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Social and Instrumental Interaction Between Parents and Their Toddlers With Autism: A Qualitative Analysis

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Abstract

A qualitative study of three parents and their toddlers with autism was conducted to investigate the communicative functions underlying parent–toddler interactions and how the instrumental or social nature of one partner's actions influenced the other's engagement. Parent–child interaction videos collected from a separate intervention study were transcribed with thick description, coded for literal and inferential meaning by independent coders, and analyzed for emergent themes following an iterative process of code categorization. Themes converged around the partner as instrument, attempted but missed social connections, and congruent social engagement. A complementary interactional sequential analysis revealed that communicative functions of initiating partners were largely mirrored in their partners' responding actions, suggesting that actively supporting parents to interact with their toddlers socially, rather than prescriptively or instrumentally, may be a potent intervention strategy to address the core social communication challenge in autism during the formative early developmental period.

Keywords

infants and toddlers, social development, autism spectrum disorders, family collaboration and support, qualitative methods

Introduction

The designation of social communication as a core area of concern in autism spectrum disorders (American Psychiatric Association, 2013), together with findings of distinctive social challenges for young children on the spectrum, points to the importance of a clearly targeted social agenda in early intervention for toddlers with autism. Research in recent decades has consistently found unique interaction patterns for this group who, when compared with age-matched peers without signs of autism, were relatively competent in instrumental forms of preverbal communication for the purpose of requesting but showed substantial difficulty with social forms, such as commenting for the sole purpose of sharing attention about objects or events (Adamson, McArthur, Markov, Dunbar, & Bakeman, 2001; Mundy, 1995; Sigman & Ruskin, 1999). This early preference for

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nonsocial over social signals in autism was corroborated in eye-tracking studies (Klin, Lin, Gorrindo, Ramsay, & Jones, 2009).

Social and instrumental communicative functions are differentiated in assessments tailored for toddlers with autism (Grzadzinski et al., 2016; Luyster et al., 2009; Mundy et al., 2003; Schertz, 2005), with both functions occurring in initiating and responding forms. Social initiations include "showing" or nonverbal "commenting" to initiate joint attention, and social responses reveal active interest in a partner's social initiations. Indicators of social interest, such as smiling accompanied by gaze shifts between an object of interest and the partner, are evident with both social initiations and responses. In contrast, instrumental initiations signify nonverbal "requests" (e.g., by gaze shifts or pointing) to regulate a partner's behavior toward something the child wants. Instrumental responses take the form of following directions or responding to others' didactic instruction.

In developmental theory, language and cognitive development are built on a social foundation (e.g., Bruner, 1996; Rogoff, 1991; Vygotsky, 1978), and experimental research similarly links early social competency to later outcomes. In typically developing infants, preverbal social (but not nonsocial) communication was associated with subsequent language and social competency at later ages (Carpenter, Nagell, & Tomasello, 1998; Freeman, Gulsrud, & Kasari, 2015; Markus, Mundy, Morales, Delgado, & Yale, 2000) and the same was found in studies of joint attention in toddlers with autism (Charman et al., 2003; Clifford & Dissanayake, 2009; Mundy, Sigman, & Kasari, 1990). These findings on the foundational importance of early social learning have implications for early intervention in autism not only because it defines the core difficulty in autism but also because of its impact on parent–child interaction.

In interaction between parents and their young children with autism, transactional influences are evident in both successful and unsuccessful social engagement attempts. In a reciprocal pattern of social challenges, mothers of young children with autism initiated fewer social play bids and the children accepted fewer parent bids than did parents and children without autism (Adamson et al., 2001), revealing a pattern in which each partner's level of social engagement appears to influence that of the other partner. On the positive side, certain actions of parents and young children with autism (e.g., eye contact, signs of positive affect) predicted the other's social engagement (Vernon, 2014).

Evidence of social malleability for toddlers with autism is also supported with findings of positive effects on social outcomes from parent-mediated interaction-based early intervention. Three randomized controlled trials assessed child outcomes from socially oriented interventions conducted through parent–child interaction. The Early Social Interaction intervention used practicing and problem-solving strategies with parents (Wetherby et al., 2014), Focused Playtime Intervention promoted coordinated toy play between parents and toddlers (Kasari et al., 2014), and the Joint Attention Mediated Learning (JAML) project used mediated learning processes to support preverbal social communication (Schertz, Odom, et al., 2013). These studies show positive social outcomes from general socially based early intervention; however, further investigation is needed to isolate specific aspects of parent–child engagement that have the best potential for furthering child social communicative learning. If the social, not the instrumental, function is primarily associated with autism-specific challenges, it suggests the need to differentiate the two when exploring the types of partner actions that may influence toddler engagement. Mundy and colleagues (Mundy et al., 2003; Mundy & Sigman, 1989), who quantitatively assessed instrumental and social initiations and responses in young children with autism, noted the need for qualitative contextually based analyses to more fully understand early social difficulties. One approach to addressing this need is to analyze free-flowing parent–child interaction. Transcription-based analyses that capture communication nuances are an established and widely used approach in qualitative research (Corbin & Strauss, 1990) and a method that could shed light on parent actions that seem to encourage or prolong episodes of social, as opposed to instrumental, engagement.

Accordingly, the purpose of the current study was to qualitatively explore social and instrumental qualities of interaction between parents and their toddlers with autism, with an aim to uncover individual parent and child communicative actions indicative of social intent and how they might differ from nonsocial or instrumental actions. A secondary purpose was to explore the dynamic interplay between parent and child actions; that is, how social or instrumental actions of one partner appear to influence the other partner's form of engagement.

Method

"Qualitative research is not done for purposes of generalization but rather to produce evidence based on the exploration of specific contexts and particular individuals" (Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005, p. 203). In our study, interaction between parents, who had been exposed to mediated learning principles, and their toddlers provided the context. The study explored "how" and "why" questions related to these interactions arrive at converging themes from a systematic exploration of the data. We interpret our data not in terms of universal or generalizable causal effects but as illustrative narratives of the complex contributors to early social learning and its transactional aspects.

