CHAPTER 5

Predictive power and construct validity of the Level of Expressed Emotion (LEE) scale:
Depressed out-patients and couples from the general community

British Journal of Psychiatry (1997) 170, 520 - 525
With kind permission from the Royal College of Psychiatrists,
17 Belgrave Square, London SW1X 8PG, England
CHAPTER FIVE

Predictive power and construct validity of the Level of Expressed Emotion (LEE) scale:
Depressed out-patients and couples from the general community

Coby Gerlsma and William W. Hale III

ABSTRACT

Background The Level of Expressed Emotion scale (LEE) is a questionnaire designed to measure the perception of expressed emotion, an important predictor of the course of several psychiatric disorders.

Method In this study, the scale’s predictive and construct validity were examined in a sample of 26 clinically depressed out-patients and their partners, and in a sample of 40 couples from the general community.

Results In the sample of depressed out-patients, the LEE was predictive of depression improvement at six month follow-up. With regard to the construct validity, results in both samples showed quite strong relationships between the LEE and depressive symptomatology, relational dissatisfaction, and coping styles.

Conclusion The LEE may be a useful tool in the study of interpersonal processes and depression, both in clinical and research settings.
CHAPTER FIVE

Introduction

Expressed Emotion (EE), that is, the amount of criticism, hostility, and emotional over-involvement expressed in family relationships, has proven to be a valuable predictor of the course of various psychiatric disorders, such as schizophrenia, depression, and anxiety disorders (e.g. Kavanagh, 1992). The interactive model that Kavanagh (1992) proposed to explain the link between EE and relapse suggests that patient’s symptom behaviour causes stress in the household. Relatives’ interpersonal behaviour can be seen as an attempt to cope with this stress. In some relationships it involves the expression of criticism and/or emotional over-involvement, i.e. high EE. This exacerbates rather than mitigates the stress in the household, which, in turn, is likely to increase the patient’s symptom behaviour (and the likelihood of relapse). The development of such a vicious circle of negative interactions is proposed to be moderated by the interpretation that each relationship partner makes of the other’s behaviour (i.e. perceived EE), and by the coping skills that each can bring to bear. Hooley and Teasdale (1989) showed that perceived criticism was even more predictive of relapse in depressed patients than the amount of criticism actually expressed by the relative during the Camberwell Family Interview (CFI; Vaughn & Leff, 1976), the standard measure for assessment of EE. Little is known, however, about the interrelationships between perceived EE, own and partner’s coping skills and symptom behaviour.

Like the Hooley & Teasdale (1989) measure, the Level of Expressed Emotion scale (LEE; Cole & Kazarian, 1988) uses the patient rather than the relative as a source to gain information about the relative’s behaviour; hence, it addresses perceived EE. While most theory and research on EE builds on the ‘gold standard’ of EE-measurement, i.e. the CFI, there is good reason to explore the psychometric and validational properties of alternative measures such as the LEE. As Kavanagh (1992) noted, the status of the EE concept should not rest on a single operationalisation. Furthermore, its length and scoring complexity put limits on the applicability of the CFI in certain situations, such as repeated measurement in order to monitor progress in therapy, or in order to gain information about the patient’s wider social network, including hospital staff. Finally, as was noted above, while perceived EE is a decidedly different operationalisation than CFI-assessed EE, it may be equally important (e.g. Hooley & Teasdale, 1989; Hooley & Richters, 1991) and merits study.
in its own right. In this study, we examined the construct validity of the LEE in order to evaluate its usefulness in clinical and research settings. We examined the LEE’s predictive power with regard to the course of clinical depression, and, in accordance with Kavanagh’s (1992) interactive model, its interrelationships with own and partner’s coping skills, relational distress, and depressive symptomatology. Except for the prediction of the course of clinical depression, findings in a sample of couples involving a clinically depressed out-patient were compared with findings in a sample of couples from the general community. The generally held assumption that depressed patients are more vulnerability to relational distress (e.g., Blatt & Maroudas, 1992) may result in depressed patients perceiving higher levels of EE than non-patient controls do; on the other hand, the intimate relationships of depressed patients may be characterized by more negative interaction (e.g. Coyne & Downey, 1991). Such differences in perception or relational quality are likely to affect the pattern of interrelationships between perceived EE, relational distress, symptom behaviour, and coping styles, and, as such, bear on the construct validity of measures for perceived EE.

