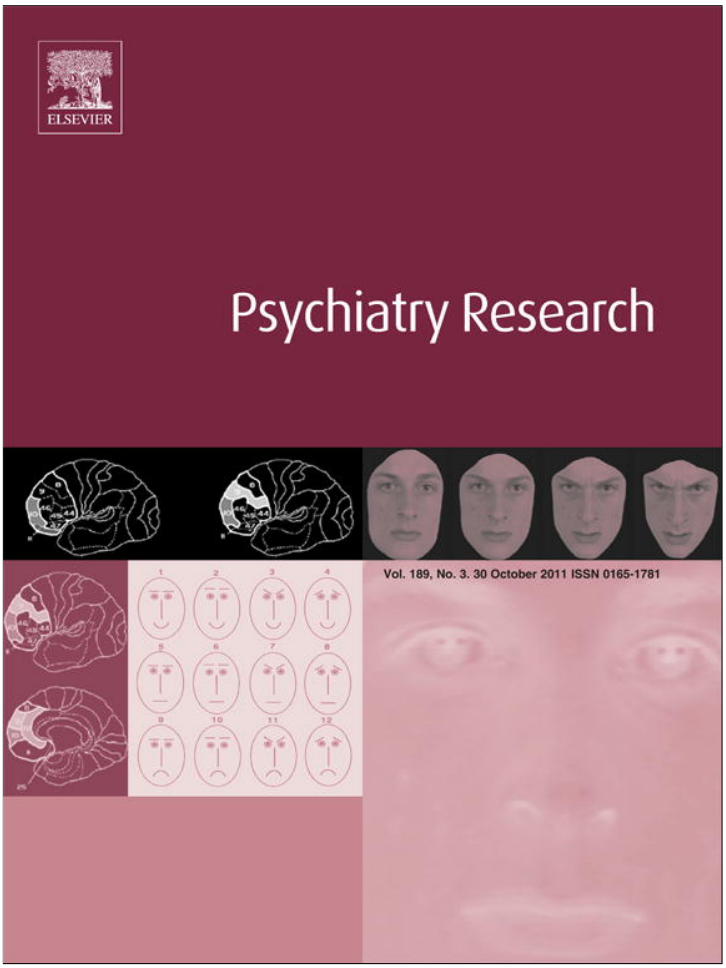

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Expressed emotion in first-episode schizophrenia and in ultra high-risk patients: Results from the Programma2000 (Milan, Italy)☆,☆☆

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ABSTRACT

Expressed emotion (EE) was examined in a large sample of families of patients with either first-episode psychosis (FEP) within the schizophrenia spectrum, or who met the criteria for ultra high-risk (UHR) of psychosis. The aim of our study was to determine the patterns and relationship of EE with the duration of untreated illness (DUI) or of untreated psychosis (DUP), as well as with illness severity. The sample used in our study included 77 FEP and 66 UHR families. The Camberwell Family Interview was used to assess EE. In both samples, about one-third of patients' families were classified as high EE, with emotional over-involvement (EOI) being the most frequent reason for a family to be classified as high EE. In FEP, higher EE correlated with longer DUI, and higher paternal EOI with longer DUP. DUI, however, was not found to correlate to EE in UHR patients. Severity of illness at the initial assessment did not relate to EE in either FEP or UHR families. Families of FEP and UHR patients were not found to differ in terms of the prevalence of a high EE rating, or of any of its subcomponents. The results of this study only partially support the hypothesis that high EE develops as a reaction to patient status. Patients from families with high EE could possibly benefit from interventions that are targeted at improving their resilience when dealing with problematic family environments.

1. Introduction

Since the publication of earlier studies by Brown and co-workers (1962, 1972), family factors have been thought to play an important role in the psychotic relapse in schizophrenia. The concept of expressed emotion (EE) was developed to describe the emotional environment and the attitude of caregivers towards an affected relative, by incorporating the key aspects of negative interpersonal relationships (Vaughn, 1989; Kuipers, 1992). The Camberwell Family Interview (CFI) is the standard reference for this type of study (Vaughn and Leff, 1976b) and is conducted with a member of the patient's family (without the patient present) and generally lasts 1–2 h. The CFI measures the amount of critical comments (CCs), hostility (H) or emotional over-involvement (EOI) expressed by a close relative when talking about a mentally or physically ill family member (Brown et al., 1972; Vaughn and Leff, 1976a). CCs express dislike or disapproval of the patient's behaviour; H remarks reflect disapproval or rejection with a more negative attitude towards the patient; and EOI includes an exaggerated or overprotective attitude towards the patient, as reflected by the intrusive style of the relationship with the patient and evident emotional distress shown during the course of the interview. Warm and positive remarks about the patient are noted as well. High EE, as measured with the CFI, consistently predicts the risk of relapse for patients within 9 months of the interview (Bebbington and Kuipers, 1994). A meta-analysis of 27 studies on EE in patients diagnosed with schizophrenia (Butzlaff and Hooley, 1998) found a twofold risk of relapse in patients from high-EE families compared with low-EE family environments, with an effect size of $r = 0.31$, which is medium level according to conventional criteria (Kraemer and Kupfer, 2006).

A more rapid measure of EE is obtained with the Five Minute Speech Sample (FMSS) (Magaña et al., 1986), based on a short speech delivered by a relative about the patient. However, some studies found the FMSS to underestimate the prevalence of high-EE families (e.g., Weisman de Mamani et al., 2007), and less able than the CFI to

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predict outcome for serious mental illness (see Hooley and Parker, 2006, for further information).

