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Perceptual Ratings Regarding Individuals with High Functioning Autism

Melanie A. Manhart

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Perceptual Ratings Regarding Individuals

with High Functioning Autism
(TITLE)

BY

Melanie A. Manhart

THESIS

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Perceptual Ratings Regarding Individuals with High Functioning Autism

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Abstract

A perceptual rating scale evaluating appropriateness/ inappropriateness of eight communicative behaviors was designed to determine if the general population perceives adult individuals with high functioning autism as different. In addition, the rating scale results were examined to determine which of the eight communicative characteristics were perceived as most different. The results were also evaluated to determine if a rating difference between genders existed.

The subjects consisted of 453 college students who viewed videotaped interviews with five individuals, two considered "normal" and three diagnosed with high functioning autism who had received varying levels of remediation. After viewing each interview, subjects rated the interviewee based on the communicative behaviors indicated on the rating scale form.

Results were analyzed by computer and statistical information yielded significance in all areas examined. The general population did perceive the individuals with high functioning autism as different. Female viewers rated the individuals with autism more favorably than male viewers. Characteristics perceived as most different were body posture, conversation effectiveness, and level of comfort, whereas word choice and eye contact were rated as least

different for the individuals with high functioning autism.

These findings indicate that the general population did perceive individuals with high functioning autism as significantly different than the "normal" population, as measured by the examiner's rating scale. Degree of significance varied consistently with the degree of remediation for the autism disorder. Further research should expand this data base in determining specific characteristics which best respond to remediation and most significantly influence the perceptions of the general population.

Dedication

I wish to dedicate this thesis to the person who has continually and consistently supported me during the trials and tribulations of developing this project. Alex, thank you for always giving me a shoulder when I needed to cry, an ear when I needed to talk, advice when I needed your rationality, entertainment when I needed a "stress reliever", and hugs when nothing else worked. Most of all, thanks for constantly loving me because, as we both know, I can be a difficult person to love. I want you to know that I will always appreciate you.

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Chapter 1

Review of Literature

Autism

Research regarding autism and its associated characteristics began in 1942 with Leo Kanner's definition. Kanner and Eisenberg (1956) later described what Kanner had titled "autism", with five diagnostic criteria:

1) The individuals lacked contact with others and maintained a sense of aloofness and aloneness. The individual with autism shut out things around himself and remained in his own world.
2) The individuals resisted change in routine.
3) The individuals had an extreme attachment to objects which were not necessarily toys, but items such as tin lids, torn paper, or empty detergent packets, and interacted with these objects in the same way for hours everyday in the absence of appropriate pretend play behavior.
4) The individuals lacked language used for communicative intent. Echolalia, reversal of pronouns, and idiosyncratic use of words or phrases were displayed. There was often a misunderstanding of idioms and humor; therefore, everything was interpreted literally.

   When a large vocabulary was present, the individual was very exact in descriptions. Those who had

speech and language often used it repetitively.

5) The individuals retained intelligent and pensive facial expressions. Good cognitive ability was displayed by those who could speak, as evidenced through performances on challenging memory tasks. In those who could not speak, cognitive potential was exhibited by performances on nonverbal tests.

Other clinical features that Kanner and Eisenberg (1956) described included several unique abnormalities. Impairment of nonverbal aspects of communication and social responsiveness was evidenced by little or absent use of gesture to supplement or substitute for speech, a lack of facial expression, poor eye contact, and monotonous or peculiar vocal intonation. Although some individuals lacked the ability to imitate, others mimicked the exact tone of voice, accents, movements, or entire stories discussed by other people. Arm flapping, tip-toe walking, jumping, and whole-body movements were identified as common stereotypic actions.

Based on the 1987 revision of the Diagnostic and Statistical Manual of Mental Disorders, Third Edition-Revised (DSM III-R), the following criteria are currently used to diagnose the disorder of autism:

1. Qualitative impairment in reciprocal social interaction;
2. Qualitative impairment in verbal and nonverbal

communication, and in imaginative activity;

3. Markedly restricted repertoire of activities and interests;

4. Onset during infancy or childhood (36 months).

Currently, the DSM III-R is undergoing revision in the diagnostic criteria for the disorder of autism, particularly the diagnostic criteria to differentiate between types and levels of the disorder (American Psychiatric Association, 1987).

The National Society for Autistic Children (Richard, 1992) has profiled behavioral characteristics demonstrated by children with autism which make them appear different when compared to "normal" children. Differences were found in areas such as the acquisition and pragmatic use of communication; hyper-sensitive and/or hypo-sensitive responses to the sensory stimuli of touch, sound, smell, and sight; a need for sameness/routine; unique "play" behaviors; and varying degrees of aberrant emotional reactions.

