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I, You, Me, and Autism: An Experimental Study[1]

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The nature of autistic individuals' abnormalities in the use of personal pronouns has been a topic of considerable speculation but little systematic investigation. We tested groups of CA- and verbal MA-matched autistic and nonautistic mentally retarded children and young adults on a series of tasks that involved the comprehension and use of the personal pronouns "I," "you," and "me." All subjects were able to comprehend these pronouns within the test situations, and there were few instances of pronoun reversal. However, autistic subjects were significantly less likely to employ the pronoun "me" in a visual perspective-taking task (when instead they tended to say: 'I can see the . . . '), and lower ability subjects were more likely to use their own proper names rather than personal pronouns in certain photograph-naming tasks. There were also circumstances in which autistic subjects were less likely than controls to employ the pronoun "you" to refer to the experimenter. A high proportion of these autistic subjects were reported to have current difficulties with personal pronouns in their everyday life, and we discuss some alternative interpretations of the results.

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INTRODUCTION

To achieve correct use of personal pronouns, young children must respect a range of pragmatic, semantic, syntactic, and morphological distinctions. Critically, the pronouns *I/me* and *you* designate the speech roles of speaker and addressee. Children who are coming to employ these words need to identify individuals in terms of their current and respective speech roles in discourse and, even more fundamentally, to appreciate different people's coordinated and complementary psychological attitudes and points of view within communicative contexts. Correspondingly, the pattern of shifting reference that is characteristic of personal pronouns contrasts with the fixed reference of nonpronominal expressions such as proper names, which refer to particular individuals regardless of who is speaking. The very early appearance of the pronouns *I*, *you*, and *my* in children's speech (e.g., at MLU 1.75, age about 1,6–2,0 years, according to Brown, 1973), even if these first appear in whole, unanalyzed phrases (Charney, 1980), attests to children's sensitivity to the speech roles that other people express and that they themselves can adopt. Indeed, it is remarkably rare for young normal children to exhibit pronoun reversal by calling others *I* and themselves *you*. Even when this has been reported, or when children have been observed to employ nonpronominal word forms where adults would normally use pronouns, there has been evidence that the errors were not the result of mistakes over pronoun functions nor failures to recognize speech roles per se, but rather role-governed nonadult constructions (Charney, 1981; Chiat, 1986a, 1986b).

Not all groups of children comprehend and produce personal pronouns with such facility, however. In particular, descriptions of autistic and blind children suggest that they are sometimes confused in the production of personal pronouns to a degree that seems out of keeping with other aspects of their language development (e.g., Fay, 1979; Fraiberg & Adelson, 1977). The nature and origins of such abnormalities have been the subject of considerable speculation but little systematic investigation. This paper reports a set of experimental studies concerning the comprehension and production of the pronouns *I/me* and *you* by relatively able and linguistically advanced autistic children and young adults.

In the first description of 11 cases of early childhood autism, Kanner (1943) gave prominence to the children's abnormal use of personal pronouns. Kanner wrote:

> *Personal pronouns are repeated just as heard,* with no change to suit the altered situation. The child, once told by his mother, "Now I will give you your milk," expresses the desire for milk in exactly the same words. Consequently, he comes

> to speak of himself always as "you," and of the person addressed as "I." Not only the words, but even the intonation is retained. (p. 244)

Here was an initial attempt to explain autistic children's abnormal pronoun use in terms of a tendency to echolalia. Kanner's proposal was subsequently taken up by Bartak and Rutter (1974), who provided evidence that at least in their echolalic utterances, autistic children do not avoid the use of first-person pronouns in the way that had been suggested by Bettelheim (1967). Yet it remains questionable whether this account reaches the heart of the matter. How far is an explanation in terms of echolalia relevant for autistic children's abnormal pronoun use in nonecholalic utterances, or for reported instances of third-person self-references by the use of names and the pronouns *he/she*, or for occasions on which the children seem to substitute unusual passive constructions for what would normally be expressed in assertive first-person statements (e.g., Bosch, 1970)? A more radical approach has been to consider whether limitation in self–other differentiation and/or self-conception might underlie *both* the confusions with personal pronouns *and* the tendency to echolalia (Hobson, 1990; Mahler, 1968). As Kanner's (1943) account illustrated, echolalia is the use of someone else's language unmodified according to the vantage point of the child in the child's own setting. Instead of relating the other person's utterance to that person's attitude and then identifying with the other person's stance, autistic children tend to adopt speech forms that correspond with *their* experience of the circumstances in which the words are uttered and to repeat utterances as heard (Charney, 1981). According to this perspective, impairments in personal-social understanding might be at the root of autistic children's linguistic "role-taking" deficits.

