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ORIGINAL PAPER

Expressed and perceived emotion over time: does the patients' view matter for the caregivers' burden?

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Abstract While the impact of mentally ill patients' perceptions of their key relatives' expressed emotion is well examined with regard to relapse, there is a paucity of evidence concerning the impact on their key relatives' burden. The present study aims to evaluate the relative prognostic value of expressed and perceived emotion on caregivers' stress outcome within a 3-year follow-up period. Yearly follow-up data of the key relatives of 16 first-hospitalized schizophrenic and 34 depressed patients were available including expressed and perceived emotion and different dimensions of caregivers' stress outcome: objective and subjective burden, well-being, psychological symptoms and subjective quality of life. Multiple linear regression analyses were computed to assess the relative impact of expressed and perceived emotion. All dimensions of burden were significantly and consistently correlated with caregivers' expressed emotion and patients' perceived criticism on the bivariate level. On the multivariate level, however, expressed criticism appeared to be the most relevant predictor, followed by perceived resignation. Data indicate that the impact of the patients' perceived criticism on caregivers' stress outcome is limited. More attention should be paid to patients' perceived resignation which may be an unidentified stress contributor for caregivers so far.

Keywords Caregivers' burden · Expressed emotion · Perceived criticism · Follow-up

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Introduction

The construct of expressed emotion (EE) reflects the relationship between carers and patients from the carers' perspective. The constellation of emotions, attitudes and behaviours, namely criticism/hostility and emotional overinvolvement, is indexed by observer-ratings on the basis of caregiver interviews or questionnaires. EE has been extensively studied, particularly it has been shown to be a strong predictor of patients' relapse in psychosis and mood disorders [4, 31], and later on, associations with carers' characteristics such as personality and subjective burden could be observed [12, 21, 22, 24]. However, less is known of how the patients perceive the emotional attitudes of their parents or spouse and how this perception affects the patients' well-being or contributes to caregivers' burden. Studies examining patients' self-rated perceptions of their relatives' EE have focussed rather on criticism than on overinvolvement, because in Western societies, high EE is mainly attributable to criticism than to emotional overinvolvement and as a consequence, criticism is held to be the most important and predictive component of EE related to the patients' illness course [1, 13, 16]. The respective studies found moderate correlations between carers' EE and patients' perceived EE. In schizophrenia, perceived criticism predicted relapse over a period of 9 months to 2 years [3, 31, 33], and in depression and other mental disorders, correlations were small to moderate [5, 14]. In a 10-year longitudinal study perceived criticism at baseline and also EE of the relatives at baseline failed to predict the outcome of depression [17]; one of the reasons for this might have been the lack of considering possible changes of EE and perceived EE over time. In contrast to the focus on patients' relapse, less is known about the impact of the patients' view of their relatives' emotional attitudes on

caregivers' burden. As, for example, perceived criticism by the patients may not only reflect the real criticism of their relatives but also their own sensitivity to criticism [6], their perceptions may as well be a stressor for the relatives, thus contributing to their sense of burden. The only study to date which had included the impact of patients' perceived EE on caregivers' burden found that the patients' view was unexpectedly unrelated to caregivers' experience of distress and burden, low self-esteem and coping styles [25]. While the impact of perceived criticism on patients' relapse has been examined cross-sectionally and longitudinally with inconsistent results, longitudinal data on the relations between changing EE, changing perceived EE and changing caregivers' burden are yet not available.

The aim of the present study was therefore to examine the prognostic value of carers' EE and perceived EE by the patients on the stress outcome of caregivers of first-hospitalized patients with schizophrenia or depression within a 3-year follow-up period. The study is part of the Munich 5-year follow-up study [21–24].

Subjects and methods

Subjects

In-patients first hospitalized for a schizophrenic or depressive episode in the Psychiatric Department of the Ludwig-Maximilians-University of Munich were recruited within the German Research Networks of Schizophrenia or Depression in the years 1999–2003. Patients who lived with a relative or had a facial contact of at least 15 h per week were informed of the caregiver study and asked to name the person to whom they have the closest contact. After getting the informed consent from the patient, the relative was contacted and, if he/she agreed to participate into the study, he/she was interviewed by the first author about 3 weeks after first hospitalization of the patient. The index-interview was audiotaped, and a protocol was written by the author adapting to the wording of the caregiver. Numerous standardized questionnaires were completed by the caregivers at home.