Parents, caregivers, and others involved with children with autism often suspect something is wrong long before the disability is actually diagnosed. The child exists in a state of isolation; the child is more responsive to objects than to humans; eye contact is avoided with a transparent-like stare as the child seems to look through another individual (Wing, 1991).

Most of the behavioral characteristics mentioned

previously are present in individuals with autism regardless of the intellectual level. As early as 1976, Bartak and Rutter found that within certain characteristic features, mental retardation in conjunction with autism accentuated the autism. Their research suggested that children with mental retardation and autism demonstrated more severely disturbed personal relationships, more significant language delays, and increased socially disruptive behaviors than children with autism and "normal" intelligence. The higher functioning children with autism tended to display more pronoun reversals, more sensitivity to noise, and an increased reliance on rituals.

It has been noted by Gillberg (1986) that Rett Syndrome and mental handicaps are two disorders that often share many of the diagnostic criteria of autism. Gillberg (1986) stated that the realization of shared diagnostic characteristics "provides a striking example of how infantile autism will eventually be divided into multiple diagnostic subcategories" (p. 130). Differential diagnosis has been examined in regard to autism and other disorders, as well as within autism, to discriminate between high and low functioning diagnostic criteria.

Presently, the one objective measure used to differentiate between high and low functioning autism is that of intelligence quotient. According to the Webster's New World Dictionary (Guralinik, 1984), intelligence

quotient (IQ) is, " a number indicating a person's level of intelligence, based on a test" (p. 321). The Academic American Encyclopedia (Anatasia, 1989) described IQ scoring as, "a person's mental age (MA) is compared to chronological age (CA) to produce an achievement index, the intelligence quotient (IQ)." In other words, IQ = (MA/CA) x 100, with average IQs of 100 (p.593).

Several professionals have conducted research which supports the necessity for differential diagnosis within the disorder of autism. An early work by Bartak and Rutter (1976) reported that children with autism who had nonverbal performance IQs above 70 displayed different behaviors and skill patterns on cognitive tests when compared to individuals with IQs below 70. They discovered that children with autism demonstrating a non-verbal IQ below 70 had more deviant social responses as compared to the autistic children with normal or above normal IQs. Some of the deviant skills included delayed language skills, more self-injurious behaviors and stereotyped hand and finger movements, greater difficulty with changes in routine, and an increased rate of seizure disorders. Bartak and Rutter (1976) concluded that "there may be differences in the origin of autism according to the presence or absence of mental retardation" (p. 6).

DeMyer and colleagues (DeMyer et al., 1973) reported a study in which children with autism were placed in one of

three subcategories. The first category of high autism was defined as those individuals having a mixture of "noncommunicative and communicative speech and some intellectual or perceptual-motor activity that approximated chronological age in complexity" (p. 240). The middle autism category was comprised of those having little communicative speech beyond infrequent communicative words, but with at least one intellectual or perceptual-motor activity that approximated age level. The category of low autism was defined similarly as middle autism, except that the intellectual and perceptual-motor performances were globally retarded. The researchers then examined mean full-scale IQs within the three groups. The low and middle autism groups tended to display a downward change in IQ, whereas the high autism group demonstrated an upward change in IQ. In addition, the high autism group showed a greater reduction in autistic symptoms than that of the middle and low autism groups. Approximately 14% of children from the high autism group functioned educationally like "normal" children, while none of the low autism group functioned normally.

Freeman and colleagues (1981) studied the behavioral characteristics of children with autism aged 30-60 months who had either high or low IQs. In this study, the score used was the nonverbal performance IQ. A high-IQ was considered 70 or above; whereas, a low IQ was below 70,

implying mental retardation. The high-IQ group with autism was compared to children with mental retardation. The results agreed with those of Bartak and Rutter (1976) that high-IQ children with autism tended to exhibit different behaviors (Tsai, 1990).

Tsai (1990) has indicated that both diagnostic categories of "high functioning" and "low functioning" autism, based on IQ criterion and the Diagnostic and Statistical Manual Third Edition-Revised criteria, have good internal validity, meaning that professionals should agree on the diagnosis for any particular individual. Tsai further believes that external validity exists because of outcome differences of the two subtypes. "However, the evidence that this distinction carries inferences with respect to etiology, clinical course, and treatment outcome is only suggestive"(pg. 4).

Others, including Lotter (1978) and Rutter (1970), concluded that "a high nonverbal score with no subsequent language development is of no predictive value; whereas, if language subsequently does develop, the nonverbal score is a useful guide to later general IQ scores". In other words, "some combination of speech and IQ may be a more useful predictor than either separately" (Tsai, 1990, p. 7).

These findings suggest that diagnosing autism based on IQ level has some internal validity. It is also indicated that there may be differences in the origin of autism

according to functioning level. Specific criteria that would result in the highest validity and hence, would qualify the establishment of separate diagnostic categories, remains unclear. Most diagnostic criteria being examined has been subjective in nature except for having an IQ criteria greater than 70; IQ has been the only quantitative criterion used.