Most studies on EE were carried out in families in which a relative had been recently hospitalised; therefore, it is safe to conclude that EE rated during a crisis is predictive of relapse at follow-up. Studies that explored the role of EE measured during remission failed to find a statistical link between high EE and the risk of relapse over a 12-month interval (McCreadie and Phillips, 1988; King and Dixon, 1999) or 18-month interval (King and Dixon, 1999).

High EE can precipitate relapse by acting as a stressful factor on vulnerable subjects (Nuechterlein and Dawson, 1984), and neurophysiological measures proved that high EE acts as a stressful challenge on the patient (Hooley, 2007 for review). However, some symptoms of the disorder can engender criticism, hostility or EOI in relatives, thus explaining the links with relapse in an indirect or actually reverse way. Overall, there is evidence that EE levels can change over time, with more CCs and EOI in stressful periods of symptom reactivation and lower levels during periods of clinical improvement (Patterson et al., 2000; Hooley, 2007). Some studies found that CCs and H increase over time in families of patients with psychosis (Hooley and Richters, 1995), whereas, at the very beginning of first-episode psychosis (FEP), EOI tends to prevail (Stirling et al., 1991; Patterson et al., 2000), possibly suggesting that EE has a reactive component.

1.1. The role of culture in EE measurement and effects

Culture defines the range of behaviours open to criticism. In some ethnic groups, EOI may be more culturally acceptable than criticism or H, and indeed in studies carried out in Japan (Tanaka et al., 1995) EOI – and not CCs – was predictive of relapse, whereas in Egypt no link was found between EOI and relapse (Kamal, 1995).

In general, EE was found to be a strong predictor of the course of illness in a variety of different countries and ethnic groups, although prevalence of high-EE families tended to be lower in non-Western countries than in Western countries (Bhugra and McKenzie, 2003; Kymalainen and Weisman de Mamani, 2008), whereas in Western countries EE was lower in Italy and Spain than in the United States or England (Kavanagh, 1992).

Jenkins and Karno (1992) suggest that EE may actually be a measure of the meaning that relatives attribute to behaviours, which are perceived as violating culturally endorsed social norms. White Anglo-Saxons place primary emphasis on independence; some symptoms of schizophrenia might violate family members' expectations of autonomy and independence (Jenkins and Karno, 1992).

Other cultural groups put greater emphasis on interdependence and a sense of connectedness with the others than on the characteristics that distinguish the self from the others (Singelis, 1994). Because of the strong value attached to family unity and to the sense of interconnectedness, family-oriented people would be less likely to blame their relatives for symptoms of illness to preserve family cohesion, resulting in lower EE (Weisman, 2005).

1.2. The role of EE in the course of schizophrenia

In schizophrenia, the first years of treatment define a critical period and are predictive of long-term outcome. Any relapse during this critical period increases the risk of further relapse and chronic course (Harrison et al., 2001). As there is some evidence that EE is related to outcome, and particularly to the risk of relapse, independently of other outcome predictors (Phillips et al., 2007a), early assessment of EE is mandatory to identify patients in need of special attention with respect to family climate.

Measurement of EE in patients with FEP within the schizophrenia spectrum would also make it possible to test the hypothesis that high levels of EE result from a reaction to the disorder rather than being a stressful risk factor for relapse (McFarlane and Cook, 2007). Criticism and H would be angry attempts to force the patient into a more normative style of behaviour, whereas EOI would mark awareness of the disorder's worsening and reflect concern about this (Patterson et al., 2000; Hooley and Campbell, 2002). In a study on young FEP patients, mothers were found to respond to more severe symptoms with more CCs, particularly in the case of negative symptoms and uncooperativeness (King, 2000). Conversely, in patients with prodromal symptoms, EOI was found to prevail (O'Brien et al., 2006). In O'Brien's study on adolescents, the EOI rating was associated to the mother taking her son to a doctor and/or to hospital to assure compliance with treatment, or to spending a lot of time with an affected daughter (O'Brien et al., 2006, Table 1, p. 272). The authors proposed that parental EOI might be appropriate in adolescence, as a means to help adolescents successfully navigate across peer groups and often challenging school environments.

A key component of first-episode schizophrenia is the time that elapses between the onset of symptoms and the beginning of therapy. The duration of untreated illness (DUI) is the time that elapses from the onset of an illness to the first adequate treatment; the duration of untreated psychosis (DUP) is the time interval between the onset of symptoms of psychosis and the first effective treatment. Families often misinterpret or underestimate the impact of social withdrawal and of enduring anxiety and/or depression, thus leading to a long DUI. However, overt symptoms of psychosis, such as hallucinations, delusions or bizarre behaviour, can start abruptly, and DUP may be short, particularly when negative episodes occur, such as law infringement or a suicide attempt (Preti et al., 2009). Longer DUI and DUP proved predictive of poor outcome in patients with psychosis (Wyatt et al., 1998; McGlashan, 1999; Perkins et al., 2005). Conversely, early intervention treatment programmes aimed at reducing DUI and DUP were effective in improving outcome at 1–2 years (Killackey and Yung, 2007); however, any benefit seems to become diluted over longer follow-ups (Bertelsen et al., 2008; Gafoor et al., 2010).

1.3. EE in FEP and Ultra high-risk (UHR) samples

Overall, there is some evidence that DUI or DUP is related to high EE (MacMillan et al., 1986; Stirling et al., 1991). Concerning the relationship with severity of illness, data indicate a weak link (Nuechterlein et al., 1992; Huguelet et al., 1995; McNab et al., 2007; Onwumere et al., 2009), or no links at all (Linszen et al., 1997; Heikkilä et al., 2002; Raune et al., 2004). Moreover, the magnitude of the association between high EE and relapse is lower in first-episode patient samples than in chronic patients (Butzlaff and Hooley, 1998).

