper and tell him to ... put in the dustbin, he'll do that. Somehow give him a biscuit

and tell him to put in the dustbin and [he may not].” (Nimisha-Kamat, Interview in English, 9/17/13). This adherence to a routine without conceptual comprehension is a common occurrence for children in the program. As such, the use of highly-structured routines is maximized in order to provide children with as much non-verbal input about activities and expectations as possible.

Structure is built into the environment in a variety of ways. Each day, a visually-displayed schedule of activities is exactly the same, and children participate in all aspects of group time, free time, and individualized work time. The schedule begins with a group assembly, after which children go together to a play area to independently (though with hired caregiver oversight) occupy themselves, while mothers set up work areas (in the same location of the work rooms each day) for their children to complete repetitive, individualized tasks (i.e. identifying objects, imitating actions, matching objects, threading beads, etc.). This same process is repeated for the next two group activities of snack and music time. In all, the scheduled activities for the day take just over two hours to complete.

Should children resist participation, a variety of strategies are used to keep them involved. Though minimized, verbal directives from trainers and mothers are sometimes used. Crying and repetitive requests (usually for “reinforcers”) are verbally acknowledged and addressed one time and then ignored, after which they almost always stop. During a group activity, for instance, it is common to hear a trainer or mother say something like: *It’s Anu’s turn right now. When his turn is finished, you will have a turn, too*, or, *You can have chips at snack time*. In addition to these verbal reassurances, the repetitive nature of each activity, the predictable steps within them, and the manual and

visual accommodations that are provided appear to aid in quieting the children, as the disruptive behaviors decrease and attentive behaviors increase over the course of the 3-month training.

Trying to move inappropriately about the workspace is treated as boredom or misunderstanding boundaries. To prevent boredom, short activities are delivered with a relatively high affect and volume (though children with sensory sensitivities are provided with self-soothing strategies such as averting their eyes or covering their ears), as well as a relatively fast pace. Additionally, children's names are called out to elicit their attention, and group activity leaders move around instructional spaces, much like performers make use of each part of a stage. To contain children's movement and encourage (varying degrees of) participation, boundaries are often environmentally delineated. Child-sized chairs and tables are set up in the same place each day, and children are walked to their expected locations during transitions (aided during early stages by a mother's hand or hands on the child's shoulder or body). If necessary, a mother's arms or legs encircle a child while he or she is seated, or her whole body is used to guide, move, or transition a particularly distracted or resistant child. Because completing each step of an activity is required, mothers are also trained to very closely monitor and, if necessary, physically guide their children's actions (i.e. position their hands for prayer, lift their arms for exercise, walk them to check and change their personal visual schedule, provide a hand-clap response to a instruction like "high five", etc.) until children independently co-participate or respond. As described, almost all of the expectations and redirections are consciously and strategically non-verbal. This is

especially important for most children with autism whose strengths are often more observational than linguistic.

Prioritizing the use of speech to teach in the face of limited verbal understanding is simply less effective than capitalizing on the communicative competence that all learners bring with them into a new setting. In the case of PCTP, these competencies are enhanced by decreasing speech and increasing comprehensibility through the use of routines, visual structures including furniture arrangements and picture-based schedules, varied pacing and movement during instructional delivery, and individualized supporting techniques. Interestingly, however, children are treated as being able to understand speech that is directed toward them when it is used to reassure the child that he or she is being attended to and heard, but that he or she must be patient in meeting current expectations. As children continue to predict and successfully meet the expectations of their learning environment, their attention to their mothers and to trainers appears to be enhanced. Again, this is important because the neurobiological pathways that support social affiliation are thought to be same as those that support language learning (Schumann, 1999/2001a/2007). Especially in terms of learning to use speech, this opens the door to engaging in specific tasks that support the pattern-matching process that may facilitate learning grammar (Kasari et al., 2008).