Researchers (Bartak & Rutter, 1976; DeMyer et al., 1973; Freeman et al., 1981; Lotter, 1978; Rutter, 1970; Tsai, 1990) have indicated that autism occurs on a continuum from low functioning (mental retardation) to high functioning. Currently, diagnostic criteria for high functioning autism are not available in the DSM III-R . Without specific diagnostic criteria, individuals may either be misdiagnosed or not identified and, hence, may receive inappropriate services or no specific remedial services.

Differences between individuals with low functioning autism and those with high functioning autism are apparent in communication ability, adaptive behavior, and type of intervention necessary, in addition to IQ. Children with high functioning autism are able to communicate more appropriately, either verbally or nonverbally, with an augmentative and alternative communication (AAC) device; are more likely to have the ability to function in a regular education classroom alone or with an aide; have or can develop more socially adaptive behavior; and have the

ability to function both academically and vocationally similar to peers who are nondisabled (Scott-Miller, 1990). Children with low functioning autism could be described by Leo Kanner's definition of autism (Kanner and Eisenberg, 1956). Because of a low IQ (below 70), these children do not have the academic or vocational potential of children with high functioning autism. Individuals with high functioning autism and individuals with low functioning autism show different behavioral profiles, potential, and intervention needs; therefore, differential diagnosis between high and low functioning autism appears to be critical (Scott-Miller, 1990).

The Autism Society of America (ASA) established a committee to refine a definition which can distinguish diagnostic criteria for "high functioning autism" versus "low functioning autism". Dr. Luke Tsai, ASA chairperson, and committee members developed and sent a questionnaire to 75 internationally known professionals who attended a May 1989 autism conference which focused on high functioning individuals with autism. One survey question asked, "Do you believe there is a need for greater clarity about what is 'high functioning autism'?". Seventy of the individuals questioned, or 92 percent, answered, "yes". When asked in another question to identify the features considered critical in referring to an individual as 'higher functioning' (i.e., the specific criteria essential in

developing a definition of 'high functioning autism'), the responses centered around cognitive development in at least the near normal range, the ability to communicate in at least a near normal range, and independent living skills at a functional level (Tsai, 1990).

Overall, ASA's survey results indicated that a more refined diagnostic criteria is needed. When comparing higher functioning autistic persons with normal peers, "One is instantly aware of how different they are and the enormous effort they have to make to live in a world where no concessions are made and where they are expected to conform" (Everard, 1975, p. 2).

Present research studies in the area of autism have focused primarily on diagnosis and characteristics in children. This limitation in the literature results in the need to infer findings to characterize the adult population.

Measurement of Perceptions/Attitudes

Although individuals with high functioning autism have been perceived as different by professionals, to the best of the author's knowledge, no studies of the general population's perceptions of high functioning autism have been conducted. However, individuals' perceptions have been studied in other areas.

The general population's perceptions of persons with disabilities have been extensively studied by researchers

such as Barker, Wright, Meyerson, and Gonick (1953); Block and Yuker (1977); Chaiken and Eagly (1993); Cruikshank (1980); Jones (1984); Siller (1976, 1984); Wright (1960); and Yuker, Block and Younng (1966). In 1982, Livneh discussed origins of the negative attitude individuals attribute to people with disabilities. In his article, several reasons were given to explain why nondisabled individuals negatively judge disabled individuals. He concluded that because attitudes are learned and conditioned over many years, changing negative stereotypes cannot be accomplished quickly.

Chaiken and Eagly (1993) define "attitude" as, "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (p. 1). Attitudes/perceptions can be informally assessed through verbal discussion and nonverbal communication. In order to formally examine persons' perceptions in a controlled manner, researchers often utilize rating scales, such as a Likert scale.

In 1932, Likert developed his scale as a "method of summated ratings" because the scores received on each item are summed to obtain the respondent's total score on the attitude scale. Items on the 5-point scale are written and selected so that agreement with the item represents either a favorable or unfavorable attitude toward the object. However, the degree of favorability or unfavorability is

ignored. Usually the scale receives a score of 1 to 5, which represents end point selections, such as "strongly disagree" to "strongly agree". Variations of the Likert scale often include "more or fewer than five alternatives of agreement and disagreement as well as omission of the neutral or undecided alternative" (Chaiken and Eagly, 1993, p. 53).

In order to make statements regarding the underlying dimensionality of Likert scales, investigators frequently incorporate factor analyses, which often yield more than one dimension. "The main disadvantage of Likert scales is that the exact level of measurement of the resulting scale scores is unknown" (p. 55). Since Likert scaling does not have any internal checks for its representative measurement properties, it is difficult to determine whether it yields interval or ordinal level measurement. Current research by Chaiken and Eagly (1993) indicated that "developments in item response theory appear to provide a basis for assigning metric properties to various psychological tests," however, these innovations have not yet been applied to attitude scaling (p. 55).

