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Autism and the social world: an anthropological perspective



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ELINOR OCHS, TAMAR KREMER-SADLIK,
 KAREN GAINER SIROTA AND OLGA SOLOMON
 UNIVERSITY OF CALIFORNIA, LOS ANGELES

ABSTRACT This article offers an anthropological perspective on autism, a condition at once neurological and social, which complements existing psychological accounts of the disorder, expanding the scope of inquiry from the interpersonal domain, in which autism has been predominantly examined, to the socio-cultural one. Persons with autism need to be viewed not only as individuals in relation to other individuals, but as members of social groups and communities who act, displaying both social competencies and difficulties, in relation to socially and culturally ordered expectations of behavior. The article articulates a socio-cultural approach to perspective-taking in autism in three social domains: (1) participating in conversational turn-taking and sequences; (2) formulating situational scenarios; and (3) interpreting socio-cultural meanings of indexical forms and behavior. Providing ethnographic data on the everyday lives of high-functioning children with autism and Asperger syndrome, the article outlines a cline of competence across the three domains, from most success in conversational turn-taking to least in inferring indexical meanings. Implications of these abilities and limitations are considered for theoretical approaches to society and culture, illuminating how members of social groups are at once shaped by, and are agents of, social life and cultural understanding.

KEY WORDS: *autism, conversational turn-taking, culture, indexicality, perspective-taking, situational scenario, social membership*

1. Introduction

In this article, we pursue three goals. First, we offer an enriched view of autism informed by the field of anthropology. Our approach foregrounds the notion that people who are diagnosed with autism are participating members of social groups and communities. In turn, the social coherence and sustainability of these social units rely upon members' common-sense understandings, domains of knowledge, value orientations, and ideologies, as well as 'logics of practice' (Bourdieu, 1990a; Garfinkel, 1967; Geertz, 1973, 1983). These facets of social

membership, which are central to social well-being, have explanatory power in accounting for displayed social competencies and difficulties associated with autism. In addition to providing ethnographic data on the everyday lives of high-functioning children with autism and Asperger syndrome, this article offers a view of social functioning in relation to autism, which complements and reconfigures existing social psychological frameworks. Of particular importance is the distinction between social as interpersonal and social as socio-cultural. Specifically, we propose a socio-cultural approach to understanding challenges faced by persons with autism in accomplishing perspective-taking in social interaction that augments more than a decade of experimental, psychological research.¹

Second, we delineate three social domains that entail perspective-taking: (1) conversational turn-taking and sequences; (2) formulating situational scenarios involving others; and (3) interpreting the socio-cultural meanings of indexical forms and behaviors – and we consider the challenges of each for persons with autistic spectrum disorders. Specifically, our observations of spontaneous social interactions involving high-functioning children with autistic spectrum disorders evidence a cline of competence, ranging from most success in anticipating conversational moves to least success in inferring indexical meanings of forms and behaviors.

Third, we consider the implications of abilities and limitations of autistic persons for theoretical approaches to society and culture. Across the social sciences, disciplines have struggled to distill how human beings are at once shaped by and agents of social life and cultural frameworks (i.e., Barth, 1959; Blau, 1964; Boyd and Richerson, 1985; Garfinkel, 1967; Giddens, 1979; Godelier, 1977; Schutz, 1967; Thompson, 1978). Scholars of culture, in particular, have alternated between top-down definitions that emphasize shared, stable symbolic systems and rules of conduct that organize members' orientations (e.g. Durkheim, 1938; Leach, 1970; Parsons, 1937, 1951; Radcliffe-Brown, 1973; Tylor, 1865) and bottom-up definitions that emphasize culture as open-ended and members as actively implementing rational choices or intuitively formulating strategies for interpreting and participating in emergent yet conventional social situations (e.g. Berger and Luckmann, 1966; Bourdieu, 1977, 1990a, 1990b; Garfinkel, 1967; Giddens, 1979; Kapferer, 1976; Sahlins, 1976).

Top-down structural models are well suited to describe the predominant *modus operandi* of children with autism who seek predictability and routine as they engage in day-to-day social activities. This complementary match – between structural models of culture and life as lived by persons with autism – suggests not only the importance of stable patterns of social behavior and meanings to persons with autism but additionally suggests that structural models depict core social and cultural capabilities of all human beings. Alternatively, bottom-up agent-centered, improvisational models depict facets of society and culture that present challenges for those with autism spectrum disorders. These challenges underscore the importance of members' ability to draw upon socio-historical

understandings and artifacts to appraise fluid, contingent, multi-dimensional, often ambiguous circumstances as well as to coordinate with others.

Our generalizations are based on an ethnographic and clinical study of 16 children aged 8 to 12 years old diagnosed with high-functioning autism and Asperger syndrome.² The ethnographic component involved 381 hours of video and audio recording of the children's everyday interactions with family members at home, in transit to and from school, and with peers and teachers at school. The clinical component involved administering the Autism Diagnostic Interview Revised (ADI; Le Couteur et al., 1989) to the children's parents. In addition, the children were administered the Wechsler Intelligence Scale (WISC-III; Wechsler, 1992) and first- and second-order theory of mind tasks. All children's IQ test scores were within normal range.³ In addition, all children attended ordinary public schools and were fully included in regular classrooms. Importantly, this article and the material we present here are illustrative of general trends emergent from our research data and are intended to be suggestive rather than definitively programmatic.

2. *Autism*

Autism is a neurologically based developmental disorder characterized by a spectrum of severity, ranging from the mute and profoundly retarded to highly gifted and intelligent individuals. Existing research on the abilities of high-functioning children with autism and Asperger syndrome is often contradictory and far from complete. Much of the existing research on autism spectrum conditions has included individuals whose functional capabilities are additionally impacted by a concurrent diagnosis of mental retardation. Some researchers argue that the inclusion of dually diagnosed subjects limits the applicability of these research findings to the entire autistic spectrum (cf. Capps et al., 1998). Hence, the studies overviewed below should be critically evaluated, bearing in mind that high-functioning individuals' abilities often can exceed those which have been reported for more severely affected persons with autism.

Some severely affected children with autism never develop spoken language, while others may exhibit developmental lags in language acquisition, mastering language skills at a slower pace than unaffected children (Bartolucci and Pierce, 1977; Pierce and Bartolucci, 1977; Sigman and Capps, 1997; Tager-Flusberg, 1981, 1985, 1988; Ungerer and Sigman, 1987). Verbally, children with autism often echo words or sentences spoken by others or heard on television, reverse pronouns, especially 'I' and 'you', and use neologisms and idiosyncratic vocabulary of their own creation. These atypicalities of language use, however, usually diminish over time (see Tager-Flusberg, 2000, for review).

Children with autism display social abilities that reveal a basic awareness of themselves and others. For example, they recognize themselves in a mirror (Dawson and McKissick, 1984), display attachment to caregivers (Capps et al., 1994; Sigman and Ungerer, 1984), and can secure the attention of others when

they desire it (McHale, 1983). Yet, children with autism typically evidence difficulties in sharing affective experiences with others vis-à-vis a third referent, also known as joint-attention (Baron-Cohen, 1989a; Kasari et al., 1990; Mundy et al., 1993). For example, while children with autism engage in 'protoimperative pointing', that is, pointing to request an object for instrumental purposes (Baron-Cohen, 1989c; Bates et al., 1979), they less frequently share their interest in objects together with other people through means such as 'declarative pointing', that is, pointing out an object for the sake of shared interest alone.⁴

In line with their tendency to use pointing gestures to obtain objects, children with autism initiate and comprehend speech acts that serve directive purposes (e.g. requesting an object) more often than speech acts that facilitate shared understanding and affect among participants (e.g. announcements, questions, compliments) (Baron-Cohen, 1988; Frith, 1989; Loveland et al., 1988). When children with autism respond to questions in laboratory settings, they are likely to repeat prior comments or to offer idiosyncratic responses rather than to offer new and relevant information (Capps et al., 1998). In these experimental situations, the children demonstrate pronounced difficulties adjusting information to listeners' needs (Geller, 1991, 1998; Loveland et al., 1990; Perner et al., 1989). However, an ethnographic study examining the everyday conversational skills of high-functioning children with autism revealed that the children responded adequately to 75 percent of the spontaneous questions addressed to them by family members (Kremer-Sadlik, 2000, 2001). These responses evidence the children's ability to adequately interpret conventional expectations of questioners and to supply relevant answers.