Individualized learning tasks <=> Pattern-matching

In the PCTP program, trainers closely observe children during one-on-one work time with their mothers as they begin to do basic imitation, matching, requesting and fine or gross motor skill activities. They refer to a checklist of developmental milestones,

determining where each child appears to be most consistently performing, and then create a program for each child. For example, because a 2½ year old girl was not yet ready to sit and do independent tasks at the work table with her mother, trainers created a program that prioritized quick “put in” activities (i.e. mother places ball in daughter’s hand, tells her to put it in a bowl, helps her, rewards her, then repeats this step) followed by a break. This was done in order to build up the girl’s comprehension and enjoyment of the basic steps of eventually doing longer, more complex intervals of work, which she gradually accomplished (Turvi-Priya, Field notes).

The prior steps of building relationships and increasing social participation ultimately supported these moments of individualized skill building. In the PCTP program, children’s tolerance for sitting and working independently was gradually increased week by week, and mothers cited “waiting” as a significant accomplishment. One mother described a common concern expressed by the group members that before attending the program her son needed to be monitored at all times. After using daily routines and verbal reassurances with him, this began to change: “I have to tell him, *son, I would come back in this much time, so wait for some time*. I have to explain to him. And after coming here he has learned to live alone a little also and to wait a little. So it feels good.” (Subarna-Kavi, Interview translated to English from Hindi, 9/10/13). Not only did these sitting and waiting behaviors provide the caregivers with more flexibility and free time, but they extended into additional benefits for children including learning to play alone, share, and take turns. Interestingly, learning to be comfortable with waiting increased children’s overall capacity to be social.

By the end of the program, children developed additional, important abilities during one-on-one work time with their mothers: (1) Using objects (or, if that was already mastered, then pictures) as symbols that indicate what to do next (i.e. pulling a pencil from the next spot on the schedule means to move to one's independent work area), and (2) using the affordances of objects to determine how to complete a task (i.e. picking up spools from a bowl attached to a tray and threading them on a string that is also on the tray). In these moments, mothers quietly and unobtrusively watched their children work. The idea, which requires the aforementioned weeks of trust building, rewarding/reinforcing, and participating in routines, is for children to work completely independently. Even if only for short intervals or in small ways at first, they do.

Sustained attention to the completion of highly-structured activities comes easily to many children with autism who often have an affinity and/or aptitude for pattern-matching. As described, though, children in the program can also be taught how to accomplish this. The mother of an 11-year old boy described the emergence of this ability in her son: "Earlier he didn't used to sit to work with me. Once he got to know that mom is coming to work with him, he would just run away. But now, as [PCTP has] taught, how to teach them to sit, how to make them work, how to enjoy with them and everything else, so he is learning" (Reva-Ayushi, Interview translated to English from Hindi, 9/11/13). More clearly than other times during the training, the children are able to independently display their knowledge during these individualized work times. This often provides children with concrete experiences of success, and it also provides mothers and trainers with critical observation time to assess and possibly enhance the children's learning plans.

Why training accomplishments are valued

The efforts that mothers make to learn PCTP strategies and implement them with their children are driven by what they value in terms of child-wellbeing and well-becoming (Frones, 2007; Weisner, 2002; Weisner, 2008; Weisner, 2009). In interviews, mothers described these connections in the three training areas described above.

In terms of rewarding children for their social interactions and work efforts, mothers first enhanced their attachment, bond and trust with their children. They learned to leverage affiliation in order to increase their children's enjoyment of being with others and learning, and over they time integrated a variety of reinforcers into work times that provided additional ways to motivate their children. These included favorite food/drink items, favorite toys, music, breaks, success with a step of a highly-structured activity, success with following particular commands, water play, and being in a group environment. Using these in tandem with general positive interactions built children's confidence in their own abilities, which trainers and mothers alike valued because they experienced it as fundamental to the children's emerging and future independence. As one mother reflected about providing her daughter with positive stimuli: "It totally will make a difference because she can take care of her herself, [her] confidence level will build up that *yeah I can do this*" (Mahi- Tarranu, Interview in English, 9/11/13). Built into this process—and Mahi's description—is that various forms of motivation had helped her to more effectively direct her daughter's attention.