Intervention Context

As contextual background, we provide a brief description of the larger intervention study, JAML, from which we drew video data for the current investigation. The JAML study is a multisite randomized controlled trial to assess effects of its parent-mediated play-based interaction approach on preverbal social communication for toddlers with autism. Its primary intervention outcomes are to promote visual engagement, reciprocal interaction, and joint attention. As the focus is on social engagement, instrumental forms of engagement are de-emphasized.

The weekly intervention included three developmentally sequenced phases corresponding to three targeted outcomes in which parents were supported to promote (a) child looks to the parent's face, (b) reciprocal back-and-forth turn-taking interaction, and (c) joint attention. Intervention coordinators (ICs) guided parents to follow the child's lead, promote playful interaction, and use mediating learning principles to foster active child engagement in learning. Five learning principles promoted focusing, organizing and planning, giving meaning, encouraging, and expanding. The three phases were introduced with verbal explanations, print materials, and video clips depicting toddlers with autism demonstrating the targeted outcome, while weekly units provided additional resources: further verbal and written guidance on the use of mediated learning principles to promote the targeted phase outcome, written and video case examples illustrating the principles in practice, and "ideas other parents have used to promote current outcomes." In lieu of IC modeling of intervention strategies, the video examples were used to promote parent self-efficacy by illustrating other parents devising strategies based on their own interpretations and according to their unique child and family interests and values.

The mediated learning approach was used in both parent–child and IC–parent interactions to emphasize engagement in learning over prescriptive training protocols. Families identified a parent to participate in data collection and intervention activities and the IC provided them with targeted support. Weekly1-hr home-based intervention sessions consisted of reviewing parents' reports on planned activities implemented during the week, video-recording parent–child interaction in which these activities were demonstrated, viewing the recording and eliciting the parents' reflections, introducing learning materials, and generating new activity ideas.

Across the three intervention phases, guidance to families emphasized the social quality of interaction. For example, the final phase, joint attention, was introduced to parents as follows:

> Joint Attention is a three-way interaction that involves two people and an object. When a parent shows something to a child, the child responds by looking back and forth between the parent and object, observing that both partners are interested in the same thing. When the child does the showing, s/he alternates looks between the parent and object to show social interest and to see the parent's reaction. The purpose of joint attention is to engage socially rather than to request or to follow directions. (Schertz, Horn, Baggett, Lee, & Mitchell, 2013)

Study Focus and Qualitative Research Orientation

The distinction between social and instrumental functions was the current study's focus, and we used raw video data from the larger study to examine these underlying functions in the context of parent–child interaction. Although the purpose was not to explore intervention effects, it is important to recognize that the intervention likely influenced participants' social interactions, likely in a positive direction.

Qualitative researchers are typically embedded in the research setting and their perspectives contribute to the framing of research results. It is therefore important to describe researchers' perspectives to contextualize their findings. The first and third authors are invested in the JAML intervention approach, the first in her role as Principal Investigator and the third as the IC working directly with families in the larger research project. The first author developed the JAML approach and has worked closely with the third to interpret and promote preverbal social communication in family settings. Both support the idea that parents are best positioned to support their toddlers' social communication learning, that this learning process is transactional (i.e., both partners influence the other), and that meaningful social learning for parents and toddlers can be better supported through meditational and interactional approaches than through didactic professionally directed skills training approaches. These beliefs grew out of extensive experience with the JAML intervention as well as through their previous professional roles in supporting parents and their toddlers with developmental concerns. The third author's perspectives are also influenced by her role as the parent of a young adult with autism. The second and fifth authors are not involved in intervention for young children with autism but the fourth, who was involved in data coding, had previous research experience in intervention for young children with autism.

Participants and Setting

Using purposeful sampling (Brantlinger et al., 2005), we determined that the selected participants demonstrated wide ranging and interesting variance in social and instrumental interaction consistent with the study's focus. Participants, who are identified by the pseudonyms Ian, Olivia, and Jacob, are described in Table 1.

In her role as IC, the third author noted family strengths in Ian's family, including the extended family's previous experience and understanding of developmental disability (the household included Ian's uncle, who had a disability) and their willingness to calmly allow Ian to develop at his own pace. The family lived in a small two-bedroom mobile home. In an initial interview, Ian's mother Ana mentioned that he often showed affection to family members "on his own terms" but was "too rough" with his sister. She wanted him to move beyond his current "clicking" form of communication. Ian preferred that Ana manage toys or tools that he could not operate rather than attempting them on his own. She noted that he was sometimes controlling with his preferred toys and sometimes became aggressive if she tried to enter his play. Ana's goals for Ian centered on fully engaging him in the social life of her close-knit family. She wanted him to learn to talk with her, have friends, and be social with others.

Olivia's mother, Jessica, reported that she had left the workforce to devote more time to supporting Olivia's development, causing financial strain and leaving her feeling anxious and

Table 1. Participant Descriptions.

Participants	Ian[a]	Olivia[a]	Jacob[a]
Parent name	Ana	Jessica	Emily
Ethnic origin	Mexican	Caucasian/Hispanic	Caucasian
Child age in months	27	26	24
Family income/size	US$25,000/8	US$68,000/4	US$75,000/5
Mother/father education	Some high school (both)	Some college/college graduate	College graduate (both)
ADOS-T score range	Moderate to severe	Moderate to severe	Moderate to severe
CARS score range	Severe	Mild to moderate	Mild to moderate
Receptive language[b]	2	13	7
Expressive language[b]	10	16	15

Note. ADOS-T = Autism Diagnostic Observational System–Toddler version; CARS = Childhood Autism Rating Scale.
[a]Pseudonyms.
[b]From Mullen Scales of Early Learning (Mullen, 1995).

responsible for quickly "making Olivia better." The IC's impressions of family strengths included their stability and early recognition of Olivia's special needs. Jessica recounted in an initial interview that Olivia communicated primarily by pointing to or leading Jessica to items she wanted, engaged in some smiling and touching but avoided eye contact, did not make social overtures, and liked to keep toys to herself. She also noted that most interaction depended on Jessica's initiation and that they both sometimes found communication to be frustrating. Jessica's goal was for Olivia to be as "typical" as possible, to enjoy interaction, and to communicate better. She also reported wanting an interactive relationship within flexible boundaries.