At baseline, 85 caregivers participated, and full standardized data files of 83 caregivers were available (48 relatives of depressed patients and 35 relatives of schizophrenic patients).

Of the 85 key relatives, 73 (90.41%) could be reassessed at 1-year follow-up (45 relatives of the depressed patients and 25 relatives of the schizophrenic patients). Of these, 3 relatives participated in the interview but did not complete the questionnaires. As a result, complete data files of 70 key relatives were available at 1-year follow-up. At 2-year follow-up, 64 relatives completed the questionnaires, and at 3-year follow-up, 50 relatives could be contacted again. In a dropout analysis, there was no indication of a selection bias.

Methods

While the measures for the entire Munich 5-year follow-up study are described elsewhere [22–24], the following study is based on the following questionnaires.

Expressed Emotion was measured by The Five Minute Speech Sample (FMSS) [20] as well as the Family Questionnaire (FQ) [35]. Although the FMSS shows a high concurrent reliability with the Camberwell Family Interview, the classical EE measure and a high interrater reliability, a systematic underassessment of high EE relatives has been observed, which goes even beyond 28% in this study. This is the reason why the Family Questionnaire was preferred in data analyses at baseline and follow-ups. Relatives were rated as high EE, if their sum score on the scale 'criticism' and/or their sum score on the scale 'emotional overinvolvement' exceed the cut-off points.

Perceived Expressed Emotion by the patients was measured by the German Fragebogen zur Erfassung der Familienatmosphäre (FEF, a questionnaire assessing family atmosphere) [8]. This scale consists of 27 items referring to the dimensions criticism (e.g. "He/she rebukes me a lot"), overprotection (e.g. "he/she takes over important decisions for me") and resignation (e.g. "He/she is not interested in how I am doing") and are rated dichotomously ("true"/"not true"). According to Feldmann et al. [8], reliability and validity of the FEF are satisfying.

Caregivers' stress outcome was measured with different instruments to assess different dimensions of burden: subjective burden, psychological well-being and global quality of life.

Objective and subjective burden was measured at each follow-up with the Family Burden Questionnaire (FBQ), which was adapted by the first author from the semi-structural interview of Pai and Kapur [26]. This instrument is also a self-rating scale and is applicable to relatives of schizophrenic as well as depressive patients. With regard to several life domains (daily living, family atmosphere, leisure, financial aspects and well-being), objective and subjective aspects of burden are assessed with 29 items for the last 3 months. Objective burden is defined as observable changes in routine arrangements and is bipolarly assessed by the relative (e.g. "Does his/her behaviour disturb daily routine?" The answer is "yes" or "no"). Subjective burden refers to each item of objective burden with the question, how burdensome this is for the relative. The answer consists of a three-point scale: not at all/moderate/very burdensome. While Pai and Kapur offer only one global score of subjective burden, the author has constructed several

scores for objective and subjective burden, once with regard to each life domain and once with regard to a global measure of the objective and subjective dimension of burden. To make the scores more perceptual, the quotients (sums of item values are divided through number of items) are transferred to percentage by multiplication with 100. Reliability test ($n = 83$) for the global percentage of objective burden resulted in $\alpha = 0.83$, for the global percentage of subjective burden in $\alpha = 0.88$ and for the entire scale α was 0.92.

Psychological well-being of the caregivers was assessed at each follow-up by the German 'Befindlichkeitsskala' (Bf-S) [34], which includes a broad scope of bipolar structured cognitive-emotional states.

Self-rated symptoms of the caregivers were measured by the Symptom-Checklist-90-R (SCL-90) [7]. It evaluates a broad range of current psychological problems and symptoms of psychopathology consisting of 90 items and yielding nine scores along primary symptom dimensions (e.g. somatization, obsessive–compulsive, interpersonal sensitivity, depression, anxiety and hostility) and three scores among global distress indices. In the present study, only the GSI, global severity index referring to all 90 items, is used.

Subjective quality of life was assessed as a global item included in the German adaptation of the 'Lancashire Quality of Life Profile' (LQLP) by Priebe et al. [27]. Questions ask for objective conditions in different life domains, for subjective satisfaction with these domains and for global satisfaction with life, which is rated on a 7-point scale (1 = totally dissatisfied to 7 = totally satisfied).