Though finding it challenging to transfer the highly-structured routines of the PCTP program to their home environments, most mothers reported implementing selected components with success. This included using visual calendars and schedules, as

well as picture cards for transitions between activities, verbalizing reassurances, and setting up worktables for one-on-one instruction time. In many cases mothers received immediate reinforcement for their efforts to provide such structure in their children's daily lives. It translated into current and imagined states that mothers (and often their partners) believed improved or would improve the quality of life for their children and families. This appeared especially relevant in joint households because children began to develop "sharing" and "turn taking" behaviors.

Additionally, all members of the household—not just the children—better understood scheduling plans. One mother, who like many others had experienced significant conflict with her mother-in-law while trying to implement changes she learned in PCTP, reported the following success with her son: "All the family members were very much disturbed because of his attitude of *what I have to do now*. He used to do different activities, *what I have to do*, so everything got messed at our place. But now, when I have started schedule, I feel that he is more stable and the family members are also more stable, like my in-laws" (Shihaam, Anu, Interview in English, 9.19.13). In addition to a less chaotic and more sustainable home life, mothers also discussed their sense that children learned general appropriateness and morality from the routines they were now practicing. When asked why this was the case, one mother provided an example of teaching her son to stay clothed in public. She said, "We have to teach him the right things, and if we know that he follows the routine, then it's always in our mind that *okay we have to teach the right things to do ... make him understand what is right*" (Nimisha, Kamat, Interview in English, 9.17.13). Interestingly, whether the outcome of the implemented routines was for the children's current well-being or future well-

becoming, they translated into increased social opportunities. This is critical for cultural learning, including language acquisition (Erickson & Shultz, 1994; Kasari et al., 2008; Lee et al., 2009; Ochs, 2002; Ochs & Sheffelin, 2011).

Maximized by enhanced personal relationships and more enjoyable daily social and work routines, instruction for children eventually became more and more individualized. Once the basic routine of accomplishing an activity was established, it could be nuanced, which challenged the children to move beyond rote action and into attentive discrimination. As one mother explained:

The[re are] different types of understanding. ... I used to verbally teach him, *Ammar what does sweeper do?* Now I'm very sure that I'll show him visually what does the sweeper do. *Who is the sweeper and what does he do?* Like he must understand who is the sweeper, like in the environment. ... He must connect that. Now I'm learning that many things are there which has gone into his rote, he has not learnt that, and now I have to teach him in a concrete way and in a visual way. That would be a more refined learning. (Shihaam, Anu, Interview in English, 9/17/13)

Individualized learning opportunities such as these help to shift pattern-matching that may be based on perceptual input to higher-order concepts, including symbol recognition. Importantly, children's development during their time in PCTP regularly included the emergence of picture-exchange usage, sign language usage and/or speech production. One mother summarized this complex process, as follows: “[The PCTP program] gave me full confidence. Earlier I was very stressed. *What should I do, he is not understanding anything, what can I do?* But I did PCTP at the home ... and it works for Rasul. ... And his speech is also coming. Now he is saying a few words: *papa, mummy*. He is saying, *wish*” (Shirin-Rasul, Interview in English, 9/17/13). During group discussions, mothers regularly emphasized this emergence of communication exchange. Why this and other

forms of independent learning and expression were valued, however, often linked back to the mothers' desires for their children to care for themselves in the future. Without a hope for this possibility, mothers in the program expressed fear and great concern for their children as they aged. Herself a mother of an adult son with autism and a developer of the PCTP program, the coordinator described a philosophy that underpinned the importance of tailoring learning efforts in a way that ultimately supported more independence for those with autism, as well as caregivers:

If I am empowered ... if I know how to be teaching my child ... then look at the amount of intervention within the home that my child is having. That's important because at the end of the day being empowered comes from a place of acceptance, from a place of understanding. When you have [that] in your environment you are a happier person. When you are happy that's the only way you can make anyone else in your life happy. That's the only ... way you can move forward, whether it's for your child or whether it's in your life. (Isha, Interview in English, 11/13/13)

One of the mothers described experiencing this very personal yet public transformation of acceptance and empowerment, which affected all of the participants (including the researcher). When asked by a research assistant, "Are there other changes that you feel within yourself from coming and learning through the PCTP?," she said: "That we should share each other's experiences and learn how to move forward, like how Isha ma'am did for her [son who was 14]. She has done it in his age, so I feel good that my child is also grown up, he's 11. Earlier I was doubtful whether he'd learn or not, so she convinced me and explained to me, and gave me confidence within that he can do it and I will do it" (Reva-Ayushi, Interview translated to English from Hindi, 9/11/13).