Very few data are available on UHR patients, a heterogeneous group of people in the prodromal phase of psychosis, formed by three clusters of individuals: young people with attenuated positive symptoms, as revealed by dedicated interviews; people with diagnosable transient psychotic symptoms, not stabilised in a syndrome yet; and a third category of people with a genetic risk (having a close kin diagnosed with psychosis), or meeting the criteria for Schizotypal Personality Disorder, who show symptoms of social role deterioration (Yung et al., 2004; de Koning et al., 2009). Some evidence does exist on the effectiveness of early intervention programmes dedicated to these patients in decreasing their risk of transition to full-blown psychosis, but the long-term benefit of these protocols is still to be proved (Preti and Cella, 2010).

EE has rarely been studied in UHR patients. McFarlane and Cook (2007) found lower levels of EE in patients in the prodromal phase of psychosis than in patients with full-blown psychosis. Furthermore, they found that the longer the DUI, the higher the levels of EE in the parents of patients in the prodromal phase of psychosis. McFarlane and Cook (2007) did not use CFI in their assessment.

Using the CFI in a sample of 26 UHR adolescent patients, O'Brien et al. (2006) found that higher levels of EOI , positive remarks and

warmth by the caregiver were associated with a reduction in symptoms and enhanced social functioning approximately 3 months after the start of a clinical research programme. In a study on 63 UHR patients, Schlosser et al. (2010) found that EOI interacted with warmth in predicting better functioning over time, whereas a combination of CCs, H and EOI resulting in high EE was related to a worsening of positive symptoms in these young patients.

Data are scarce on the individual contributions of mothers and fathers to family climate, which could be of interest as developmental literature suggests that child maturation is influenced by the mother or father in different ways. For example, King and Dixon (1999) found that the relapse rate in their sample of young patients with schizophrenia was best predicted by CCs from fathers and by EOI in mothers. Indeed, fathers might be more likely to support the normative values of the family and possibly more likely to express their concern by CCs. Mothers, on the other hand, might be more alarmed by their child's distress and be more willing to communicate EOI. O'Brien et al. (2006) already noted that "the evaluation of only one key relative for each patient allows significant contributions to the family atmosphere to remain unaccounted for" (p. 274).

This study set out to investigate the levels and characteristics of EE in relatives of FEP and UHR patients among those enrolled in the Programma2000, an early intervention programme implemented in Milan (Italy) in 1999 (Cocchi et al., 2008; Meneghelli et al., 2010). We tested the hypothesis that EE is a reaction to the patient's behaviour, and greater severity of illness, as measured on validated scales and/or longer DUI or DUP, is expected to be related to higher levels of EE in the relatives of patients. Moreover, if EE is a reaction to the patient's symptoms, one would expect EOI to prevail over CCs in patients assessed at the very beginning of the course of their disorder, with EOI resulting from the concerns of key relatives about the health status of their kin. Finally, the parents of FEP patients were expected to report greater EOI and CCs than the parents of UHR patients. As Italians highly value family cohesion and interconnectedness (Putnam, 1993), a low prevalence of high EE is expected in the relatives of patients when compared with the prevalence observed in Anglo-Saxon studies.

2. Methods

Data were collected during the routine assessment of patients participating in the Programma2000. The institutional review board approved the study, and all patients and interviewed parents gave their informed consent. The sample included 168 patients from a catchment area catering to approximately 200 000 inhabitants.

Patients were included in Programma2000 when they were between 17 and 30 years of age, and were referred to Programma2000 after a first contact with any public mental health service of the catchment area for an FEP (i.e., their DUP had to be lower than 24 months), or suspicion of psychosis. Both professional referrals and self-referrals were accepted.

All patients who were referred to Programma2000 underwent a comprehensive, multidimensional assessment (Cocchi et al., 2008; Fusar-Poli et al., 2009). For the purpose of this study, the following standardised instruments were considered: (1) a socio-demographic form; (2) the Early Recognition Inventory Retrospective Assessment of Symptoms (ERIraos-CL) (Häfner et al., 1992), a 17-item screening checklist intended to select the subjects requiring more in-depth assessment, with graded scores according to the presence of the investigated item (no, doubtful or present), assigning 0-1-2 to items 1–13, 0-2-4 to items 14 (changes in perceptions) and 15 (interference in thought) and 0-3-6 to items 16 (paranoid ideation) and 17 (hallucinations); (3) the Health of the Nation Outcome Scale (HoNOS) (Wing et al., 1998), used to assess psychopathology and disability, which includes 12 5-point (0–4) items to evaluate clinical and social functioning within the past 2 weeks; (4) the 24-item Brief Psychiatric Rating Scale (BPRS) (Overall and Gorham, 1962; Roncone et al., 1999), to assess general psychopathology across 24 domains on a Likert 1–7 point scale; and (5) the Global Assessment of Functioning (GAF), designed to evaluate patient's functioning on a 0–100 point scale in the week preceding the index assessment period (Moos et al., 2000).