Three issues arise. The first is the straightforward question of whether there is more than anecdotal evidence that autistic children's difficulties with personal pronouns extend beyond instances that might plausibly reflect a tendency to echolalia. Controlled experiments on the issue are surprisingly rare. Jordan (1989) recorded the responses of autistic, mentally retarded, and normal children matched for verbal mental age (between 3 and 10 years) when given simple instructions such as "Make the doll kiss you/me." Most subjects were able to comprehend the personal pronouns in these contexts. On the other hand, the majority of autistic children were unusual in responding to such prompts as "Now the puppet's tickling . . . ?" by giving proper names to themselves or the experimenter rather than using the pronouns *me* or *you*, or they used incorrect pronouns or unusual forms of pronoun such as *I* instead of *me*. This pattern of results is suggestive that the children were using abnormal forms of self- and other-reference, not merely echoing. The findings are complemented by those of

Tager-Flusberg (1989), who has been recording young autistic and MLU-matched Down syndrome children's conversations with their mothers, and has found that only among autistic children have there been pronoun reversal errors. Such errors have occurred in about 12% of instances of pronoun use, for example, where the child might have been asking a question through a form of utterance that would have been appropriate had the mother rather than the child been speaking.

The second issue concerns the source of autistic children's putative difficulties in understanding *self* and *other*. For example, Loveland and Landry (1986) reported that correct production of *I/you* pronouns by autistic children was related to the number of their spontaneous initiations of joint attention with an experimenter. Drawing upon the writings of de Villiers and de Villiers (1974), Bruner (1975), and Charney (1981), Hobson (1990) suggested that autistic children's relative delay in recognizing reciprocal roles in dialogue arises through their failure to apprehend (a) the commonality between the experiences of themselves and others and (b) the differentiation of different people's affective-conative attitudes and perspectives. Tager-Flusberg (1989) took a similar approach in emphasizing autistic children's lack of understanding "that people have different conceptual perspectives—that people perceive, interpret, remember, value, and respond affectively to situations in unique ways" (p. 9, unpublished manuscript). Such explanations prompt questions both about the basic constituents of or substrates for a sense of self or "me-ness," such as the senses of agency and possession, which Bosch (1970; Silberg, 1978) considered to be deficient in autistic individuals, and about the sequelae to impairments in recognizing persons *as* persons, such as autistic children's limited capacity for self-consciousness and self-reflection (Hobson, 1990). Each of these levels of explanation might be relevant for the children's difficulties in recognizing people as centers of subjectivity and as the occupants of reciprocal roles in discourse.

The third issue concerns the relative contribution of nonsocial factors in the genesis of autistic children's pronoun difficulties. Fay (1979) has presented an "eclectic analysis" in which he concluded that multiple developmental obstacles of a social, cognitive, and grammatical nature probably contribute to the children's problems. To distinguish general developmental delay from specific impairments in linguistic or self-concept development, comparisons with normal children's progress in the mastery of personal pronouns, supplemented by research into abnormal pronoun usage in both normal and nonautistic disabled (e.g., congenitally blind) children, will prove invaluable. For the present purposes, the most important thing to note is that although the first- and second-person singular pronouns are among the first to be acquired by normal children, little is known about the usage

of these pronouns in different contexts. The facts that sporadic use of pronouns often precedes more systematic and frequent use, that it is often difficult to determine whether the pronouns have achieved syntactic independence from the phrases in which they are embedded, and that errors may reflect specialized rather than deficient forms of pronoun usage (Chiat, 1982), each contribute to the difficulties in establishing a normal developmental timetable for increasingly adult-like pronoun usage. It follows that to establish abnormal patterns of pronoun use in atypical groups of children in specific (and often rather contrived) experimental settings, comparisons with the performance of control groups in the same settings is vitally important. For this reason, the present set of studies were conducted with groups of autistic and nonautistic subjects who were matched very closely for chronological age and verbal ability.

Subjects

There were 25 autistic children and adolescents (20 male and 5 female) who were diagnosed according to the criteria of DSM-III-R (American Psychiatric Association, 1987). Each of these individuals had suffered early onset of social impairments characteristic of autism, which were currently manifested along with typical deficits in the realms of communication, imaginative activity, and stereotyped behavior. They were given the British Picture Vocabulary Scale (BPVS; Dunn, Dunn, Whetton, & Pintile, 1982) as an estimate of verbal mental age (verbal MA), and were divided into an upper ability and lower ability group of roughly equal size. It should be noted that ability here refers to level of functioning, not IQ, and the lower-ability subjects were also lower in CA. The autistic subjects were matched pairwise with 25 nonautistic mentally retarded individuals (16 male and 9 female) according to both CA and verbal MA (based on raw scores on the PBVS: Table I). The latter control group comprised individuals whose mild intellectual retardation was not ascribable to any diagnosed medical condition. The mean CA difference between matched individuals was 1.7 months (SD = 1.9), and the mean difference in verbal MA was 2 months (SD = 4.62).