Isha, who had little to no services available when trying to help her son years ago, wanted mothers in the PCTP program to feel capable of teaching their children. Reva,

like the other mothers who completed the program (only one of all those observed found the program unsuitable and left because she preferred to continue using corporeal punishment, which the program does not condone), felt confident about their burgeoning abilities to teach their children. In three months, they had deepened their bond with their children and learned how to implement routines that provided predictable learning opportunities for them. As children began to trust their mothers (as teachers) and their environment at PCTP more, they developed the ability to engage for longer durations in increasingly challenging independent work. It is not surprising, therefore, that the first Hindi the English-speaking researcher learned by doing observations of the program was the often-repeated phrase, *kre-ding-gee*, or *we will do it, we can*.

Additional eco-cultural findings

Whether or not the Western-influenced training of the PCTP program reveals experiences and perspectives that are specific to the Indian experience is challenging to determine. Perhaps some perspectives are specific to the host organization itself rather than necessarily to India as a nation; however, the researcher has also participated in observations of U.S.-based programs. Seemingly important differences between these sites were noted.

Though it is a common philosophy in the U.S. that *parents are a child's best teacher*, there is an overwhelming range of available autism instructional methods and programs that can make it difficult for U.S. parents to determine where they should invest time and resources. Educational, medical or other professionals may avoid telling parents that their child will always have autism and/or that he or she should receive a particular kind

of training. In contrast, parents in the PCTP program are specifically taught that autism is a lifelong condition, and they are encouraged to accept that fact as a prerequisite to becoming their children's teachers. PCTP parents are also given the opportunity to ask about other intervention methods, whether alternative or conventional, and then reassured that what will be offered to them within the PCTP program is the only reliable approach.

Unlike in the U.S. settings, where these discussions with parents and training sessions with children are both confidential and private, they were intentionally group-oriented and public in this setting. Mothers (and sometimes fathers) and children participated in group activities in the same room, as trainers and even visitors observed. They also worked one-on-one with their children in the same rooms together. This provided participants with the opportunity—often for the first time—to see other children and families adapting to and functioning with autism. They shared their pain and their promise on a daily basis in the group discussions that were facilitated by a lead trainer who also raised a child with autism using the same methods. Tears and group consolations were frequent, and they appeared to be precursors to true acceptance of their children with autism and later feelings of confidence and empowerment. The public expression of these strong emotions fostered bonds between the participants, who sometimes went on to maintain contact beyond the program and even start training programs in their home towns across India and some surrounding countries. Similarly, the mothers bonded with the coordinator, who made all of her contact information available and encouraged them to contact her about any issue, at any time. PCTP's message of acceptance and empowerment also fostered stronger connections between

mothers and their own family and community members because it reduced their daily experiences of internal and external conflict, thereby increasing their quality of life.

What may be more unique to this setting when compared with those in the U.S. is that receiving diagnosis and treatment is often seriously delayed in India. Getting an autism diagnosis for a child sometimes requires prolonged insistence on the part of the mother with doctors and with family members alike. It can be postponed into late childhood, even for children with serious delays, and especially for boys, who are considered to be "slower" and "less talkative" than girls. Finding treatment is also frequently delayed due to the limited availability of resources and/or information about autism. On the other hand, receiving affordable domestic support is more readily available to a wider range of socio-economic groups, which in part provided mothers with "breaks" that parents in the U.S. observations rarely reported. These respite times were frequently reported by the Indian mothers as being critical to their mental and physical health. Without such assistance or financial support to secure it, U.S. parents often tearfully reported feeling abandoned, isolated, exhausted and severely stressed.