Exposure to traumatic events, history of suicide attempts and history of substance abuse were also considered as indicators of illness severity and also because these events/conditions are likely to raise concern in the family and ultimately have an impact on EE. Exposure to traumatic events and history of substance abuse were investigated via direct interviews with the patient and at least one other close informant. Traumatic events were considered to be any event within the last 12 months that could potentially cause physical or psychological harm to the patient, for example, victim of a violent act, a road traffic accident, an episode of public humiliation, and so on. Substance abuse was investigated by asking whether the patient had received any diagnosis of substance abuse in the last 24 months, or habitually consumed a drug from a list including alcohol, tobacco, cannabis, cocaine, heroin/opiates, amphetamine and its derivatives, hallucinogens and a residual class of 'others'. Threshold for abuse was defined according to the International Classification of Diseases-10 (ICD-10) (WHO, 1992), that is, the inability to stop use of the drug despite awareness of a health risk. History of suicide attempt was investigated by considering any act of purposefully inflicted self-harm with expressed suicidal intent, that is, the wish to die, as reported by the patient at the assessment and/or by a family member consulted as a key informant (no discrepancy), as in Preti et al., 2009.

DUI and DUP were based on the interview of a close relative (generally a parent with young patients), and were both measured as a function of time elapsed from the onset of key symptoms (anxiety, depression or social withdrawal for DUI; hallucinations, delusions or bizarre behaviour for DUP) to the start of treatment (pharmacotherapy or psychotherapy) prescribed by a psychiatrist. DUP was measured in days, DUI in months.

Assessors were instructed to reach a good-to-acceptable concordance on the scales they used. In this study, the intraclass correlation coefficient (ICC) was 0.71 (95% confidence interval (CI): 0.62–0.81) for the ERIraos-CL; 0.83 (0.77–0.88) for the BPRS; and 0.72 (0.62–0.79) for the HoNOS in FEP patients.

In UHR patients, ICC was 0.69 (0.61–0.77) for the ERIraos-CL; 0.79 (0.71–0.85) for the BPRS; and 0.62 (0.53–0.66) for the HoNOS.

As GAF produces a global summary score, no ICC could be calculated.

2.1. Inclusion and exclusion criteria

The main criterion for the inclusion of an FEP was a diagnosis of schizophrenia or related syndromes (F20-29 in ICD-10) according to both ICD-10 (WHO, 1992) and Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV) criteria (APA, 1994). A past or present diagnosis of psychosis in the spectrum of schizophrenia was a mandatory exclusion criterion for UHR diagnosis. Referred UHR patients were initially screened on the ERIraos-CL, and, to be enrolled in treatment, UHR patients had to have scored ≥12 on the ERIraos-CL, which is the threshold score that most accurately defines patients at risk of transition in the German Schizophrenia Network study (Maurer et al., 2006a, 2006b). UHR patients scoring higher than 12 on the ERIraos-CL were included in treatment when they met the criteria of the Personal Assessment and Crisis Evaluation (PACE) Clinic in Melbourne, the so-called Melbourne criteria for the identification of young people at incipient or 'ultra high risk' of developing a psychotic disorder (Yung et al., 1996, 2004; Phillips et al., 2007b), that is, they had: (1) an attenuated positive prodromal syndrome; or (2) a brief, limited and intermittent psychotic syndrome; or (3) had familial genetic risk or were diagnosed with the Schizotypal Personality Disorder and manifested evidence of deterioration in functioning in the last year as measured by a decline ≥30% upon GAF scores.

In both FEP and UHR patients, affective psychosis (bipolar disorder or unipolar disorder with psychotic features) was an exclusion criterion, as well as a co-morbid persistent substance-use dependent disorder, whereas substance use/abuse without dependence was not.

2.2. Measures of EE

The CFI was used to assess EE (Vaughn and Leff, 1976b). Classification of EE on the CFI is derived from five scales. Three scales involve negative attitudes: CCs, on a frequency count; H (0, 1, 2 or 3); and EOI (0–5). Two scales deal with positive attitudes: positive remarks, on a frequency count; and warmth (0–5). Key relatives were rated high on EE if they made six or more critical comments, revealed any hostility or scored 3 or higher on EOI . In the case of unmarried people, the key relative is often a parent, and in this study, whenever possible, both parents were interviewed. Family was rated as high EE, if one of the parents had high EE. However, in a fraction of cases only one parent was interviewed, whereas the other parent refused due to lack of time or because he/she was not willing. In this case, an EE rating was based on the single interviewed parent. In our study, only one patient was married, and, in this case, the spouse was interviewed.

Evaluators were trained in the assessment of EE by Christine Vaughn (Expressed Emotion Training Course, University of London), reaching levels of acceptable reliability on the three negative attitudes scale (>0.80), with a coefficient ≥0.80 for the overall EE rating.

We had no measure of the frequency of contact between the patient and involved key informant(s). The living situation (alone, with the family of origin or with other relatives or friends) was used as a proxy of the frequency of contact, with those living with the family of origin having more prolonged contact with their parents.

2.3. Statistical analyses

Data were analysed with the Statistical Package for the Social Science (SPSS) for Windows (Chicago, Illinois 60606, USA), version 13. All tests were two-tailed; the threshold of significance was set at $P=0.05$. Categorical data were analysed in inter-group comparisons with χ^2, or Fisher's exact test, when appropriate ($n<5$ in any cell in binary comparison). Student's t-test was used to assess age differences; non-parametric statistics were used to compare ordinal measures of psychopathology or

social functioning, due to non-normality (Kolmogorov–Smirnov, with Lilliefors significance correction, $P<0.05$ in all explorations). The Mann–Whitney test was used to compare ordinal variables. Spearman's rho correlation coefficients were used to examine associations between two variables.

3. Results

Data on EE were available at assessment for 143 patients out of 168 enrolled in treatment. The families of 25 patients (10 FEP and 15 UHR) were not evaluated due to organisational problems ($n=11$) or refusal ($n=14$). In both the FEP and UHR groups, the patients who had their families evaluated for EE at assessment did not differ from those whose families were not evaluated for EE at assessment on the following measures: DUI, DUP (when needed), BPRS, HoNOS or GAF (data available upon request).