Another variable that is often controlled for and examined in the study of individuals' attitudes and perceptions is the rating differences between the male and female gender. In Tannen's, <u>You Just Don't Understand</u> (1990), differences between males and females are discussed

to be evident in early childhood and persistent throughout the course of life. It is for this reason that researchers often compare males' and females' ratings in order to control for the gender difference of the raters. To the best of the author's knowledge, within the disorder of autism, no research exists which suggests that perceptions vary due to gender.

Individuals' attitudes toward nonspeaking individuals are another area in which perceptions have been researched. For example, Gorenflo and Gorenflo (1991) developed the Attitudes Toward Nonspeaking Persons Scale to assess attitudes toward nonspeaking individuals. Undergraduate students served as subjects and viewed videotaped segments featuring one nonspeaking 23 year old female and one nonspeaking 22 year old male.

The scale consisted of Likert-type statements with both positively and negatively worded items. Viewers responded to items on a 5-point scale with end points of "strongly agree" and "strongly disagree". The videotapes differed in the type of augmentative and alternative communication (AAC) system used to determine the effect of different AAC techniques on the perception of, and attitudes toward, a nonspeaking individual. Three situations were taped, including a nonspeaking person using an unaided communication technique (his/her own voice), a nonelectronic alphabet board, or a computer-based, voice-output

communication aid (VOCA). Half of viewers were provided with an information sheet discussing the person's physical disability, social activities, and academic and employment status.

The results of the study indicated that attitudes toward the individual were more favorable when a voice output communication aid (VOCA) was used and when information regarding the individual was provided. However, the researchers (Gorenflo and Gorenflo, 1991) believed that these results supported the position stated by Jones and Guskin (1984). "What evidence tells us is that when little additional information is available about a handicapped individual, people who are asked to state their preferences report less willingness to become close with a handicapped rather than a nonhandicapped person" (Jones and Guskin, 1984, p. 6). The more that the person with a disability was able to compensate or augment the communication deficit, the more willing the persons without disabilities were to interact with him.

College students' perceptions of stutterers have also been extensively researched. In a study by Brown and colleagues (1988), a questionnaire was developed which asked respondents to name adjectives that accurately described two stutterers. All but one of the frequently reported adjectives were negative in nature. In general, results indicated that college students' perceptions of stutterers

included mostly negative personality stereotypes.

Blood and Collins (1990) also focused on college students' perceptions of stutterers. In this study, four videotaped interview samples of two mild and two severe stutterers were viewed and rated by female college students ages 18 to 41 years. On the videotape, two stutterers acknowledged their stuttering and two did not. The rating scale incorporated 14 bipolar opposites, such as mentally stable-mentally unstable and unintelligent-intelligent. Results indicated that nonstutterers preferred to interact with stutterers who acknowledged their stuttering. "This preference indicates that severe stuttering is viewed as a disability by nonstutterers" (p. 78). In addition, acknowledgement of stuttering by a mild stutterer was not perceived as important, nor were the mild stutterers rated as negatively as the severe stutterers.

In a study completed by Turnbaugh and colleagues (1981), college students were asked to rate both the "typical individual who stutters" and the "typical individual who is normally fluent" using a 25 bipolar adjective scale. The stuttering and normally fluent individuals were presented via audio- versus videotaped recordings (thus controlling for visual factors). College students were chosen as raters because, as listeners, they appear to be a representative sample of the general population (Woods and Williams, 1976). Again, the raters

associated negative stereotypes to the stutterer, whereas more positive ratings were given to the normally fluent individual.

In all three studies (Blood et al., 1988; Blood and Collins, 1990; and Turnbaugh at al., 1981), results indicated that the perceptions of the general population's/college students' were negative in regard to stutterers. This substantiates the need for appropriate intervention of stuttering to assist in adjustment and remediation of the disorder.

Although research regarding autism and research regarding individuals' perceptions have been extensive as separate entities, research on perceptions of individuals with high functioning autism has not been explored. Therefore, the present study was designed to assess if there are characteristics which the general population perceive as different in individuals with high functioning autism. It was the examiner's postulation that the general population would perceive fewer differing characteristics among individuals with high functioning autism who had more therapy intervention, hence perceptual ratings would be more favorable.

Research Questions

The following primary research question is posed: Does the general population perceive adult individuals with

high functioning autism as different from the general population, as evaluated using the examiner's scale?

Secondary research questions are the following:

1. What characteristic(s) is/are perceived as being most different in individuals with high functioning autism as compared to characteristics of the general population, as indicated by the rating scores obtained on the examiner's scale?
2. Is there a significant difference between female perceptions and male perceptions as evaluated using the examiner's scale?

