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Article in Autism · March 2010
DOI: 10.1177/1362361309354757 · Source: PubMed

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Parents' criticisms and attributions about their adult children with high functioning autism or schizophrenia

STEPHANIE WASSERMAN  
University of Miami, Florida, USA

AMY WEISMAN DE MAMANI  
University of Miami, Florida, USA

PETER MUNDY  
UC Davis, M.I.N.D. Institute, California, USA

ABSTRACT  The current study examined the criticism component of expressed emotion (EE) and attributions in parents of adults diagnosed with schizophrenia/schizoaffective disorder (S/SA) or high functioning autism/Asperger's. Consistent with study hypotheses, parents of adults diagnosed with autism/Asperger's disorder exhibited lower levels of high EE-criticism than parents of adults diagnosed with S/SA. Moderate trends suggested that parents of adults diagnosed with autism/Asperger's disorder tended to make less blameworthy attributions towards patients than did parents of adults diagnosed with S/SA. A content analysis of parents' causal attributions was also conducted. The most common cause cited by both groups of parents was biological factors, suggesting that parents may be becoming more aware of scientific findings implicating biological factors, in conjunction with psychosocial factors, as a major cause of mental illness.

ADDRESS  Correspondence should be addressed to: AMY WEISMAN DE MAMANI, University of Miami, Department of Psychology, Coral Gables, Florida 33124-0751, USA. e-mail: aweisman@miami.edu

While there is a large body of research that has examined family factors (i.e., expressed emotion and attributions) in schizophrenia (e.g., Hooley and Parker, 2006), investigators have pointed to a dearth of such studies in autism (Norton and Drew, 1994; Gray, 1998; Dyches et al., 2001). Because of the similarities in presentation between schizophrenia and autism, one might expect similarities in family processes surrounding the two disorders. The current study compared parents of patients diagnosed with schizophrenia or schizoaffective disorder and autism or Asperger's disorder on their attributions and criticism towards their adult child. Because schizophrenia...
and schizoaffective disorder are on a spectrum of psychotic disorders, throughout the remainder of the paper, the sample will be referred to as the schizophrenia/schizoaffective (S/SA) sample. Similarly, because high functioning autism and Asperger's are on a spectrum of autistic disorders, throughout the remainder of the paper, the sample will be referred to as the autism sample.

**Criticism**

Why study criticism? Criticism is one component of expressed emotion (EE). EE is a measure of the family environment reflecting the amount of criticism, hostility, emotional over-involvement (EOI), and warmth expressed by a key relative towards a family member with a disorder or impairment (Leff and Vaughn, 1985). Those who speak about a relative in a critical, hostile, or emotionally over-involved manner are classified as high EE; those who do not are classified as low EE.

Only recently have autism researchers started to examine EE. Orsmond et al. (2006) and Greenberg et al. (2006) found that a minority of mothers of adolescents or adults diagnosed with autism were rated as being high in criticism (between 16.8% and 18.1%), possibly because once the child diagnosed with autism has reached adolescence or adulthood, the mother is accustomed to the disorder and can adapt to it, making her less critical. Greenberg et al. highlighted that the levels of EE in their study were lower than those reported in studies of families dealing with schizophrenia. Although not empirically examined, Greenberg et al. suggested that lower rates of EE among mothers of adolescents and adults diagnosed with autism may be explained by mothers' attributions that the patient's behavior is beyond his or her control.

EOI, defined as extreme protectiveness and excessive concern, is conceptually different from criticism/hostility and the two are not typically correlated (Hooley et al., 1995). High EE-EOI relatives' attributions are more similar to low EE relatives' attributions than to those made by high EE-critical/hostile relatives. Furthermore, Leff and Vaughn (1985) found the criticism index to be the EE index most related to relapse in schizophrenia (Leff and Vaughn, 1985). Because EOI is a low frequency category (Barrowclough and Hooley, 2003) and because it appears to relate to prognosis through different mechanisms than does criticism, the current study examined EE based on the criticism index only.