A study of thematic continuity in conversation showed that high-functioning children with autism spectrum disorders used connective markers such as 'and', 'but' and 'so', but that these markers often linked topically disjunctive propositions (Solomon, 2001a, 2001b). In addition, some children repeatedly listed, contrasted, and otherwise linked items within topical paradigms (Solomon, 2000), as illustrated below:⁵

Adam: **So he says, 'INK, INK for the practice report.'**
 Pencil **for the music.**
 Pencil **not for the practice report,**
and ink not for the music.

Children with autistic spectrum disorders tend to perseverate on their own topics of interest (Baltaxe, 1977). A study of conversational patterns involving one adult with autism and mental retardation revealed a tendency to recycle topics that had been initiated previously. The adult's perseveration within and across utterances occasionally led to overlapping turns and diminished attention to the interlocutor's desire to take a turn at talk (Dobbinson et al., 1998). These tendencies are tied to a preference among many persons with autism for highly structured environments and for sameness across time, often yielding perseveration and distress at even minor changes in situations (Frith, 1989; Happé, 1994).

Children with autistic spectrum disorders are able to understand that an object in a 'line of sight' may appear differently to self and other (Leslie and Frith, 1988). They have difficulty, however, understanding that different modalities of perception (e.g. seeing, touching) can lead to different states of knowledge (Baron-Cohen, 1989b; Baron-Cohen and Goodhart, 1994; Ozonoff et al., 1991). For example, they have difficulty understanding that a person who looks inside a box and a person who merely touches a box are likely to have different knowledge about the contents of the box. Infants and young children typically track the gaze of co-present others in their social environment (Sorice et al., 1985; Trevarthen, 1979, 1993). For example, gaze monitoring is a source of information concerning goals in which shared foci of attention allow inferences concerning others' impending behaviors. Children with autism spectrum disorders, however, engage less frequently in gaze monitoring than do typically developing children (Mundy et al., 1993).

Children with autistic spectrum disorders also display difficulties in emotion recognition (Hobson, 1986) and emotion expression. They tend to express negative feelings, such as fear, anger and guilt, more often than feelings of joy and interest (Capps et al., 1993). They evidence difficulty in comprehending complex social emotions, particularly embarrassment and pride, suggesting that they are less aware of others' opinions and perspectives. Children with autism are also less aware of affect-loaded prosodic features (Capps et al., 1992; Kasari et al., 1993). In addition, children with autism tend not to attend to others' expression of negative emotions (Loveland, 1993; Sigman et al., 1992). Further, the children do not fully comprehend the significance of loneliness nor that friendship involves closeness and reciprocity (Bauminger and Kasari, 2000). This does not mean, however, that they never form friendships. In fact, the authors' ethnographic observations reveal that the high-functioning children in our study had friends with whom they met regularly after school and on weekends.

In the past two decades, researchers have debated the possibility that these and other functional deficits associated with autism involve a central impairment in the capacity to construct a 'theory of mind', that is, to infer another person's internal dispositions (Baron-Cohen et al., 1985, 1986). According to this argument, 'mind blindness' inhibits the detection of others' beliefs, thoughts, knowledge, desires, and intentions in the course of interactions with others (Baron-Cohen, 1996). Theory of mind abilities have been measured through a variety of laboratory tasks that require the subject to attribute intentions, beliefs, and other psychological states to another person on the basis of prior background knowledge about that person – their experiences and personality, for example – or on the basis of a person's ongoing bodily comportment, facial expressions, voice quality, and actions.

Experimental evidence indicates that most children and adults with autism perform poorly on theory of mind tasks. Only 20 percent of individuals with autism pass the first-order theory of mind task, which requires that the individual being evaluated attributes beliefs to another person that are different from his

or her own beliefs (Baron-Cohen et al., 1985). More capable individuals with autism are able to pass the second-order theory of mind task, which evaluates the ability of the subject to attribute to another person beliefs about yet another person's beliefs (embedded mental representations) (Baron-Cohen et al., 1986). Those few who are able to infer beliefs and intentions also tend to achieve high scores on standardized intelligence tests. These intellectual skills may help them learn how certain ecological circumstances relate to others' mental states, thus facilitating their accomplishment on 'theory of mind' tasks. Nevertheless, even high-functioning individuals with autism typically demonstrate delays in acquiring these mentalizing abilities relative to unaffected individuals (Baron-Cohen et al., 1985, 1986). In a study involving high-functioning children with autism and Asperger syndrome, Baron-Cohen et al. (1999) administered an advanced theory of mind test that required recognition of social 'faux pas' (including, for example, a vignette about a person who introduces his wife to a good friend from high school using the wrong name). Children diagnosed with autism and Asperger syndrome performed less proficiently on this task and exhibited less developed skills in comprehending complex social interactions and motivations than did typically developing children.

Baron-Cohen et al. (1997) administered an *adult* theory of mind test to high-functioning adults with autism and Asperger syndrome. The task required the subjects to infer mental states from photographs of a person's eyes. Compared to the performances of age-matched unaffected adults and members of other clinical control groups (i.e. adults with Tourette syndrome), adults with high-functioning autism and Asperger syndrome proved significantly less successful at this task. Similarly, Kleinman et al. (2001) asked high-functioning adults with autism and unaffected participants to attribute mental states to photographs of people's eyes and to audio recordings of various verbal intonations. The performance of individuals with autism regarding interpretation of mental states was significantly compromised on both of these measures.

In addition, individuals with autistic spectrum disorders show a deficit in information processing that is characterized by a detail-processing style that is hypothesized to result in 'weak central coherence' (Frith, 1989; Happé, 2000) or impaired ability to perceive details as part of a meaningful whole, i.e., to organize locally processed stimuli into meaningful, higher level patterns or structures. This theory of 'weak central coherence', proposed by Frith (1989), is based on Gestalt psychology's argument that perception is governed by a field of interdependent elements perceived as parts of a whole. This tendency also operates on the socio-cultural level. Bartlett (1932), for example, writes that 'an individual does not normally take . . . a situation detail by detail', but rather 'has an overmastering tendency simply to get a general impression of the whole' on the basis of which 'he constructs the probable detail' (cf. Happé, 1994: 116). Those with autism appear to have a specific imbalance in information-processing ability, leading to a combination of weak central coherence along with overdeveloped lower-level cohesive forces. This, Frith (1989: 98) writes, results in 'an

incoherent world of fragmented experience' for those with autism spectrum disorders.

Another candidate explanation for the cognitive processing deficits associated with autism has been framed in terms of an overarching executive function disorder resulting in compromised problem-solving abilities, particularly as required to plan a goal-directed course of action amidst changeable, relatively unstructured environmental circumstances (Hughes, 2001; Ozonoff et al., 1991; Russell, 1997; Zelazo et al., 2001). Persons with autistic spectrum disorders perform relatively well when guided by external prompts, but have difficulty independently generating new ideas and flexible responses to shifting situational demands. They may perseverate on a previous problem-solving strategy, for example, even though the parameters of the task have changed (Turner, 1997).

Finally, children with autistic spectrum disorders show limited engagement in pretend play activities (Happé, 1994; Kasari et al., 2001; Wulff, 1985). Rather than pretending that a toy car is driving and crashing into another car, a child with autism may spin the toy, or line it up in a row of other cars. While unaffected 2-year-olds are able to 'decouple' an object from its function by pretending that it is something else, for instance pretending that a banana is a telephone, children with autism demonstrate difficulty with such pretense (Carpenter and Tomasello, 2000; Leslie, 1987; Ungerer and Sigman, 1981). A study that examined autistic children's ability to draw pictures of unreal or impossible objects found that the children were less inclined or less able to produce such drawings. In adults with autism, diminished imagination often manifests in a tepid interest in fictional novels and films, for example, coupled with a heightened interest in decontextualized facts, sometimes including the development of esoteric pre-occupations, such as memorizing train timetables, phone numbers in phone-books, etc. (Happé, 1994). Related to their difficulty 'decoupling' an object from its function, individuals with autism also display limited understanding of metaphor and irony. In particular, the comprehension of metaphor and irony requires 'decoupling' an utterance from its literal meaning. Persons with autism who passed first-order theory of mind tasks performed well on tasks involving interpretation of metaphor, yet were significantly less successful in fathoming non-literal meanings of irony (Happé, 1993). Those who passed second-order theory of mind tasks performed well in comprehending both metaphor and irony. Individuals with autism who passed second-order theory of mind tasks also were assessed on their ability to recognize the underlying intentions and motivations of story protagonists engaged in non-literal communicative strategies such as sarcasm, irony, metaphor, jokes, bluffs, and white lies throughout a series of vignettes ('Strange Stories') (Happé, 1994). Although the subjects attributed mental-states to the protagonists, their attributions often were overly literal or otherwise non-conventional. For example, when presented with a story in which a mother tells her son, 'Your room is a pig sty', one subject said, 'She thinks he keeps pigs in his room.' Thus, subjects with autism appeared not to use

situational cues typically accessed by unaffected persons to evaluate truth values and strategic uses of language.

