

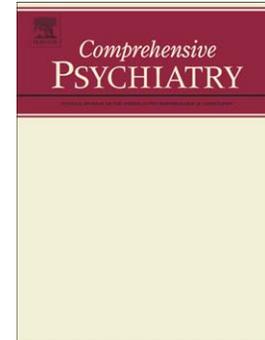
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Assessing the reliability of the Five Minute Speech Sample against the Camberwell
Family Interview in a Chronic Fatigue Syndrome sample

Short running head: Using the FMSS for CFS

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Abstract

Purpose: The current study aimed to examine the reliability of the Five Minute Speech Sample (FMSS) for assessing relative Expressed Emotion (EE) compared with the Camberwell Family Interview (CFI) in a sample of relatives of adult patients with Chronic Fatigue Syndrome (CFS).

Method: 21 relatives were recruited and completed both assessments. The CFI was conducted first for all participants, with the FMSS conducted approximately one month later. Trained raters independently coded both EE measures; high levels of rating reliability were established for both measures. Comparisons were conducted for overall EE status, emotional over-involvement (EOI) and criticism.

Findings: The distribution of high and low-EE was equivalent across the two measures, with the FMSS correctly classifying EE in 71% of cases (n=15). The correspondence between the FMSS and CFI ratings was found to be non-significant for all categorical variables. However, the number of critical comments made by relatives during the FMSS significantly correlated with the number of critical comments made during the CFI. The poorest correspondence between the measures was observed for the EOI dimension.

Conclusion: The findings suggest that the FMSS may be a useful screening tool for identifying high-EE, particularly criticism, within a sample of relatives of patients with CFS. However, the two measures should not be assumed equivalent, and the CFI should be used where possible, particularly with respect to understanding EOI.

Keywords: Camberwell Family Interview; Chronic Fatigue Syndrome; Expressed Emotion; Five minute speech sample; Relatives.

1. Introduction

The Expressed Emotion (EE) construct was developed to assess aspects of family relationships in the context of illness [1]. When derived from the Camberwell Family Interview (CFI) [5], EE is coded along five dimensions, which include the number of critical and positive comments made by the relative, as well as levels of hostility, warmth and emotional over-involvement (EOI). EOI is a global, multi-component construct, consisting of varied attitudes and behaviours such as over-protection, exaggerated emotional responses and self-sacrifice [2]. Relatives who demonstrate above threshold evidence for critical comments, hostility and EOI are categorised as “high-EE” [2]. The validity of high-EE as a robust predictor of poorer patient outcomes has been well established across several patient groups [3, 4].

Chronic fatigue syndrome (CFS) is a condition in which patients suffer from severe, long-lasting fatigue which cannot be explained by other known medical causes of fatigue, and which can be disabling and disruptive to many aspects of life [5]. The reluctance of some doctors to diagnose CFS and difficulty in accessing appropriate treatment [6], can leave patients feeling disbelieved; this in turn places a particular burden on relationships and family members may be unsure how best to help patients [7]. There is growing evidence that the behavioural responses of close relatives may influence the course of CFS, but the literature is difficult to integrate partly because studies have used a variety of methodologies [8]. Measures of negative and solicitous responding to CFS symptoms have been associated with patient outcomes, but different researchers have used questionnaire measures of these constructs to measure subtly different things [8, 9]. Recently, we applied the established and robust EE methodology to CFS and examined the role of EE in a sample of adults diagnosed with CFS [10]. We found that high levels of relative criticism and EOI, as measured

by the CFI, were associated with significantly higher levels of patient fatigue severity over time [10].

While the CFI is considered the 'gold-standard' measurement of EE, the administration and coding of data from it are both time and labour intensive [11]. Consequently, the Five Minute Speech Sample (FMSS), in which data is coded from relatives' free speech about the patient across a five minute period, was developed as a brief measure of EE [12]. The correspondence between the CFI and FMSS has been reviewed elsewhere previously [11]; some studies report reasonable correlations between FMSS- and CFI-derived coding of EE [12-14], while others show lower levels of agreement [15, 16]. The advantage of the FMSS is that it offers the potential to quickly identify high-EE in both research studies and clinical settings [7].