Jacob's mother, Emily, reported feeling sad and overwhelmed by Jacob's diagnosis, particularly when confronted by daily comparisons with his typically developing twin. The IC reported family strengths to include the parents' determination to actively include Jacob in family life and their belief that they would be able to help him in the intervention. Emily noted that Jacob communicated by crying, pointing to request items, reaching, whining, and head banging. His way of showing affection was to snuggle on her lap; however, he had to be the one to make the overture. He was most interactive when the play was physical. Jacob used toy cars for solitary play and was interested in other people, but only from a distance. He could make his wants known and engaged in "just a little" pretend play. Emily's main concern was Jacob's lack of language and her stated priority was that they have fun together.

Conceptual Focus and Definitions

For the current study, *social engagement* was defined as sharing attention with the partner around a common focus out of mutual interest. Socially engaged partners communicate verbally or nonverbally with gestures or eye gaze to "comment" or "show"—or to respond to the partner's initiation of the same (Mundy et al., 2003). A key attribute of social engagement, in our conception, is that the partner takes the other's interests into account. Common indicators of socially motivated engagement were positive affect, a playful quality to the interaction in which a partner's actions were flexibly adjusted depending on the other's actions, and looks to the partner signifying interest in or anticipation for the partner's actions. One example of child-initiated social engagement was when the child initiated a game of "chase" by running off while looking back at the parent and laughing. The parent's social response to this initiation was holding out her "claws," leaning forward, and saying "I'm gonna get you!" An example of a parent-initiated social event was the

parent saying with anticipation "It's going to fall!" as a block tower began to teeter. The child's social response was to push the block tower over with a big smile accompanied by an exchange of looks between the fallen blocks and the parent's face.

Juxtaposed against social engagement is *instrumental communication*, which, in our interpretation, focused on verbal or nonverbal requesting (i.e., to meet one's own needs irrespective of the partner's interests) or following the partner's directive request, command, or instruction. We also considered instrumental communication to include giving or following directions in which the purpose was adult-directed didactic teaching with a direct instructional aim (example: the parent asked the child to name the picture on a block, holding up the block until the answer was forthcoming, correcting mistakes, and praising the child for her correct answer). The child's instrumental response occurred when she followed the parent's block-naming instructions. A child-initiated instrumental requesting event occurred, for example, when the child approached a basket on a toy shelf, pulled on the basket handle, and looked at the parent while frowning, as if to request help in accessing the toys. The parent's instrumental response to this "request" was to help him to remove the basket from the shelf.

Data Collection, Preparation, and Analysis

In the larger study, each pair participated in approximately 32 weekly home-based intervention sessions in which the IC recorded 10-min videos of parent–child interactions. The videos, in which parents demonstrated activities they had conducted during the week, were recorded near the beginning of each session. Parents used their own toys or props to interact with the child as they normally would. The IC moved as necessary to capture the child's face and to keep the parent in the camera frame, but refrained from interacting during the recording. We obtained video-recordings for one fourth of these sessions to assess intervention fidelity for the larger study (i.e., eight each), and of these, we identified one video-recording for each participant pair to analyze for the current study. We selected videos based on the richness of the data (i.e., both parents and toddlers were fully engaged and ample instances of instrumental and social interactions were seen). At the time these sessions occurred, Jacob/Emily, Ian/Ana, and Olivia/Jessica had received 7, 27, and 26 weeks of intervention, respectively.

We employed a number of measures to assure the validity and reliability of our findings, beginning with data transcription and proceeding through the final analysis. The second author, whose PhD is in qualitative inquiry methodology, oversaw the process of transcribing video data to result in thick descriptions (Carspecken, 1996). We considered this author's "outsider" status important to establishing the validity and reliability of the data analysis process, beginning with the transcription itself. She helped the research team remain objective throughout the analysis, introduced new ideas and approaches as we clarified our research goals, and challenged our original approach to data analysis to push our whole team toward methods in keeping with the theoretical underpinnings of the project and the refined goals of the research.

Although we did not consider our research to be a critical ethnography, we did follow Carspecken's (1996) methodological framework for conducting critical ethnographic research because of its emphasis on iteratively identifying and labeling (coding) and developing emergent themes from even the simplest verbal and nonverbal communicative acts. This process, "emic" or "open" coding, emphasizes extracting—or making explicit—bits of meaning from each communicative act (Merriam, 2009, p. 178; Saldana, 2013; Yin, 2016, p. 196).

The analytic process began with transcribing the data in explicit detail to produce a "thick" record with which to capture details and subtleties of interactive events to meet validity requirements (Carspecken, 1996; Hammersley, 2010). The transcriptions included words or sounds spoken, physical motions, focus and direction of looks, facial expressions, vocal expressions of emotion such as laughing, and duration of actions. As needed, transcribers ascribed contextual

interpretations, such as "aah, [*as if whining*]," "child leans forward and down [*as if trying to leave*]," and "mother inhales [*as if to communicate she is excited or surprised*]." This level of detail in the transcribed data reflected the team's methodological and epistemological commitment to authentic representation of the communication that occurred during these sessions, as it allowed for more accurate interpretations of social and instrumental intent than would have been possible with a simple representation of words spoken and activities conducted. After being trained in these methods, the fifth author, a doctoral student in School Psychology, transcribed the video-recorded data. The 10-min sessions resulted in transcriptions ranging from eight to 12 single-spaced pages each.

Following this transcription process, we began with "low-level" coding, "which falls close to the primary record and requires little abstraction" (Carspecken, 1996, p. 146). At this level, we extracted discrete units of meaning with possible relevance to parent–child interactive communication. Examples of these low-level codes include literal interpretations of individuals' actions such as "I am paying attention" (when a child stopped what he was doing to watch his parent's action intently), "This is what I want to do" (when the child moved toward play materials and stood in front of them while looking at the parent), and "Parent insisting on ritual" (when the parent called the child back to naming pictures after the child had left).