Preliminary Survey of Personal Pronoun Usage

To set the scene for the present study, a teacher who knew each subject well was asked whether the individual had current difficulties in the comprehension and/or production of the pronouns *I* and *you*. In addition, the class teacher (or for older subjects, the workshop supervisor) was asked

Table I. Subject Characteristics

		CA (years, months)			Verbal MA (years, months)[a]		
	n	*M*	*SD*	Range	*M*	*SD*	Range
Upper ability							
Autistic	13	17,01	3,08	12,09–23,01	6,09	0,09	5,07–8,02
Nonautistic	13	17,02	4,06	12,00–25,08	6,11	0,10	5,06–8,01
Lower ability							
Autistic	12	14,09	3,07	8,04–19,06	4,07	0,08	3,05–5,05
Nonautistic	12	14,09	2,10	8,11–18,07	4,09	0,09	3,04–5,10

[a]British Picture Vocabulary Scale (Dunn et al., 1982).

to complete a screening questionnaire covering a range of clinical features corresponding with DSM-III-R diagnostic criteria and requiring teachers to indicate the presence or absence of problems with the production of personal pronouns such as *I / my / mine / you / your / yours / we / us.* Obviously the teachers were not blind to diagnosis, but we emphasized that we were interested in individuals who did not have problems as well as those who did. The results were that *no* nonautistic subject was reported to show abnormality in the use of personal pronouns, but 17 of 25 autistic subjects (9 upper ability and 8 lower ability) were reported to do so by both independently rating teachers, $\chi^2(1) = 22.8$, $p < .001$, and a further 2 subjects were said to do so by one of the teachers. A typical example cited was that of a young autistic boy who approached his teacher on her return from sick leave and said, "I'm better now."

EXPERIMENT 1

The aim of the first experiment was to investigate subjects' production and comprehension of the personal pronouns *I* and *you* as these terms referred to the child and the experimenter "seeing" different pictures (Masangkay et al., 1974, employed a simple version of the comprehension aspect of this task with normal 2- and 3-year-olds). Control tasks that were designed to estimate the effects of pronoun-independent task-demands included tests of comprehension in which proper names were employed in place of personal pronouns. Our prediction was that in comparison with nonautistic individuals, autistic subjects would have greater difficulty in comprehending, and a lesser propensity and/or ability to produce, personal pronouns vis-à-vis proper names.

Subjects were tested in two sessions, each lasting about 15 minutes and conducted on different days. Each session began with a test of the spontaneous production of personal pronouns (so that performance was unaffected by subsequent tasks), and followed by a test of the comprehension of personal pronouns vis-à-vis personal names.

Production

Method

The experimenter (E) first reminded the subject (S) of the names of himself and a coexperimenter who was in attendance to record the responses—a preliminary procedure that we recognized might influence how subjects responded in the task itself. E and S sat opposite one another. E introduced S to a 32 cm by 26 cm white cardboard sheet which had 10 cm by 7 cm drawings of a familiar object (e.g., a teddy bear) fixed on one side and another object (e.g., a spade) on the other. E began by teaching S to name and remember what was on each side of the sheet. Then he held the sheet vertically between himself and S, so that E saw (for example) a teddy bear and S saw a spade, and asked: "Who sees the teddy bear?," and then "Who sees the spade?" Subsequently E produced another sheet with two new pictures and asked similar questions but this time naming first the picture in front of S; and then a third new sheet was introduced and E repeated the same questions, referring first to the picture in front of E. Therefore subjects made six responses in all, three that should have made reference to E—to whom S might refer as "E" or "you"—and three that should have referred to S ("S" or "me/I").

Results

We initially categorized responses as follows: (a) correct versus incorrect, where correct meant any verbal response that unambiguously referred to the *person* who could see the picture in question, whatever descriptive term was used, and (b) within the correct category: personal pronoun versus name.

We analyzed the data in two ways. Our first approach was to classify subjects according to their predominant mode of response. For example, in the case of a subject who employed the personal pronoun *you* on at least two of the three occasions of referring to E1, this would have been accounted his or her predominant response. The second approach was to consider the numbers of utterances in each response category made by in-

dividuals within the respective matched pairs of autistic and nonautistic subjects and to test for group differences by a nonparametric matched-pairs analysis. In this case, each and every response, rather than each subject's predominant mode of response, contributed to the group comparisons. These analyses were supplemented by an examination of the quality of the responses made by the subjects of each group.

The analyses yielded no significant group differences. Since the patterns of responding were similar in upper and lower ability groups, it is possible to summarize the findings by considering performance of the groups overall:

Production of "You." In referring to E, 8 of 25 autistic and 12 of 25 nonautistic subjects predominantly used the pronoun you; 8 autistic and 7 nonautistic subjects used E's personal name; and 9 autistic and 6 nonautistic subjects made incorrect responses, often referring to the picture (e.g., with the subject uttering "Spade, spade," while touching the picture of the spade) instead of orienting to and mentioning the person who could see them. There was a significant difference in the predominant categories of response among subjects who failed to refer to E correctly. Five of 9 autistic subjects made incorrect responses which predominantly contained first-person pronouns, but none of the 6 nonautistic subjects with incorrect responses showed this pattern ($p = .044$, Fisher's Exact test, two-tailed). On closer inspection, only 3 of the 5 autistic subjects were pronoun-reversing, making statements that would have meant they could see a picture that was out of sight (a response that was never seen among nonautistic subjects): the 2 remaining subjects were correctly responding "I can't" (rather than "you/E1 can"). In other words, the responses of these latter 2 subjects appeared to exemplify consistent egocentrically correct usage of the personal pronoun I.

