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The French version of the Family Attitude Scale: Psychometric properties and relation of attitudes to the respondent's psychiatric status

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Abstract

The Family Attitude Scale (FAS) is a self-report measure of critical or hostile attitudes and behaviors towards another family member, and demonstrates an ability to predict relapse in psychoses. Data are not currently available on a French version of the scale. The present study developed a French version of the FAS, used a large general population sample to test its internal structure, criterion validity and relationships with the respondents' symptoms and psychiatric diagnoses, and examined the reciprocity of FAS ratings by respondents and their partners. A total of 2072 adults from an urban population undertook a diagnostic interview and completed self-report measures, including an FAS about their partner. A subset of participants had partners who also completed the FAS. Confirmatory factor analyses revealed an excellent fit by a single-factor model, and the FAS demonstrated a strong association with dyadic adjustment. FAS scores of respondents were affected by their anxiety levels and mood, alcohol and anxiety diagnoses, and moderate reciprocity of attitudes and behaviors between the partners was seen. The French version of the FAS has similarly strong psychometric properties to the original English version. Future research should assess the ability of the French FAS to predict relapse of psychiatric disorders.

Keywords: Confirmatory factor analysis; criterion validity; reliability; French version; mean scores; psychiatric disorders; dyadic partners.

1. Introduction

"Expressed emotion" (EE) refers to communication of criticism, hostility or rejection about someone with a psychiatric illness, or reports of emotional over-involvement with them. It originated in the 1950s following observation of interactions between inpatients with schizophrenia and their families (Brown et al., 1958; Brown et al., 1962). This theory is conceptually akin to other contemporaneous theories on family communication (e.g. Bateson et al., 1956; Bateson and Ruesch, 1951), but unlike those theories EE is focused on family factors that increase risks of relapse in psychiatric disorders, rather than advancing a general theory of human communication (Favez, 2010). Research on EE has shown that risks of relapse in schizophrenia are substantially higher in families with high EE, especially when there is a substantial amount of contact between the patient and their family (Brown et al., 1958; Brown et al., 1962; Butzlaff and Hooley, 1998; Kavanagh, 1992). EE was argued to act as a major stressor, which triggers intense physiological activation, which in turn increases the risk of psychotic symptoms, social withdrawal and ultimately, relapse (Brown et al., 1972; Rosenfarb et al., 2006; Rosenfarb et al., 1995). Links between EE and relapse are also seen in patients with mood (Hooley et al., 1986; Hooley and Teasdale, 1989), anxiety (Chambless et al., 2001) and alcohol use disorders (O'Farrell et al., 1998).

Several instruments have been developed to measure the presence of EE in the familial environment. The "Camberwell Family Interview" (CFI: Brown et al., 1972), updated and shortened by Vaughn and Leff (1976), is the gold standard instrument, but necessitates initial training for interviewers and several hours for each individual interview and its subsequent rating. A shorter alternative is the "Five Minute Speech Sample" (FMSS: Gottschalk and Gleser, 1969; Magana et al., 1986) during which a family member speaks about his or her perception of the patient and their relationship for 5 minutes without interruption. Responses are coded using the CFI scoring procedures. However, the FMSS still requires training, and it misses some instances of high EE that are seen in a full CFI. As

a result, its predictive validity for relapse is less well established than for the CFI (Hooley and Parker, 2006).

An alternative is to use a self-report instrument, which can be delivered without incurring the costs of training and of the administration and scoring of interviews. The Family Attitude Scale (FAS, Kavanagh et al., 1997) is one such instrument with strong psychometric characteristics. In an initial study, the FAS was administered to undergraduate students and their parents, and to relatives of people with schizophrenia spectrum disorders (Kavanagh et al., 1997). Strong evidence for a single-factor solution was obtained, and the internal consistency of the scale was high for parental FAS scores in both student and clinical samples (Cronbach alphas ≥ 0.95). In the student sample, parental FAS scores significantly correlated with State and Trait Anger and Anxiety on the State-Trait Personality Inventory (Spielberger et al., 1983) (Median *r* across the four scales = 0.28, $p < 0.001$ for mothers, 0.44, $p < 0.001$ for fathers) and with anger expression ($r = 0.35$, $p < 0.001$ for mothers, 0.49, $p < 0.001$ for fathers) on the Anger Expression Inventory (Spielberger et al., 1985). In parents of people with schizophrenia spectrum disorders, parental Hostility and Criticism on the CFI were significantly associated with more negative parental FAS scores, especially in the case of maternal Criticism on the CFI and maternal FAS ($r = 0.66$, $p < 0.001$). Subsequent studies have confirmed the validity of both the English (Kavanagh et al., 2008) and Japanese versions of the FAS (Fujita et al., 2002) against the CFI. The FAS has also shown predictive validity for illness relapse in two samples of patients with psychosis (Kavanagh et al., 2008), although the relationship was weaker than when the CFI was used.