After developing these codes, we engaged in higher level coding by identifying bits of meaning within interactive events that were, perhaps, more abstracted from the record itself. This meant that the coding employed a degree of inference when the underlying intent was less explicit. Examples of higher level codes included "Parent asking question to guide child interaction" (when a parent asked, "Want more bubbles?" in which the purpose was inferred to be guiding social engagement rather than entertaining), "Child bidding to set social agenda," (when a child slowly bumped his head on the table, seemingly on purpose, after having done it accidentally), and "Child passive/compliant engaging" (when a child glanced at the book and answered in response to her parent's picture naming query while her main focus was on the TV). This progressive coding process helped to assure the integrity of assigned codes, an important foundation for the validity of the thematic development that followed.

A complementary process for classifying and interpreting the data was memo writing (Carspecken, 1996; Merriam & Tisdell, 2015; Yin, 2016). This process allowed for analysis of more hidden or subtle questions. Memos were often of a questioning nature and pointed to issues that might be explored further, such as in this example:

> The parent seems to switch quickly back from the non-interaction of the previous sequence to asking about the toy car that the child was interested in. Maybe she realized what she was doing (or not doing) and is trying to correct herself?

We conducted the coding as an iterative process using the web-based program Dedoose (SocioCultural Research Consultants, 2015) to allow remote collaboration among coders. The second author, the research team's methodological expert, trained the first, who served as primary coder and who supplemented codes developed in the training process. The fourth author, a doctoral student in School Psychology who had research experience with young children with autism, served as the secondary coder and worked with the primary coder to further define and revise codes in a collaborative peer-debriefing process. Related codes were grouped into unifying code categories that reflected the study's focus. For example, a category labeled *parent guiding child's social interaction* contained codes labeled *parent asking question to guide interaction, parent physically guiding willing child noncoercively*, and *parent cuing child action*. The coders met to resolve discrepancies in how codes were applied, and arrived at a final set of primary and secondary codes by collaborative consensus, as shown in Table 2. The entire data set was then

Table 2. Codes and Themes.

Codes	Code categories	Themes
C requesting: "This is what I want to do"	C initiating instrumentally	Partner as instrument
C "I am paying attention"	C responding instrumentally	
C "this is what I am supposed to do"		
C following direction		
C passive/compliant engaging		
P correcting C	P directing C for control purposes	
P directing C indirectly		
P directing C nonverbally		
P directing C passively		
P directing C physically		
P directing C verbally		
P insisting on ritual		
P teaching didactically		
C actively rejecting P's overture	C rejecting P's overture	Missed social connections
C passively ignoring P's overture		
C responding halfheartedly to P's overture		
C showing aggression/defiance		
C disengaging	C stepping back	
C expressing frustration		
C resisting change		
C resisting interaction		
C seeking reassurance		
C showing trepidation		
C solitary play		
C unsure of what to do—I don't know what to do now		
P expressing frustration/recognition of C's nonengagement	P noncongruent with C's focus	
P rejecting C's bid to set agenda		
P redirecting C from current focus		
P missing chance to follow child's lead		
P engaging in separate noninteractive activity		
C adapting to variation	C initiating socially	Congruent social engagement
C asserting nonverbally		
C asserting verbally		
C bidding to set social agenda by 'showing'		
C breaking ritual		
C initiating affection		
C nonverbal "I want to interact"		
C adapting to variation		
C "I hear you"	C responding socially	
C adapting to variation		
C acceptance/understanding of caring		
C engaging in social ritual		
C indicating agreement or "yes"		
C indicating pleasure/interest		
C responding willingly to P's social initiation		
P asking question to guide interaction	P guiding C's social interaction	
P physically guiding willing C noncoercively		
P cueing C action		
P adapting engagement style	P interacting socially	
P bidding to set social agenda		
P caring/loving/comforting		
P caring/teasing		
P following/encouraging child's lead		
Accepting C bid to set agenda		
Asking what C wants without directive intent Following C's lead		
Questioning to feign openness to C's opinion		
Verbally engaging in C's agenda		
PC equally balanced engagement	Shared agenda setting	
PC collaborative engagement		
PC congruent engagement		

Note. P = parent; C = child.

re-coded by both coders, resulting in exhaustive consideration of all codes for each interactive event.

A supplementary step in the analysis was to conduct an interactional sequential analysis (Table 3). For this process, we identified and labeled activities in the order of occurrence (e.g., bubbles, "soup" making, or car rolling). For each activity, we identified the initiator and follower and classified each partner's action as instrumental, social, or unengaged. The first and third authors completed this review independently, compared their classifications, and resolved discrepancies by consensus. This analysis allowed us to track social and instrumental events systematically in relation to partner initiations and responses, applying the definitions described above. The *unengaged* classification was used to describe actions that took the form of solitary, rejecting, or aggressive behavior. Although signs of social interest were not always clear-cut, the interactional context and nonverbal signs provided clues to underlying social or instrumental functions. For example, we interpreted as social one partner's look to the other's face by revealing interest (e.g., showing surprise) or enjoyment (e.g., smiling) in the interaction process. However, if a child's smile appeared related to a solitary focus rather than one in which both partners were engaged, we classified it as *unengaged.*

Once coding was complete, the first, second, and fourth authors collaborated on deriving themes from the coded data. Initially, we reviewed coding categories for the frequency with which codes were applied within them and by further merging related code categories. Resultant collapsed categories included child social actions, child nonsocial actions, parent social engagement, parent nonsocial actions, parental social guidance, and shared agenda setting. Reviewing this delineation revealed three convergent streams of extracted meaning that captured the preponderance of data, which were assigned as themes: (a) *the partner as instrument*, (b) *missed social connections*, and (c) *congruent social engagement*. A focus of the thematic analysis was to identify and describe distinguishing patterns among the themes and to explore the meaning behind these patterns and their relevance to intervention. The three themes, along with codes and subcodes from which they emerged, are itemized in Table 2.