Production of "Me/I." In referring to themselves, 17 autistic and 16 nonautistic subjects predominantly used a correct personal pronoun (*me* or *I*); 5 autistic and 4 nonautistic subjects used their own names; and 3 autistic and 5 nonautistic subjects failed to refer to themselves. However, significant group differences emerged when a distinction was made between those subjects who correctly referred to themselves as *I*, and those who correctly used the pronoun *me*. Whereas nonautistic subjects were divided equally in their correct use of *I* (8 subjects) and *me* (8 subjects, of whom 5 were lower ability), 15 of 17 pronoun-using autistic subjects employed the pronoun *I* in such responses as "I can" and "I can see the X," and only 2 employed the pronoun me in isolation, with Yates' correction, $\chi^2(1) = 4.04, p < .05$. This significant contrast had not been anticipated a priori. In fact, one of the two autistic subjects who used *me* did so perseveratively in response to all questions, so that only one autistic subject was using the

term me discriminatively. Matched-pairs analysis of the numbers of responses in each category confirmed that autistic individuals used significantly more *I* pronouns (Wilcoxon's $T = 11.5$; $N = 13$, 12 ties; $p < .025$, two-tailed) and nonautistic subjects used significantly more *me* pronouns (Wilcoxon's $T = 7$; $N = 10$, 15 ties; $p < .05$, two-tailed).

Comprehension

Method

E taught S the names of the pictures on either side of a new cardboard sheet. With E and S sitting opposite one another and the sheet held vertically between them so that each could see only one of the drawings, E posed questions in the course of a "systematic turning" procedure as follows: (a) For personal pronouns, the order of E's questions was: What can you see?/ (Turn sheet so that E and S now saw the other drawing) What can you see?/What can I see?/ (Turn sheet) What can I see?/ (Introduce a fresh sheet with two new drawings which were again named and learnt) What can you see?/ What can I see?/ (Turn sheet) What can I see?/ (Turn sheet) What can you see? The purpose of this technique was to induce subjects to make errors if they were inattentive to the pronouns or pictures, or less than confident in responding to the pronoun-anchored questions. For example, the last item in the series differed from the previous one in the question posed and in the visual perspectives entertained by E and S, but the correct response remained the same. (b) As a control task, exactly the same procedure was followed with two new picture sheets, except that E used the subject's name instead of *you*, and his own name instead of *I*, in each of the questions.

The sequence of the questions and actions of the systematic turning procedure were fixed, but a random half of the autistic subjects along with their matched nonautistic subjects performed the personal pronouns task before the names control task, and half performed the tasks in the reverse order. These two tasks always followed one another in the same testing session.

Results

There were 4 questions each that featured *I*, *you*, E's name, and S's name, so that the maximum total score was 16. Fifteen of 25 autistic and 16 of 25 nonautistic subjects achieved the maximum score of 16 correct responses. There was broad comparability across groups in the numbers

and distribution of errors. Wilcoxon's matched-pairs signed-rank test was employed to test for differences between groups in overall responding, as well as in subjects' replies to *I*, *you*, E's name, and S's name considered separately. There were no significant group differences.

It had been predicted that autistic subjects would have more difficulty in responding to questions involving personal pronouns than those involving proper names. To examine this prediction directly, the results from those subjects who made one or more errors overall were examined for each individual's relative performance on *you* vis-à-vis S's name questions, and on *I* vis-à-vis E's name questions. There were no significant group differences. Thus our predictions concerning autistic subjects' specific difficulties with pronoun comprehension were not borne out.

EXPERIMENT 2

The purpose of this second experiment was to investigate how autistic individuals compared with nonautistic people in their use of personal pronouns when referring to photographs of themselves and the experimenter. Again our prediction was that autistic subjects would be less able to comprehend and less likely to produce personal pronouns in these circumstances. Experiment 2 was conducted at one sitting, and was immediately followed by a different form of "photographs" task, described as Experiment 3.

The groups comprised the same subject pairs who had been involved in the first experiment, except that a single pair of subjects in the middle of the upper ability range was no longer available and was replaced by another pair who were of similar age and ability.

There were two tasks, each with Production and Comprehension subtests. Task 2.1 concerned the pronouns *you* and *me*, and Task 2.2 concerned the pronouns *you* and *I*. These were presented in counterbalanced order. The Production subtests were always presented as the first two subtests.

Paired Photographs Task 1: "You" and "Me"

The materials for this task comprised head-and-shoulder photographs as follows: (a) two slightly different photographs of the experimenter, (b) two slightly different photographs of the subject, and (c) one photograph each of two of the subjects' peers at school. One week prior to the task, and outside the experimental situation, the experimenter ascertained that

the subject knew the names of the experimenter and of each peer. The photographs were *not* used at this preliminary stage because we wished to avoid influencing subjects' naming of the photographs.

Production

The method consisted of presenting pairs of photographs to subjects and asking a simple question as E pointed to each in turn, "Who is this a picture of?"

The task was conducted in an informal and relaxed manner, with no other instructions, checks, or corrections. However, there was a strict underlying structure to the task. Three pairs of photographs—of E and S, of S (or E) and first peer, and of second peer and E (or S), respectively—were presented in succession. There were two modes of presentation, so that half the subjects named E before S and half named S before E. On every occasion that a photographed peer was alongside a photograph of S or E, the peer was indicated first.