Chapter 2

Method

Subjects

Subjects for this study were 453 undergraduate students at Eastern Illinois University who were enrolled in the introductory speech communication course, SPC 1310C. Subjects included 272 female students and 181 male students ages 18 to 28 years. Twenty-three course sections of students were selected due to their availability and because, as listeners, college students appear to be a representative sample of the general population (Woods and Williams, 1976). While all of the students were selected from a college required introductory level course, it is possible that some of the subjects were non-traditional students.

Rating Scale Instrument

A ten-point rating scale (Appendix A) was designed in a pilot study to rate appropriateness/inappropriateness of seven communication characteristics which included eye contact, facial expression, body language, word choice, rate of speech, intonation of speech, and conversation ability. In addition, the rating scale included an overall measure for level of comfort (Manhart, 1992). The rating scale form included a space to mark the rater's gender, age, student status, birthdate, as well as a place to mark if the rater

had ever interacted with the interviewee prior to the viewing of the videotape.

This Likert-type rating scale contained anchors or ratings from 1-10 with a score of 1 being mostly inappropriate and a score of 10 being mostly appropriate. This Likert-type scale contained an even number of rater choices to avoid a midpoint selection (Appendix A).

Upon the completion of the study, an analysis of variance was applied to statistically analyze the data. Construct validity was assessed by a factor analysis of the current instrument.

Materials

A Polaroid T-120, 1/2 inch VHS videotape of five two-minute interviews, including three adults (two males, one female) with high functioning autism and two "normal" adults, (one male, one female) was used. Targets included on the videotape were a combination of previously televised segments from public television channels and individuals recorded locally. The videotaped interviews were arranged by alternating genders and levels of treatment to account for the possibility of an order-effect. In each videotaped segment the interviewer was not pictured, however, the interviewer's voice was heard.

The interviewees with high functioning autism had received varying levels of therapy intervention. One male

had received minimal amounts of therapy, another male had received 30 months of therapy and the female was considered "recovered". Table 1 displays the specific characteristics of the videotaped interviews.

Table 1. Videotape Description

Interview Segment	Age (years)	Level of Intervention
#1 male	21	"Normal"
#2 female	32	"Recovered"
#3 male	20	Minimal therapy
#4 female	21	"Normal"
#5 male	18	Minimal therapy

The topic of discussion for all interviews was career choices. In addition, other topics which pertained specifically to each individual were discussed.

Procedures

The examiner visited numerous sections of the speech communication class to explain scoring procedures, show the videotape, and collect data. Subjects were given one rating scale form, an ob-scan computer sheet, and corresponding written and verbal instructions by the researcher that explicitly stated how to fill in demographic information, as well as how to rate each interviewee (Appendix B). The rating scale and associated anchors (1 = mostly inappropriate, 10 = mostly appropriate) were defined and explained to ensure comprehension. "A score of mostly inappropriate means that the individual does not use

appropriate _____(eye contact, facial expression, body posture, word choice, rate of speech, intonation of speech, and conversation effectiveness); whereas, a score of mostly appropriate means that the individual consistently uses appropriate _____ (eye contact, facial expression,... conversation effectiveness)."

After presentation of the first taped interview, the videotape was "paused" to allow the subjects time to complete the ratings on the ob-scan form. Subjects were told to fill in the number corresponding to the chosen rating. No information regarding the interviewees was provided. Subjects were informed that the rating scale would be used for a college course assignment.

Permission to be a part of this study was obtained from those who were pictured on the videotape (Appendix C). The research procedures were approved by the Eastern Illinois University's Grants and Research Committee for human subject research (Appendix D).

Data Analysis

The independent variables were amount of therapy intervention (i.e., minimal therapy, recovered, normal) and the gender of the raters. The dependent variable was the raters' perceptions of the individuals with high functioning autism, as indicated by each of the eight items on the rating scale.

A multivariate analysis of variance (MANOVA) was used to analyze responses to the individuals with high functioning autism.

To determine reliability, the Pearson product moment correlation coefficient was used to correlate the scores obtained on the rating scale forms in the current study. Validity was assessed using a factor analysis of the rating forms.

Chapter 3

Results

Reliability correlation coefficient and multivariant analysis of variance (MANOVA) were used to statistically analyze the descriptive data to address the posed questions. All results were derived using mode replacement, i.e., replacing missing data with the most frequently occurring score from the original data. Data missing for this specific study accounted for 1% of the total data. Consequently, mode replacement was used for the missing 1%, which yields more conservative results. An N = 453 was used for all statistical analyses.