Other Validity Procedures

Additional measures supported the trustworthiness of the data analysis process. First, we used triangulation by reviewing IC notes and family logs generated from the larger study. These sources provided contextual background information to supplement and contextualize the findings. Second, multiple perspectives were obtained by involving the first four authors in interpreting our results. Finally, the third author's prolonged 8-month period of engagement with the families, her presence during video-recordings of parent–child interaction, her knowledge of what came before and after the video sessions, and her input into the analytic process helped infuse our interpretations with an in-depth understanding of the toddlers' experiences. Her input resulted in the nuancing of a number of code applications and interpretations and served as proxy "member check," a participant review of transcriptions and analyses, because of her familiarity with the toddlers' experience.

Findings and Interpretations

Each of the three overarching topical themes, the partner as instrument, missed social connections, and congruent social engagement, is represented with illustrations of interaction to reveal how toddlers participated in instrumental versus social communicative encounters and how parents' actions and communication styles co-occurred with toddlers' actions.

Table 3. Sequential Interaction Analysis.

Action/activity	Initiator and function	Follower and function
Ian and Ana		
Bubbles	Parent—Social	Child—Social
Soup	Child—Social	Parent—Social
Lines up/stacks/connects toys	Parent—Social	Child—Social
Soup	Parent—Social	Child—Social
Lines up/stacks toys	Child—Social	Parent—Social
Soup	Parent—Social	Child—Unengaged
Rolls car	Parent—Instrumental	Child—Unengaged
Bangs toys to get attention	Parent—Instrumental	Child—Unengaged
Juggles balls	Parent—Unengaged	Child—Unengaged
Bubbles 1	Parent—Instrumental	Child—Unengaged
Bubbles 2	Parent—Social	Child—Social
Soup ('yummy')	Child—Social	Parent—Unengaged
Lines up blocks	Child—Social	Parent—Unengaged
Bubbles	Parent—Social	Child—Social
Toys	Child—Social	Parent—Social
Car	Parent—Social	Child—Unengaged
Basketball	Parent—Social	Child—Social
Clean up	Parent—Instrumental	Child—Unengaged
Lines up blocks 1	Parent—Social	Child—Social
Lines up blocks 2	Parent—Unengaged	Child—Unengaged
Bubbles	Parent—Social	Child—Social
Blocks	Child—Unengaged	Parent—Unengaged
Olivia and Jessica		
Stacks	Parent—Instrumental	Child—Instrumental
Names pictures	Parent—Instrumental	Child—Instrumental
Stacks	Parent—Instrumental	Child—Instrumental
Watches tower fall	Parent—Social	Child—Social
Builds tower	Parent—Instrumental	Child—Instrumental
Names pictures	Child—Social	Parent—Social
Names pictures	Child—Social	Parent—Social
Names	Child—Social	Parent—Unengaged
Stacks	Child—Instrumental	Parent—Unengaged
Makes animal sounds	Parent—Social	Child—Social
Stacks	Parent—Instrumental	Child—Instrumental
Gives direction "On top!"	Child—Instrumental	Parent—Instrumental
Addresses fallen block	Parent—Instrumental	Child—Instrumental
Stacks	Parent—Instrumental	Child—Instrumental
Names	Child—Social	Parent—Social
Names filmer	Child—Social	Parent—Unengaged
Stacks/names	Parent—Instrumental	Child—Unengaged
Book	Parent—Social	Child—Unengaged
Directs to sit	Parent—Instrumental	Child—Unengaged
Blocks	Parent—Social	Child—Unengaged
Books	Parent—Instrumental	Child—Instrumental
Names pictures	Child—Social	Parent—Social
New book	Parent—Instrumental	Child—Unengaged
Book: Naming/animal sounds	Parent—Social	Child—Social

(continued)

Table 3. (continued)

Action/activity	Initiator and function	Follower and function
Makes music (recorder)	Parent—Instrumental	Child—Instrumental
Jacob and Emily		
Leans child backward	Parent—Social	Child—Social
Leans back	Child—Social	Parent—Social
Reaches out to parent	Child—Social	Parent—Social
Leans back	Child—Social	Parent—Social
Holds up truck	Child—Social	Parent—Unengaged
Under table	Parent—Social	Child—Unengaged
Snuggles	Child—Social	Parent—Social
Leans back	Parent—Social	Child—Social
"One, two, . . ."	Parent—Social	Child—Social
Flips child	Parent—Social	Child—Social
Approaches parent for another	Child—Social	Parent—Social
Approaches for another	Child—Social	Parent—Social
Approaches for another	Child—Social	Parent—Social
Approaches for another	Child—Social	Parent—Social
Touches car to his chest	Child—Social	Parent—Unengaged
Comforts child	Parent—Social	Child—Social
Crouches for 'get you' game	Parent—Social	Child—Social
Blanket peek-a-boo	Parent—Social	Child—Unengaged
Leans in for kiss	Child—Social	Parent—Social
Pounds parent's face with head	Child—Unengaged	Parent—Unengaged
Tugs at blanket	Child—Instrumental	Parent—Unengaged
"Beep-beep" to nose	Parent—Instrumental	Child—Unengaged
Shakes blanket	Child—Instrumental	Parent—Instrumental
Captures blanket	Child—Instrumental	Parent—Instrumental
Chase Game 1	Child—Social	Parent—Social
Chase Game 2	Parent—Social	Child—Social
Card table house	Parent—Social	Child—Social
Rolls train on table top	Child—Social	Parent—Unengaged
Boo scare game	Parent—Social	Child—Unengaged
Joins parent under table	Child—Social	Parent—Social
Tickle/chase/boo game	Parent—Social	Child—Social
Joins parent to repeat game	Child—Social	Parent—Social
Bumps head on purpose	Child—Social	Parent—Social
Turns table on side to hide/peek	Parent—Social	Child—Not engaged
Pulls table down	Child—Instrumental	Parent—Instrumental
Pretends to eat	Parent—Social	Child—Social
Runs to restart chase game	Child—Social	Parent—Social
Explores shelf with toy bins	Child—Instrumental	Parent—Instrumental
Offers toys	Parent—Social	Child—Social
Rolls car on child's arm	Parent—Social	Child—Unengaged
Rolls car on child's back	Parent—Social	Child—Unengaged
Requests cars	Parent—Instrumental	Child—Instrumental
Offers car	Child—Social	Parent—Social
Rolls car on child's back	Parent—Social	Child—Social
Hides to restart chase	Parent—Social	Child—Social
Drops car for body rolling	Child—Social	Parent—Social

(continued)

Table 3. (continued)

Action/activity	Initiator and function	Follower and function
Runs cars on table	Parent—Social	Child—Social
Drops cars off table	Child—Social	Parent—Social
Tickle monster game	Parent—Social	Child—Social

Note. "Unengaged" = disengagement from interaction, as in solitary, rejecting, or aggressive behavior.