Results

In the Production task, every subject named his or her two peers correctly. Moreover, every occasion of pronoun use was correct—there was no instance in which S called E me or him/herself you. There were two opportunities in which you and two in which me responses might be given. When each type of pronoun was considered separately, therefore, a given subject might fall into one of three categories: (a) using the personal pronoun only (e.g., me for both pictures of him/herself), (b) using the personal pronoun on one occasion and a first name (i.e., his/her own name, or that of the experimenter) on another, or (c) using names only.

We had embarked on the present studies with the specific prediction that autistic subjects would produce and comprehend personal pronouns with less consistency than nonautistic control subjects. Therefore in analyzing between-group results that take the form of 2×2 contingency tables, we have mostly employed one-tailed Fisher's Exact tests. Given that the numbers of subjects in each ability subgroup were insufficient to warrant the use of chi-square analyses for the 3×2 contingency tables of Tables II and III, we have excluded the small number of nonautistic subjects who used both names and pronouns, and have conducted Fisher's Exact tests on the numbers of subjects who used only correct pronouns vis-à-vis subjects who employed only proper names.

Production of "You." The results are shown in Table II. There was a significant difference between the lower ability but not the upper ability subgroups: Whereas 11 of 12 lower ability autistic subjects always used E's name to refer to the experimenter, 6 of 12 nonautistic subjects consistently referred to E as *you* ($p = .034$, Fisher's Exact test, one-tailed). The differences between upper and lower ability subjects were not statistically significant.

Production of "Me." The results are shown in Table II. The performance of upper ability autistic and nonautistic subjects was not significantly different. However, Table II indicates that there was a significant contrast between the two groups of lower ability subjects: whereas 10 of 12 of the lower ability autistic subjects exclusively employed first names for themselves, only 4 of 12 nonautistic subjects did so and more than half this group always responded to the photograph by calling themselves *me* (excluding the one subject who used both pronouns and names, $p = .018$, Fisher's Exact test, one-tailed). Of the 3 upper ability and 1 lower ability nonautistic subjects who used *me* on one occasion and his/her name on the other, all began by using pronouns but then seemed to shift strategy as the test proceeded. There was a significant difference within the autistic group (only) between upper and lower ability subgroups of subjects, with the upper ability subjects more likely to use the pronoun *me*, $\chi^2(1) = 11.54$, $p < .005$.

Overall Production of Personal Pronouns. When individuals were categorized according to their use of pronouns across the first- and second-person condition, the patterns of similarity among the upper ability autistic and nonautistic subjects were sustained. On the other hand, 10 of 12 lower ability autistic subjects but only 4 of 12 lower ability control subjects used no personal pronouns at all ($p = .018$, Fisher's Exact test, one-tailed).

Comprehension

The method for the Comprehension task was very similar to that of the Production task already described, except that E gave a simple instruction as he pointed to each picture in turn: "Point to the picture of . . . ." Half the subjects were first required to point to *you* and then to *me*, and half to *me* and then to *you*. Whenever the contrast was between a peer and either E or S, the peer was always the last to be indicated. If this method had not been followed, subjects would have been able to respond to the pronoun question by excluding the peer as the correct choice. Each subject was given the task only once.

Table II. Paired Photographs Task 1: "Who is This a Picture of?"

	No. of individuals in each response category[a]			
	Upper ability (n = 13)		Lower ability (n = 12)	
	A	NA	A	NA
Referring to experimenter				
Correct pronoun (you)	6	7	1	6
Pronoun and name	1	1	0	0
Name only	6	5	11	6
Referring to subject				
Correct pronoun (me)	11	8	2	7
Pronoun and name	0	3	0	1
Name only	2	2	10	4

[a]A = autistic group; NA = nonautistic group.

Results

The results were straightforward. Every subject within each diagnostic group responded perfectly throughout.

Paired Photographs Task 2 "You" and "I"

Method

The design of Task 2 was similar to that of Task 1, except that the six photographs were now of S wearing a hat, S wearing a scarf, E wearing a hat, E wearing a scarf, Peer 1 wearing a hat, and Peer 2 wearing a scarf. The Production task always preceded any Comprehension task. The two orders of items within the Production and Comprehension tasks were exactly as in the *me/you* study, and again 3 paris of photograph were presented. However, the questions posed were now different.

Production

In the Production task, the questions for each pair of photographs took the form: "Who is wearing the hat/Who is wearing the scarf?" Responses were recorded verbatim.

Results

Production of "You." The results are shown in Table III. There was a significant group difference only between lower ability subgroups of subjects ($p = .008$, Fisher's Exact test, one-tailed). All but 1 of the lower ability autistic subjects always referred to the photograph of E by E's name, whereas two thirds of lower ability nonautistic subjects called him *you* at least once (and in most cases twice). The difference between upper and lower ability subjects was significant only in the case of autistic subjects, $\chi^2(1) = 5.94, p < .05$.