**METHODS**

**Subjects and procedure in the clinical sample**

Twenty-six depressed out-patients consecutively attending our hospital’s out-patient clinic (13 men and 13 women with mean age 42 years (s.d. = 13)) and their partners (13 men and 13 women with mean age 42 years, (s.d. = 12)) participated in this study. Of the 26 couples, 19 (73%) were married and 7 (27%) were living together. Mean duration of the relationship was nine years (s.d. = 4.3). Written informed consent was obtained from all participating patients.

Patients were included in the present study if they were diagnosed by a clinical psychologist as suffering from a major depressive disorder (DSM-IV; American Psychiatric Association, 1994) without psychotic features at admission, did not suffer from any organic disorder, did not receive neuroleptic medication, and had a Beck Depression Inventory (BDI) score at admission of 17 or higher (mean = 27 (s.d. = 6); range 17-37). There were six patients (23%) with a first episode of depression, and 20 (77%) with a recurrence of depression. Beyond the exclusion criterion of neuroleptic
medication, no control was made of the patients’ psychotherapies or pharmacological treatments; 17 patients (65%) received antidepressant medication.

Within two weeks after admission at the out-patient clinic, all couples were asked to complete a series of questionnaires which included: the Level of Expressed Emotion, the Beck Depression Inventory, the Symptom Checklist-90, the Maudsley Marital Questionnaire, and Utrecht Coping List.

Following T1 measurement, the patients were requested to fill in a BDI once a week and to send this to the researcher. Patients were invited to return for retesting (T2) once their weekly BDI score was 8 or less; in cases where the BDI remained 9 or higher, patients were invited back for testing six months after T1. At T2 measurement, patients were asked to fill in the BDI and the SCL-90. Nine patients (35%) were invited before six months; the remaining 17 (65%) were invited six months after T1. The former patients did not differ from the latter in T1 depression score ($t(24)= 0.44$, $P = 0.66$).

**Subjects and procedure in the healthy sample**

To increase comparability, we decided to select couples from the general community who, like the couples from the clinical sample, had experienced a relatively stressful episode in their relationship at the time of data collection. On the basis of literature research we chose couples with a first child aged between 6 and 18 months. Adaptation to parenthood generally gives rise to considerable increases in stress and relational conflict, due to new demands and (newly discovered or developed) differences in roles, ambitions, and interests. Hence, this stage of the relationship is generally characterised by a relatively high level of chronic stress, which appears to reach its peak in the period from 6 to 18 months after the birth of the child (Cowan *et al*, 1985).

Forty couples were contacted through day-care centres and swimming pools (baby-hour). Thirty-two (80%) couples were married, 7 (17.5%) lived together and one couple (2.5%) was “living-apart-together”. Respondents ranged in age from 21 to 48 years, with a mean age of 32 years (s.d. = 4.8).

Couples were visited at their home address and asked to complete a series of questionnaires: the LEE, the BDI, the Interpersonal Problem Solving Inventory, and the Utrecht Coping List.
CHAPTER FIVE

Material

Perceived quality of the relationship

Perceived EE was assessed using the LEE scale (Cole & Kazarian, 1988; Gerlsma et al, 1992). Respondents are asked to rate their partner’s behaviour towards them during the past three months on a four-point Likert scale (anchored ‘untrue’ - ‘true’). The factorially derived 33-item version (Gerlsma et al, 1992) has three moderately intercorrelated subscales labelled “perceived lack of emotional support” (α = .92 in the clinical sample; α = .86 in the healthy sample), “perceived irritability” (α = .88 in the clinical sample; α = .82 in the healthy sample), and “perceived intrusiveness” (α = .84 in the clinical sample; α = .82 in the healthy sample); the total score is labelled “perceived EE” (α = .93 in the clinical sample; α = .90 in the healthy sample).