Links to classroom language instruction

The steps for teaching basic skills in autism that translate into teaching language skills include: promoting affiliation as a means to build and sustain attention-motivation, providing highly-structured social routines to increase social participation, and presenting individualized learning tasks that help learners to develop discrete skills. Though they are not distinct categories, they do appear to be order dependent.

In terms of facilitating student-teacher and even peer-peer affiliation in classrooms in order to enhance social reward and related participation and learning, one has to wonder if a language classroom is distinct from other subject areas such as a biology, history or math classroom. Arguably, the social demands that students are enacting and producing in language classrooms are in fact greater compared to other subjects. Without continual efforts to publicly engage with others in the target language, the content could not ultimately be mastered. This increases students' exposure to potentially embarrassing and vulnerable moments in the classroom. In this way, especially in a language classroom, the need for teachers to create affiliative opportunities between class members before asking students to take learning risks is essential for building and sustaining attention-motivation. A variety of strategies could help. Knowing students' names and affording them with ways to continually use another's names in activities is an important step in building a pathway to social bonding in the classroom. Using a textbook/workbook also provides a variety of input. This, along with the use of audio, visual, and tactile learning aids, will reach a broader range of learning needs and styles than using a more limited instructional repertoire, increasing the chance creating a more rewarding learning experience.

Highly structured routines may also help to promote social participation. Imitation and directives can be used with methods such as Total Physical Response and directive-response sequences, and can provide predictable and progressive order (i.e. 1. demonstrate, 2. do together, 3. do independently, 4. review.). Instructional strategies to aid mutual understanding in a language classroom may include the following ideas: (1) Starting the class with an opening or "warm up" activity, which may be as simple as

writing the day's schedule on the board and quickly reviewing it to increase comfort levels; (2) integrating textbooks and/or workbooks into at least part of the day's lesson to create routines that increases engagement with others and the grammatical structures of focus; and, (3) ensuring that learners display their comprehension throughout activities (i.e. discretely using hand signals to answer questions like, *Is the answer 1, 2, 3 or 4?*, matching cards, physically responding, writing) so that you are increasingly aware of their level and able to adjust the difficulty of assignments accordingly.

The assessment and individualized instructional planning done by the PCTP trainers is something with which teachers are familiar, though the teacher to student ratio is much higher in classrooms than in the PCTP program (where each child has at least one direct care provider—the mother). The challenges this poses to truly providing individualized instruction is noted, and, hopefully, administrative procedures of providing resources such as counseling and support staff, peer mentoring and sharing, and time are made available to engage in this important preparation.

Conclusion

In terms of effectiveness, the Parent Child Training Program is presented to mothers in this setting as the best available approach, and it worked well during the observations of this study. Despite its contextual success, it might be rejected in settings where a cure for autism is the expectation or goal, for example, in the United States in organizations with names such as "Cure Autism Now." In a setting where people expect cures, PCTP will be seen as ineffective. Perhaps one of this training program's greatest values is that it doesn't purport to be a cure for autism. It does, however, give parents

what appear to be effective strategies to manage it. In the PCTP program, mothers learn to teach their children a range of skills using *reward*, *highly-structured social routines*, and *individualized learning tasks*. Reflecting on these core strategies can be helpful for language teachers of individuals with varying abilities due to age and/or neurodevelopment. This is especially important in a language classroom because promoting trust and predictability will likely make learners' experiences of classroom activities and interactions more rewarding and, thereby, increase their overall participation, sustained attention, and related opportunities for learning (Erickson & Shultz, 1981).

Acknowledgments

The author would like to thank the host and partnering organizations and their leaders and other staff members for facilitating this study. The author is especially grateful to the research team members and all of the participants for truly making this study possible. Sincere thanks is also given to those who provided funding for this project: The Foundation for Psychocultural Research-UCLA Center for Culture, Brain and Development-Mental Health and the UCLA Center for Culture and Health.