Production of "Me/I." The results are shown in Table III. The only significant difference between the diagnostic groups was in lower ability subgroups of subjects: 9 of 12 autistic subjects but only 3 of 12 nonautistic subjects used only proper names for themselves throughout (excluding the 2 subjects who used both pronouns and names, $p = .045$, Fisher's Exact test, one-tailed). The contrast between the upper and lower ability subgroups of autistic subjects is also significant in this respect, $\chi^2(1) = 11.78$, $p < .005$. Subjects who used only personal pronouns were categorized according to their usage of the pronouns *I* (as in "I am wearing the X") and *me*. The numbers of subjects were small and the group differences nonsignificant. However, whereas 16 of the 21 nonautistic subjects who at some time employed pronouns responded with me at least once, only 9 out of 15 pronoun-using autistic subjects did so, the remainder responding with "I am wearing the X." In addition, two autistic subjects made unusual responses by pointing to themselves (correctly) and saying: "That one."

Table III. Paired Photographs Task 2: "Who is Wearing the . . . ?"

	No. of individuals in each response category[a]			
	Upper ability ($n = 13$)		Lower ability ($n = 12$)	
	A	NA	A	NA
Referring to experimenter				
Correct pronoun (you)	7	9	1	7
Pronoun and name	0	0	0	1
Name only	6	4	11	4
Referring to subject				
Correct pronoun (me/I)	12	10	3	7
Pronoun and name	0	2	0	2
Name only	1	1	9	3

[a]A = autistic group; NA = nonautistic group.

Comprehension

In the Comprehension task, the questions were "What are you wearing/What am I wearing?" and/or "What is [named peer] wearing?". Responses were recorded verbatim.

Results

There were only four incorrect responses, all made by lower ability subjects as follows: 1 autistic subject, making three of these errors, consistently responded to the comprehension questions involving pronouns, by saying the name of each person and what they were wearing in both photographs. On one occasion after E repeated the question "What are *you* wearing?" this autistic subject named the correct item of clothing. In contrast to the questions involving pronouns, those involving the peers' names were answered immediately and correctly. The fourth comprehension error was made by a nonautistic subject.

EXPERIMENT 3

The purpose of this final experiment was to explore further how subjects would use personal pronouns as applied to photographs. As previously, our specific prediction was that autistic subjects would be less inclined to refer to a photograph of themselves as *me* and to a photograph of the experimenter as *you*.

Method

Subjects were the same 25 matched pairs of autistic and nonautistic individuals who took part in the previous study of naming photographs. The materials comprised one head-and-shoulders photograph of the subject, one of the experimenter, and six of individual school peers. These were stacked into a pile placed in front of the subject. There were two versions of the task. In one version the top 3 photographs were of peers, the next was a photograph of S, the next 3 were peers, and the final photograph was of E. In the other version, the positions of the photographs of E and S were exchanged. Each subject took only one version of the task, with alternate pairs of subjects across the gradient of ability performing the first version, and alternate pairs the second.

Having placed the pile of 8 photographs in front of S, E said: "Here are some more pictures. Tell me who they are." Prior to and throughout the task, E made a concerted effort to engage S, and specifically to be available for eye contact. We believed that such engagement might have a bearing on subjects' use of personal pronouns (perhaps especially you) vis-à-vis names.

Results

Production of "You." Each subject made a single response to the photograph of E (saying either "you," or using E's name), and a single response to the photograph of him/herself (saying either me, or using his/her name). The results for the use of you are given in Table IV. Although the differences between higher ability and lower ability diagnostic subgroups were not significant, there was a significant overall group difference: In accord with our prediction, autistic subjects were less likely than nonautistic subjects to call E *you* ($p = .04$, Fisher's Exact test, one-tailed). Broadly speaking, this pattern was manifest across both upper and lower ability autistic subjects, and in this experiment the difference between the two subgroups of autistic subjects was not significant. Of the 6 autistic and 13 nonautistic subjects who used the pronoun *you*, all 6 autistic and 11 nonautistic subjects also used the pronoun me to refer to themselves. On the other hand, there were 6 autistic and 4 nonautistic subjects who used the pronoun *me* but not the pronoun *you*.

Production of "Me." The results for the use of me are given in Table IV. Despite the fact that our method had been successful in eliciting varied responses from the subjects of each diagnostic group, there were no significant group differences. Note that the lower ability subjects of each group tended to name themselves rather than use the pronoun *me*, and the upper versus lower ability contrast was significant for the autistic group ($p = .047$, Fisher's Exact test, two-tailed).