Up to now, information on the FAS scores of family members of patients with psychiatric disorders other than psychoses is sparse. Moreover, measures of EE have seldom been used to document attitudes and behaviors in relation to a marital partner. Nor are there many studies on potential effects of a respondent's own symptoms or diagnoses on EE or FAS scores. In parallel to a patient's symptoms influencing family members' adjustment to a given disorder (e.g. Albert et al., 2010), EE or attitudes towards another

family member may well be affected by the respondent's own symptoms (Barrowclough and Parle, 1997). One study on 17 couples with depressed partners (Florin et al., 1992) showed that high EE of both the respondent and their depressed partner were significantly more common when the partner had a higher score on the Beck Depression Inventory (Beck et al., 1961). The study using the Japanese version of the FAS found the FAS ratings of 57 family members of 41 schizophrenic patients to be higher when they had more physical complaints themselves (Fujita et al., 2002). However, the FAS ratings of the family members were not significantly higher when they were more anxious or depressed, or had more social dysfunction (Fujita et al., 2002). A recent Polish study (Pankiewicz et al., 2012) showed no differences between mean FAS scores in 85 couples, where one or both partners suffered from Panic or Generalized Anxiety Disorders, than where neither had these disorders. Further research on this issue is needed. Moreover, studies on associations between EE and subthreshold mood disorders, which have gained increasing interest in contemporary psychiatry, are entirely lacking.

Given these gaps in the existing literature regarding the sensitivity of the FAS to EE in non-psychotic disorders, the aims of the present study were to use a large general population sample: a) to provide a short, internally coherent measure of EE in French-speaking cultures, by creating a French translation of the FAS, and testing its internal structure; b) to establish the criterion validity of the translated FAS with other measures of relationship functioning (in particular, the Dyadic Adjustment Scale of Spanier, 1976); c) to provide further data on the validity of the FAS, by examining relationships between FAS scores, and the respondent's own anxiety symptoms and anxiety, affective, psychotic and substance use disorders; and d) to examine the extent of reciprocity between the FAS of respondents and their partners. An examination of associations between the respondent's own symptoms or diagnoses and the level of EE would extend the initial concepts, which primarily focused on the partner's psychopathology, to the role of the respondent's psychopathology in the development of emotional communication within the family system.

2. Methods

2.1. Participants

The present sample was derived from the CoLaus study, which included information on 6738 adults aged 35-75 years who were randomly selected from a list of residents of Lausanne, Switzerland in 2003. That project assessed cardiovascular risk factors and collected DNA and plasma samples for the study of genetic variants and biomarkers (Firmann et al., 2008). The PsyCoLaus study (Preisig et al., 2009), which was based on a subsample of CoLaus, constituted its psychiatric arm. It included a semi-structured diagnostic interview and a number of self-rating scales including the FAS. The final PsyColaus sample comprised 3717 adults (67% of CoLaus participants). In a subsample of 131 participants, data from their current partner was also available for analysis. All non-French native speakers spoke French sufficiently well to complete the questionnaires.

2.2. The FAS and its French translation

The original FAS is a 30-item questionnaire assessing a respondent's attitudes and behavior towards another person—in this case, their partner. Partners' FAS responses were used to test the reciprocity of the behaviors and attitudes — i.e. reflecting the partners' attitudes and behaviors towards the respondent. Items are rated from 4 (every day) to 0 (never), except for positive attitudes and behaviors which are reverse scored. The total score therefore has a potential range of 0-120, with higher scores reflecting more negative attitudes or behaviors. The translation of the FAS (see Supplementary Table, doi…) was developed in Lausanne by a bilingual psychologist who is an expert in the development of psychological questionnaires. A second expert in that field, fluent in French and English, checked the accuracy of the translation. A third bilingual person back-translated the questionnaire into English, resolving translation issues by consensus with the two other experts.