3. Revisiting 'social' in autism research

In these and other accounts of autistic spectrum disorders, different facets of social competence are assessed, but these facets are not integrated into a more comprehensive analysis of social functioning. Although autism is characterized as a social disorder, social functioning tends to be arbitrarily configured and under-conceptualized in clinical diagnostic manuals and in many psychological studies of the disorder. With the exception of Vinden and Astington (2000), critique of this situation is rare. In the discussion that follows, we seek to enhance the conceptualization of social functioning through two modifications: (1) we argue against the distinction made in diagnostic accounts of autism between 'social' and 'communicative' domains; and (2) we amplify the notion of social functioning to specify socio-cultural as well as interpersonal knowledge and skills.

'SOCIAL' AND 'COMMUNICATIVE' AS INTEGRATED DOMAINS OF FUNCTIONING

The first modification in conceptualizations of social functioning addresses the distinction between impairments that are 'social' and those that are 'communicative', originally argued by Wing and Gould (1979) in their description of the autistic disorder and used in formulating the diagnostic criteria of autistic impairments in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM IV) (American Psychiatric Association, 2000). While the domain of social functioning covers phenomena beyond communication, and while some researchers recognize that the boundaries between these domains are blurry, this diagnostic division is deeply problematic in that the use and interpretation of language in everyday life, i.e. communication, are essential to social functioning and an outcome of both innate social predispositions and local socialization practices. Moreover, language use and interpretation mediate experimental assessments of social skills and in this sense cannot easily be factored out in assessing subjects' social understandings.

Inversely, language use and interpretation are quintessentially 'social'. This insight motivates the linguistic anthropological message that language competence extends beyond tacit knowledge of context-independent grammatical systems to include context-sensitive knowledge of language as praxis or what anthropologist Dell Hymes (1962, 1972) calls 'communicative competence'. The fields of pragmatics, sociolinguistics, linguistic anthropology, and conversation analysis, among others, have emphasized that interpretation of utterances involves the ability to understand the socio-cultural indexicality of utterances and constituents within them. Indexical forms point to or indicate some contingent, situational feature, e.g. the address term 'sir' indexes that the addressee is male (Levinson, 1983: 48); the utterance 'Where is it?' indexes that a response is

expected to follow (Sacks et al., 1974; Sacks 1992). Deciphering indexical meanings necessarily draws upon social knowledge, in that interlocutors need to be able to recognize how linguistic and other semiotic forms pragmatically indicate a prior, ongoing or impending social context (Ochs, 1990; Silverstein, 1992). Certain indexical relations between forms and social contexts are pan-cultural (e.g. second person pronouns index the addressee across languages), while other indexical relations may be specific to local communities of language practice.

SOCIO-CULTURAL AND INTERPERSONAL UNDERSTANDING

The second modification to psychological accounts of social functioning among persons with autistic spectrum disorders expands the domain of social functioning to include not only knowledge and skills needed to engage in interpersonal interactions but also socio-cultural knowledge and skills that allow members of social groups to enact and interpret conventional behaviors, activities, roles, and institutional norms that organize families, schools, youth organizations, workplaces, and religious communities (Edgerton, 1985; Garfinkel, 1967; Geertz, 1973; Schutz, 1967; Wittgenstein, 1958). Schutz (1967: 13), for example, argues as follows:

We come, therefore, to the conclusion that 'rational action' on the common-sense level is always action within an unquestioned and undetermined frame of constructs of typicalities of the setting, the motives, the means and ends, the courses of action and personalities involved and taken for granted. They are, however, not merely taken for granted by the actor but also supposed as being taken for granted by the fellow-man.

Analyses of autistic impairments generally do not distinguish between interpersonal and socio-cultural knowledge and skills that facilitate participation in social encounters. Thus, for example, the DSM-IV-TR (American Psychiatric Association, 2000: 75) lists as a diagnostic criterion for autism the 'failure to develop peer relationships appropriate to developmental level' yet does not distinguish between interpersonal and socio-cultural acumen needed to establish and maintain a developmentally appropriate peer relationship. In many communities, peer relationships require displayed awareness of one another's personal histories and outlooks. In all communities, successful peer relationships entail displayed awareness of conventionally expected behaviors and psychological dispositions associated with such relationships. The distinction between interpersonal and socio-cultural knowledge and skills is difficult to draw, not the least because, first, socio-cultural knowledge and skills are not universally shared by all members of a social group, as Durkheim noted (1933) and, second, members appropriate socio-cultural frameworks for interpreting the world in idiosyncratic ways, individuating them according to their personal life-worlds (Shore, 1996). Nonetheless, certain socio-cultural knowledge and skills *are* expected to be displayed and recognized by all those who claim membership in a social group. And when these expectations are breached, members are routinely subject to

negative sanctions from other members (Garfinkel, 1967; Goffman, 1959, 1963, 1967; Sacks et al., 1974).

The relation of interpersonal to socio-cultural knowledge and skills is complex. In this discussion, we focus on the import of this relation to perspective-taking in social interaction. Specifically, we view perspective-taking to encompass more than interpersonal inferencing about another's mental states, as codified in the concept of 'theory of mind'. Perspective-taking centrally involves socio-cultural decentering. Such decentering draws upon members' awareness of 'behavioral expectancies' associated with socially and culturally organized situations (Wallace, 1965: 41).

Psychological studies of social impairments among persons with autistic spectrum disorders tend to blur the distinction between interpersonal and socio-cultural perspective-taking. Certain experimental tasks designed to assess theory of mind, for example, focus on subjects' ability to infer another individual's beliefs in a particular set of circumstances, e.g. theory of mind tasks that ask subjects to infer, on the basis of their observations of events, where a puppet character (mistakenly) believes a desired object is located. Other theory of mind tasks focus on subjects' ability to infer mental states (e.g. beliefs, intentions) and pragmatic meanings conventionally associated with displayed social behaviors or social situations, e.g. theory of mind tasks that ask subjects to infer mental states from conventional expressions of eyes or to interpret the conventional pragmatic meaning of social faux pas, white lies, and bluffs. In both tasks, interpersonal and socio-cultural perspective-taking are entailed, but the first prioritizes the capacity to take into account the mental states expected of particular persons in particular events, while the second prioritizes the capacity to take into account the mental states and understandings conventionally expected of members when they display certain socio-culturally recognizable facial expressions, speech acts, or are otherwise engaged in a social practice.

Similarly, interpersonal and socio-cultural dimensions of pragmatic impairments associated with autism generally are not teased apart. Thus, for example, the ability to recognize, interpret, and respond to speech acts involves socio-cultural perspective-taking, minimally including an awareness of (1) the socio-cultural conventions for performing such acts; (2) the social roles being enacted by the performers; (3) the social activities in which the acts are both embedded and which they help to constitute; (4) the default knowledge states, beliefs, emotions, and intentions conventionally associated with performers of such acts; and (5) the possible, anticipated, and preferred next interactional moves conventionally projected by the performance and performers of these acts. But interpersonal perspective-taking is involved as well in recognizing, interpreting, and responding to speech acts, in that interlocutors are minimally expected to situate speech acts in the context of particular past, present, future or hypothetical circumstances and particular persons, and to fine-tune their interpretations and responses accordingly. The conversation analytic concept of 'recipient design' is helpful in bridging interpersonal and socio-cultural dimensions of

social functioning, in that social interaction depends upon the ability of participants to design interactional moves in relation to (perceived and constructed) personal and positional identities, knowledge states, and dispositions of ratified recipients (Sacks, 1992).

In summary, psychological approaches to autism tend to cast social competence as the ability to interact with another person, including the ability of one person to fathom another person's mental states, to respond relevantly and empathically to another person, to engage another person in an object of shared interest, and otherwise to maintain interpersonal relationships, such as friendships. Across these important and illuminating psychological studies, the concept of 'social' is applied liberally to any and all social encounters. The capacity for social interaction is viewed as a diffuse ability entailing adaptive levels of functioning that generally regulate relations between self and other. Our background as linguistic anthropologists and our ethnographic observations of autistic children's social life suggest that while social functioning needs to be understood as a general domain of ability, it also needs to be examined as an on-line, real-time process involving knowledge of historically rooted and culturally organized social practices. That is, throughout the life span, human beings are socialized to recognize and implement social practices, including their own and others' expected roles, stances, and comportment. This capacity demands perspective-taking on a *socio-cultural* level. These two complementary yet distinct facets of perspective-taking are delineated as follows in Table 1.