**Attributions**

EE and criticism can be understood within an attributional framework (Hooley, 1987). Attributions are the beliefs an individual possesses concerning his or her own or others' behaviors. Hooley proposed that criticism
of psychotic disorders, it will be referred to as Similarly, because high um of autistic disorders, it will be referred to as

expressed emotion (EE),ing the amount of criti-, and warmth expressed disorder or impairment t a relative in a critical, assified as high EE; those

examine EE. Ormond at a minority of mothers were rated as being high, because once the child : adulthood, the mother making her less critical. i their study were lower ng with schizophrenia. al. suggested that lower s diagnosed with autism he patient’s behavior is

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attributional framework idal possesses concern-proposed that criticism

WASSERMAN ET AL.: CRITICISMS AND ATTRIBUTIONS ABOUT AUTISM reflects the belief that symptoms are within the patient’s control and not the result of a legitimate illness. Perceived as being under the patient’s control, these symptoms become the target for criticism from the family member.

Hooley’s (1987) central hypothesis that attributions of controllability underlie criticism has been confirmed in numerous published investigations on this topic to date (Barrowclough and Hooley, 2003). High EE-critical relatives make more internal and blameworthy attributions for patients’ behavior, whereas low EE relatives make more external and uncontrollable attributions for patients’ behavior (e.g., Weisman et al., 1998; Hooley and Campbell, 2002). No studies, to our knowledge, have investigated attributions towards adults with autism.

Similarities and differences between autism and schizophrenia Seltzer et al. (2004) argued that moderate overlaps in symptomatology, yet differences in age of onset between autism and schizophrenia, make research comparing families affected by autism and schizophrenia valuable. At one point, autism was thought to be the childhood expression of schizo-phenaria (Konstantareas and Hewitt, 2001). Schizophrenia and autism are both characterized by deficits in language, affect, and interpersonal relatedness (American Psychiatric Association, 2000). Specific symptoms common to the two disorders include lack of interest in peers, poor eye contact, stereotyped movements, and odd speech and behavior.

Greenberg et al. (1993) showed that the mothers of adults diagnosed with schizophrenia reported greater caregiver burden and poorer relationships with their child than did mothers of adults diagnosed with intellectual disabilities, possibly due to the difference in age of onset of schizophrenia versus intellectual disabilities. Because intellectual disabilities, like autism, are typically diagnosed during the first years of the child’s life, parents are aware early on that their child will always be dependent on them to some degree and will experience life-long difficulties. However, the onset of schizophrenia does not occur until late adolescence or early adulthood (American Psychiatric Association, 2000). Therefore, the early onset of autistic symptoms, relative to symptoms of schizophrenia, may be related to greater perceptions of legitimacy of the illness in family members, resulting in less criticism and less blameworthy attributions.

Study hypotheses

Based on the findings outlined above, it is hypothesized that parents of adults diagnosed with autism will exhibit lower rates of high EE-criticism than parents of adults diagnosed with S/SA. It is also hypothesized that parents of adults diagnosed with autism will exhibit fewer blameworthy attributions than will parents of adults diagnosed with S/SA. On an
exploratory basis, a content analysis of the types of attributions made by
the parents of patients diagnosed with autism will also be conducted and
compared to those made by the parents of patients diagnosed with S/SA.

Method

Participants
Data for the S/SA sample in this study was drawn from a larger project aimed
at examining the psychosocial correlates of schizophrenia or schizoaffective
disorder (see Weisman et al., 2005). This research was supported by NIMH
grant #1RO3MH60080-01. Participants consisted of 36 parents and, when
available, their adult children diagnosed as having schizophrenia or schizo-
affective disorder based on DSM-IV criteria. Eight patients were unavailable
or unwilling to participate. Parents consisted of 30 mothers (83.3%) and
6 fathers (16.7%). Parents ranged in age from 43 to 86 years (M = 61, SD
= 10.68). Throughout, parents’ and patients’ ethnic backgrounds were
determined by self-report. Parents’ ethnicity was distributed as follows:
Caucasian = 13 (36.1%) and Hispanic = 23 (63.9%). Twenty-two parents
(61.1%) were interviewed in English, while 14 (38.9%) were interviewed
in Spanish. Refer to Weisman et al. (2005) for a description of the transla-
tion methods used in the current study. Adult children consisted of 19 sons
(67.9%) and 9 daughters (32.1%) who ranged in age from 19 to 58 years
(M = 34.43, SD = 9.61). Patients’ ethnicity was distributed as follows:
Caucasian = 10 (35.7%) and Hispanic = 18 (64.3%). Nineteen of the
patients (67.9%) were interviewed in English, while 9 (32.1%) were inter-
viewed in Spanish.

