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**ABSTRACT**

The study examined the spontaneous expressions of affect displayed by 18 autistic and 18 mentally retarded children matched for chronological age and mental age, as well as a group of 18 normal children matched for mental age only. Affect expressions were coded from videotapes of a standard child-experimenter interaction designed to assess prelinguistic communication skills. The experimenter presented the child with different toys, initiated social games and turn-taking activities, pointed at posters around the room, and made simple requests of the child. Results indicated that the autistic subjects were not more neutral or flat in their affect compared to the mentally retarded and normal subjects. However, the autistic children showed a greater variety of affect expressions and spent more time displaying discrete negative affect expressions. In particular, they displayed negative and incongruous blends not displayed by any of the other children. This unique pattern of autistic children's affect expressions may be syndrome-specific, and may contribute to the difficulty that others experience in reading the affective signals of autistic children. (Author/JW)

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# FACIAL EXPRESSIONS OF EMOTION: ARE AUTISTIC CHILDREN DIFFERENT FROM MENTALLY RETARDED AND NORMAL CHILDREN?

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## ABSTRACT

The present study examined the spontaneous affect expressions displayed by matched samples of autistic, mentally retarded, and normal children during a structured child-experimenter interaction. Affect expressions were coded by using a modification of the Maximally Discriminative Movement Coding System (MAX) (Izard, 1979).

Results indicated that the autistic children were not more neutral/flat in their affect compared to the mentally retarded and normal children. However, the autistic children spent more time displaying discrete negative affect expressions, and showed a greater variety of affect expressions. In particular, they displayed negative and incongruous blends not displayed by any of the other children.

This unique pattern of autistic children's affect expressions may be syndrome specific, and contribute to the difficulty that others experience in reading the affective signals of autistic children.

## AIMS

In his description of autistic children, Kanner (1943) concluded that these children "have come into the world with innate inability to form the usual biologically provided affective contact with people" (p. 250). More recent clinical observations suggest that autistic children are either affectless, or that they show inappropriate and distorted affect (Howlin, 1986). Also, autistic individuals do not show refined facial expressions and gestures. Instead, they display different emotions such as pleasure, fear, disgust, and anger only in their extreme forms (Bartak, Rutter, & Cox, 1975; Ricks & Wings, 1975).

Although diagnostic criteria (American Psychiatric Association, 1980) includes reference to a lack of facial responsiveness, very few studies have examined the spontaneous affect expressivity of autistic children. The aim of the present study was to describe and compare the spontaneous affect expressions displayed by matched samples of autistic, mentally retarded (MR), and normal children during a structured child-experimenter interaction. Based on the available literature, we hypothesized that 1. autistic children will be more neutral/flat in their affect, 2. they will display a more extreme range of affect, and 3. their affect will be less clear compared to the MR and normal children.

# METHOD

## Subjects

Three groups of children participated in the study. The first group consisted of 18 children diagnosed with infantile autism. The second group of children consisted of 18 mentally retarded children (MR) matched with the autistic group on chronological and mental age. The third group of children involved 18 normal children matched with the two aforementioned samples on mental age only.

The mean chronological and mental ages of the three groups were as follows: autistic, CA=53.3, MA=25.7; MR, CA=50.2, MA=26.0; and normal, CA=22.2, MA=25.0.

## Procedures

Affect expressions were coded from videotapes of a standard child-experimenter interaction designed to assess prelinguistic communication skills. In this paradigm the experimenter presented the child with different toys, initiated social games and turn taking activities, pointed at posters around the room, and made simple requests of the child.

The affect expressions displayed by the children in seven segments of the child-experimenter interaction were coded by using a modification of the Maximally Discriminative Movement Coding System (MAX) (Izard, 1979). Ten fundamental affect expressions can be identified by the system, including interest, enjoyment-joy, surprise-

astonishment, sadness-dejection, anger, disgust, contempt, fear, shame, and discomfort-pain. In addition, the various combinations, or blends, of two or more of the ten affect expressions may be detected.

The coding procedure was established in two phases. In the first phase, changes in facial appearance were coded second by second from each onset time to offset time. When an appearance in one of the three regions of the face (brows, eyes/cheeks, mouth) was detected, the time was recorded, and the movement was assigned one or more of the 32 possible codes described in MAX. In the second phase, the numerical codes, indicating the presence of appearance changes, were translated into emotion expressions via a priori formulas specified in the MAX manual.

### Inter-rater reliability

The reliability sample consisted of 30 children, 10 randomly selected from each group. One randomly selected segment of the interaction was coded for each child. Reliability was estimated between two judges on a second by second, absolute time basis. The mean agreement coefficients and standard deviations (in parentheses) for the autistic, MR, and normal groups were .78 (.15), .81 (.25), and .86 (.09), respectively.