In drawing this distinction, we rely upon Amelie Rorty's insight that 'although psychological activities are centrally cognitive, their significance is a function of a larger frame of specific sorts of activities, many of them organic and cultural' (Rorty, 1995: 208). In this framework, perspective-taking as interpersonal *and* socio-cultural depends crucially upon simultaneously grasping what Malinowski called the 'context of culture' as well as the 'context of situation' (Malinowski, 1923). The remainder of this article focuses on socio-cultural perspective-taking in relation to autism.

Socio-cultural perspective-taking undergirds both the production and interpretation of human behavior. First, a member's *own* socially coherent behavior rests upon his or her ability to infer other members' expectations regarding

TABLE 1. *Two facets of perspective-taking*

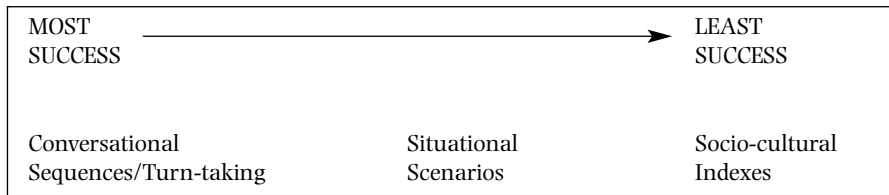
<i>Interpersonal perspective-taking</i>	<i>Socio-cultural perspective-taking</i>
Understandings of another person's intentions, beliefs, knowledge, and/or feelings	Understandings of other members' expected intentions, beliefs, knowledge, and/or feelings conventionally associated with socio-culturally organized practices, roles, institutions and, more generally, inclusion in a social group

typical and appropriate actions, intentions, beliefs, knowledge, and feelings vis-à-vis some social practice, social identity or institution. Perspective-taking is involved, in that social participation entails members' ability to 'read' social situations. Second, the same socio-cultural founts of knowledge guide the interpretation of *other* members' mental states. Complex webs of signification regarding what another member may be thinking, feeling or doing depend upon a member's ability to infer contextually contingent social practices, identities, and institutions.

Compared with the task of trying to interpret an individual's particular, sometimes idiosyncratic intentions, beliefs, knowledge and feelings, the task of socio-cultural perspective-taking is facilitated for autistic persons by several properties. First, certain socio-culturally preferred and expected mental dispositions associated with practices, identities and institutions are *accessible to explicit socializing discourse*. Social gaffes by children, for example, often give rise to overt reprimands, corrections, or other forms of instruction. Even if they do not fully grasp what another member may be thinking or feeling, autistic children may learn how to act and react in ways that conventionally entail intentions, beliefs, knowledge states, and feelings. They may learn schemata for displaying and reacting to politeness, for example, which may entail sentiments that may not be internally experienced.

Second, the link between preferred and expected mental states and certain social practices, identities, and institutions may be relatively *stable* and *predictable*, a quality which is highly compatible with autistic longings for and comfort with routines and sameness across time and space. Thus, for example, the children in our study were repeatedly exposed to practices such as question-answer exchanges that had an enduring grammatical form over time and space. Through exposure to and participation in such exchanges, children come to understand that, with some exceptions (e.g. rhetorical questions), members who pose questions tend to expect responses to their questions in a subsequent conversational turn. Part of understanding a question is to recognize this conventional interactional implicature which in turn involves socio-cultural perspective-taking.

Third, the interpretation of socio-culturally durable intentions, beliefs, knowledge, and feelings is facilitated by the fact that practices, identities, and institutions that are systematically linked to these dispositions are themselves recognizable through an *array* of co-occurring perceptual cues. For example, high-functioning children with autism often are able to interpret and anticipate social intentions of others at school on the basis of identifying routinized school practices like reading aloud in turns and conventional roles like teacher and student, which are recognized through a set of visible objects and built environments, as well as participants' spatial location, dress, gesture, bodily comportment, and language.

FIGURE 1. *Cline of ability in socio-cultural perspective-taking*

4. *Socio-cultural perspective-taking across contexts*

In making an argument for socio-cultural perspective-taking, we are not suggesting that socio-cultural decentering is always or even usually accessible to people with autism. Indeed, our video records of high-functioning children with autism and Asperger syndrome suggest a cline of ability in their socio-cultural perspective-taking across social contexts. In particular, the children had high success in turn-taking and conversational sequences, moderate success in articulating and recognizing situational scenarios, and least success in fathoming socio-cultural indexes of practices, positional identities, institutions, and dispositions, see Figure 1.

CONVERSATIONAL TURN-TAKING AND SEQUENCES

Existing research presents a vague picture of autistic children's ability to participate in conversation. In the DSM-IV-TR Diagnostic Criteria for autistic disorder, a 'marked impairment in the ability to initiate or sustain a conversation with others' (American Psychiatric Association, 2000: 75) is one of four possible symptoms of impaired communication.⁶ In spite of the recognized need for research systematically investigating autistic persons' conversational impairment, however, there is little analytic specification of what constitutes the inability 'to initiate or sustain a conversation with others' (American Psychiatric Association, 2000: 75) within the autistic population (Baltaxe and D'Angiola, 1992; Baltaxe and Simmons, 1977; Dobbins et al., 1998; Fine et al., 1994; Paccia and Curcio, 1982; Tager-Flusberg, 1995).

Various deficits associated with autism hinder autistic persons' ability to participate in conversation: trouble grasping affective stances and social identities of interlocutors; difficulty adhering to social norms concerning acceptable topics and conversational actions (Baltaxe, 1977; Frith, 1989; Loveland et al., 1988); neglecting listeners' needs for contextual detail and supplying irrelevant or redundant information (Layton and Stutts, 1985; Tager-Flusberg and Anderson, 1991); perseveration on idiosyncratic associations (Hurtig et al., 1982); failure to use eye gaze to signal turn-taking; and frequent interruption of others (Mirenda et al., 1983).

CONVERSATIONAL TURN-TAKING

With the exception of Dobbins et al. (1998), the existing accounts of turn-

taking skills in relation to autism are not grounded in the theoretical frameworks of interactional sociology, ethnomethodology and conversation analysis. Conversational turn-taking is a complex activity that involves participants' 'mutual monitoring', taking place every time 'an individual . . . find[s] himself accessible to the senses of others who are 'present', and similarly finds them accessible to him' (Goffman, 1964: 63). Smooth transitions between one speaker's turn and the next entail considerable socio-cultural and interpersonal perspective-taking, in that the interlocutor needs to recognize the conversational juncture at which a turn change is relevant and expected. Such recognition follows no simple metric or routine, but rather depends upon interlocutors' ability to monitor contingent, unfolding linguistic and interactional structures. To avoid interrupting the current speaker, the interlocutor needs to attend to the moment by moment grammatical, phonological, and lexical shaping of utterances, along with their thematic content and pragmatic functioning. Competent conversational partners are expected to evaluate when a particular 'turn-constructive unit', i.e. 'sentential, clausal, phrasal, and lexical constructions', could be coming to possible completion, when the current speaker is projecting to continue with yet another turn-constructive unit, or when another speaker's turn could begin (Sacks et al., 1974: 702; Schegloff, 1996). Generally, the interlocutor is expected to take the next turn in a timely fashion, avoiding lengthy gaps in the conversational interaction. Depending upon conversational norms of social group and situation, turn transitions occasionally may involve slight overlap at the point at which a turn-constructive unit appears to be ending.

Our ethnographic study of high-functioning children with autism and Asperger syndrome interacting with family members and Dobbins et al.'s case study (1998) of a mildly retarded woman with autism indicate that the conversational turn-taking system appeared within the grasp of persons with autistic spectrum disorders. The subjects of the two studies displayed few difficulties taking their turns at talk at expected transition-relevance places. In the excerpt below, for example, Connor, an 8-year-old-child with Asperger syndrome, engages in mild disagreement with his father about music lessons at school, with no gaps or overlaps between turns (Kremer-Sadlik, 2001: 125):

- Connor: One year of the violin and the next year um (the flute)
 Father: I don't know if they would let you do that though
 Connor: No no the- they don't care what instrument you choose.
 Father: You sure about that?
 Connor: Yeah, they don't really care which instrument you choose.
 Father: Huh.
 I would think they'd want you to continue to progress.
 Connor: Yeah, no they don't- they don't care.