Contextual Material

Supplemental sources of documentation, family logs, and IC session notes provide contextual background. Ana's family log focused on the joint attention phase and showed plans for making pretend "soup," car play, and play that included other family members. Ana reported engaging in these activities an average of 24 min daily to promote joint attention. She commented that Ian had been ill but that they practiced for longer times as he recovered. The IC noted Ian's good progress and demonstration of pretend play and joint attention.

Jessica's family log, also focused on the joint attention phase, showed planning for a zoo outing, building block towers, and book reading, with a focus on strengthening joint attention. She reported engaging in these activities an average of 14 min daily, noting that holiday preparations and Olivia's tantrums reduced their planned engagement time. The IC noted Jessica's attempts to offer Olivia more choices and Olivia's demonstration of joint attention and improved verbal language.

Emily's family log, which focused on the attending-to-faces phase, showed plans for mirror play, peek-a-boo, and a store outing, all designed to help Jacob look at her face more often. She recorded an average of 30 min daily engaged in these activities. Emily commented that Jacob enjoyed the store visit, an activity that had previously been difficult for him. The IC noted Emily's increased confidence in her ability to promote Ian's social communication as he continued to progress.

The triangulated data showed all three dyads engaging in a variety of interactions throughout the week. The amount of time spent in daily activities seemed to mirror the parents' success in promoting the child's social engagement during the recorded session. For example, Jessica, who struggled to gain her child's social attention, reported spending less time than the others in daily interaction. Their interaction may have been affected by the observed transactional patterns, in which positive responses from both partners were sparse and interactions were largely instrumental, likely limiting their motivation to socially engage during the week. Parents' reported activities related to targeted outcomes to different degrees. For example, Emily's choice of peek-a-boo and mirror play were well suited to promoting attention to faces, and Ana's activity choices and face-to-face positioning set the stage for socially based joint attention. In contrast, Jessica's choice of side-by-side book reading interfered with joint attention, which required exchanging looks to share social interest. While all dyads showed a mix of social and instrumental engagement, the relevance of activities to targeted outcomes seemed to correspond with the children's level of social engagement. Although parents' and toddlers' actions on video may have varied from their unobserved actions during the week, these differences were likely minimized by the video-recording instructions to parents to interact with the child as they normally would, by the natural settings from which data were collected, and by the open-ended expectations for parent–child interaction.

Coded Data Analysis

Theme 1: Partner as instrument to give/follow directions or requests: "I interact to get what I want or to follow directions." This section illustrates initiating and responding roles in instrumentally focused

exchanges. The instrumental functions include child requests, parent directives, responses in kind to instrumental initiations, and didactically oriented interactions.

Child instrumental initiations. One form that child instrumental initiations took was to request help, as in a game of making "soup" using balls and a bowl. Ian removes a ball from the bowl with one hand and holds a spoon in the other. He places the ball in the bowl, looks at Ana, and says *Help*. Ana responds *Look, you just grab it*. She drops the ball into the bowl, holds Ian's arm, and guides the spoon into the bowl with her hand over his while he picks up balls with the spoon. In a similar exchange, Jacob frowns and looks toward Emily while reaching to pull the handle of a basket on a shelf. Emily asks if he needs help and encourages him to say *Help*. Jacob grunts and tugs while looking at the basket. Emily responds by pulling on the handle.

Both examples illustrate serious, task-oriented child-initiated requests to meet personal rather than social goals, following the child's agenda. The parents' responses were also task-oriented as they fulfilled their children's requests. The function in both cases was to use the parent as an instrument to obtain the children's desired outcomes, contrasting with a social function in which an initiator "comments" or "shows" solely for the purpose of sharing attention with a partner about an object or event of mutual interest.

Child instrumental responses. A pattern of parent instrumental initiations was also common, in which the parents' agendas prevailed and toddlers followed directives. In one example, Jessica opens a book on her lap in front of Olivia, revealing a picture of a dog. Jessica says *Look, I see a . . .* and pauses to wait for Olivia to respond with the correct answer. Olivia responds with *doggie*, which Jessica affirms. Rather than a social interchange, the function of this task-oriented exchange was didactic, and thus instrumental. Jessica "owned" the correct answer and Olivia's role was to respond correctly.

In a similar exchange between Emily and Jacob, he is distracted by his restricted interest, a toy car, which he holds in his hand. Emily holds out her hand and asks *Can I have that please?* to which Jacob responds by giving her the car, for which she thanks him. This polite compliance-oriented interaction was also classified as instrumental because of its focus on meeting Emily's wish for Jacob to curb his restricted interest and by Jacob's response in kind. Again, the function was to solicit Jacob's compliance in accomplishing Emily's agenda.

As in the toddlers' instrumental initiating examples, their responses in this section were circumscribed and task specific. They did not respond for the purpose of sharing in the parents' interest and observing their perspectives, but to fulfill parental requests. This pattern, instigated by parents' instrumental initiations, though sometimes warranted, contrasted with potential social actions such as following the child's lead and promoting playful interaction.

Theme 2: Missed social connections: Resisting the partner's social agenda—"I do not notice or accept your social bid." The second theme focused on the dynamic interplay when one partner made a social overture and the other failed to accept it. In some of these misconnections, the child resisted by frankly rejecting a parent's overture, responding defiantly, or passively disengaging. In others, it was the parent who failed to follow the child's social initiations. Regardless of which partner disrupted the initiated social event, the derailment prevented what might have otherwise become a new or sustained social interaction.