2.3. Other instruments

2.3.1. The Diagnostic Interview for Genetic Studies

Diagnoses were obtained using the Diagnostic Interview for Genetic Studies (DIGS, Nurnberger, Jr. et al., 1994). The French translation of the DIGS (Leboyer et al., 1995) provided high kappa coefficients for inter-rater reliability and lower (although still acceptable) test-retest reliability for major Axis-I diagnoses including mood, psychotic (Preisig et al., 1999) and substance use disorders (SUD, Berney et al., 2002).

Lifetime Axis-I DSM-IV diagnoses were derived. In addition, lifetime diagnoses of subthreshold mood disorders were assigned using the algorithms defined by Angst and Merikangas (1997) and Angst et al. (2003). Subthreshold unipolar depression was defined as minor depression (3–4 depressive symptoms for ≥ 2 weeks), brief depression (≥ 5 DSM-IV depressive symptoms for less than 2 weeks), or recurrent brief depression (brief depression occurring around monthly over a year - a subjective work impairment criterion was not used; Angst and Merikangas, 1997). Similar to Angst et al. (2003), subthreshold bipolar disorder was defined as the occurrence of hypomanic episodes without major depressive episodes, brief mania (euphoria or irritability and at least 3 or 4 manic symptoms, respectively, for 2-3 days), recurrent brief mania (brief mania occurring at least 12 times over lifetime) or minor mania (euphoria or irritability and 1-2 or 2-3 manic symptoms, respectively, for ≥ 4 days). The diagnosis of hyperthymia was defined according to Research Diagnostic Criteria (RDC, Spitzer and Robins, 1978), including symptoms of elation or uncommon intensity in ambition, energy, optimism or activity for at least 50% of adult life since the age of 18 years. The category of anxiety disorders included DSM-IV panic disorder, generalized anxiety disorder (GAD), agoraphobia and / or social phobia. Alcohol and drug use disorders were defined as abuse or at least 2 dependence symptoms according to the DSM-IV.

2.3.2. *Self-rating instruments*

Participants also completed the Dyadic Adjustment Scale (DAS: Spanier, 1976), which measures the degree of adjustment within the marital relationship; the Family Adaptability and Cohesion Evaluation Scales III (FACES III: Olson et al., 1985) which measures the

degree of Cohesion (or emotional bonding) among family members, and the Parental Bonding Instrument (PBI: Parker et al., 1979) which retrospectively assesses perceived Maternal and Paternal Care during the first 16 years of life. Anxiety was measured by the State-Trait Anxiety Inventory (STAI: Spielberger et al., 1970), and Neuroticism was assessed on the Eysenck Personality Questionnaire (EPQ: Eysenck and Eysenck, 1975). All of these scales have been extensively tested and widely used. French versions of these scales have also been established and validated (STAI: Spielberger, 1993; EPQ: Eysenck et al., 1980; PBI: Mohr et al., 1999; DAS: Baillargeon et al., 1986; Vandeleur et al., 2003; FACES III: Vandeleur et al., 1999).

2.4. Procedure

The study was approved by the local institutional ethics review board. All participants gave written informed consent for their participation prior to assessments. They were then interviewed using the DIGS by Masters-level psychologists or psychiatrists who had completed intensive training over a 3-month period, which included supervision of videotaped interviews by clinically experienced senior psychologists. The self-report battery was completed after the diagnostic interview.