Data from 13 parents and their adult child diagnosed as having high
functioning autism or Asperger’s was collected for the current study. Parents
consisted of 11 mothers (84.6%) and 2 fathers (15.4%). These parents
ranged in age from 36 to 66 years (M = 56.84, SD = 7.54). Parents’ ethnic-
ity was distributed as follows: Caucasian = 8 (61.5%) and Hispanic = 5
(38.5%). Twelve parents were interviewed in English and one in Spanish.
Adult children consisted of 10 sons (76.9%) and 3 daughters (23.1%) who
ranged in age from 18 to 44 (M = 26.23, SD = 7.47). Patients’ ethnicity
was distributed as follows: Caucasian = 8 (61.5%) and Hispanic = 5
(38.5%). All patients were interviewed in English.

There were no significant differences in ethnicity or primary language
between diagnostic groups (p > .05 for both). See Table 1 for a description
of additional participant characteristics and for a comparison of these char-
acteristics between the S/SA and the autism samples. An examination of
Table 1 indicates that patients diagnosed with S/SA were more likely to be
distributions made by be conducted and posed with S/SA.

The study aimed to explore the differences in employment status between children with autism and schizophrenia/schizoaffective disorder (SISA). The sample consisted of 19 sons ranging in age from 19 to 58 years. Nineteen of the parents (83.3%) and 23.1% of the patients were interviewed, and parents' ethnicity was reported as follows: 60% Hispanic = 5

Parents

The BPRS (Brief Psychiatric Rating Scale) was used to assess global symptom severity. The mean total scores were 43.75 for the autism group and 36.93 for the SISA group, with a t-value of 1.72, p = .11.

Table 1: Autism and schizophrenia/schizoaffective (SISA) sample characteristics

<table>
<thead>
<tr>
<th>Patients</th>
<th>Autism (N = 13)</th>
<th>SISA (N = 28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
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<td>19</td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
<td>9</td>
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<tr>
<td>Employment status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
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<td>5</td>
</tr>
<tr>
<td>Unemployed</td>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>Marital status</td>
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<td></td>
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<tr>
<td>Married</td>
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</tr>
<tr>
<td>Not married</td>
<td>13</td>
<td>27</td>
</tr>
<tr>
<td>BPRS Mean Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>43.75</td>
<td>36.93</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parents</th>
<th>Autism (N = 13)</th>
<th>SISA (N = 36)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>30</td>
</tr>
<tr>
<td>Employment status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Unemployed</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>Not married</td>
<td>4</td>
<td>18</td>
</tr>
</tbody>
</table>

*p is significant at the .01 level (2-sided).

BPRS = Brief Psychiatric Rating Scale.
**Design and procedure**

Individuals who received a prior diagnosis of S/SA by a qualified mental health practitioner and appeared to meet DSM-IV criteria for the illness based on self-report of symptoms during a telephone screening were invited to participate in the study along with their parents. A minimum of one hour per week of face-to-face contact between the parent and their adult child diagnosed with S/SA was required for participation. See Weisman et al. (2005) for a more detailed description of sample characteristics.

High functioning adults diagnosed with autism or Asperger's and their parents were identified by the university's Center for Autism and Related Disabilities database. The sample was limited to adults diagnosed with high functioning autism or Asperger’s because we aimed to study EE and attributional differences between S/SA and autism without the confounding effects of comorbid conditions (i.e., intellectual disabilities) that often occur among lower functioning patients with autism. Letters were mailed in order to solicit participation, and staff members informed support group attendees about the potential for participation in the study. A minimum of one hour per week of face-to-face contact between the parent and their adult child with autism was required for participation. Once eligibility requirements were met, the parent was screened using the Social Communication Questionnaire (SCQ; Rutter et al., 2003) in order to confirm the autism diagnosis in their adult child.