The reliability correlation coefficient obtained in the current study using the examiner's rating scale was .89. This indicates a strong reliability for the examiner's rating scale to evaluate characteristics perceived by the general public in regard to high functioning autism. This high correlation indicates a unidimensional instrument, i.e., all eight items contributed to measurement of the same type, suggesting high reliability and validity.

Factor analysis was conducted to substantiate the unidimensionality of the scale. Table 2 reports factor analysis for the eight items.

Table 2. Factor analysis of the rating scale items.

Variable	Factor 1	Eigenvalue	% of Variance
V1	.645		
V2	.852		
V3	.820		
V4	.833		
V5	.849		
V6	.858		
V7	.845		
V8	.794	5.33	67%

An Eigenvalue over 1.0 is considered significant. The examiner's instrument accounted for 67% of the variance, indicating high validity.

The second issue was to determine if subject ratings, using the examiner's scale, differed due to gender differences of the raters. Multivariant analysis of variance was used to address this issue. Table 3 displays the MANOVA results based on gender of the raters.

Table 3. Analysis of variance for the rating differences between gender. *p < .05

Source	df	Mean Square	F	Sig. of F
Within Cells	451	269.62		
Gender	1	3684.63	13.67*	P < .001

A probability of <.001 indicated a significant difference between male and female gender. Ratings by

females were consistently higher, or more favorable, than ratings by males.

Multivariant analysis of variance was used to determine if the raters viewed the individual targets as significantly different. Table 4 displays the MANOVA results, which indicated that the five individuals viewed on the videotape were perceived by the subjects as statistically different.

Table 4. MANOVA involving target within-subject effect.
*p < .05

Source	df	Mean Squares	F	Sig. of F
Within Cells	1804	80.22		
Target	4	85104.34	1060.86*	.0001
Gender by Target	4	98.95	1.23*	.297

T-tests were utilized to determine an order effect from most favorable to least favorable among targets (individuals on videotape). Table 5 summarizes results.

Table 5. T-tests results of targets A through E. *p < .05

Results	Summary/Comparison	p
A > B,C,E B > C,E	A = D (Normals)	.950
C > E D > B,C,E	A,D > B > C > E	.001*

Statistically significant differences were found between all targets except the two "normals". The order effect based on statistical analysis showed targets A and D (normals) evaluated most favorably, then target B (recovered individual with autism), then target C, with E being rated the lowest (minimal therapy for both C and E).

MANOVA was utilized to compare the eight rating scale items with the three targets who had high functioning autism (B, C, E) to determine which items were perceived as being most different by the raters. Table 6 displays the characteristics which were rated as the highest (least different) and lowest (most different) items.

Table 6. Highest and lowest ratings of the 8 items for targets B,C,E.

Ratings	B	C	E
Lowest	body posture	convers. effect.	body posture
Highest	word choice	eye contact	eye contact

In addition, the level of comfort was rated next lowest for all three targets.

A post hoc discriminant analysis was included to examine subjects' ratings for the unknown targets versus the subjects' ratings for known targets. Target C was recognized by 53 subjects, target E was recognized by 15

subjects, and both A and D were recognized by 5 out of 453 total subjects. In other words, 83.9% of 453 subjects did not know anyone on the videotape; whereas, 15% knew either C or E, or both. For this reason, the results of known versus unknown rating scores were analyzed. For rating scale items 1-8, subjects who knew C demonstrated a difference in ratings of .8 - 1.9 points higher than those who did not know C. Hence, the overall effect of knowing C yielded a F of 45.81 with a $p < .001$. Similarly, subjects who knew E rated that individual from 0.5 - 1.2 points higher when compared to subjects who did not know E. The overall effect of knowing E yielded a F of 6.25 with a $p < .013$.

In addition to the above post hoc results, Tukey-HSD and t-test procedures were applied to examine if knowing C (third individual on the videotape) affected the other ratings on the videotape. Results indicated the following:

1. Knowing C elevated ratings of C and E;
2. Knowing E did not elevate ratings of C, but appeared to elevate ratings of E;
3. Knowing C and/or E did not elevate ratings of A, B or D.

Chapter 4

Discussion

Previous research and literature has shown that individuals with high functioning autism are perceived as different by professionals (Bartak and Rutter, 1976; DeMyer et al., 1973; Freeman et al., 1981; Lotter, 1978; Rutter, 1970; Tsai, 1990). It has also been shown that individuals with high functioning autism have certain differing characteristics, especially within the pragmatics of language (Kanner and Eisenberg, 1956). The purpose of this study was to determine if the general population perceived individuals with high functioning autism as different from the general population.

Results of the study indicated that the examiner's rating scale was a reliable instrument for characterizing individuals with high functioning autism ($r = .89$). Probabilities of .001 signified that subjects using the rating scale identified the adult individuals with high functioning autism as significantly different from the general population. The "recovered" female with high functioning autism was rated the highest among the individuals with autism, but statistically lower than the "normals"; the male individuals with high functioning autism who had received minimal amounts of treatment intervention received the lowest ratings. These results are summarized in Table 7.