3.1. EE in FEP patients

The sample used in this study included the families of 77 FEP patients. Among all FEP patients, males prevailed ($n=63$; 81.8% of the total sample); age at assessment was 22.4 (S.D. = 3.9) years; about one-half had a high school diploma ($n=40$); and none was married (Table 1).

About one-third ($n=27$, 35.1%) of families of FEP patients were classified as high EE, mostly because of EOI ($n=22$, 81.4%); one family was rated as exclusively H (3.7%); and four were rated as CC (14.8%).

EE did not correlate with living situation or any other socio-demographic variable.

DUI was positively related to high-EE (Spearman's rho = 0.241, $P<0.05$). There was also a trend for DUP to be positively related to high EE, although not significant (rho = 0.138, $P>0.05$). However, paternal EOI was positively related to DUP (rho = 0.43, $P<0.01$).

Severity of the illness, as measured on the ERIraos-CL, BPRS or HoNOS was not related to EE, nor was the level of functioning related to the GAF. Furthermore, no statistically significant differences emerged concerning EE due to traumatic events, suicide attempts or substance abuse.

In FEP patients, mothers ($n=64$, 83.1%) were slightly more likely than fathers ($n=49$, 63.6%) to be the key informant, but the difference was not statistically significant.

In 41 cases, both parents were interviewed separately. On average, fathers and mothers both reported more EOI and positive remarks than critical, hostile or warm comments (Fig. 1(a)).

In the 41 cases where both parents were interviewed, paternal and maternal EOI (Spearman's rho = 0.431, $P<0.01$), positive remarks (rho = 0.678, $P<0.001$) and warmth (rho = 0.354, $P<0.05$) were positively related to each other. On the other hand, paternal and maternal CCs and H were not related, in all likelihood because of their rarity.

When both parents were interviewed ($n=41$), eight couples were rated as high EE. In three cases, only the father was rated as high EE, whereas in eight cases only the mother was rated as high EE. Therefore, the mother was more likely to contribute to a high EE rating than the father.

3.2. EE in UHR patients

The sample being studied included the families of 66 UHR patients: 47 were males (71.2%), age at assessment was 21.8 (3.6) years, 34 had a high school diploma and all but one were unmarried (Table 2).

About one-third ($n=22$, 33.3%) of families of UHR were classified as high EE, principally because of EOI ($n=19$, 86.3%); one family was rated as exclusively H (4.5%); and two were rated as CC (9.1%).

UHR patients from high-EE families were, on average, younger than the patients from low-EE families: $t(64)=2.078$, $P<0.05$. Patients with high EE were marginally more likely to live with their parents, thus having a higher frequency of contact with them, but the difference was not statistically significant (90.9% vs. 77.3%).

DUI was not related to EE (Spearman's rho = −0.08, $P>0.10$).

Severity of the illness, as measured on the ERIraos-CL, BPRS or HoNOS, was not related to EE, nor was the level of functioning on the

Table 1
Baseline clinical characteristics of FRP patients enrolled in Programma2000, whose families underwent CFI assessment (data refer to individuals in treatment up to March 2009) and differences between patients from low EE families and those from high EE families by demographic, clinical, and family variables – All data *N* (%) or mean (Standard deviation).

Variables of interest	Total sample	Low EE families	High EE families	Statistics
	$N=77$	$N=50$	$N=27$	
Age at entry	22.4 (3.9)	22.5 (4.1)	22.2 (3.6)	$t=0.33$, df = 75, $P>0.10$
Gender (*N*, %)				
Males	63 (81.8%)	38 (76.0%)	25 (92.6%)	$\chi^2=2.22$, $P>0.10$
Females	14 (18.2%)	12 (24.0%)	2 (7.4%)	
Education				
High school diploma or higher	40 (51.9%)	26 (52.0%)	14 (51.9%)	$\chi^2=0.00$, $P>0.10$
Lower than high school diploma	37 (48.1%)	24 (48.0%)	13 (48.1%)	
Marital status				
Single	77 (100%)	50 (100%)	27 (100%)	–
Living situation				
Alone	5 (6.5%)	2 (4.0%)	3 (11.1%)	$\chi^2=2.02$, $P>0.10$
With the family of origin	63 (81.8%)	41 (82.0%)	22 (81.5%)	
With other relatives or friends	9 (11.7%)	7 (14.0%)	2 (7.4%)	
Family psychiatric history				
Yes	53 (68.8%)	35 (70.0%)	18 (66.7%)	$\chi^2=0.01$, $P>0.10$
None	24 (31.2%)	15 (30.0%)	9 (33.3%)	
Duration of untreated psychosis (days)	167.3 (214.6)	154.2 (210.4)	190.4 (223.9)	M-W = 541.0, $P>0.10$
Duration of untreated illness (months)	27.8 (20.4)	24.2 (19.6)	34.0 (20.5)	M-W = 451.5, $P>0.10$
Exposure to traumatic events	9 (11.7%)	6 (12.0%)	3 (11.1%)	Fisher = 1.00, $P>0.10$
History of suicide attempts	6 (7.8%)	4 (8.0%)	2 (7.4%)	Fisher = 1.00, $P>0.10$
History of substance abuse	8 (10.4%)	5 (10.0%)	3 (11.1%)	Fisher = 1.00, $P>0.10$
Clinical characteristics at entry				
ERIraos-CL	26.4 (8.2)*	26.7 (7.6)	25.5 (9.9)	M-W = 426.0, $P>0.10$
HoNOS, total score	14.8 (6.1)	14.3 (6.1)	15.7 (6.0)	M-W = 610.0, $P>0.10$
BPRS, total score	52.6 (15.9)	51.2 (15.3)	55.3 (16.9)	M-W = 576.5, $P>0.10$
Functional level at entry				
GAF	43.5 (9.3)	43.8 (10.6)	42.8 (6.5)	M-W = 657.0, $P>0.10$

* Only 68 subjects underwent ERIraos-CL evaluation.