As was noted in the Gerlsma et al (1992) study, none of the original LEE items seemed to refer explicitly to perceived criticism as formulated by Hooley and Teasdale (1989). We therefore appended the scale with five items to assess perceived criticism (i.e. “is critical of me”; “tries to change me”; “gets annoyed when I want something from him/her”; “usually agrees with me” (reverse scoring); “shows me (s)he cares for me” (reverse scoring)). These items were adapted from the Familien Fragenbogen (Hahlweg et al, 1995), and Hooley and Teasdale’s (1989) perceived criticism measure. Reliability of this appended “perceived criticism” scale was satisfactory, considering the small number of items (α = .72, in the clinical sample; α = .65, in the healthy sample).

‘Relational dissatisfacton’ was assessed by means of the Maudsley Marital Questionnaire (MMQ; Arrindell et al, 1983) in the clinical sample. For this study, use was made of the relational dissatisfaction subscale (α = .88). In the healthy sample, the relational dissatisfaction subscale of the Interpersonal Problem Solving Inventory (IPSI; Lange, 1983) was used (α = .72).
CHAPTER FIVE

Symptom behaviour

In both samples, depressive symptomatology was assessed with the BDI (Beck et al, 1961) ($\alpha = .92$ in the clinical sample; $\alpha = .83$ in the healthy sample).

In the clinical sample, the patients also completed the SCL-90 (Arrindell & Ettema, 1986). The SCL-90 total score, psychoneuroticism, was used in this study as an indication of the general level of psychological and physical dysfunctioning in the last week ($\alpha = .98$).

Coping styles

The Utrecht Coping List (UCL; Schreurs et al, 1988) was used to measure coping styles in both the healthy and the patient samples. This questionnaire was designed to measure the coping strategies people use in stressing situations, either life events or daily hassles. We used five UCL subscales; active coping, avoidant coping, support-seeking, expression of emotion, and depressive reaction. All scales had satisfactory internal consistency ($\alpha > .70$).
RESULTS

Prediction of changes in depression and psychoneurotic complaints in patients

Change score for the patients’ BDI (depression) and SCL-90 (psychoneuroticism) were calculated by subtracting the T2 score from the T1 score. Higher scores indicate more improvement, and lower scores indicate less improvement or worsening. BDI change scores ranged from -10 to 31 with a mean of 13 (s.d. = 9); SCL-90 change scores ranged from -34 to 158 with a mean of 45 (s.d. = 62).

As can be seen in Table 1, the LEE’s perceived irritability, perceived criticism, and perceived EE scales were significantly related to BDI as well as SCL-90 change scores, indicating that patients who perceived more irritability, criticism and EE from their partners at T1 showed less improvement during the following six months. The

---

**Table 1** Prediction of patient’s changes in depressed mood and psychoneurotic complaints, by perceived expressed emotion and marital dissatisfaction

<table>
<thead>
<tr>
<th></th>
<th>Patients’ change scores (T1-T2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>BDI</td>
</tr>
<tr>
<td><strong>Patient’s LEE</strong></td>
<td></td>
</tr>
<tr>
<td>lack of emotional support</td>
<td>-0.23</td>
</tr>
<tr>
<td>intrusiveness</td>
<td>-0.32</td>
</tr>
<tr>
<td>irritability</td>
<td>-0.46*</td>
</tr>
<tr>
<td>criticism</td>
<td>-0.53*</td>
</tr>
<tr>
<td>LEE total score</td>
<td>-0.41*</td>
</tr>
<tr>
<td><strong>Partner’s MMQ</strong></td>
<td></td>
</tr>
<tr>
<td>relational dissatisfaction</td>
<td>0.07</td>
</tr>
<tr>
<td><strong>Patient’s MMQ</strong></td>
<td></td>
</tr>
<tr>
<td>relational dissatisfaction</td>
<td>-0.28</td>
</tr>
</tbody>
</table>

* P < 0.05
MMQ, as an analogue measure of relational distress, was not significantly related to changes in depression and psychoneuroticism.