Notes

1. Data for this study were collected in line with Institutional Review Board protocol (IRB #11-003347).
2. The terms *reward*, *highly-structured social routines*, and *individualized learning tasks* are not necessarily those used within the program; instead, they emerged from my observations of and interviews over a period of three months. Furthermore, though they are discussed separately, they are not categorically independent.
3. This *interactional instinct* is neurobiologically based and different depending on the stage of life. In neurotypical infants, beta-endorphins and mu-opioids make receiving nourishment and physical comfort from caregivers rewarding, and dopamine makes seeking smiles and vocalizations from caregivers rewarding as well. Oxytocin and vasopressin modulate these experiences and aid in the formation of affiliative memories, which infants integrate into their stimulus-appraisal system. This process for the infant is regulated by the amygdala, insula and orbito-frontal cortex of the brain as well as the body itself. After puberty and over the lifespan, brain-body changes make the stimulus-appraisal and related learning process more variable (Schumann, 2013), but the underpinning neurobiology is proposed to be fundamentally the same (Amador & Adams, 2013).
4. While principles of behaviorism, specifically stimulus-reward, are inherent in the PCTP program and have informed notions behind the interactional instinct theory, the theory is

- based on a complex-adaptive instead of a linear progression model (Goodwin, 2006; Iverson & Thelen, 1999; Larson-Freeman & Cameron, 2008; Lee et. al., 2011).
5. Depending on the child, hand signs or vocalizations may be more relevant than picture cards.

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CONCLUSION

Reviews of studies across cultures, like the one provided here (Chapter 2), demonstrate that infants are born with expressive, perceptive and sensory abilities that allow them to attend and respond to social stimuli. Physical and vocal abilities include adult-like facial expressions, selective attention—especially in relation to human eye contact and vocal rhythms—cooing and smiling, and visual and auditory abilities include the identification of and preference for human faces and speech sounds (Meltzoff et al., 2009). These innate abilities equip typically-developing infants to engage in social interaction from (and arguably even before) the moment they are born.

Though capable of interacting, infants must be motivated to do so. The neurobiology of attachment provides the drive—or the instinct—for most infants to engage with primary caregivers because engaging in interactive behaviors is highly pleasurable for most infants and caregivers. Studies show that a variety of neurochemicals contribute to the creation of attachment and bonding: beta-endorphins and mu-opioids make receiving nourishment and physical comfort from caregivers intensely rewarding for neuro-typical infants; dopamine makes seeking smiles and vocalizations from caregivers rewarding, as well; and oxytocin and vasopressin modulate these experiences and aid in the formation of affiliative memories (Lee et al., 2009). Studies also generally concur that caregivers are skilled at responding to their infants' initiations and feel rewarded for doing so, especially if they occur in predictable and not idiosyncratic ways (Siller & Sigman, 2002). One result of experiencing social interaction as pleasurable and positive is that exchanges with conspecifics become desired and

repeatedly pursued. Though social interaction alone won't guarantee primary language acquisition, the hormones, neuropeptides and neurotransmitters of the "interactional instinct" hardwire the infant's nervous system for the attentional-motivational mechanisms that language requires (Schumann, 2013).

In terms of neurobiology, the same neurochemicals that are released during mother-child bonding have also been found to be released in response to gaze exchange, soothing vocalizations and touch (Seltzer et al, 2010). These behaviors in part extend bonding experiences in early years beyond primary caregivers, including consistent childcare professionals. The affiliative behaviors displayed by Carrie (with the help of Pam) in the first study (Chapter 3) appear to increase in relation to the potential stress of the exchange and may serve to make it tolerable enough to support and even sustain Donatelo's participation. One way to broadly summarize the claim here is that the bonding process that begins with primary caregivers transfers to the primary teacher in the classroom setting, creating a positive feedback loop between Carrie and Donatelo. Donatelo regularly attends to Carrie's actions, especially in times of confusion caused by his linguistic limitations. His relationship with her appears to aid him in sustaining the levels of attention and motivation that are required to continue his participation in community activities, including embedded language learning. But what happens in the case of certain disabilities—like autism—in which social interaction may be consistently intolerable?