Statistical analyses

Due to the fact that most data were not normally distributed, nonparametric procedures were used. Changes in levels of burden in each dimension were calculated by using the Friedman test for dependent samples and in case of significance by the Wilcoxon test for post hoc pairwise comparisons. Bivariate correlations were assessed by Spearman's Rho, and multivariate regression analyses with stepwise inclusion of the potential predictors were used to identify the relative importance of these predictors for caregiver's stress outcome. Analyses were performed with SPSS 15.0 for Windows.

Results

The present sample is a mixed sample including predominantly spouses of predominantly depressed patients with a balanced rate of male and female participants (Table 1) and a mean age of 50.6 years (SD 10.8). In spite of an unavoidable attrition in follow-up samples due to nonresponse, the structure of this sample remains rather stable as is shown in Table 1.

Caregivers' stress outcome within 3 years after the patients' first admission

Over the 3-year follow-up period, a significant reduction in caregivers' objective and subjective burden (FBQ) can be observed (Table 2), mainly in the first year after the patients' first admission. Similarly, their psychological well-being (Bf-S) tends to improve, but the mean scores continue to differ slightly, but significantly from the respective norm values (50 ± 10) at each point of assessment, thus indicating a persistent elevated level of distress. With respect to self-rated symptoms (SCL) and subjective quality of life, there is also a slight improvement within the first year, but this positive trend is not stable over time. In particular, reports of caregivers' self-rated symptoms exceed the respective norm values (0.31 ± 0.31) significantly at baseline and 2-year follow-up ($P < 0.05$). Similarly, caregivers' subjective quality of life scores are below the norm value (5.30), and the differences reach significance at baseline and 3-year follow-up ($P < 0.05$).

Changes of caregivers' expressed emotion

Within the 3 years, the percentage of high EE (59.2%) reduces to 40.8% in the first year and remains rather stable

Table 1 Characteristics of the caregiver sample related to follow-up assessments

	Baseline ($n = 83$)	1-year follow-up ($n = 70$)	2-year follow-up ($n = 64$)	3-year follow-up ($n = 50$)
Spouses	75.5%	75.4%	81.0%	76.1%
Parents	22.9%	24.6%	17.5%	21.7%
Males	48.5%	51.4%	52.4%	56.0%
Mean age	48.3 ± 17.9	49.2 ± 10.9	48.3 ± 17.9	50.6 ± 10.78
Caregivers of depressed patients	64.9%	66.0%	65.6%	68.0%
Caregivers of schizophrenic patients	35.1%	34.0%	34.4%	32.0%
Full-time job	44.6%	39.2%	33.2%	33.3%

Table 2 Changes in mean scores of caregivers' stress outcome (Friedman and Wilcoxon test)

	Baseline	1-year follow-up	2-year follow-up	3-year follow-up
FBQ-OB (0–100)	30 ± 19	20 ± 20	17 ± 18	19 ± 20
FBQ-SB (0–100)	21 ± 17	13 ± 17	11 ± 14	11 ± 16
Bf-S (*t*-values)	57.88 ± 12.22	53.01 ± 12.34	53.77 ± 11.67	54.73 ± 13.28
SCL-GSI (0–1)	0.41 ± 0.34	0.37 ± 0.38	0.41 ± 0.66	0.33 ± 0.39
LQ (1–7)	4.52 ± 1.59	5.09 ± 1.39	5.09 ± 1.64	4.41 ± 1.63

FBQ-OB global score of objective burden; Baseline vs. 1-year follow-up: $P = 0.000$, Baseline vs. 2-year follow-up: $P = 0.000$, Baseline vs. 3-year follow-up: $P = 0.000$, 1-year vs. 2-year follow-up: n.s., 1-year vs. 3-year follow-up: n.s., 2-year vs. 3-year follow-up: n.s

FBQ-SB global score of subjective burden (Family Burden Questionnaire); Baseline vs. 1-year follow-up: $P = 0.000$, Baseline vs. 2-year follow-up: $P = 0.000$, Baseline vs. 3-year follow-up: $P = 0.000$, 1-year vs. 2-year follow-up: n.s., 1-year vs. 3-year follow-up: $P = 0.013$, 2-year vs. 3-year follow-up: n.s