2.5. Analyses

In order to test the construct validity of the French version of the FAS, a confirmatory factor analysis was conducted (Cole, 1987). Since a proposed factor structure was being advanced, a confirmatory technique was more appropriate than an exploratory one (Kieffer, 1999). Consistent with the original paper on the English FAS (Kavanagh et al., 1997), we tested the fit with all items loading on a single factor. For questionnaires with less than 10% of missing data, the mean of the sample for an item was imputed when the response to that item was missing. Screening of the individual items showed that more than half of the items were not normally distributed. The model was therefore estimated using the diagonally weighted least squares (DWLS) procedure, which does not assume a normal distribution and

is currently considered the most suitable method for analyses using ordinal data with distributions deviating from normality (Mîndrilâ, 2010). Goodness of fit was assessed using the Parsimonious Goodness-of-Fit Index (PGFI) >0.80 (Mulaik et al., 1989) and the Standardized Root Mean-Square Residual (SRMSR) <0.080 (Hu and Bentler, 1998). The internal consistency of the overall factor was calculated using both coefficient alpha (Cronbach, 1951) and coefficient omega (McDonald, 1999), the latter providing a less biased estimate of internal consistency than the former when the classical theory assumptions, and particularly the Tau equivalency assumption (which assumes that all items have similar factor loadings and the same amount of variance), are violated (Zinbarg et al., 2006). A reliability estimate >0.70 was considered to be sufficient (Tavakol and Dennick, 2011).

Spearman correlation coefficients between the participants' FAS scores for partner and the other self-report instruments were then calculated in order to establish the criterion validity of the FAS. Mean FAS scores of participants with specific psychiatric diagnoses were compared using analysis of variance (ANOVA). Then these scores (created using dummy variables), adjusted for sex and age, were entered simultaneously into a multiple regression model. Therefore, we considered diagnoses separately, and a person with two or more diagnoses (comorbidity) was represented more than once (represented by each diagnosis). This allowed for a disorder to be adjusted for the effects of all the others. Hyperthymia, subthreshold mood, substance use and anxiety disorders were assessed either as primary or as comorbid disorders. As the overall FAS score was not normally distributed, we applied a logarithmic transformation to this score. As the scores established by psychiatric disorders could differ by sex of participants, interaction terms for sex by each diagnosis were entered simultaneously into the model. Finally, reciprocity of FAS ratings was established by calculating a correlation coefficient between scores of participants and those of their partners. All statistical analyses were performed using the Statistical Analysis System, version 9.2 (SAS Institute, Inc., Cary, NC, USA).

3. Results

3.1. Sample characteristics

A total of 2072 (55.7%) of PsyColaus participants (49.9% female, mean age: 51.3 years, SD: 8.7 years) had completed the FAS after exclusion of questionnaires with more than 10% of missing data. In this subsample, 70.6% were married, 75% were of Swiss origin and 25.6% held professional specialty positions. Participants who completed all items of the FAS differed from those who did not in their gender (respectively, 50% vs. 57% female; X^2 = 18.0, df = 1, p < 0.0001), age (51.3 vs. 50.5 years; F= 6.4, df = 1, p < 0.011), nationality (75% vs. 64.8% Swiss citizens; X^2=45.8, df = 1, p < 0.0001), marital status (70.6% vs. 43.3% married; X^2=282.1, df = 1, p < 0.0001) and occupational status (25.6% vs. 21.2% professional; X^2=9.7, df = 1, p < 0.0018). Participants with major depressive disorder were less likely to participate (39.3% vs. 47.7%; X^2=26.3, df = 1, p < 0.0001). However, participants did not differ from non-participants regarding the presence of any other psychiatric disorder.

In the case of 131 of these participants (48.1% female, mean age: 52.0 years, SD: 9.4 years), an FAS completed by their current partner (51.2% female, mean age: 53.2 years, SD: 10.9 years) was also available for analyses. The subgroup of participants with partner data did not differ from the main sample of FAS respondents in gender, age, or the presence of psychiatric disorders (nor did the interviewed partners with a completed FAS differ from other partners on these characteristics). However, participants with partner data were more often married (88.6% vs. 69.4%; X^2=21.7, df = 1, p < 0.0001) and more likely to hold professional specialty positions (35.9% vs. 24.9%; X^2=7.8, df = 1, p < 0.0052) than the other FAS respondents.

3.2. Mean scores on the self-report measures

The FAS norms for the French version are provided in Table 1. The FAS scores differed by sex and marital status, but not by professional status (Table 1). As the original

validation study (Kavanagh et al., 1997) did not assess adults describing their partners' attitudes using the FAS, no mean score comparisons with the original study were possible.