Table 7. Relationships among individuals with autism.

Relationship	Description	Results
A = D	"Normals"	Nonsignificant
B > C > E	"Recovered" vs. Minimal Tx	Significant
A,D > B,C,E	"Normals" vs. "Recovered" & Min.Tx	Significant

These significant results support the necessity to diagnose individuals with high functioning autism and initiate remedial intervention. The study substantiated that the general population perceived adult individuals with high functioning autism as different from the general population, but less different after treatment intervention, thereby supporting the importance of diagnosis. As indicated in the literature regarding autism, a person with high functioning autism is often not diagnosed because of the presence of at least normal I.Q. (Tsai, 1990). This study verified that these individuals have communication deficits which separate them from "normals". These communicative differences appear to lessen with treatment as demonstrated by target B, resulting in an adult with high functioning autism demonstrating fewer differing qualities and becoming more accepted and comfortable to peers during interaction.

Specific characteristics which were perceived as most different through scores obtained on the examiner's scale

were body posture and conversation effectiveness. Additionally, the overall question for level of comfort received low ratings for all three individuals with autism. Word choice and eye contact were characteristics perceived as being least different. It is possible to speculate that word choice and eye contact are items which have been improved through treatment intervention since all the individuals in the video had received some amount of remediation.

The rating scores seem to suggest that body posture and conversation effectiveness should be target treatment areas since these were identified as being the most different. The overall measure for level of comfort was rated highest (among the three individuals with autism) for the "recovered" female. This may imply that although people still feel uncomfortable around an individual with autism, with treatment, the differing characteristics lessen and the general population's comfort level increases. Once again, the importance of diagnosing high functioning autism is strongly justified by the ratings obtained in specific characteristics.

A statistically significant difference was also found between male perceptions and female perceptions. Females consistently rated individuals higher, or more favorably, than male raters. As indicated in "You Just Don't Understand" (Tannen, 1990), males and females differ from

infancy in terms of the use of communication. Specifically, males use communication in a more dominant aggressive style while females use communication to express emotions and intimacy. This gender difference was substantiated in this study by the resulting scores indicating that females have a tendency to judge people more favorably, compared to males who tended to rate individuals more critically. This could also suggest that first impressions are more critical with males than with females.

Post hoc analysis was completed to examine the ratings of targets B, C and E (i.e., the individuals on the videotape who had autism) with the ratings of the other subjects. This analysis evaluated the "know" factor versus the "unknown" factor within the targets diagnosed as autistic. No subjects identified "knowing" target B. When the raters knew target C only (i.e., the third individual on the videotape), they rated target C and target E more favorably, but ratings for D ("normal" female) remained unaffected. When the raters knew target E only (i.e., the last individual on the videotape), ratings for all other targets (A, B, C, and D) remained statistically unchanged, but ratings were higher for E. When raters knew both C and E, ratings for C and E were affected more favorably, but all others were unaffected.

These results on the "know" factor indicate that when subjects knew target C, they perceived target E similarly to

C and subsequently evaluated both individuals less harshly. This implies that when members of the general population have knowledge of an adult individual's disability, they judge that person and others who are similar to that individual more favorably. Therefore, it appears that exposure to high functioning autism contributes to more favorable perceptions. This, again, supports the need for diagnosis and intervention to address the disorder of high functioning autism.

The major conclusion based on the data and analysis obtained in this study is that the rating scale is a reliable and valid instrument for indicating distinctive characteristics in adult individuals with high functioning autism when used by the general population. In addition, the results indicated that females perceived adults with high functioning autism more favorably than males. Further statistical analysis of the data also indicated that when exposed to the disorder of high functioning autism, individuals perceived others with this disorder more favorably by rating them less harshly.

Based on the statistical data obtained and conclusions drawn, several implications for future research have been formulated.

1. It may be beneficial to have a pre- and post-videotape of individuals with high functioning autism following therapy intervention, which

focuses on the characteristics identified in the rating scale as most different. In doing this, one could examine the extent to which these characteristics are treatable and what treatment techniques are most effective in shaping these characteristics into the "normal" range.

2. Utilization of this rating scale prior to enrollment in a treatment program might assist a clinician in determining target objectives in the characteristics which are most deficit or perceived as different.
3. Since this study included adult targets only, further research should replicate this study utilizing the rating scale for perceptions of children with high functioning autism. An analysis could determine if similar or different discriminating characteristics emerge statistically.
4. A similarly designed study with professional speech-language pathologists should be conducted to determine differences in ratings of characteristics based on clinical experience/knowledge. The exposure to individuals with high functioning autism may result in different perceptions as to the characteristics evaluated as significantly discrepant.