Similarly, Sylvester, an 8-year-old high-functioning child with autism, has no difficulty alternating turns with his mother while in the car looking for the home of an acquaintance:

- Sylvester: What street was it again?
 Mother: Well, we have to turn (.) on a street.
 Sylvester: Name?
 Mother: I don't know.
 Sylvester: 'I Don't Know' Street?
 Mother: ((*laughs*))
 Yup, 'I Don't Know' Street

It is not certain in this excerpt whether Sylvester has interpreted his mother's utterance 'I don't know' literally or is making a joke, but in either interpretation, he recognizes when a turn has come to a transition-relevance place and sustains a topic across a series of turns together with his mother. Excerpts from interviews with Mary, an adult with mental retardation and autism (Dobbinson et al., 1998: 125–6), also indicate her capacity for fine-tuned latching (indicated by '=' marks in the transcript) between the ending of one turn and the transition to a new turn:

- Mary: and I'm thinking of training for badminton as well and table-tennis
 (1.5 sec. pause)
 Researcher: whi- which (.) of tho:se do you like=
 Mary: =I'm getting a progressing at badminton
 an (.) s-so I can play with Elly Elly Grey
 .hhh in the errr (.) mini- mini lympics.

As discussed by Dobbinson et al. (1998), Mary occasionally overlapped a current speaker's turn to complete a proposition that she had initiated and broken off in an earlier turn. The high-functioning children with autism and Asperger syndrome in our study also manifested this tendency, but most of their overlaps occurred at projected possible completions of turn-constructional units. In the excerpt that follows, Mark, an 8-year-old boy with Asperger syndrome, anticipates what his father is asking him and responds appropriately just as the father's question comes to a close (Kremer-Sadlik, 2001: 159):

- Father: Oh,
 And they put in the balloon,
 Just like they experiment with putting a, a, a rat ()?
 Mark: No, he went into the balloon b- on his own.
 Father: Oh, did he, uh, accidentally, uh, loosen the rope
 or something so the balloon [floated up?
 Mark: [Guess so.

Turn-taking asynchronies among the children and adults with autistic spectrum disorders most typically involved longer pauses within turns and between one turn and the next. Dobbinson et al. (1998) suggest that these frequent lengthy pauses indicate cognitive difficulties, such as word searches, as illustrated in the intra-turn pauses below:

- Mary: Juliette went down to the (1.05 sec. pause) cake shop
 to order it for her
 and Patty (.) brought it up to the erm (.) the day center for her.

In the corpus of children's conversations, however, it is difficult to determine the source of the children's lengthy pauses. They could as easily be due to distraction or a desire to ignore or withdraw from the interaction at hand, as in Connor's delayed response to his mother's prompt to eat (Kremer-Sadlik, 2001: 86):

Mother: Are you gonna eat it Connor?
(3.0 sec. pause)
Mother: Huh?
(1.5 sec. pause)
Connor: I got most of it.

In this respect, children with autistic spectrum disorders seem to behave qualitatively like many of the unaffected peers in their families and communities, but their vulnerability to pragmatic language challenges may make longer gaps more commonplace.

CONVERSATIONAL SEQUENCES

Anthropologist Esther Goody notes that a key facet of social intelligence is the ability to anticipate the actions of others, referring to this kind of thought as 'anticipatory interactive planning' (AIP) (Goody, 1995: 2). Conversation analyst Paul Drew (1995: 111) suggests that anticipatory interactive planning rests on 'cognitive representations of sequences of actions' in social interaction. These representations, which allow co-interactants to attribute intentions to one another and respond appropriately, lie largely below the level of conscious awareness and are rooted in socio-cultural conventions. Culture, as linguistic anthropologist Stephen Levinson (1995: 240) provocatively proposes, may indeed be no more than 'a set of heuristics for intention-attribution' in human interaction.

Social interaction exhibits organized patterns of stable, identifiable structural features to which participants are oriented (Heritage, 1984). All contributions to talk-in-interaction are at once *context-shaped* (i.e., cannot be understood except by reference to the context, especially the immediately preceding conversational contribution) and *context-renewing* (i.e., a 'current' contribution forms the immediate context for the next one in a sequence). Finally, speakers' contributions accomplish particular *actions*, which become meaningful to participants in interaction by virtue of occupying a particular place within *sequences of actions* (Garfinkel, 1967; Heritage, 1984; Schegloff and Sacks, 1973).

Paired linkages of turns must be accomplished in a conventional way. They may be fairly ritualized exchanges, such as greetings, or more variable paired actions such as question/answer, request/grant or rejection, invitation/acceptance or refusal, etc. As Schegloff and Sacks (1973: 295–6) illuminate, an adjacency pair is a sequence of two utterances that are adjacent, produced by different speakers, ordered as a first and a second pair part, and are matched by type, so that a first part requires a particular second part (or range of second parts). Adjacency pair structure is a normative framework for actions that are *accountably*, but not invariantly, implemented.⁷

Schegloff and Sacks (1973) point to the role of 'next positioned linkage' in maintaining interlocutors' mutual understanding. By producing a second pair part, a speaker shows that s/he understood the first pair part. The 8–12-year-old children in our study often recognized that given one particular conversational move (e.g. a question, a request), a second conversationally relevant next move was expected (e.g. an answer, acceptance/refusal). As noted earlier, Kremer-Sadlik (2001) found that when questions were posed by parents, the high-functioning children with autism and Asperger syndrome attempted to provide an adequate response 85 percent of the time and actually answered these questions adequately 75 percent of the time, as illustrated in the excerpts below (Kremer-Sadlik, 2001: 84):

- Father: And did she have a real Oscar?
 Keith: I'm not kidding she had >a real genuine Oscar<.
 Father: And did you get to touch it?
 Keith: Yeah.
 Father: Was it heavy or light?
 Keith: It was heavy.
- Mother: [Where did you move, from there to there?
 [((pointing on the board))
 Mark: [No from the- from there to there.
 [((pointing))
 Mother: Okay.
- Father: How'd you do that?
 How'd you figure out that that was the right answer?
 Jed: I guessed.
 I added it.
 (You wanna' know?)
 If nineteen started at twenty plus thirteen is obviously thirty three- so minus one is obviously . . . ((continues))

Production of relevant second pair parts in conversational sequences requires awareness of the conventional expectations surrounding the enactment of first pair parts in recognized social circumstances (socio-cultural perspective-taking) as well as awareness of the informational relevancies of particular utterances and particular knowledge states and dispositions of conversational partners (interpersonal perspective-taking). In this way, linked actions within conversational sequences constitute 'the basic blocks of intersubjectivity' (Heritage, 1984: 256).⁸

In addition, interlocutors may also produce a single proposition over the course of their respective turns (Lerner, 1991: 441):

- Louise: **when he gets his eyes like this
 an' starts thinkin', you know**
 Ken: **then you get to worry**

Such attempts at intersubjectivity appear to be within the capabilities of some

high-functioning persons with autism. Consider the following interaction in which Keith, an 11-year-old high-functioning child with autism, completes the utterance of his younger sister, Lynn:

- Keith: Well, I'll be twenty, you::'ll be::
 [°twenty nineteen eighteen seventeen° sixteen (.) years old.
 [((counting his fingers))
- Lynn: **((making a happy face)) I'll b[e::**
- Keith: [still waiting to get a ca::r.

This finely coordinated conversational turn-taking involves the ability not only to monitor syntactic structure of talk-in-progress but also to infer the other's attitudes and mental states, an ability that experimental studies show to be impaired in autistic individuals (Baron-Cohen et al., 1985, 1986). Yet, in this example, Keith appears to be in command of this ability, appropriately completing his sister's utterance.

Although specific features of turn-taking and conversational sequences vary in relation to institutional settings (Drew and Heritage, 1992), their relatively predictable organization across a wide range of *informal* interactions may account for the relative ease with which children with autism master this pragmatic domain. While this property may allow certain conversational norms to be explicitly learned, the dynamics of sequencing and turn-taking rarely rise to the level of meta-discursive awareness. Instead, the variety of sequence types and the on-line processing demands involved in formulating sequentially relevant next turns in a timely fashion require a generative competence that is difficult to teach. As ethnomethodologist Harold Garfinkel (1967: 41) emphasizes:

These properties of common understandings stand in contrast to the features they would have if we disregarded their temporally constituted character and treated them instead as precoded entries on a memory drum, to be consulted as a definite set of alternative meanings from among which one was to select, under predecided conditions that specified in which of some set of alternative ways one was to understand the situation.

Hence, high-functioning children with autism and Asperger syndrome likely *acquire* conversational sequences and turn-taking skills through spontaneous interaction rather than learning them through elicited imitation and other forms of instruction.