Child passive social disengagement. In some interchanges, the child was pulled between the parent's initiated social action and an object of restricted interest, as in an exchange between Ana and Ian. Ian is drawn to interlocking toys while Ana tries to capture his interest by rolling a toy car. She picks up a ball and bangs it against the car to get his attention. Ian briefly looks at her

then back at the toys. Ana again bangs the ball and car together loudly, saying *Look*. She briefly acknowledges Ian's separate focus with *Are you trying to do it or are you . . .* [trails off], after which she resumes calling his name and banging while Ian continues attaching toys together. Finally, she juggles two balls on her own, as if giving up on engaging Ian. Although Ana's effort to draw his attention to her own focus of interest did not meet with success, his disengagement took a passive rather than an aggressive or defiant form, perhaps because she allowed him to choose his own activity.

Child active rejection of the parent's overture. In an example of a child's active rejection, Jessica tries to engage Olivia in toy-stacking turn-taking play. Jessica says *Come here, come play! Mommy's turn.* She places the largest stacking block on the floor in front of her, saying *Olivia's turn.* Jessica holds out the block, *Does mommy need to turn the TV off?* implying that she will do so if Olivia does not join her. Olivia looks away from the TV toward the camera and smiles while leaning against a chair. She peers closely at the camera saying *Doh dah doh dah* in a seemingly annoyed tone. Jessica, seeming to interpret Olivia's response as a request not to turn the TV off, says *Okay then you have to play. Come here.* Olivia's rejection of Jessica's overture appeared to relate to Jessica's control-oriented statement *You have to play.*

Parent noncongruence with child's focus. Another class of missed social connections occurred as Ana blows bubbles. Ian says *Yummy*, which was previously used as code for making "soup" with balls in a bowl. Ana replies *Yummy? Why is it yummy?* as if Ian was commenting on the bubbles being yummy. She smiles, looks at him, and raises the bubble wand to her mouth to make more bubbles. She uses the familiar *Ready, Set . . .* to draw his attention to the bubbles. Ian responds with *Go* but is looking down at the blocks. Ana asks, *Go?* as if to imply that he did not mean it. Having no response from Ana to his invitation to the "soup" play, Ian disengaged from bubble play to pursue his separate interest in lining up blocks.

In all examples for Theme 2, parents' failure to follow their children's foci of attention was followed by child resistance to the parents' agendas. The result was compromised social engagement, which would have required sharing attention socially around a common focus.

Theme 3: Congruent social engagement: "I choose to engage socially with you, recognizing your interests." Representing the third theme, another group of interactions showed convergent social engagement. These included social initiations by children and parents that were reciprocated in back-and-forth social exchanges. The following examples illustrate the social elements embedded in these interactions.

Child-initiated social events. In one exchange, Jacob makes a social bid to Emily. He squats abruptly in front of a card table under which Emily is perched, saying *Boo!* while looking at her. Emily squats lower to look at Jacob from under the table, responding *Boo!* Jacob repeats, *Boo!* and Emily laughs. He crawls under the table to join her and Emily responds, *Whatcha do?* Jacob repeats, *Boo!* and Emily moves to make room for him under the table. The social character of this encounter is evident in the partners' responsive laughs, a shared focus of attention in the *Boo!* interchange, exchanged looks, excited voices, and physical closeness, contrasting with the more serious task-focused interactions involving requesting and direction following. Emily takes responsive actions to maintain the social quality of the interaction, including responding in kind to Jacob's initiation (repeating *Boo!*), adding an affective element (laughing), and inviting him into physical proximity with her.

In another example, Jessica follows a connection that Olivia makes between a teddy bear that appeared on the TV screen and an actual one on the sofa. Jessica follows Olivia's gaze when she looks from the TV screen to the sofa and interprets Olivia's utterance of *Kah the*

bear by taking into account its context. In contrast to a previous encounter, instead of viewing the TV as a distraction, Jessica uses it to maintain Olivia's initiated social connection by saying *Is that a teddy bear on TV?* while looking at the sofa and pointing to the TV. After acknowledging Olivia's social bid, Jessica extends it by whispering, *Roar*, while looking at Olivia. Olivia returns the look. Unlike their instrumental exchanges, this one served a social function without overtones of requesting, giving directions, or requiring a scripted response. Instead, both partners commented to one another for the sole purpose of communicating about a mutual interest.

A variation of Ian's and Ana's familiar "soup making" activity provides a third example of congruent social interaction. A spoon is holding a ball, and Ian moves it up to his face as if pretending to eat. Ana treats this as a social bid by saying *Mmm, It's yummy*. The ball drops from Ian's spoon and he picks it up, laughing. He smiles while putting the ball back in the spoon. Ana reaches across to pick up the spoon, saying *I'll stir now. Stir, stir, stir.* Ian briefly plays alone with other toys on the floor. Ana draws him back into social interaction by using the spoon to pick up a ball from the bowl, bringing it to her mouth, and making slurping noises as if eating soup. Ian looks up at her and smiles. Ana asks *Do you want some?* She reaches out and puts the spoon in front of Ian's face. Ian grasps it and opens his mouth, keeping his gaze on the spoon while guiding it to his mouth as if eating. Ana says *Mmm yum*, while laughing. Here, Ana followed up on Ian's social initiation and extended it, circumventing his tendency toward solitary play. She kept the interaction social by using descriptive noncoercive language, following his lead, laughing, and guiding his attention back toward the social focus that he had initiated.

Following each of these child social initiations, the parents responded socially by interpreting looks to their faces, positive affect, and other nonverbal communication bids as social overtures and extending interaction around the child initiations. The result was a balanced pattern of social perspective taking with both partners engaging around mutual interests rather than controlling the other's actions with a didactic agenda or prescribed instructions.

Parent-initiated social events. In an example of a parent initiating what would become a successful social interaction, Emily begins a familiar routine with a *Rawr!* as she jumps from behind the couch on her knees with her arms raised in front of her as if to catch Jacob. He stands in front of her and laughs heartily in response, accepting her bid to play. Emily tickles Jacob with both hands saying, *Tickle monster. Woooo!* Jacob runs in place then runs back toward the kitchen laughing. Emily appears to be sensitive to Jacob's previous interest in the game and waits for his response before extending the play to a "tickle monster" variation.