5. Subsequent research should expand information gathered on the eight characteristics in the rating scale to include narrative descriptions as explanations of the objective ratings. Inclusion of qualitative analysis to supplement the objective numerical ratings might assist in understanding the specific aspects within a characteristic (e.g., body posture) that separate the individual with high functioning autism from the general population.

This study provides a foundation in formulating a grounded theory for understanding the normal population's response to the characteristics of high functioning autism. The eight variables utilized in this study are not inclusive of all possible variables perceived by the general population in regard to autism. From this study, an explanation of perceptions by gender on these eight characteristics can be predicted. Further research should expand this data base in documenting how individuals with high functioning autism are perceived by the general population.

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Appendix A

Please rate the speaker on the appropriateness of the following 1-8 items. Use the scan sheet to indicate your ratings.

1. Eye Contact

1	2	3	4	5	6	7	8	9	10
Mostly Inappropriate			Rarely Appropriate		Sometimes Appropriate			Mostly Appropriate	

2. Facial Expression

1	2	3	4	5	6	7	8	9	10
Mostly Inappropriate			Rarely Appropriate		Sometimes Appropriate			Mostly Appropriate	

3. Body Language

1	2	3	4	5	6	7	8	9	10
Mostly Inappropriate			Rarely Appropriate		Sometimes Appropriate			Mostly Appropriate	

4. Word Choice

1	2	3	4	5	6	7	8	9	10
Mostly Inappropriate			Rarely Appropriate		Sometimes Appropriate			Mostly Appropriate	

5. Rate of Speech

1	2	3	4	5	6	7	8	9	10
Mostly Inappropriate			Rarely Appropriate		Sometimes Appropriate			Mostly Appropriate	

6. Intonation of Speech

1	2	3	4	5	6	7	8	9	10
Mostly Inappropriate			Rarely Appropriate		Sometimes Appropriate			Mostly Appropriate	

7. Conversation Effectiveness

1	2	3	4	5	6	7	8	9	10
Mostly Inappropriate			Rarely Appropriate		Sometimes Appropriate			Mostly Appropriate	

Overall, how comfortable would you feel interacting with this person?

8. Level of Comfort

1	2	3	4	5	6	7	8	9	10
Very Uncomfortable			Barely Comfortable		Somewhat Comfortable			Very Comfortable	

Appendix B

Rating Scale Scan Sheet Instructions

1. Enter gender in column labeled "Sex".

2. Enter student status, according to completed semester hours, in the column "Grade or Educ" as follows:
   Freshman= 13 Sophomore= 14 Junior= 15 Senior= 16
   (Nothing should be filled in/entered in spaces 0-12)

3. Enter birth date in bottom left corner "Mo., Day, Year" and fill in corresponding circle underneath.

4. Enter your age in columns A and B under "Identification No." to the right of "Birth date" and fill in corresponding circle underneath.

5. Enter whether or not you have interacted with the person on the videotape under "Special Codes":

   If you <u>have not</u> interacted with the person/subject on the videotape enter a 0.
   If you <u>have</u> interacted with the person/subject on the videotape enter a 1.
   Do this in the following columns for each subject on the tape:

   1. Subject A (1)= column **K**
   2. Subject B (2)= column **L**
   3. Subject C (3)= column **M**
   4. Subject D (4)= column **N**
   5. Subject E (5)= column **O**

NOTHING SHOULD BE ENTERED UNDER "NAME" OR IN SPACES "C-J" UNDER "IDENTIFICATION NO." OR "P" UNDER "SPECIAL CODES".

Rate Subject A using lines numbered 1-8 on the scan sheet.
Rate Subject B using lines numbered 11-18 on the scan sheet.
Rate Subject C using lines numbered 21-28 on the scan sheet.
Rate Subject D using lines numbered 31-38 on the scan sheet.
Rate Subject E using lines numbered 41-48 on the scan sheet.

A rating of "Mostly Inappropriate = 1 or A on the scan sheet whereas "Mostly Appropriate = 10 or J on the scan sheet.

Appendix C

Permission Slip For Thesis Research Purposes

I, _____, permit Melanie A. Manhart, a graduate student at in Communication Disorders and Sciences at Eastern Illinois University, to use a videotaped clinical session involving myself for her thesis research. I understand that the videotape is the sole possession of Melanie Manhart. I further understand that any personal information the videotape may contain will be regarded as confidential and the tape will be used solely for research and educational purposes.

Signed_____

Dated_____

Witness_____

Appendix D

Memorandum

To: Gail Richard, CDS

From: Bud May, Director of Grants and Research

Date: September 7, 1993

Re: Human Subjects approval for research

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Thanks very much for your answers to our questions concerning your research project. Please feel free to proceed.

Best wishes for a successful project.

xc: HUSUB file