All research materials and procedures were approved by the Social and Behavioral Sciences Institutional Review Board at the University of Miami. Prior to the assessment, study personnel verbally explained the consent form to participants and answered any questions. Participants were then invited to read and sign the consent form if they agreed to participate. Numeric codes were used in lieu of identifying information on computerized data files and written materials; hard copies of data were stored in locked file cabinets within a secured lab. Access to data files was limited to the primary research team.

**Measures**

**Criticism**  
High versus low EE-criticism was rated using the Five Minute Speech Sample (FMSS; Magaña et al., 1986). Respondents were asked to speak uninterrupted for five minutes about their child, telling the interviewer what kind of person he or she is and how the two of them get along. In line with Magaña et al.'s guidelines, parents were coded as high EE-critical if they made a negative initial statement about the adult-child or the relationship between the adult-child and themselves, if they reported a negative relationship with their adult-child, or if they expressed one or
a qualified mental or the illness based on the presence of dissatisfaction in the interview. Following suggestions of Hooley and Parker (2006), participants who were rated borderline EE-critical were also classified as high EE. Hooley and Parker indicated that the FMSS, relative to the Camberwell Family Interview (CFI; Leff and Vaughan, 1985), tends to under identify cases of high EE. However, when relatives receiving a borderline rating on the FMSS are instead classified as high EE, the sensitivity of the instrument increases greatly (Hooley and Parker, 2006).

Two graduate students received an intensive didactic training session in the FMSS scoring system by a trained FMSS coder. Raters then coded 5 training tapes and had 100% agreement for rating high versus low EE with one another and with the trained coder. The two graduate student coders then rated 10 additional tapes to assess their reliability with one another. The intraclass correlation coefficient between the two graduate students was .93 for rating high EE-criticism versus low EE across the 10 tapes.

**Contributions** Attributions about symptoms and the cause of the illness were rated using a variation of Russell’s Causal Dimension Scale (RCDS; Russell, 1982). Parents were asked to make attributions of controllability, responsibility, and intentionality twice, once regarding the original cause of his or her adult-child’s illness and once regarding the most obvious symptom. Global attributions scores were derived by summing across these 6 items. Scores could range from 6 to 54, with higher scores indicating more blameworthy attributions toward the patient for his or her illness and illness-related behaviors. Reliability estimates using Cronbach’s alpha for global attributions were .86 and .72 for the S/SA and autism samples, respectively. The content of parents’ attributions was also examined using qualitative analyses.

**Results**

A chi-square analysis was conducted to assess the hypothesis that parents of adults diagnosed with autism would exhibit lower rates of high EE-criticism than parents of adults diagnosed with S/SA. This hypothesis was supported. Only 15.38% of parents of adults diagnosed with autism were rated as high EE-critical as opposed to 48.57% of parents of adults diagnosed with S/SA, $\chi^2(1, N = 48) = 4.37$, $p = .04$.

An independent sample t-test was performed to assess the hypothesis that the parents of adults diagnosed with autism would exhibit less blameworthy attributions than the parents of adults diagnosed with S/SA. Results
indicated a non-significant trend for parents of adults diagnosed with autism to make fewer blameworthy attributions towards the patient for the illness ($M = 13, SD = 8.21$) than parents of adults diagnosed with S/SA ($M = 17.47, SD = 10.98$), $t(43) = -1.32, p = .19$. Using Cohen’s criteria, the trend for group differences on global attributions was moderate, $d = .44$.