SITUATIONAL SCENARIOS

Anthropologists have long been interested in how members' representations of social situations organize social experience and coordination in a community. Just as members are socialized into historically rooted preferences and expectations related to conversational turn-taking and sequences, so are they socialized to interpret specific experiences in terms of historically rooted situational models. Socio-cultural perspective-taking is involved, in that members use their awareness of preferred and expected conventional arrangements of situational roles,

actions, dispositions, artifacts and built environments to infer participants' knowledge states, intentions, feelings, and other mental states.

The children in our study evidenced a limited sense of what is expected of themselves and others in a range of social situations. At times, they displayed more competence *articulating* hypothetical socio-cultural scenarios involving members than *participating* in them. For example, consider the following dinner-time interaction between an 11-year-old high-functioning boy with autism named Keith, his younger sister, Lynn, and their parents, in which Keith explicitly projects himself and his sister in a future-oriented prototype of what their lives will be like as they move through adolescence and young adulthood:

- Keith: Well, I'll be twenty,
you::'ll be::
((counting his fingers))
twenty nineteen eighteen seventeen sixteen (.) years old.
- Lynn: ***((making a happy face)) I'll b[e::***
- Keith: [still be waiting to get a ca::r.
- Lynn: **No! I'll be [getting-**
- Father: **[No she still will be-**
- Lynn: **She'll be grounded all the time.**
- Lynn: **NO I WON'T! [That's HIM! *((pointing at Keith))***
- Keith: ***[(laughs)]***
- Keith: I'll be *((shrugs))* just going out to parties (all the time).
- Lynn: [()
- Keith: [Make sure I don't drive with drunken friends.
- Father: ***((semi-laughing)) mm-hm***
- Keith: What if it's –
'Eh- have YOU: (.) had anything to drink (.) today?'
'Oh just a couple of bottles of beer'.
'O::H I'll take a walk'.
- Lynn: **Yeah you can do that.**
- Father: **mm**

In this excerpt, Keith demonstrates social knowledge related to what 16-year-olds expect and desire, namely to get their own car. He portrays the social importance of owning a car when he teases his sister that she will 'still be waiting to get a car' when she turns 16. For himself at the age of 20, he envisions a social scenario of partying with friends, complete with drinking and driving concerns and strategies for avoiding trouble. Such socio-cultural scenarios display some understanding of age-appropriate values and conventional life courses.

We know from prior research and our recordings that children with autism seek routinized, predictable structuring of experience, often because of specific sensory processing deficits inherent in autism (Anzalone and Williamson, 2000). In addition, they may over-invest in socio-cultural scenarios, such that when the comfort of a familiar situation is disrupted, the children may become overwhelmed and upset. In addition, some children orient to and perseverate on minute details of a social situation, paying attention to small changes in features

that unaffected persons might not notice or dwell upon. We might say that such children have a tendency to over-specify social situations. Consider, for example, how 11-year-old Adam, who has Asperger syndrome, recounts deviations in how he expected his first day at middle school to be structured:

- Adam: **The first period starts at eight-thirty-ONE, not eight-thirty, eight-thirty-ONE.**
- Mother: Oh, that's interesting.
- Adam: **And ends-**
- Mother: **Well, you know WHY, because they figure everybody's going to be in their class at eight-thirty. Well does the bell ring at twenty-five after, or are you just supposed to be there at eight-thirty?**
- Adam: **No, it rings at, rings at- There's three bells. One at twenty-seven after-**
- Mother: Okay, warning bell.
- Adam: **And then there's one at twenty-five**
and then one at twenty . . . (*narrative continues*)

In this excerpt and continuing throughout the following 45 pages of this transcribed narrative, Adam dwells on small deviations from what he expected to transpire at school. He focuses on the fact that the first period started at 'eight-thirty-ONE, not eight-thirty, eight-thirty-ONE.' When his mother asks about the warning bell, Adam provides the minute-by-minute exact sequence of warning bell times (Solomon, 2000). Interestingly, Adam and the other children in our study use narratives as a vehicle for airing their preoccupation with departures from expected situational representations. Narratives also afford an opportunity for parents and others to help these children to cope with the fluidity and exigencies of everyday social life and establish new socio-cultural frameworks for thinking, feeling, and being in the world (Solomon, 2001b).

SOCIO-CULTURAL INDEXICALITY

By far the most challenging domain of socio-cultural perspective-taking is *indexicality*. As noted earlier, indexical signs point to the presence of an entity conventionally associated with the sign, e.g. smoke indexes fire, footsteps index the passage of living being (Peirce, 1931–58). In certain ways, the ability to infer indexical meanings is related to the ability to represent and recognize social situations, in that indexical sense-making relies upon members' knowledge of conventional associations between entities in social contexts. Full participation as a member of a community entails understanding how particular forms of behavior, appearance, artifacts, and the built environment historically and conventionally index what larger practices, identities, dispositions, and institutions are at stake at some moment in time and space. For example, members of certain communities might recognize that praying is taking place on the basis of bowed

heads, clasped hands and hushed voice quality or on the basis of recognizing an environment to be a house of worship. Or members might infer that it is morning time on the basis of hearing the crow of a rooster. Indexical perspective-taking such as this requires members to make inferences about social phenomena on the basis of apprehending some contingent feature.

The children in our study generally displayed difficulty making such socio-cultural inferences. Consider, for example, the limited understanding of a conventional scene in a film articulated by 10-year-old Don, a high-functioning boy with autism:

- Don: [Hey mommy =
 Hans: [()
 Don: = can I ask you a question
 in Old Yeller real quick?
 Mother: ((turns to Don, chewing))
 What?
 Don: Um-
 ((circles the table surface with his finger, chewing))
 (0.8)
 when the rooster crowed um-
 (.)
how come (.) Arliss did this?
 "Uh:::" ((stretches arms wide and grimaces))
 Like tha:t. when the roo- =
 Mother: =Well what does it mean
 when the rooster crows (.) in the morning? =
 Don: =It's time to wake up?
 Mother: ((chewing))
 Right
 (.)
 What do you think (.) Arliss was saying?
 Don: Not ri:ght now:::
 ((uses an exaggerated low tone of voice))
 Mother: He di:dn't want to wake up↑
 (.)
 He was saying,
 "O:ne mo:re mi:nute."
 ((using an exaggerated, low tone of voice))=
 Don: =(hhh) Yeah (hh)

In this interaction, Don is confused about the contingent relation between a rooster crowing and the vocalizations, grimaces, and gestures of a boy protagonist in the film. He is able to infer its socio-cultural meaning only after his mother breaks down the scene into its component parts. Notice as well that she supplies the psychological disposition of the protagonist with the comment, 'He di:dn't want to wake up.'

We point out here facets of socio-cultural indexicality that pose interpretive challenges for those with autism: First, recognizing and using indexicals is a

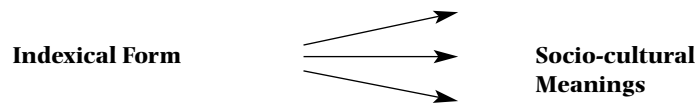


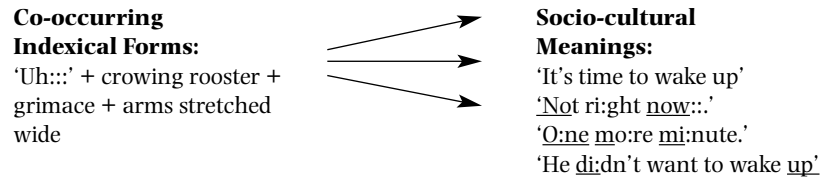
FIGURE 2. *Indexical form with several socio-cultural meanings*

demanding task, in that indexical forms often conventionally signal how another is feeling, believing or intending. Our observations of autistic children's difficulty in fathoming socio-cultural indexicality parallel experimental studies that demonstrate autistic impairments in inferring another person's intentions and emotions from *perceptual cues* like eye gaze, facial expressions, and gestures (Baron-Cohen et al., 1997; Frith, 1989; Happé, 1993; Tager-Flusberg, 2001). While some of these cues are human universals and others are socio-culturally local, all the cues are conventional indexicals, whose meanings are socialized in the course of normal development and become part of members' tacit knowledge.

A second challenge for persons with autistic spectrum disorders is that indexical forms may signal *more than one socio-cultural meaning*, see Figure 2. In the film 'Old Yeller', Arliss's vocalization 'Uh:::', for example, could convey several meanings on its own. The ambiguity of indexical signs may pose problems for even high-functioning children with autism. This difficulty may be related to experimental observations that children with autism have difficulty comprehending metaphors and other *non-literal* meanings and delineate categories more narrowly than unaffected persons (Happé, 1994; Plaisted, 2001).