If an instinct to interact drives primary language acquisition, one would hypothesize a relationship between diminished social skills and language abilities. This appears to be true in the case of Autism Spectrum Disorder, as is shown in the second and

third studies (Chapters 4 and 5). In a parent-training program for children with autism in India, the lead trainer, Isha—also a mother of an adult son with autism—distilled what she believes to be a fundamental lesson for program participants. In an interview she said: *The one skill that I want [the kids] to learn, and I don't really know if it's a skill or not ... I want them to be connected with the mother, bonded with the mother, so when they're sitting down for work time, they're looking forward to that time, they are happy being with the mother at that point in time, and they're ready to learn. ... if the mom has been able to help the child reach that stage, she can teach her child anything.* Indeed, in the twelve-week training program, Isha ensures that the first two to three weeks are almost entirely dedicated to facilitating connection, enjoyment and fun between the mothers and their children.

A number of studies support the practices that Isha teaches in her program. Weak affiliative memories appear to correlate with reduced levels of oxytocin and vasopressin, and a possible disruption in the mirror neuron system likely causes difficulties with imitative abilities and related emotional encoding and understanding (Lee et al., 2009). Infants who are later diagnosed with autism often display idiosyncratic and unpredictable reactions when interacting with their mothers, who report difficulties in interpreting the meaning of their children's cries, facial expressions, and early requests (Siller & Sigman, 2002). These findings suggest that the unpredictable nature of the social exchanges between caregivers and their children with autism result in fewer and fewer rewarding experiences, which decrease related attention to these social nuances over time (Schumann, 1997). Based on experience of what works, and possibly without knowledge

of these neurobiological systems, many autism teachers, trainers and therapists consistently seek opportunities to link pleasure or positive stimuli to skills training.

One (sometimes controversial) strategy that Isha teaches mothers to use—and that applied behavioral autism therapists around the world also employ—includes providing “reinforcers”. A reinforcer most often means a child’s favorite food item (for example, chips, chocolate, soda) and a few additional highly favored food items. It can also mean a favorite object or toy that may even be musical. The most highly favored item, determined over a period of days by program trainers, is almost always used. The purpose of the reinforcers is to directly increase a child’s sense of pleasure during “work time” with mothers. Mothers are trained over 12 weeks to very quickly and reliably link individualized reinforcers to children’s responsive behaviors during specified work times. This boost to children’s motivation consistently increases the positive affect of both children and mothers, creating a positive environment for teaching and learning. When a daily reward of chocolate from a mother during work time facilitated her daughter’s very first request using a picture-sign, both smiled at one another with spontaneous delight.

Another proxy for the motivation that would typically emerge from attachment mechanisms comes from the training program observed in the U.S. As described in study 3 (Chapter 5), highly-skilled therapists in an autism language research program used play in part to increase the pleasure that children experience during lessons. Twice a week for six months, children and therapists played together, during which time therapists imitated children’s actions and used minimal speech only in relation to their play and/or toy selections. Because children with autism rarely initiated shared activities, therapists often need to pretend that whatever a child started to do with a toy was an invitation for her to

do the same thing. If a child placed a block on the floor, for example, a therapist would quickly stack another block on top of it, animating the move with a very high affect, including exaggerated facial expressions and a higher pitch.

The therapists often produced what were termed “accept” responses from a discourse-conversation analytic perspective. These moves were the most realistic interactional strategies with the best play outcomes in this setting. Though the play sequences often started with boys’ solitary actions (i.e. pushing a bus), therapists simply treated them as social bids for what to play *together*. Through the sequential act of “accepting,” the therapists almost always succeeded in transforming the meaning of the boys’ just prior action. They exploited the turn-taking system to retrospectively offer the boys opportunities to be social on their own terms. By capitalizing on the boys’ (often restricted) interests, therapists increasingly engaged the boys in shared play, sustained those exchanges, and ultimately increased access to contextualized language use. *But how, you might ask, does all of this talk of typical and atypical primary language acquisition relate to second and/or foreign language acquisition in later life?*

Just as in autism, older individuals—and especially those who have gone through puberty—may have a diminished “interactional instinct” that ultimately decreases their language access abilities. Of course, adult language learners are not autistic but, like those with autism, their interactional instinct is different from that of neurotypical primary language learners. This may be due to changes in the oxytocin, vasopressin, dopamine, and opiate systems. Additionally, learning languages in classrooms, regardless of how interactive they are, constitutes vastly diminished social opportunities from what is provided in early language acquisition. Because language evolved culturally to be

learnable by children via attachment's promotion of motivation and attention to interaction and input, thus allowing the acquisition of frequency patterns in the language spoken to children and around them, they learn universally.