Differences in perceived EE between the clinical and healthy samples

Table 2 summarises means and standard deviations for the level of perceived EE in the clinical and healthy community samples. Comparison of the patients’ scores with those of the non-clinical respondents, as estimated by means of Cohen’s (1988) $d$ effect size estimate,\(^1\) shows that the patients perceived more intrusiveness ($d = 0.41$). Note that the differences between patients and non-clinical respondents in perceived criticism, perceived irritability, and perceived lack of support were small ($d \leq 0.23$).

Partners of depressive patients perceived a greater lack of support ($d = 0.46$), greater intrusiveness ($d = 0.53$), irritability ($d = 1.45$) and total perceived EE ($d = 0.83$) than non-clinical respondents.

Table 3 summarises correlation coefficients for the relationships between the perceived EE scales, and own and partner’s relational dissatisfaction, coping styles, and depressive symptomatology.

Relationship between perceived EE and relational dissatisfaction

Relational dissatisfaction appeared to be strongly related to perceived EE in the healthy sample, strengthening the convergent validity. Except for the perceived intrusiveness scale, all LEE scales correlated positively with own and partner’s relational dissatisfaction scores. Hence, those who were dissatisfied and those with dissatisfied partners were likely to perceive more EE.

\(^1\) Effect size estimates $d$ is an estimate of the standardised difference between two groups; for purposes of interpretation, Cohen (1988) considered $d = 0.20$ a small, $d = 0.50$ a medium, and $d = 0.80$ a large effect size.
<table>
<thead>
<tr>
<th>LEE scales for perceived</th>
<th>Healthy sample</th>
<th>Patients</th>
<th>Partners</th>
<th>Cohen’s $d$ effect size estimate for the difference between</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>s.d.</td>
<td>Mean</td>
<td>s.d.</td>
</tr>
<tr>
<td>lack of support</td>
<td>30.41</td>
<td>7.74</td>
<td>31.96</td>
<td>12.40</td>
</tr>
<tr>
<td>intrusiveness</td>
<td>13.47</td>
<td>4.44</td>
<td>16.18</td>
<td>4.75</td>
</tr>
<tr>
<td>irritability</td>
<td>13.23</td>
<td>4.40</td>
<td>12.73</td>
<td>5.57</td>
</tr>
<tr>
<td>criticism</td>
<td>8.60</td>
<td>2.45</td>
<td>9.18</td>
<td>3.10</td>
</tr>
<tr>
<td>total score EE</td>
<td>65.89</td>
<td>14.57</td>
<td>70.05</td>
<td>21.00</td>
</tr>
</tbody>
</table>

Note: Cohen (1988) considered $d = 0.20$ a small, $d = 0.50$ a medium, and $d = 0.80$ a large effect size.
<table>
<thead>
<tr>
<th></th>
<th>Depressed out-patients</th>
<th>Non-clinical respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lack of support</td>
<td>Intrusiveness</td>
</tr>
<tr>
<td><strong>Own coping styles:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>active</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>avoidant</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>support-seeking</td>
<td>-0.64</td>
<td>-</td>
</tr>
<tr>
<td>depressive reaction</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>expression of emotions</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>BDI depression</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>relational dissatisfaction</td>
<td>0.88</td>
<td>-</td>
</tr>
<tr>
<td><strong>Partner's coping styles:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>active</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>avoidant</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>support-seeking</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>depressive reaction</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>expression of emotions</td>
<td>0.57</td>
<td>-</td>
</tr>
<tr>
<td>BDI depression</td>
<td>-</td>
<td>0.46</td>
</tr>
<tr>
<td>relational dissatisfaction</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
CHAPTER FIVE

Patients’ dissatisfaction with the relationship was similarly related to perceived EE, that is, to all LEE scales except perceived intrusiveness. However, unlike the healthy sample, perceived EE was unrelated to partner’s dissatisfaction.

Relationship between perceived EE and depressive symptomatology

In the healthy sample, the link between perceived EE and own and partner’s depressive symptomatology paralleled findings with regard to relational dissatisfaction. Own and partner’s depression scores were related to increased levels of perceived lack of support, irritability, criticism, and total EE.

Patient perceived EE was less consistently related to depression scores. Patients with higher depression scores perceived less criticism, while they perceived greater intrusiveness when their partner reported more depressive symptoms.