Third, indexicality also may present challenges in that interpretation of socio-cultural inferences requires an ability to rapidly guess at a relevant meaning in swiftly changing topical contexts. This difficulty is possibly rooted in executive function impairments observed in those with autistic spectrum disorders (Russell, 1997). This explanation, however, is countered by the fact that the children in our study generally responded adequately to the contingent, fluid demands of conversational sequencing, producing relevant conversational moves projected in prior conversational turns.

Fourth, interpreting socio-cultural meanings of indexical signs requires *part-whole inferencing*, which appears to be impaired in those with autistic spectrum disorders (Frith, 1989). It is important to note, however, that the children in our study successfully employed conventional part-whole relations when they articulated situational scenarios composed of appropriate socio-cultural components, as illustrated in this article. The interpretation of indexical forms in the flow of social life places greater demands than this accomplishment. Interpreting indexical forms requires members to notice what else is going on in a situation, linking these aspects together with co-occurring indexical features of situations as well as with relevant socio-cultural background knowledge that gives

FIGURE 3. *Co-occurring indexical forms and different socio-cultural meanings*FIGURE 4. *Indexical forms signal further socio-cultural meanings*

meaning to these features, see Figure 3. Thus, the vocalization 'Uh:::' gains meaning when positioned with a crowing rooster, a grimace and yawning gestures, all of which are interpretable on the basis of historically rooted community understandings.

Moreover, the interpretive task is amplified by the fact that indexical forms that signal certain socio-cultural meanings, e.g. psychological dispositions or social acts, often additionally signal further socio-cultural meanings, for example social activities, identities, and institutions (Ochs, 1996; Ochs and Schieffelin, 1994), see Figure 4.

Thus, children with autism have the double task of trying to fathom not only what psychological dispositions or social acts another member may be indexing but also what activities, identities, and/or institutions, members may be attempting to put into play at some interactional moment. Thereby, members draw upon a vast palette of indexical forms in a community's semiotic repertoire to portray both prototypical and nuanced versions of social order.

Yet, even high-functioning children with autism and Asperger syndrome often may not grasp these more indirect indexical relations. For example, in the following conversational exchange, Adam, an 11-year-old boy with Asperger syndrome, recounts to his parents that following his first bike ride with his grandfather on major city streets, his worried grandmother incessantly questioned them. Of Greek origin, Adam calls his grandmother 'Yaya' and his grandfather 'Papu'. When his parents comment that 'Yaya' should have been a lawyer or a detective, Adam does not quite comprehend the indexical relation between interrogation and these social roles:

Adam: She says, she says-
'This WAS
the first time you were riding a bike.
[WASN'T it, Philip?
[(*gesticulates with both hands*)

- This WA:S isn't it?
 [And- and- and then,
 [((change in voice, calmly))
 and Papu goes-
 says uh- says uh-
 ['Well- BUT-'
 [((change of voice to imitate grandfather, calmly))
 [You know how Yaya doesn't like that-
 [((calm tone, back to own voice))
 ['JUST ANSWER THE QUESTION!
 [((imitating grandmother's voice))
 'It's the FIRST time'=
- Mother: **[=She should have been a lawyer.=**
 [((shakes finger, knowingly)).
- Adam: =It's the first time he rides a bike.
 Are you SU::RE?'
- Father: It's true! ((laughs))
- Mother: She really should have been.
She could have easily been a District Attorney.
Or a detective of [some type.
- Father: [That's where she missed her call-
- Mother: And her skills- she had skills for that.
- Father: She had ALL the skills to be it.
 ((Adam, who has been rocking up to this point, stops))
 Yeah. Yeah. Easily.
 [That's too bad.
 [((thoughtfully))
- Adam: **[She FINDS things easily?**
[(intently looking into mother's face))
- Mother: Yeah.
 She is- that's too bad=
- Adam: **DeTECTIVE, see! =**
- Mother: **[=That's what she should have been =**
 [((pensively, points finger in Adam's direction))
- Adam: = ((stretches arm across the table,
 points finger close to mother's face, with excitement))
[A DE-TECT-IVE! =
 [((waves hands, very excited, speaking abruptly)).
- Mother: **=A District Attorney or a detective.**
- Adam: **She can find things EASily you know!**
An- an- anyway- so- uh.
[She looks (through pockets all the time).
 [((whispering conspiratorially to mother))
- Mother: [((laughs))
- Father: [((laughs))

This interaction suggests that Adam makes an indexical link between 'being a detective' and his grandmother's capacity to 'find things easily', but the indexical relation he infers is not the one his parents are bringing into play at this

particular juncture. Adam does not grasp that it is his grandmother's inquisitorial questioning (e.g. 'JUST ANSWER THE QUESTION!') and her displeasure with Papu's avoidance of answering these questions that motivate Adam's mother to say, 'She should have been a lawyer' and his father's comment, 'Or a detective of some type'. Adam's interpretation suggests that children with autism do have some ability to make indexical links between socially recognized actions (e.g. 'She can find things easily') and stances and social identities with which they are associated (e.g. a detective), but that they have problems discerning which *particular* indexical relations are most saliently foregrounded as relevant, given the focal situation at hand.

Adam's difficulty supports Loveland's notion that children with autism have limited ability to perceive the affordances promoted by specific social environments (Loveland, 1993, 2001).⁹ In the flow of social life, children with autism often fail to grasp the potentially relevant actions and mental states afforded by others' behaviors and artifacts. Interpreting indexicality involves inferring which of the possible dispositions, acts, activities, identities, and/or institutions are relevant to the focus of attention at hand. In conversing with his parents, Adam is unable to link his own portrayal of Yaya's interrogation to the particular indexical inferences accentuated by his mother and father. It is this mapping of indexical possibilities to continually shifting situational relevances that frequently presented a challenge to the children in our study.

5. *Autism and socio-cultural models*

In this article, we have proposed ways in which anthropology can enhance our understanding of autism, a condition that is at once neurological and social. Persons with autism need to be viewed not only as individuals in relation to other individuals but also as members of social communities who think and act in relation to socially and culturally ordered situations in motion. As such, it is useful to cast perspective-taking impairments associated with autism in relation to the practical wisdom of members, e.g. what members expect other members to be thinking and doing in organized practices. The high-functioning autistic children in our study had considerable success in interpreting members' conversational sequential moves and in transitioning from one conversational turn to the next. We believe this is in large part due to the local orderliness of sequences and turn-taking in conversation. The children had more limited success in positing situationally relevant scenarios for social circumstances and least success in inferring practices, dispositions, identities and other socio-cultural meanings from conventional indexical forms. Entry into the world of indexicals is particularly challenging, because indexical meaning potential is wide-ranging and requires members to discern co-occurring salient properties of circumstances at hand.

Having viewed autism in light of anthropology, we conclude with a few remarks on anthropology in light of autism. Specifically, an account of the

abilities and limitations of autistic persons can shed light on anthropological theories of society and culture. Autism is a particularly fascinating condition for anthropologists to fathom, because those with this condition often are not at ease operating in social milieu and often may be working actively to construe culturally sanctioned meanings throughout the course of unfolding encounters with families, peers, and other members of their communities. Autism is the last frontier of anthropology, in that anthropology is historically grounded in the notion that 'others' have their own social logics (Bourdieu, 1990a; Evans-Pritchard, 1937; Good, 1994; Lévy-Bruhl, 1926; Lévi-Strauss, 1963; Sahlins, 1976). Yet, how can we begin to understand the social logics of persons with autism from an emic perspective if a disruption in 'social logic' is positioned precisely at the heart of this condition, as it has been conceptualized from the etic perspective? This, of course, is an imposing analytic endeavor towards which our present article makes only a modest contribution.

A study of autism, however, also holds promise for enhancing theories of society and culture, in that both the struggles and the successes of those diagnosed with autism make evident what is most essential to participation in human society. Social competencies displayed by persons with autistic spectrum disorders have implications for delineating foundational properties of sociability. Conversely, social challenges faced by persons with autistic spectrum disorders highlight what likely are more demanding requisites of immersion in social spaces. It is particularly interesting to juxtapose a portrait of these lived competencies and challenges in relation to factors that have been stipulated as key elements of society and culture according to various analytic approaches.