INSERT TABLE 1 HERE

The DAS mean score was 110.8 (SD = 19.9) which is in the nondistressed range (Crane et al., 1990). The scores for the other self-report measures were as follows: 36.6 (SD =7.1) for Cohesion, 25.3 (SD = 8.4) for Maternal Care, 22.4 (SD = 8.7) for Paternal Care, 31.8 (SD =10.8) for State Anxiety, 35.9 (SD = 10.8) for Trait Anxiety, and 9.5 (SD= 5.8) for Neuroticism.

3.3. Confirmatory factor analysis and internal consistency

Confirmatory factor analysis testing the appropriateness of the single-factor solution revealed an excellent fit: PGFI = 0.916; SRMSR = 0.057. All DWLS estimations of items were ≥ 0.50, suggesting that no item should be dropped from the model (Table 2). The Cronbach's α coefficient for the total scale was 0.96 and Mcdonald's omega coefficient was 0.73, suggesting sufficient reliability of the scale.

INSERT TABLE 2 HERE

3.4. Criterion validity of the FAS

The FAS was highly associated with a lack of dyadic adjustment on the DAS, r = -0.83; $p < 0.0001$. Respondents distinguished current FAS ratings of the partner from ratings of the whole family (FACES III Cohesion scale: r = -0.25, $p < 0.0001$), and from retrospective ratings about parental care in their childhood (Maternal PBI Care: r = -0.23, $p < 0.0001$; paternal PBI Care: r = -0.24, $p < 0.0001$): in each case, these coefficients showed lower

cohesion or care if FAS scores were higher, and were highly significant but relatively small in size.

3.5. Effect of anxiety, neuroticism and diagnosis on FAS scores about the partner

Higher State (r = 0.37, p < 0.0001) and Trait Anxiety (r = 0.41, p < 0.0001) were moderately associated with higher FAS scores, as was EPQ Neuroticism (r = 0.37, p < 0.0001). Mean FAS scores of participants with different diagnoses differed significantly from each other (F = 8.7, p < 0.0001, df = model: 13, error: 2058; Table 3). A multiple regression model predicted FAS scores from diagnoses and sex of participants as well as the interaction of each diagnosis with sex. Since none of the interaction terms reached statistical significance, they were removed from the final model which is displayed in Table 3. FAS scores were significantly more negative for participants with Bipolar-I/Schizoaffective Bipolar Disorder, Major Depressive Disorder and unipolar subthreshold depression, as well as in participants with alcohol misuse and social phobia. In contrast, Hyperthymia was associated with more positive FAS scores. The model accounted for 5% of the variance (p < 0.0001, df = model: 13, error: 2058).

INSERT TABLE 3 HERE

3.6. Reciprocity of FAS ratings

A correlation of FAS scores by participants with those of their partners showed a moderate reciprocity of attitudes and behaviors within the relationship (Total FAS: r = 0.34, p < 0.0001).

4.0. Discussion

Our first goal was to test the internal structure of the French FAS. Results showed satisfactory internal consistency, and the confirmatory factor analysis revealed an excellent

fit of the single-factor solution. Our second goal was to establish the criterion validity of the French FAS. A lower FAS score, reflecting more positive attitudes and behaviors towards the partner, was strongly associated with a higher score on the Dyadic Adjustment Scale (predicting 69% of the variance). While more positive FAS scores were also significantly associated with family cohesion on FACES III, the relationship was relatively weak, reflecting the distinction between these concepts, as well as the fact that family cohesion is also affected by relationships with other family members. Perceptions of maternal and paternal care showed significant associations with lower FAS scores —potentially showing the influence of early experiences on later relationships, or a tendency to view relationships in general as positive or negative — but again the relationship was weak, demonstrating that respondents distinguished their relationship with their partner from these with historical or global influences.

Our third goal was to establish the scores of the FAS in relation to the participants' symptoms and diagnoses. FAS scores were more negative when anxiety or neuroticism were more severe, and varied according to diagnosis. Our results were partially in contradiction with those of Fujita et al. (2002) who did not observe a relationship between the FAS and anxiety or depressive scores. However, that study was restricted to family members of schizophrenic patients, and used a different self-report instrument (the General Health Questionnaire, Goldberg and Williams, 1988).