SCL-GSI global symptom index (Symptom Checklist); Baseline vs. 1-year follow-up: n.s., Baseline vs. 2-year follow-up: n.s., Baseline vs. 3-year follow-up: $P = 0.027$, 1-year vs. 2-year follow-up: n.s., 1-year vs. 3-year follow-up: n.s., 2-year vs. 3-year follow-up: n.s

Bf-S global score of subjective well-being (Befindlichkeits-Skala); Baseline vs. 1-year follow-up: $P = 0.002$, Baseline vs. 2-year follow-up: $P = 0.003$, Baseline vs. 3-year follow-up: n.s., 1-year vs. 2-year follow-up: n.s., 1-year vs. 3-year follow-up: $P = 0.003$, 2-year vs. 3-year follow-up: $P = 0.006$

LQ global score of subjective quality of life; Baseline vs. 1-year follow-up: $P = 0.003$, Baseline vs. 2-year follow-up: $P = 0.020$., Baseline vs. 3-year follow-up: n.s., 1-year vs. 2-year follow-up: n.s., 1-year vs. 3-year follow-up: n.s., 2-year vs. 3-year follow-up: n.s

in the following years at 42.9%. Similarly, an increase in low EE occurs from 40.8 to 59% which also appears to be rather stable for the most part.

At baseline, high EE is mainly attributable to emotional overinvolvement (28.6%) compared to criticism (14.3%) and mixed overinvolvement and criticism (16.3%). Interestingly, this changes drastically during the following years while turning mainly into criticism with a percentage of 14.3 at 1-year, 26.5 at 2-year and 22.4 at 3-year follow-up ($P < 0.05$). Clearly, there is a tendency of caregivers' critical attitudes to become more obvious and reinforced over time.

Associations between expressed and perceived emotion

Data reveal a considerable concordance between carers' EE and perceived EE by the patients. While the carers' emotional overinvolvement and the patients' perception of this attitude are significantly correlated only at baseline ($\rho = 0.352$; $P = 0.002$), consistent associations result between expressed criticism and perceived criticism at each point of assessment, except at 3-year follow-up (baseline: $\rho = 0.504$; $P = 0.000$; 1-year follow-up: $\rho = 0.624$; $P = 0.000$; 2-year follow-up: $\rho = 0.660$; $P = 0.001$; 3-year follow-up: $\rho = 0.066$; n.s.). (As the scale 'resignation' of the FEF has no equivalent scale in the FBQ, no correlations could be performed).

In the first 2 years, concordance between carers' emotional attitude and patients' perception is highest with 57.5% at baseline, 57.5% at 1-year follow-up and 67.5% at 2-year follow-up, and lowest with 45% at 3-year follow-up. Interestingly, the discordance over time can mainly be attributed to an overestimation of emotional overinvolvement by the patients ranging from 22.5 to 42.5% at 3-year follow-up. In contrast, patients neither overestimate nor underestimate their relatives' criticism.

Does perceived EE matter for the carers' burden?

In order to estimate the relative impact of expressed and perceived EE on the different dimensions of the carers' stress outcome, multivariate linear regression analyses were performed after having identified the significant bivariate correlates. While the carers' emotional overinvolvement and criticism significantly correlated with all dimensions of burden at each point of assessment ($P < 0.01$), perceived criticism, but not perceived emotional overinvolvement, was significantly associated with all dimensions of the carers' burden at each point of assessment ($P < 0.05$). Perceived resignation significantly correlated at 1-year follow-up with all indicators of burden, but not at baseline, and inconsistently with different indicators of burden at 2-year and 3-year follow-up.

Regression analyses were related to the 3-year follow-up values of burden as dependent variables and were calculated for each dimension of burden separately. Two series of regression analyses were performed: in the first series, only baseline variables were used as independent variables, and in the second series, time-dependent changes of these variables were considered. The first regression series showed that carers' emotional overinvolvement at baseline predicted their objective burden 3 years after first admission of the patient ($\beta = 0.347$; $P = 0.014$; $f = 6.5$; explained variance: 12.1%), patients' perceived criticism at

baseline predicted subjective burden ($\beta = 0.366$; $P = 0.010$; $f = 7.3$; explained variance: 13.4%), carers' expressed criticism at baseline predicted subjective well-being ($\beta = 0.398$; $P = 0.005$; $f = 11.5$; explained variance: 19.6%) and self-rated symptoms ($\beta = 0.443$; $P = 0.001$; $f = 7.3$; explained variance: 13.4%), while carers' subjective quality of life was predicted by expressed emotional overinvolvement ($\beta = -0.309$; $P = 0.031$; $f = 5.0$; explained variance: 10%). Compared to carers' EE, patients' perceived EE at baseline had only limited effects on carers' burden. In sum, the baseline predictors explained only a small amount of variance.