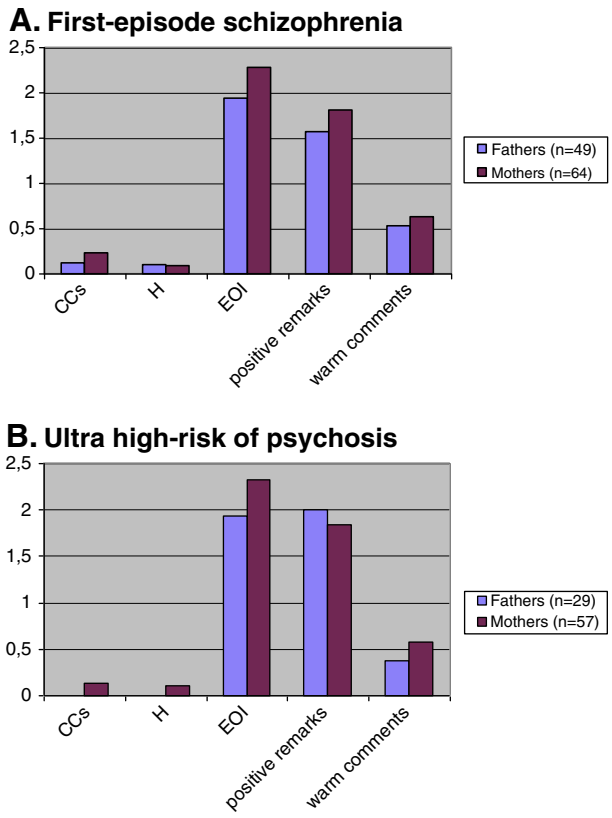

Fig. 1. Distribution of ratings by subcomponent of the Camberwell Family Interview in First-episode (A) and ultra high-risk (B) patients.CCs = critical comments; H = hostility; EOI = emotional over-involvement.

GAF. History of traumatic events, suicide attempts or substance abuse in UHR patients was not related to EE.

For UHR patients, mothers ($n=57$, 86.3%) were more likely than fathers ($n=29$, 43.9%) to be the key informant. In 24 cases, both parents were interviewed separately.

In the families of UHR, fathers and mothers both reported more EOI and positive remarks than critical, hostile or warm comments (Fig. 1(b)).

In the 24 cases where both parents were interviewed, paternal and maternal EOI (Spearman's rho = 0.587, $P<0.01$), positive remarks (rho = 0.750, $P<0.001$) and warmth (rho = 0.651, $P<0.01$) were positively related to each other. As there were no paternal CCs and H, no relationship could be calculated among these subcomponents of EE.

When both parents were interviewed ($n=24$), six couples were rated as high EE; in seven cases, only the mother was rated as high EE. In the families of UHR patients, the mother was more likely to contribute to a high EE rating than the father.

3.3. Comparison between FEP and UHR patients on EE

As expected on the basis of classification, FEP patients proved to be more severe than UHR patients (Mann–Whitney-*U* test $P<0.01$) in all comparisons on measures of psychopathology or social functioning. However, DUI did not differ between FEP and UHR patients: 27.8 ± 20.4 versus 30.1 ± 21.5 (Mann–Whitney $U=2148.5$, $P>0.10$).

FEP patients were as likely as UHR patients to be rated as high EE: 27 (35.1%) versus 22 (33.3%): $\chi^2_{(1)}=0.002$, $P>0.10$.

FEP and UHR patients did not differ regarding the prevalence of high EE because of EOI: 22 (95.7%) versus 19 (95.0%), $\chi^2_{(1)}=0.00$, $P>0.10$.

FEP and UHR patients did not differ regarding the role of the father or the mother in high EE. The father had a high EE rating in 13 FEP families (26.5%) and in six UHR families (20.7%): $\chi^2_{(1)}=0.095$,

Table 2
Baseline clinical characteristics of UHR patients enrolled in Programma2000, whose families underwent CFI assessment (data refer to individuals in treatment up to March 2009) and differences between patients from low EE families and patients from high EE families by demographic, clinical, and family variables – All data *N* (%) or mean (Standard deviation).