Top-down approaches to understanding society and culture foreground members' common cognitive frameworks and value orientations as well as norms and other social regularities (e.g. Durkheim, 1933, 1938; Fortes, 1949; Goodenough, 1971; Kuper, 1999; Leach, 1970; Radcliffe-Brown, 1973). These approaches depict an idealized world for children and adults with autistic spectrum disorders, as persons with autism often prefer predictable, highly stable environments and commonly organize information into rules and rigid categories in ways influenced by their condition. As an example, those with autism can be extremely interested in street layouts, clocks, church steeples or can accumulate encyclopedic knowledge of specialized domains like bats, insects, stars, or cattle chutes. As noted earlier, many of the children in our study often systematically listed or contrasted members or features of sets, structuring their conversation as a series of taxonomies. In this sense, autism validates theoretical models that posit the centrality of stable symbolic and social order, of rules, schemata, and structural features. High-functioning children with autistic spectrum disorders do have difficulties with the socio-cultural *langue*, however, often over- or under-specifying socio-cultural codes and not adapting to variations from familiar arrangements of entities across time and space.

In the past several decades, scholars have elaborated the notion that the demands of successful participation in society are far more complex than

predictable mappings of behavioral codes on to social situations (e.g. Geertz, 1973). Socio-cultural perspective-taking, in particular, involves interpreting 'dense networks of meaning' (Greenblatt, 1997: 18) that unfold in the course of social life. Along these lines, interpretive, ethnomethodological and practice-based models have argued that much more is involved in negotiating social membership than simply abiding by structural regularities (i.e., Bourdieu, 1977, 1990b; Eagleton, 2000; Garfinkel, 1952). Social life also entails the ability to construe and respond to fluid, contingent circumstances and indeterminate meanings. As Bourdieu (1990b: 63) notes:

The good player, who is so to speak the game incarnate, does at every moment what the game requires. That presupposes a permanent capacity for invention, indispensable if one is to be able to adapt to indefinitely varied and never completely identical situations. This is not ensured by mechanical obedience to the explicit, codified rule (when it exists).

The social challenges of those with autism make plainly evident the importance of improvisational models that depict members as agents of social experience. Although the high-functioning children with autistic spectrum disorders who participated in our study exhibited improvisational strategies for taking part in conversational interactions, they also evidenced pronounced difficulties in grasping the range of socio-cultural dispositions, acts, identities, activities, and institutions indexed moment-by-moment by linguistic and other conventional semiotic features of shifting social situations. In addition, children and adults with autism at times are reported to be inattentive to life's subtle circumstantial variations or, conversely, they can become extremely uncomfortable when situations alter unexpectedly or do not unfold according to familiar, circumscribed patterns or rules (Turner, 1997; Wing and Gould, 1979). This cline in ability, from inferring what relevant, expected conversational move is likely to be projected by a current turn to inferring out of the range of possible social meanings indexed by behaviors and entities those that are likely to be most relevant to the situation at hand, suggests that mastery of a 'feel for the game' (Bourdieu, 1990a, 1990b) is by no means uniform. Wittgenstein (1958) and Bourdieu (1990a, 1990b) have stressed that every practice has its own loose logic, which must be tacitly understood by members who participate in the games of social life. We propose, on the basis of non-conventional autistic proclivities, that the logics of practices are asymmetrical. They consist of systems of relevances that differ in situational scope, range of variable realizations, and webs of signification that variously impact ease of practical engagement and appropriation by high-functioning children with autism.

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NOTES

1. In this article, we will not be addressing questions relating to the issue of autism as a social construct. However, it is significant to note that, although Autistic Disorder has been identified by biomedical and psychiatric practitioners in a variety of cross-cultural settings (cf. Cohen and Volkmar, 1997), there are many communities throughout the world in which autism is neither recognized as a condition nor codified as a mental disorder. As emphasized by Edgerton (1993), Ingstad and Whyte (1995), Jenkins (1998), and McDermott and Varenne (1996), among others, disability is a social construct wherein categories of normalcy and deviance, competence and incompetence are culturally and historically variable, and whereby attributions and meaning constructions are delineated in relation to locally rooted social networks, values, orientations, and life-worlds.
2. The autism project involved interdisciplinary collaboration of two research teams: the UC Berkeley group led by clinical psychologist Lisa Capps, and the UCLA group directed by linguistic anthropologist Elinor Ochs.
3. All children in the study had full IQ scores of 73 or higher.
4. Jordan (1993) who looked at the spontaneous signing of older children with autism, also noticed that signing only involved requesting a conversational partner to perform a certain routine, and was never interactive.
5. The transcription conventions used in this article are given in the Appendix.
6. The others include lack or delay of language; stereotyped, repetitive or idiosyncratic use of language; and lack of varied, spontaneous make-believe play. Only one of these four items is necessary for diagnosis of autism, as long as there is a total of six or more items from the three domains of functioning identified as 'social interaction', 'communication', and 'restricted repetitive and stereotyped patterns of behavior, interests, and activities', presenting in combination with delay or abnormal functioning prior to the age of three in 'social interaction', 'language as used in social communication' and/or 'symbolic or imaginative play'.
7. Although actions frequently are organized in these structures, the expected pattern also may be breached, in which case the interlocutors exhibit an orientation to the normative accountability of the adjacency pair structure, maintaining the expectation that an original first pair part ultimately will be provided with the second pair part, or an account of its absence will be given.
8. (Heritage, 1984: 257):

Mom: Do you know who's going to that meeting?
 Kid: Who.
 Mom: I don't know!
 Kid: Ou::h pro'bly Mr Murphy an' Dad said prob'ly
 Mrs Timple an' some o' the teachers.

Here Kid takes Mom's first utterance, not as a question, but as an utterance designed to clear the way for Mom to announce who will be going to the meeting (Levinson, 1983: 349–56; cf. Heritage, 1984). Kid displays this orientation by uttering 'Who', which

constitutes a request for the information he assumes Mom to have. Mom's 'I don't know!' constitutes a third turn correction of the misunderstanding which Kid displayed in the second turn, whereupon Kid now responds to Mom's lack of information with a reporting of what he knows, displaying that he knows a great deal about who will be attending the meeting.

9. Her hypothesis draws upon Gibson's (1979) notion of affordance as an opportunity or potentiality for perception, cognition, and action, arising from interactions with specific ecological conditions.

APPENDIX: TRANSCRIPTION CONVENTIONS

- .
 - ?
 - ↑
 - ,
 - :::
 -
 - word
 - (())
 - ()
 - (1.2)
 - (.)
 - [
 - WORD
 - Word**
- The period indicates a falling, or final, intonation contour, not necessarily the end of a sentence.
- The question mark indicates rising intonation as a syllable or word ends
- The upward arrow indicates a rising intonation, usually in the middle of a word
- The comma indicates 'continuing' intonation, not necessarily a clause boundary.
- Colons indicate stretching of the preceding sound, proportional to the number of colons.
- A hyphen after a word or a part of a word indicates a cut-off or self interruption.
- Underlining indicates some form of stress or emphasis on the underlined item.
- Double parentheses enclose transcriber's comments.
- Single parentheses indicate that something is being said, but it is unintelligible.
- Numbers in parentheses indicate silence in tenths of a second.
- A dot in parentheses indicated a 'micropause', hearable but not readily measurable; ordinarily less than $\frac{2}{10}$ of a second.
- Separate left square brackets, one above the other on two successive lines with utterances by different speakers indicates a point of overlap onset.
- WORD indicates increased voice volume (loudness)
- Word** boldface indicates relevance to the discussion (Atkinson and Heritage, 1984)

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ELINOR OCHS is Professor of Anthropology and Applied Linguistics at the University of California, Los Angeles. Her work focuses on the nexus of language, culture and society in various settings and communities. Her early research on child language led to the development of the field of language socialization. Her books include *Culture and Language Development: Language Socialization in a Samoan Village*; *Developmental Pragmatics and Language Socialization across Cultures* (co-edited with B.B. Schieffelin); *Interaction and*

Grammar (co-edited with E. Schegloff and S.A. Thompson); and (with L. Capps) *Consulting Panic: The Discourse of Agoraphobia* and *Living Narrative: Creating Lives in Everyday Storytelling*. ADDRESS: Department of Anthropology, 341 Haines Hall, Box 951553, University of California, Los Angeles, Los Angeles, CA 90095-1553, USA. [email: eochs@anthro.ucla.edu]

TAMAR KREMER-SADLIK, Department of Anthropology, 341 Haines Hall, Box 951553, University of California, Los Angeles, Los Angeles, CA 90095-1553, USA. [email: tkсадlik@ucla.edu]

KAREN GAINER SIROTA, Department of Anthropology, 341 Haines Hall, Box 951553, University of California, Los Angeles, Los Angeles, CA 90095-1553, USA. [email: ksirota@ucla.edu]

OLGA SOLOMON, Department of Anthropology, 341 Haines Hall, Box 951553, University of California, Los Angeles, Los Angeles, CA 90095-1553, USA. [e-mail: solomono@ucla.edu]