If time-dependent changes in expressed and perceived EE were considered, a more complex picture occurred (Table 3).

Among the baseline variables, only emotional overinvolvement remained as one of four variables predicting subjective quality of life at 3-year follow-up. Expressed criticism (value at 2-year follow-up) turned out to be a major predictor for all dimensions of burden. From the patients' view, perceived criticism (value at 1-year follow-up) was a predictor for quality of life, and perceived resignation (value at 1-year follow-up) predicted quality of life as well as carers' self-rated symptoms (perceived resignation values at 1-year and 2-year follow-up). The explained variance of the models ranges from 43.8 to 77.2%.

Discussion

The present study aimed at analysing the impact of caregivers' expressed and patients' perceived emotion on caregivers' burden over time. To our knowledge, this is the first study examining the relations between changing EE, changing perceived EE and different dimensions of caregivers' burden in a longitudinal design. The present data support previous findings concerning carers' EE as an important predictor of their objective and subjective burden and psychological well-being [18, 22–24, 28] on a bivariate as well as multivariate level: This is particularly true for expressed criticism, although emotional overinvolvement is dominantly prevalent at baseline (patients' first hospitalization) in this study. However, within the first year after admission, emotional overinvolvement changes impressively into critical attitudes, which obviously becoming more pronounced in the course of time, although there was an overall reduction in the percentage of high EE carers' from 59 to 43%. On the one hand, these results document that high EE has a reactive component as it tends to decrease for the shorter term depending on the patients' clinical improvement. On the other hand, data also point to the trait component of EE, as high EE seems to be rather stable in the longer term due to its association with specific caregiver characteristics such as external locus of control or a more pronounced neuroticism, what has been shown in previous research [15, 21, 24]. Obviously, this makes relatives less tolerant and flexible in their response to the patients' behaviour.

Expressed and perceived criticism were moderately to well correlated, thus being in line with previous studies [1, 9, 29, 32]. This correspondence is taken to reflect a habitual pattern of reciprocal criticism, with patients actively contributing to negative interactions by also attacking and counter-attacking [10, 15], which obviously is a stressor for

Table 3 Impact of expressed and perceived emotion and carers' stress outcome over time

Predictors	Stress indicators	β	F	P	Explained variance R^2 (%)
Expressed criticism at 2-year follow-up	Objective burden (FBQ-OB)	0.466	17.4	0.003	53.7
Expressed emotional over involvement at 3-year follow-up		0.370		0.017	
Expressed criticism at 2-year follow-up	Subjective burden (FBQ-SB)	0.690	25.4	0.000	47.6
Expressed criticism at 2-year follow-up	Well-being (Bf-S)	0.676	23.4	0.000	43.8
Expressed criticism at 2-year follow-up	Self-rated symptoms (SCL-90-R, GSI)	0.959	25.5	0.000	77.2
Expressed criticism at 1-year follow-up		0.560		0.001	
Perceived resignation at 1-year follow-up		0.296		0.004	
Perceived resignation at 2-year follow-up		0.289		0.011	
Perceived resignation at 1-year follow-up	Global quality of life (LQ)	−0.421	14.4	0.001	65.1
Perceived criticism at 3-year follow-up		−0.363		0.018	
Expressed criticism at 2-year follow-up		−0.364		0.009	
Expressed emotional over involvement at baseline		−0.360		0.042	

Results of multivariate linear regression analyses

the caregivers, too. While the present data support the correspondence of the carers' and the patients' view with regard to criticism, there is a discordance with regard to emotional overinvolvement. Patients tend to increasingly overestimate their carers' emotional overinvolvement during the 3-year period. Possibly, this increasing overestimation is an indicator for patients' increasing sensitivity to their carers' concern for the patient and the disorder, for their pity and worry. In contrast, the patients' perception of their carers' criticism is rarely overestimated, possibly because critical comments and behaviours are easier to grasp and react to than emotional overinvolved behaviours which may not always provide clear messages to the patient.