Variables of interest	Total sample	Low EE families	High EE families	Statistics
	$N=66$	$N=44$	$N=22$	
Age at entry	21.8 (3.6)	22.4 (3.7)	20.5 (2.9)	$t=2.07$, df = 64, $P<0.05$
Gender (*N*, %)				
Males	47 (71.2%)	33 (75.0%)	14 (63.6%)	$\chi^2=0.45$, $P>0.10$
Females	19 (28.8%)	11 (25.0%)	8 (36.4%)	
Education				
High school diploma or higher	34 (51.5%)	22 (50.0%)	12 (54.5%)	$\chi^2=0.08$, $P>0.10$
Lower than high school diploma	32 (48.5%)	22 (50.0%)	10 (45.5%)	
Marital status				
Single	65 (98.4%)	43 (97.7%)	22 (100%)	–
Living situation				
Alone	5 (7.6%)	4 (9.1%)	1 (4.5%)	$\chi^2=1.87$, $P>0.10$
With the family of origin	54 (81.8%)	34 (77.3%)	20 (90.9%)	
With other relatives or friends	7 (10.6%)	6 (13.6%)	1 (4.5%)	
Family psychiatric history				
Yes	42 (63.6%)	29 (65.9%)	13 (59.1%)	$\chi^2=0.07$, $P>0.10$
None	24 (36.4%)	15 (34.1%)	9 (40.9%)	
Duration of untreated psychosis (days)	–	–	–	–
Duration of untreated illness (months)	30.1 (21.5)	31.6 (22.1)	27.0 (20.5)	M-W = 375.5, $P>0.10$
Exposure to traumatic events	6 (9.1%)	3 (6.8%)	3 (13.6%)	Fisher = 0.39, $P>0.10$
History of suicide attempts	6 (9.1%)	5 (11.4%)	1 (4.5%)	Fisher = 0.65, $P>0.10$
History of substance abuse	5 (7.6%)	3 (6.8%)	2 (9.1%)	Fisher = 1.00, $P>0.10$
Clinical characteristics at entry				
ERIraos-CL	17.7 (7.5)	18.0 (7.4)	17.2 (7.7)	M-W = 449.5, $P>0.10$
HoNOS, total score	13.0 (5.0)	12.9 (4.9)	13.1 (5.4)	M-W = 474.5, $P>0.10$
BPRS, total score	45.1 (11.9)	45.2 (12.0)	44.7 (12.0)	M-W = 473.5, $P>0.10$
Functional level at entry				
GAF	52.6 (10.4)	53.0 (9.3)	51.8 (12.7)	M-W = 422.0, $P>0.10$

$P>0.10$. The mother had a high EE rating in 22 FEP families (34.4%) and 22 UHR families (38.6%): $\chi^2_{(1)}=0.086$, $P>0.10$.

As for the subcomponents of EE, no statistically significant differences were found between FEP and UHR patients.

4. Discussion

The main finding of this study shows that the families of FEP and UHR patients have the same prevalence of high EE, mostly because of EOI. No link was found between EE and severity of illness or psychosocial functioning, as measured by GAF. In FEP, higher EE correlated with longer DUI, and higher paternal EOI with longer DUP; DUI was not related to high EE in UHR patients.

4.1. Comparability with past studies

The prevalence of high EE families in our sample was 35% among FEP patients, which is very similar to the prevalence found by Onwumere et al. (2009) in their sample of 67 relapsing patients with psychosis (36%). However, McNab et al. (2007) found a higher prevalence of high EE families (73.5%) in a sample of 40 FEP patients assessed in Australia, whereas Raune et al. (2004) found that 44% of families had high EE in their sample of 46 FEP patients assessed in London, UK, which is identical to the percentage found by Heikkilä et al. (2002) in their sample of FEP patients assessed in Finland. In these last two studies, patients on average were older than our sample (30 vs. 22 years), but Heikkilä et al. (2002) and Raune et al. (2004) also included in their samples patients with a mood disorder, which may reveal itself later than schizophrenia (Kessler et al., 2005; van Os and Kapur, 2009).

The prevalence of high EE was 33% of our UHR sample, which is consistent with past investigations (Hooley and Richters, 1995; Schlosser et al., 2010). The fact that the parents of patients meeting the criteria for the prodromal phase of a psychosis rarely express critical comments or other negative remarks is in line with past studies (McFarlane and Cook, 2007), although with some noteworthy exceptions. For example, O'Brien et al. (2006) found as many CCs as EOIs in their sample of 26 families of UHR patients (average age: 16.2 years) from Los Angeles (United States). Cultural differences related to expressing concern towards an ill relative and age differences among samples may partially explain these inconsistencies.

Indeed, this is the first study on EE in families of young people with first-episode schizophrenia or at ultra high-risk of psychosis, who attend an early intervention programme in Italy. Many studies on patients from early intervention programmes were done in Anglo-Saxon or Scandinavian countries; therefore, this study contributes to the cross-cultural investigation on the role of EE in early psychosis. Overall, our findings are consistent with other studies showing a lower prevalence of higher EE attitudes in Italy than in the United States or England (Kavanagh, 1992), although prevalence of high EE in the Italian families of UHR patients is more similar to the prevalence found in studies carried out in the United States (Schlosser et al., 2010). This could suggest that initial aspects of psychosis, as they may be inferred from prodromal symptoms, help convince some parents that their child is actually ill, and not just behaviourally or characterologically impaired. This raises an alarm that is more similar across cultures than the reaction to the functional consequences of full-blown psychosis, which is more influenced by the value attached to independence and personal achievement or to family cohesion and interconnectedness (Jenkins and Karno, 1992).

4.2. EE did not differ between FEP and UHR patients

In this study, FEP and UHR families did not differ as far as high EE was concerned, which is congruent with a lack of differences between FEP and UHR patients in measures of family burden (Wong et al., 2008). In the Wong et al., 2008 study, worry was an oft-reported reaction to patient status, mirroring the high frequency of EOI in our samples. Anger and displeasure, comparable to CC or H reactions, were rarely reported in that study. When reporting a higher prevalence of high EE in FEP families than in UHR families, McFarlane and Cook (2007) did not use the CFI, which makes it difficult to compare their study with present findings.

4.3. EE was not related to severity of symptoms in either FEP or UHR patients

No links between severity of illness and EE were found in either FEP or UHR families. Thus, EE might not be a reaction to the patient's status.