In another episode, Emily makes exaggerated eating noises, mimicking a monster. Jacob smiles and sits under a table. He looks at Emily as she crawls toward him. Emily shakes her head while continuing to make eating noises and stops in front of Jacob. She judges that Jacob can handle the potentially scary play as she laughs to signify that it is all in fun. Jacob crawls out and Emily reaches to tickle him. Jacob laughs again, showing that he is socially engaged and willing to play along. The social nature of both encounters shared aspects of the child-initiated social events. Emily used her knowledge of Jacob's play preferences in her activity choice, allowed for a balance of parent and child actions, gauged his tolerance for physical contact, and maintained an atmosphere of excitement and positive affect.

In the Theme 3 episodes, a sense of harmony and rhythm was present in the give-and-take patterns of the toddlers' and parents' social initiations and responses. The toddlers' initiations and congruent reactions to parents' socially oriented responses and initiations gave the sense that the toddlers acted of their own free will rather than in response to prescribed expectations or to assert their own will irrespective of the parent's interests.

Sequential Interaction Analysis

The pattern of toddlers' reactions being influenced by the function of parents' initiations and a similar pattern in parents' reactions to toddlers' initiations (i.e., both partners responding in kind to instrumental or social initiations) was upheld in the sequence of events across the entire data set (see Table 3). The sequential interaction analysis showed that, regardless of who initiated a social action, the follower's response was usually (but not always) categorized as social. Similarly, instrumental actions, whether child- or parent-initiated, were followed by either instrumental or "unengaged" responses in the form of following directions or solitary, rejecting, or aggressive behavior, but not by socially interactive responses.

General Discussion

Together, the straightforward pattern that emerged in the thematic illustrations and the sequential interaction analysis revealed clear transactional influences in parent–toddler interaction. Instrumental initiations, regardless of initiator, were followed by instrumental responses in the form of following directions or disengagement from the interaction. Social initiations were likely to be followed by social responses, but were thwarted if the partner introduced a competing or nonresponsive agenda, such as the parent failing to follow the child's social lead, the parent initiating with an underlying instrumental agenda (i.e., engaging the child in a seemingly social agenda, but on the parent's terms), or the child reverting to restricted or solitary play. These results are instructive for orienting parent-mediated intervention for toddlers on the autism spectrum toward a clear social communication focus.

Strengths and Limits of the Qualitative Approach

Our expansive approach to data transcription added contextual richness and generated findings that would have been less evident from more cursory descriptions of the interactions. For example, documentation of facial expressions, visual focus, voice tone, and positioning supported reliable coding of social and instrumental aspects of interactions and helped to elucidate parents' and toddlers' underlying communicative intent. Other features that added depth to the analysis included a generative collaborative process for identifying and classifying codes and themes; inclusion of outsider (a qualitative researcher without early intervention experience) and insider (the IC who worked directly with the families) perspectives; and the sequential analysis to uncover patterns in how each partner's actions influenced the other.

Consistent with the purpose of qualitative educational research (Brantlinger et al., 2005), our findings are not interpretable as universal or generalizable but, rather, illustrate interaction patterns from three particular parent–toddler pairs. Although our validity protections were strong, qualitative research is, by design, interpretive and case specific, and alternative data may have colored the findings. For instance, different interactional patterns might emerge in father–toddler interactions than in mother–toddler interactions reported here, and participants might respond differently in clinic-based settings with less familiar partners and more structured formats. Therefore, readers should consider contextual variations when applying our analysis to other participants or settings.

Applicability to Practice

Adults taking the role of *participant in* rather than *director of* toddlers' social learning is consistent with the underlying tenants of mediated learning theory, which is more oriented toward developing conceptual and interactive learning processes than training in predetermined skills

(Feuerstein, 1980; Haywood, 2013; Klein, 2003; Schertz & Horn, in press). This idea is congruent with social learning theory, in which learning is understood to be an active, transactional, socially based, observational, and cognitive process and in which external reinforcement plays only a partial role (Bandura, 1977). One important direction for intervention for toddlers with autism, then, is to favor transactional outcomes in which parents and toddlers learn to share social attention and consider partner perspectives over outcomes focused on controlling behavior, following directions, or learning narrowly defined skills. Our findings, which align with social learning theory, point to participatory and socially oriented parent–toddler interaction as an important means of addressing the core concern in autism during the formative early developmental period (Schertz & Horn, in press).

Specifically, our finding of close alignment of toddlers' successful social communication acts with parents following their toddlers' interests comports with the research-supported (e.g., Carpenter et al., 1998; for example, Schreibman et al., 2015) and field-recommended (Schertz, Baker, Hurwitz, & Benner, 2011) maxim to follow young children's interests and foci of attention. However, this study suggests a more nuanced interpretation. When the aim is to promote social communication, beyond following toddlers' interests indiscriminately, parents' engagement with toddlers' social interests, specifically, appears to be a more powerful strategy than emphasizing instrumentally focused goals. Furthermore, parents were more successful when they participated in simple back-and-forth play than when they attempted to actively control toddlers' social participation, perhaps because the latter may have taken on an instrumental dimension. This pattern suggests the importance of authentic and balanced parent–child social engagement that does not have an underlying purpose of controlling the child's responses, that is not explicitly instructive in nature, and that builds on the child's socially oriented interests. The illustrated examples might be instructive for practitioners to share with parents as they guide them toward meaningful social engagement that is unimpeded by overt or underlying instrumental agendas.

In sum, the results from this investigation support findings on transactional influences between parents and young children with autism in which certain partner actions were associated with the other's social engagement (e.g., Vernon, 2014). This evidence extends the positive findings from socially oriented early intervention for toddlers with autism (e.g., Kasari, Gulsrud, Paparella, Hellemann, & Berry, 2015; Schertz, Odom, et al., 2013; Wetherby et al., 2014) by illustrating particular aspects of parent-led interaction that appeared to be socially ameliorative for toddlers with autism and those that, because of their instrumental orientation, appeared to result in degeneration of social engagement. The implications for intervention for toddlers with autism and their families are profound given the association between early social communicative competency and later language and social functioning (Freeman et al., 2015; Mundy et al., 1990).

Authors' Note

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