With respect to the impact of patients' perceived criticism on carers' stress outcome, the present data indicate significant and stable associations between perceived criticism and each dimension of carers' burden on the bivariate level. In contrast, perceived emotional overinvolvement was unrelated to carers' burden. In sum, the present data do not support the results of Onwumere et al. [25] who did not find any relationship between perceived criticism and caregiver characteristics such as distress, burden, low self-esteem or less adaptive coping strategies, contrary to their predictions.

On the multivariate level, when analysing the relative impact of the components of expressed and perceived emotion, baseline values of EE were more predictive of carers' different dimensions of stress outcome at 3-year follow-up than was patients' perceived criticism. However, the present findings document that it is important in predictive models to include changes of the potential predictors, especially changes in patients' perceptions, because the patients' view may become more influential on carers' experience of burden over time. This was exactly the case in the present study. While patients' perceived criticism looses predictive power in the multivariate analyses (remaining predictive only for global quality of life), perceived resignation gains predictive power. It is noteworthy that patients perceived only small levels of resignation in their key relatives, but these small levels contributed significantly to caregivers' stress outcome in the course of time on a bivariate and multivariate level. Despite of small and stable mean values, perceived resignation add to increasing psychological impairment of the caregivers and to a reduction in their subjective quality of life. The impact of perceived resignation may be explained by enhanced feelings of helplessness and loss of control in caregivers. However, it remains unclear, to which behaviour of the carer the patients' perception of resignation is related.

Overall, carers' expressed emotion, in particular criticism, is a more relevant predictor of their objective and subjective burden, well-being and psychological symptoms than the patients' perceived criticism. Psychological symptoms and subjective quality of life are additionally predicted by patients' perceived resignation and perceived criticism.

The present study has several limitations. The major limitation is the mixed sample of caregivers of patients suffering from schizophrenia or depression with a predominance of depression which might have biased the results. One might argue that schizophrenic patients may be more sensitive towards criticism, and depressed patients may be more sensitive towards emotional overinvolvement, or, respectively, that key relatives of schizophrenic patients behave in a more critical manner, while those of depressed patients are more emotionally overinvolved. Because of the small size of the subgroup of schizophrenic patients in this study, diagnostic comparisons are limited. However, the present data do not support the above-mentioned assumptions, as no significant differences in the two diagnostic subgroups could be observed with respect to carers' EE as well as to patients' perceived emotion. Similarly, previous studies so far did not find that the patients' diagnosis differentiates expressed and perceived emotion [2, 11]. Nevertheless, further studies are indicated with larger diagnostic subgroups.

Due to the mixed diagnoses, the present study includes heterogenous family relationships with a predominance of spouses. Consequently, a differentiation according to family relationships could not be performed.

Another limitation is the lack of assessment of the patients' psychopathology, which may underly their perceptions of EE. Only few studies to date have addressed the links between perceived caregivers' attitudes and patients' symptomatology with inconsistent results: some found no significant association in psychotic disorder [32], some found evidence for the impact of negative symptoms within a 9-month period [30], and some found an association with patients' anxiety and depressive symptoms in affective disorders [19]. However, as the present study had focused on the patients' view as a potential predictor of caregivers' stress outcome, this limitation does not directly affect the findings. Finally, the use of continuous medication has not been considered. This may have biased perceived EE data as control of symptoms and/or sedation may affect patient–caregiver interactions.

Conclusion

Perceived criticism is held to be a strong predictor of the patients' relapse with regard to different disorders. With respect to caregiver characteristics, perceived criticism significantly correlates with expressed criticism and with different dimensions of caregivers' stress outcome across

time, but its relative impact on the caregivers' stress outcome compared to caregivers' expressed criticism is limited, as expressed criticism turned out to be the most powerful predictor. More influential on the multivariate level than perceived criticism is probably perceived resignation, a component of EE which has been paid less attention to, although it might become more relevant in the course of the illness. Particularly, the association between perceived resignation and respective caregiver behaviour has yet to be examined.

Conflict of interest None.

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