Given that relatives' high-EE is associated with poorer patient CFS outcomes [10], the current study sought to determine whether the FMSS can feasibly be used to identify high-EE relatives of CFS patients. EE ratings derived from the FMSS were therefore compared with those rated from the CFI to identify the level of correspondence within the same CFS sample.

2. Material and methods

2.1. Participants

21 relatives of adults with CFS were nominated as the person with the most daily involvement in their lives, and included parents (n = 9; 43%), partners (n = 9; 43%) and daughters of the patient (n = 3; 14%). Nine of the relatives were male (43%). The mean age was 44 years (range 19-72 years). Nineteen patients were female (90%) with a mean age of 36 years (range 17-58 years), and had been experiencing symptoms for a mean of 13 years (range 4 – 31 years).

2.2. Measuring Expressed Emotion

2.2.1 *Camberwell Family Interview (CFI)* [2]. The CFI is a semi-structured interview coded along five dimensions: criticism, hostility, warmth, positive remarks and emotional over-involvement (EOI), rated on a global 6-point scale (0-5). An overall dichotomous classification of high- or low-EE is assigned to the relative when sufficient evidence of criticism, hostility or EOI is present. CFS-specific modifications to the CFI are reported elsewhere [10].

2.2.2 *Five Minute Speech Sample (FMSS)* [12]. Four aspects of the speech sample are rated, namely initial statement, relationship, criticism, and EOI. High-EE is assigned to relatives who demonstrate EOI or evidence of criticism, which may be assigned when a negative initial statement or relationship is coded. Borderline FMSS cases (n=6) were categorised as low-EE. Despite evidence to suggest that the FMSS may be more reliable when classifying borderline cases as high EE [11] the original FMSS rating guidelines were followed [12] in line with the convention of conservative EE rating on both measures [1, 12].

2.3. Procedure

All interviews were conducted confidentially in the participants' home; the CFI was conducted first in all cases. The FMSS was recorded approximately one month later to avoid participant burden at the first interview session. Evidence suggests that EE ratings are largely stable over time [17-20].

2.4. Statistical analysis

As not all CFI and FMSS subscales directly correspond, analyses will be presented for the overall EE, EOI, and the critical comments dimensions only.

2.4.1 *EE coding.*

Conventional rating criteria were followed for both the CFI [1] and FMSS [12]. The first author (RB) coded the CFI data; reliability estimates were calculated with a second trained rater ($n = 9$). Complete agreement was established for ratings of overall EE status (low vs. high EE) and categorical EOI (low vs. high EOI) calculated using the phi coefficient [2]. Critical comments rated on the CFI showed acceptable reliability ($r = 0.89$). Two authors (EC, HH) were trained to code the FMSS interviews, and reliability assessed on a selection of pre-selected interviews ($n = 5$; 24%). There was perfect agreement between raters for overall EE status and EOI ($\text{Kappa} = 1$) and for critical comments ($r = 1$).

3. Results

3.1. CFI EE

13 relatives (62%) were classified as low-EE, and 8 (38%) as high-EE. Considering the 8 participants rated as high-EE, 4 (19%) demonstrated evidence for high EOI-only while the remaining 4 (19%) demonstrated high levels of both EOI and criticism. Relatives made a median of 1 critical ($\text{IQR} = 3.5$). The mean EOI level rated was 2 (equivalent to “some EOI”).

3.2. FMSS EE

8 relatives (38%) were rated as high-EE using the FMSS. Of those rated as high-EE, 4 (19%) were rated on EOI only, 1 on criticism only (5%), and 3 (14%) on both criticism and EOI. Relatives made a median of 0 critical comments ($\text{IQR} = 0$). Both the initial statement and relationship dimensions were rated as neutral 14 times (67%), positive 6 times (29%) and negative once (5%).

3.3. Comparison of EE derived from the CFI and the FMSS

15 relatives (71%) were assigned the same EE rating on both interviews (Table 1). Compared to CFI ratings, three relatives were misclassified as high-EE using the FMSS, and high-EE was missed in half of the cases ($n = 3$). Agreement between the two measures was not statistically significant (Kappa = .40, $p = .071$, CI = -0.01, 0.80).