DISCUSSION

At the outset, one may observe that with the two groups of autistic and nonautistic learning-disabled subjects employed in this study, there were many group similarities in performance on the pronoun tasks. In Experiment 1, concerned with viewpoints in relation to pictures, most errors in production were attributable to failures in grasping the point of the question: "Who can see the X?," and the only group difference was that very

Table IV. Experiment 3: "Tell Me Who They Are"

	No. of individuals in each response category[a]					
	Upper ability		Lower ability		Total (n = 25)	
	A	NA	A	NA	A	NA
Referring to experimenter						
Correct - pronoun (you)	5	8	1	5	6	13
Correct - name	8	5	11	7	19	12
Referring to subject						
Correct - pronoun (me)	9	10	3	5	12	15
Correct - name	4	3	9	7	13	10

[a]A = autistic group; NA = nonautistic group.

few autistic subjects said "me." Despite the fact that the comprehension component of Experiment 1 was designed to tax subjects' adjustment to switching pronoun-anchored perspectives, the majority of subjects were able to comprehend pronouns in a near-perfect manner, and the errors that occurred were not specific to the comprehension of pronouns vis-à-vis names. In only one form of task was there any evidence of pronoun reversal in the language produced by autistic subjects, and then only in three autistic individuals. In the remaining Experiments 2 and 3, errors in comprehension were again exceedingly rare. In the paired photographs tasks, the significant group differences concerned the lower ability autistic subjects' propensity to use proper names in referring to photographs of themselves and the experimenter. The tendency to name the experimenter rather than call him *you* was also a feature of the autistic subjects' responding in the final "stacked photographs" task.

Having stated this, it is important to stress that the subjects were of relatively high verbal mental age. All one can infer is that for such advanced individuals tested in these formal and structured experimental settings, there was no indication that autistic subjects have a specific incomprehension of personal pronouns vis-à-vis other aspects of their language function, nor were they making significantly more errors than control subjects in pronoun production. This does not rule out the possibility that errors in comprehension and/or production are prevalent in less linguistically able autistic individuals, nor that such errors would be absent in other situations. Indeed, our survey of teachers' judgments provided evidence that a large majority of the present autistic subjects, but not a single nonautistic subject, tended to have sporadic difficulties with pronoun production in the course of everyday life. Tager-Flusberg's (1989) report that young autistic children make reversal errors in but a small proportion of their pronoun-containing

utterances highlights the need for further study of the particular situations in which correct or incorrect pronouns are used. There is also the possibility that more able autistic subjects might have learned conventional patterns of pronoun usage by abnormal cognitively mediated compensatory strategies rather than by normal process of acquisition. It is of note that autistic children are subject to intensive tutoring in pronoun usage. On the other hand, children need to have relevant abilities to take advantage of the training they are offered, and they cannot learn speech roles by rote. The fact is that our subjects had achieved a fairly robust understanding of the speech-role-referring personal pronouns *I/me* and *you* for at least certain circumstances of comprehension and use.

A single experience of our own may illustrate the difficulties in interpreting what is happening. We had tested an able 19-year-old autistic individual on the visuospatial tests, and he had performed perfectly throughout; but as he turned to leave he said, "Thank you for seeing you, Tony" (a statement that happened to be recorded on videotape). This sentence construction is so unusual and so clearly nonecholalic that it prompts one to be circumspect about drawing firm conclusions about this person's seeming competence with personal pronouns.

Therefore the focus shifts to the possibility that even among autistic subjects who have acquired relative proficiency in personal pronoun use, there might be indication that something is abnormal about the content of their understanding of *I/me* and *you*, and/or something atypical in the attitudes they adopt when employing these pronouns. Such abnormalities might be reflected in unusual patterns of usage rather than in incorrect use. Although our autistic subjects had acquired the *ability* to comprehend and produce speech-role-referring pronouns, there were significant group differences in the *propensity* to use specific forms of expression in particular circumstances. In photograph-naming tasks, for example, they were less likely to employ the pronoun *me* than to name themselves (in Experiment 2) and less likely to employ the pronoun *you* than to name the experimenter (in Experiments 2 and 3). This pattern was most marked for lower ability subjects, and accords with the results reported by Jordan (1989) and Silberg (1978) using different methodological approaches.

Among the alternative interpretations that might be offered for these findings, several appear to be implausible. First, the autistic children did not consistently avoid personal pronouns: In Experiment 1 they were more likely than control subjects to employ the pronoun *I*, and in Experiment 3 they were not significantly less inclined than control subjects to use the pronoun *me*. Second, the experimental design allows little scope for explaining the results in terms of echolalia (although the precise relationship between echolalia and personal pronoun difficulties remains open to ques-

tion). A possible partial exception here is that autistic subjects' tendency to respond to question such as "Who can see the X?" with "I can see the X" might be counted a form of mitigated echolalia, or at least a relatively stereotyped and echo-like response compared with the reply "me." Third, there is little reason to suppose that the autistic subjects' performance might reflect general linguistic delay rather than more specific pronoun difficulties. Subjects were matched according to an index of verbal ability, and although performance on the BPVS is unlikely to be representative of all aspects of language function, it is a test on which autistic individuals are known to achieve low scores (Lockyer & Rutter, 1970). Moreover, at times autistic subjects were using relatively advanced grammatical forms (e.g., "I can see the X") in place of less advanced forms of pronoun (*me*), so that a syntactic explanation seems inadequate. For example, Wells (1985) reported that 50% of a sample of normal children were using the pronoun me by 21 months of age, but only at 30 months were half the sample using modal verbs (e.g., "I can . . . ") to express an ability. In addition, our experiments were focused on subjects' choices of person-referring terms in particular tasks, rather than upon subjects' potential to use the terms at all. Although it is quite possible that some subjects—and particularly the subgroup of lower ability autistic subjects who used names throughout the photographs tasks—may have been using proper names in order to avoid problematic pronouns, few subjects made errors with pronouns. It is true that the observed patterns of personal pronoun usage need to be interpreted alongside additional sporadic and idiosyncratic linguistic abnormalities that have been reported in autism (Volden & Lord, 1991), so that underlying general abnormalities (other than delay) might be operative, but the systematic group differences of the present study indicate that the pronoun abnormality needs explanation in its own right.