Finally, a qualitative analysis was conducted to compare attributions for the cause of the illness between parents of adults diagnosed with autism and parents of adults diagnosed with S/SA. The causes cited, in order of frequency, by parents of adults diagnosed with autism were genetics, a combination of genetic factors along with other factors, organicity, parental drug use, birth complications, and a combination of prenatal injury plus the belief that autism was secondary to another condition. The causes cited, in order of frequency, by parents of adults diagnosed with S/SA were genetics/heredity, a chemical imbalance, patients’ alcohol/drug use, family problems, prenatal insults, and miscellaneous factors. See Table 2 for a numerical breakdown. Below we discuss further how causal attributions of parents of patients diagnosed with S/SA compare with those of parents of patients diagnosed with autism.

### Table 2  Cause of the illness cited by parents of adults diagnosed with autism or schizophrenia/schizoaffective disorder (S/SA)

<table>
<thead>
<tr>
<th>Cause</th>
<th>$n$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents of adults diagnosed with autism ($N = 13$)</td>
<td></td>
</tr>
<tr>
<td>Genetics</td>
<td>4</td>
</tr>
<tr>
<td>Combination of genetics and other factors</td>
<td>4</td>
</tr>
<tr>
<td>Organicity</td>
<td>2</td>
</tr>
<tr>
<td>Parental drug use</td>
<td>1</td>
</tr>
<tr>
<td>Birth complications</td>
<td>1</td>
</tr>
<tr>
<td>Prenatal injury</td>
<td>1</td>
</tr>
<tr>
<td>Parents of adults diagnosed with S/SA ($N = 36$)</td>
<td></td>
</tr>
<tr>
<td>Genetics</td>
<td>13</td>
</tr>
<tr>
<td>Chemical imbalance</td>
<td>5</td>
</tr>
<tr>
<td>Patients’ drug/alcohol use</td>
<td>4</td>
</tr>
<tr>
<td>Family problems</td>
<td>3</td>
</tr>
<tr>
<td>Prenatal insults</td>
<td>3</td>
</tr>
<tr>
<td>Miscellaneous factors</td>
<td>8</td>
</tr>
</tbody>
</table>

### Discussion

Parents of adults diagnosed with autism exhibit very low rates of high criticism and significantly lower rates than do parents of adults diagnosed with S/SA. Low rates of criticism in parents of adults diagnosed with autism...
is the patient for whom the diagnosis was made, is diagnosed with S/SA using Cohen's criteria, moderate, $d = .44$. The rate of attribution for autism cited, in order of those of parents of adults diagnosed with autism or S/SA reveals that the most common cause cited by both groups of parents is biological factors. Approximately 77% of parents of adults diagnosed with autism cite genetic, a combination of genetic factors along with other factors, or organicity as the primary cause of the illness, while approximately 50% of parents of adults diagnosed with S/SA believe that genetics/heredity/organicity is the cause of the illness. These findings suggest that parents are becoming aware of the role of biology in mental illness, as has been implicated by numerous research studies (Kendler and Diehl, 1993; Lauritsen and Ewald, 2001; Rutter, 2002; Weinberger, 2005). The fact that parents of adults diagnosed with autism appear more likely to cite biological factors may be related to their tendency to also make less blameworthy attributions than do parents of adults diagnosed with S/SA. That is, if they see the illness as biological, they may be less likely to attribute it to factors that are within the patient's personal control.
This study is limited by a small sample size. For example, effect size estimates indicated moderate differences between diagnostic groups on attributions, yet a test of mean differences did not reach statistical significance. This is likely a function of low power due to small sample sizes. Future studies with larger samples are needed to confirm whether attributional patterns do indeed differ between parents of adults diagnosed with autism versus parents of those diagnosed with S/SA. Secondly, our hypotheses were partially based on differences in age of onset between autism and S/SA; however, information on age of onset was not available in the S/SA sample. Future research should directly measure and compare age of onset in samples of patients diagnosed with autism and S/SA and determine whether age of onset predicts levels of criticism and attributions toward patients diagnosed with these disorders.

References
example, effect size gnostic groups on h statistical signifi-
mall sample sizes. n whether attribu-
ts diagnosed with ndly, our hypothe-
tween autism and aible in the S/SA
pare age of onset 3A and determine
tributions toward

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