However, social bonds between teachers and second/foreign language acquisition students may emerge from predictable social exchanges in the classroom and help to bolster the drive to interact that language learning requires. Though perhaps diminished, the neurobiology that underpins this process is arguably the same as in earlier stages of life. In a study that compared the infant classroom exchanges in the first study of this dissertation (Chapter 3) to those in a young adult language classroom, the role and expression of affiliation and their promotion of language access were parallel (Amador & Adams, 2013). In a conversation/discourse analysis, a teacher sustains a young adult's participation in a classroom activity by moving closer to student, smiling at her, and joking with her about a pronunciation error. As Amador and Adams (2013) describe:

The light-hearted tone set by the teacher's actions and his display of engagement appear to soften any face threat that might have been provoked by imitating the learner in the way described. Importantly, affiliative cues (i.e., jokes, laughter, smiling, and applause) are regularly occasioned in this setting precisely when learners exhibit non-native forms of language use. Adapting to the moment-by-moment interactional needs of learners in this way may contribute to the sense that this learning environment is a safe place to try out novel kinds of participation and not only survive, but socially thrive, if one gets it wrong. (pp. 156)

This is not to say that the drive to attach that motivates typical primary language acquisition occurs (or should occur!) in adult language learning classrooms. Bonding as an adult with your language teacher just like you did with your primary caregiver is not a viable option. As in autism, and unlike early learning for neurotypical infants, adult learning generally occurs through formal language study plus interaction with native

speakers in the environment where it is spoken. In adults, aptitude plays a very important role in second language acquisition because language didn't evolve to be learned by the adult brain. Aptitude involves the ability to perceive and produce sounds, to detect and learn grammatical patterns, and to acquire target language vocabulary (Schumann 1997, 2013). People vary in these abilities and related success in second language acquisition varies across individuals. Adults with sufficient aptitude and motivation to seek out opportunity may become proficient in an L2. But if L2 acquisition by adults is to be characteristic of a society, there has to be a radical shift in social expectations for L2 learning and in the opportunities provided. It is important to emphasize the social conditions necessary for any kind of language acquisition. Because we have an enculturated brain—culture must provide the motivation and opportunity for child primary language acquisition and adult second language acquisition regardless of ability or disability. Culture tells the brain what to do vis-a-vis language acquisition.

To conclude, a methodology—or a specific way to teach—is not being provided here, but a bio-social perspective on language across the lifespan is. Evolution built us to learn important things early. For humans, language is important, and we have the biology of attachment to help ensure that it happens. That biology is manifested in developmental variation, as in autism, and it changes as we age. How we affiliate given our abilities or disabilities and as we age must change in order to meet social-culture norms, but the biosocial proclivities that attenuate language acquisition in earlier and later stages are the same. Importantly, bringing autism—and other disabilities—into the discussion as was done in this dissertation is not only more representative of human experience, it broadens our understanding of language access. We can see, for example, how the instinct to

interact may need to be bolstered and enhanced (with rewards such as food, playing together, and prized objects) in autism, which helps to put the role of attachment and affiliation in learning in stark relief. Overall, if we see affect as primal, then, all we can do as caregivers, teachers and therapists is make efforts to ease the learning process. We don't want to dismiss, embarrass, impede or intimidate our learners. We want them to be on our team and visa versa. This means that, as one who seeks to promote language access, it is beneficial to continually work out the kinds of strategies that increase the comfort, confidence and moments of success experienced by you and your learners.

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