# RESULTS

## Preliminary analyses

Average session times for the autistic, MR, and normal groups were 401 seconds, 312 seconds, and 324 seconds, respectively. One way ANOVA revealed a significant group effect,  $F(2,51)=4.42$ ,  $p<.05$ . The session time for the autistic group was significantly longer compared to the MR and normal groups (Student Newman-Keuls,  $p<.05$ ). Therefore, percentage scores (computed by dividing the duration of the variable in question by the appropriate total time) were employed in all analyses involving durations.

The results are organized according to the three main questions of the study.

### **Are autistic children more neutral/flat in their affect?**

The total duration that the three groups displayed affect was compared, by using a composite dependent variable. This composite variable reflected the sum of the percent duration of affect expressions for each child (i.e., all affect expressions minus neutral expressions, divided by all affect expressions including neutral expressions). The three groups did not differ in the duration that they displayed total affect. The autistic, MR, and normal children displayed affect for 150 seconds, 160 seconds, and 140 seconds, respectively. Thus, the autistic children were as expressive as the other two groups of children.

## **Are autistic children more extreme in range of affect?**

Thirty seven affect expressions were coded throughout the interaction. Thirty five of these affect expressions were displayed by the autistic group. In contrast, the MR and normal groups displayed only 20 and 17 of the 37 affect expressions, respectively. This difference was significant,  $X^2_{(2)}=22.06$ ,  $p<.01$ . Thus, the autistic group displayed a greater variety of affect expressions compared to the other two groups.

To determine whether this group difference was associated with particular categories of affect, the 37 affect expressions were assigned to one of seven categories: discrete positive, discrete negative, interest, neutral, positive blends, negative blends, and incongruous blends (i.e., a blend composed of both negative and positive affect expressions). Table 1 represents the number of children in each group that displayed each one of the seven categories of affect expressions. Compared to the MR and normal groups, more autistic children displayed discrete negative affect expressions.

A MANOVA conducted on the durations that the three groups displayed the four composite variables of discrete affect expressions (positive, negative, interest, and neutral) yielded significant differences (See Table 2). The autistic group spent more time displaying discrete negative affect expressions.



## **Are autistic children less clear in their affect expressions?**

The data in Table 1 revealed that there were significant group differences in the number of children in each group that displayed negative and incongruous blends. Compared to the MR and normal children, more autistic children displayed negative and incongruous blends. Within these categories of affect, the autistic children displayed expressions that were not displayed by any of the children in the other two groups. Specifically, the autistic children displayed fourteen affect expressions (10 negative blends, and 4 incongruous blends) not displayed by any children in the MR and normal groups. A closer examination revealed that half of the autistic children displayed one or more of these fourteen blend expressions , one to five times.

## CONCLUSIONS

The autistic children, compared to the MR and normal children did not display more neutral/flat affect. However, they did display a different pattern of affect expressions. The autistic group spent more time displaying discrete negative affect expressions in a situation found to be pleasurable by other children. Also, the autistic group displayed a greater variety of affect expressions. In particular, they displayed negative and incongruous blends not displayed by any of the children in the MR and normal groups.

This difference in the pattern of affect displayed by autistic children, especially the presence of unique negative and incongruous blends, may be syndrome specific, and contribute to the reported difficulty that others have in reading the intent of autistic children's affect signals.

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# TABLE 1

Chi Square results for the number of autistic, mentally retarded, and normal children displaying the different affect expressions

Affect Expression	X <sup>2</sup>	Autistic	MR	Normal
Discrete positive	NS	18	18	18
Discrete negative	7.30*	12	9	4
Positive blends	NS	14	13	9
Negative blends	10.15**	13	6	4
Incongruous blends	10.18**	6	0	1

\* p<.05

\*\* p<.01

## TABLE 2

Duration (percentage scores) of discrete positive, discrete negative, interest and neutral affect expressions displayed by the Autistic (A), Mentally Retarded (MR), and Normal (N) children

Affect expression	A	MR	N	Univariate F tests	Newman-Keuls comparisons		
					A/MR	A/N	MR/N
Discrete positive	25.72	42.82	36.29	F (2,51)=2.91 +			
Discrete negative	1.27	0.32	0.32	F (2,51)=5.80 **	*	*	
Interest	6.01	2.47	2.79	F (2,51)=2.52 +			
Neutral	62.30	46.85	55.33	NS			

MANOVA (Wilk's criterion),  $F (8,96)=2.31, p < .05$

+  $p < .10$   
 \*  $p < .05$   
 \*\*  $p < .01$