It must be taken into account that only a minority of families were classified as high EE and this was mostly due to EOI, which might be adaptive in the prodromal and early stages of psychosis (O'Brien et al., 2006; Schlosser et al., 2010). Based on the results of this study, one may infer that the onset of the prodromal symptoms of psychosis is perceived by close relatives as a matter of concern; however, once a certain limit is crossed, further worsening in illness severity does not cause stronger emotional reactions in the family, thus justifying lack of links to illness severity. This may depend upon the parents' belief that the symptoms of patients in their first episode are still reversible or controllable through therapy. When recurring episodes show that the disorder responds poorly to therapy, further changes in EE levels do occur, indicating greater frustration and anger, thus producing higher levels of EE in the families of chronic patients (Hooley, 2007).

In past studies, attribution to controllability of symptoms was found to influence the mediation of links between EE and the course of schizophrenia (Hooley and Campbell, 2002; Hooley, 2007). The central tenet of this hypothesis is that high-EE and low-EE relatives have different beliefs about the nature and causes of the patient's difficulties and problems. Even when high-EE families accept that the patient has a severe disorder, they maintain higher expectations about the patient, as they tend to believe that something can be done to exert control over symptoms. Empirical testing of this hypothesis yields evidence of its validity (Barrowclough and Hooley, 2003). Our study did not, however, take controllability of symptoms into consideration, and no definitive statement can be made at this time.

4.4. EE was related to DUI in FEP but not in UHR patients

In this study, longer DUI was related to high EE in FEP patients. Past studies also reported a positive link between DUI and parental levels of EE in psychosis (Parker and Johnson, 1987; Stirling et al., 1991; McFarlane and Cook, 2007). In the DUI sample, the longer the duration of prodromal symptoms, the higher the parents' concern about the status of their child.

However, DUI was not related to high EE rating in the UHR sample. The UHR sample in this study was, on average, older than in other studies (e.g., Willhite et al., 2008). In Italy, adolescents younger than 17 years are cared for through specific dedicated services, and Programma2000 can only accept referrals for people who are 17 years of age or older. Therefore, our analysis could not take into consideration the relationship between DUI and high EE that other studies had found with younger samples (e.g., McFarlane and Cook, 2007). Indeed, in that study, the youngest UHR patients were more likely to provoke high EE in their parents, a finding that may have occurred by chance. However, in this study, the most reported subcomponent of EE was EOI, which is perfectly in line with other studies on patients with early psychosis (Stirling et al., 1991; Patterson et al., 2000). Parents might be more prone to express EOI with adolescents who are showing early signs of psychosis than with young adults, who are expected to be more independent. It was proposed that, in early psychosis, EOI was not to be considered as a negative side of family members' reactions. In fact, when young people in particular are involved, EOI might serve as a testimony of the family's concern about their well-being and commitment to deal with the symptoms and their consequences (O'Brien et al., 2006).

4.5. Study limitations and strengths

This study has some shortcomings. For example, sample size was not large enough to allow for multivariate analyses of data. The design of our study was cross-sectional, thus preventing any inference on patient status over time. For the sake of completeness, a large amount of statistical comparisons was done, which might have led to some chance findings, as often happens when multiple testing is performed (Katki, 2008).

Positive remarks and warmth were less often reported in this study than in past studies. In this study, average warmth was 0.5 versus 2.82 in a mixed sample of Mexican- and Anglo-American families (López et al., 2009), or 2.80 in a Canadian sample (King and Dixon, 1999). It could be inferred that Italian families are less willing to disclose emotional matters to strangers.

Finally, the prevalence of male over female patients in the sample, as often happens with samples of FEP patients, may reduce the possibility of generalising results.

Nevertheless, the quality of data was good, and included detailed assessments of patients from both groups. The use of CFI in this study represents an advantage over studies that adopt other measures, which are less able to detect high-EE families (Hooley and Parker, 2006).

Interrelation between maternal and paternal EOI, positive remarks and warmth assessed when both parents were interviewed ensures consistency with the measurement of EE in this study. However, there was not a complete overlap between parents concerning the chance of high EE rating, which means that the widely adopted strategy of using one single key informant might overshadow real prevalence.

5. Conclusions

The results of this study only partially support the hypothesis that high EE develops as a reaction to patient status: there is, therefore, a component intrinsic to family functioning involved in the linkage between EE and the patient status, in all likelihood as a consequence of the relatives' beliefs about the controllability of the patient's behaviour (Barrowclough and Hooley, 2003). Unfortunately, attribution to controllability of symptoms was not investigated in this study.

In this sample of patients with a high risk of psychosis, or in the early first-episode phase of psychosis, CCs were rarely reported by either the mothers or fathers of the patients, which is at odds with a high prevalence of criticism, hostility and rejection consistently reported over the past 40 years in samples of chronically ill patients (Bebbington and Kuipers, 1994; Hooley, 2007). It might be inferred that a lack of hope that arises from the continuous cycle of relapse and recurring episodes could, over time, translate into less helpful reactions to the disorder on part of the family. Long-term follow-up studies will need to include testing of this hypothesis.

The involvement of families is recommended by current guidelines to improve treatment effectiveness (Lehman et al., 2004; Royal Australian and New Zealand College of Psychiatrists, 2005; De Masi et al., 2008). Preliminary results of family interventions, as implemented in the Programma2000, show that treatment favours the transition of high-EE families towards a low-EE state (Alpi et al., 2008), although this may simply be an effect of patients' remission, which would result in a relief of relatives' worries about the illness, and a subsequent lowering of EE levels. Nevertheless, patients from high-EE families might benefit from interventions aimed at improving their resilience to problematic family environment.

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