Consistent with Pankiewicz et al. (2012), there was little association of FAS scores with anxiety diagnoses, with the exception of Social Phobia. The association with social phobia — by definition, the anxiety disorder most linked to relationships - is remarkable and has not previously been reported. Relationships with psychotic disorders (Bipolar I/Schizoaffective Bipolar and Schizophrenia/Schizoaffective Unipolar Disorder) showed the largest parameter estimates, although in the latter case, the sample size was insufficient for the parameter to be statistically significant. A larger sample with participants affected by these disorders is needed to confirm the importance of these disorders on FAS ratings,

although their high parameter estimates are consistent with effects of severe disorders on more negative perceived relationships with their partners.

The use of a general population sample allowed us to examine the relationship of the FAS score with hyperthymia, a condition for which affected subjects do not often consult. This was the only condition to have significantly more positive FAS scores. People with hyperthymia are generally optimistic. We speculate that this positive mood may have been the reason for more positive ratings on the FAS. In contrast, not only may people with Bipolar I disorder not currently be experiencing a positive mood, but their more extreme manic phases are likely to incur significantly negative consequences.

While mean FAS scores significantly differed as a function of the respondent's psychiatric status, the final regression model only accounted for 5% of the variance, and the effect size of each psychiatric diagnosis was relatively modest. Factors other than the respondent's psychiatric disorder will of course also play a significant role in determining attitudes and behaviors concerning the dyadic partner.

Our fourth goal was to assess the extent of reciprocity between the FAS of respondents and their partners. We found a moderate reciprocity of attitudes and behaviors within the relationship. If respondents were critical of their partners the partners were also likely, to a certain degree, to express similar attitudes towards the respondents. Following a communication theory perspective, this reciprocal pattern could lead to a spiral of negative exchanges with potentially harmful consequences for the mental health of both partners and respondents.

Our findings of higher EE being linked to lower dyadic adjustment as well as to the respondent's psychiatric symptoms or disorder have at least one important clinical implication. Given that individuals' and couples' problems often exacerbate each other (Halford et al., 1999), people with psychiatric symptoms or disorders may benefit from

professional intervention regarding their dyadic relationship. In fact, a series of prior studies have shown that decreases in intimate relationship adjustment co-occur with increases in depression (review: Whisman and Baucom, 2012) whereas at least one prospective study has shown that relationship discord predates the onset of major depression, alcohol-related disorders and social phobia (Overbeek et al., 2006). Given that the association between marital discord and psychopathology does not seem to be limited to any single disorder, improving intimate relationships may be a useful means to improving general mental health and wellbeing (Whisman and Baucom, 2012).

To our knowledge, this is the largest study on the FAS to date. Furthermore, no previous study has assessed the FAS in a sample with such a wide array of psychiatric disorders, including substance use, bipolar and subthreshold mood disorders. These are significant strengths of the study.

However, the study does also have some limitations. The FAS sample is only slightly over half of the PsyColaus sample, which in turn was a subsample of the main CoLaus study. We had a larger proportion of men, older participants, Swiss citizens, married people and professional people than in the sample that did not complete the FAS. While these analyses may have overestimated the true differences between the subsamples (an unknown number would not have had a past or current partner who they could rate on the FAS), both the loss of participants at each point and these detected differences mean that our results may not be generalizable to the whole population. Moreover, since Major Depressive Disorder was less common in participants than in non participants, this loss may have restricted the opportunity to detect associations between that disorder and the FAS, especially if more severely affected people were less likely to respond. Similarly, since partners of participants with higher dyadic functioning participated in the study more readily than the others (DAS mean = 115.9 vs. 110.4; $F = 9.0$, $p = 0.0027$; df = model: 1, error: 2024), concerns about representativeness are even more pronounced in the case of the

partner sample, and data on the reciprocity of FAS scores should therefore be interpreted with caution.

In sum, the French version of the FAS has similarly strong psychometric properties to the original English version. Moreover, the mean scores varied in function of the respondent's psychiatric status. Future studies using this French version should use the overall score and could establish whether the scale predicts relapse in psychiatric disorders. It would be of particular interest to see whether this predictive effect—already seen with the English FAS and psychoses—can be seen with the French FAS and other conditions such as unipolar depression, substance use or anxiety disorders.

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