3.3.1 Critical comments.

Critical comments rated from the FMSS significantly correlated with the number of CFI critical comments ($r_s(19) = .63, p = .002$). When comparing categorical (high- vs. low-EE) ratings on the critical comment subscale, 17 relatives (81%) received the same classification; agreement approached significance (Kappa = .38, $p = .080$, CI = -0.11, 0.88).

3.3.2 EOI.

15 participants (71%) were assigned an equivalent EOI classification on both interviews (for example, CFI-low and FMSS-absent or CFI-high and FMSS-present), with 6 participants (29%) misclassified on the FMSS compared to the CFI (Table 1). The categorical EOI ratings from the FMSS did not significantly correspond to CFI-derived ratings (Kappa = .40, $p = .071$, CI = -0.10, 0.80).

[insert table 1 here]

4. Discussion

The present study aimed to examine the reliability of the FMSS for assessing EE compared with the CFI, in a sample of relatives of patients with CFS. The overall distribution of high and low EE was found to be the same across both measures. In addition, the number of critical comments made during the FMSS significantly corresponded with CFI critical comments. High relative criticism was previously

shown to predict greater patient depression and fatigue severity [10]. The FMSS may be a useful screening tool for easily identifying highly critical relatives [12].

However, low levels of statistical agreement were observed for the categorical EE ratings across the two measures in the current sample, with the largest discrepancies identified for the EOI dimension. While there are several subscales common to both measures, EOI is a multi-component dimension where allocation of rating is not equivalent across both measures (for example, evidence against EOI is considered for the final CFI rating; positive comments contribute to FMSS ratings but not to CFI ratings). Presentation of high-EOI may arise from a number of specific behaviours or attitudes, potentially accounting for the greater inconsistency between the two measures on this dimension. In addition, the brief nature of the FMSS limits the potential exploration of issues surrounding the chronicity of CFS and the complexity of its impact on the relative [21]; factors which commonly contributed to EOI ratings in the CFI sample [10]. This may have been further exacerbated by always conducting the CFI first in the current study; this is a limitation of the current study and the order of EE measures should be carefully considered in future EE investigations.

The proportion of relatives receiving the same EE rating across both measures, and the sensitivity and specificity of the FMSS reported here are comparable to other reported samples [15], suggesting the FMSS may be a useful tool to screen for high-EE. However, the interpretation of the results presented here are limited by the small sample size within the current study.

4.1 Conclusions

The current findings suggest that the FMSS could be usefully employed alongside the CFI in identifying potential high-EE, particularly criticism in a CFS sample.

However, the FMSS and CFI should not be considered as interchangeable measures of EE. The CFI is preferable when a more in-depth exploration of relative responses to CFS are warranted, particularly with respect to EOI.

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Table 1: Comparison of significant otherrelative EE ratings on the FMSS and CFI

	Categorical CFI ratings		Categorical FMSS ratings		FMSS classifications against the CFI									
	High	Low	High	Low	Misses	False positive	Sensitivity	Specificity	Kappa					
	n	%	n	%	n	%	n	%	n	%	p			
Overall EE	8	38	1	6	3	14	3	14	5	63	10	77	.40	.071
EOI	8	33	1	6	3	19	3	1	5	55	9	75	.40	.071
	8	38	1	6	3	14	3	14	5	63	10	77	.38	.080
CC	4	19	1	8	2	9	2	9	2	50	15	88	.38	.080
	9	71	1	8	2	9	2	9	2	50	15	88	.31	.154

Note: Misses refer to significant others relatives who received a high-EE rating on the CFI and a low-EE rating on the FMSS. False positives refer to significant othersrelatives who received a low-EE rating on the CFI and a high-EE rating on the FMSS. Sensitivity refers to the proportion of significant othersrelatives who received a high-EE rating on both the FMSS and the CFI. Specificity refers to the proportion of significant othersrelatives who received a low-EE rating on both the FMSS and the CFI.