It remains to consider how most of the group differences were restricted to contrasts between lower ability rather than higher ability subgroups, and how abnormality (not disability) in autistic subjects' self- and other-reference was occurring at a time when these subjects had mastered speech-role-referring aspects of pronoun use. It is possible that the results reflect a form of developmental delay, but such putative delay must be at least relatively specific to pronoun usage, since it is out of keeping with other aspects of language development (as assessed by the BPVS). It appears that something other than the narrowly "deictic" quality of personal pronouns is relevant for the group differences that were observed. Yet in common with other experimental studies of social functioning in autism, this study seems to reveal surprising group similarities as well as certain group differences. The formal structuring of the experiments not only "anchored" subjects in drawing attention to the task requirements but also

focused those requirements on particular facets of pronoun usage. This raises the possibility that a subtle but sometimes decisive group difference might lie in autistic individuals' spontaneous "engagement" of self vis-à-vis other, a difference that would be obscured in certain forms of forced-choice task.

To conclude, therefore, we offer our tentative (and only partly supported) interpretation of the results. Perhaps they reflect abnormalities in the way autistic children "sense" and (probably) conceptualize self and other in relation to one another. In the present study, abnormalities were not manifest as deficits in role-taking insofar as these particular subjects could comprehend and employ the pronouns *I*, *me*, and *you* in speech-role-appropriate ways, and pronoun reversals were rare. Rather, there seemed to be a relative lack of the expression of a sense of "me-ness" and "you-ness" in autistic subjects' responses. By these terms we refer to the kinds of self-experience emphasized by authors such as Cooley (1902), Bosch (1970), and Stern (1985), who wrote of the senses of agency, appropriation, affectivity, and continuity, as well as forms of self-reflective awareness such as self-consciousness and pride. It matters if it is "me" who has achieved something, or "me" who is the object of attention. Such anchorage in self-experience may not be as secure for autistic as for nonautistic individuals (Bosch, 1970; Hobson, 1990; Kasari, Sigman, Baumgartner, & Stipek, 1993).

If this is the case, then even when autistic individuals have achieved the potential for adequate speech-role-referring pronoun use, they might be subject to lapses in the propensity to identify with others in role-appropriate ways (hence the reports of sporadic echolalia and pronoun reversals), and they might be prone to experience themselves in a relatively "uncommitted" manner. The profile of our results is compatible with such an account. In Experiment 1, responses such as "I can see X" which focus on the form of the question asked, rather than on the self/other contrast, may be less self-anchored than the term *me*, which stands alone as an emphatic contrast to *you*. (We do not recall that subjects stressed the pronoun I in this context.) Or again, autistic subjects' use of names and not pronouns for photographs might have reflected a relatively detached, almost third-person attitude to these depictions of themselves and the experimenter. In contrast, nonautistic subjects seemed to identify with the photographs of themselves, and to see and care about the photographed person as *me*: The images were infused with the subjects' and experimenter's *sense* of identity as well as formal identity. Autistic subjects seemed not to become engaged nor to confer "subjectivity" in this way.

When considering such an account, it is essential to recognize that the experiments involved more than subjects responding to sets of materi-

als. They also involved the current interpersonal relations (and background relationships) between subject and experimenter. In this regard, it is relevant that the autistic subjects had had long-standing contact with the experimenter, and that we were careful to make efforts to engage all subjects on a personal level during the tasks themselves. Despite this, autistic subjects' current nonverbal behavior suggested emotional unengagement with the experimenter, and this may have directly influenced their relatively greater use of names than pronouns in the photograph tasks. In other words, the present testing situation may have highlighted deficits in the interpersonal sphere that constitute the background to autistic individuals' specific problems in acquiring as well as using personal pronouns (Hobson, 1989).

CONCLUSIONS

In a series of tests of visuospatial role-taking and photograph-naming, autistic subjects differed from closely matched nonautistic subjects in a number of subtle but substantial respects. Autistic subjects showed a relative propensity to use the pronoun *I* (as in "I can see X") rather than *me* in visuospatial tasks, and those of lower ability tended to use proper names for themselves and the experimenter instead of me and you in photograph-naming tasks. There was no indication within the tasks that autistic subjects were abnormal in their comprehension of pronouns, and few made pronoun reversals in production. On the other hand, reports by teachers suggested that sporadic abnormalities in personal pronoun usage were much more prevalent among autistic than nonautistic individuals. The nature and source of the abnormalities remain open to speculation, but one possibility is that autistic individuals' relatively deficient sense of self (and of other selves) has relevance both for their reported problems in acquiring a normal grasp of personal pronouns, and for their unusual use of pronouns and names in current interpersonal contexts.

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