Relationship between perceived EE and coping styles

In the healthy sample, respondents tended to perceive more lack of support, intrusiveness, criticism, and EE when they used avoidant and depressive reacting coping styles. Patients’ perception of EE was only related to a support-seeking coping style: patients with high scores for support-seeking perceived less lack of support, irritability, criticism, and EE.

Partner’s coping styles were also related to the perception of EE. In the healthy sample, respondents perceived higher levels of lack of support, irritability, criticism, and EE when their partners indicated the use of depressive reacting and expression of emotion as coping styles. Findings for patient perceived EE were less clear-cut. Patients perceived more lack of support and total EE when their partners used expression of emotions as a coping style; furthermore, they perceived more criticism and total EE when their partners used support-seeking for coping. Finally, patients perceived less irritability when partners reported the use of active problem-solving.
CHAPTER FIVE

DISCUSSION

Predictive power of the LEE

We found that the level of EE perceived by depressive out-patients was not noticeably higher than that perceived by individuals from the general community. Yet, perceived EE appeared to be a significant predictor of the course of their depression and, more generally, the number of physical and psychological complaints; higher levels of perceived irritability and criticism predicted less improvement during the following six months. The LEE showed consistent and quite strong relationships with a measure of relationship dissatisfaction (MMQ), but the latter did not equal the LEE in predictive power. While our findings in this regard corroborate those reported by Hooley and Teasdale (1989), it should be noted that the clinical sample was fairly small. Furthermore, besides the exclusion criterion of neuroleptic medication, we had no information as to the patients’ psychological or pharmacological treatments and were, therefore, unable to control for its effects.

Differences between relational dissatisfaction and perceived EE

While its relationships with relational dissatisfaction strengthen the LEE’s convergent validity, of the two instruments measuring relational dysfunctioning, only the LEE predicted depression improvement. Comparing the contents of the measures may show which aspects of the relationship in particular hampered improvement in depressive patients. In the items of the two relevant LEE scales, strong emphasis is given to the perception of one’s partner’s ‘negative interactional behaviour’ (sample items: [My partner] “tries to changes me” for criticism; “flies off the handle when I don’t do something well” for irritability). In the MMQ attention is focused on one’s overall attitudes and feelings with regard to the partner and the relationship (sample item: “Are you satisfied with the leisure activities that you both share in?”). This difference in focus may account for the difference in predictive power. General dissatisfaction with the partner and the relationship can express itself in various ways; if it involves criticism and irritability (rather than, for instance, avoidance), improvement in the depressive partner may be hampered (e.g. Coyne & Downey, 1991).
CHAPTER FIVE

Relationship between perceived EE and depressive symptomatology, relational distress, and coping styles

With regard to the construct validity of the LEE, results in both samples generally corroborated Kavanagh’s (1992) model; perceived EE was related to symptom behaviour as well as own and partner’s coping styles. There were, however, marked differences between the clinical and healthy sample. In the healthy sample, perceived EE was related to own as well as partner’s dissatisfaction with the relationship, and to own as well as partner’s depressive symptomatology, corroborating the notion of symptom behaviour as a trigger of negative interactional processes (Kavanagh, 1992). Patient perceived EE was, however, unrelated to their partner’s relational dissatisfaction and depression scores, suggesting that either the patients perceived EE independently of their partner’s current behaviour, or partners’ actual EE behaviour was independent of their general wellbeing in the relationship. Unfortunately, we had no assessment of partner’s actual behaviour towards the patient in terms of EE. In future studies these relationships, and the possible discrepancy between actual and perceived EE, may be examined more directly.

The clinical and healthy sample also showed differential relationships between perceived EE and coping styles. Healthy controls who used coping styles of depressive reaction and avoidance were likely to perceive more EE; they also perceived more EE when their partners used depressive reaction and expression of emotion coping styles. In marked contrast was the finding that patient perceived EE was only related to support-seeking; patients who perceived high levels of EE tended to use this coping style less.

Perceived EE in the context of interpersonal theories of depression

A tentative explanation for the differences between the clinical and healthy sample in correlations between perceived EE and coping styles might be found in interpersonal theories on depression. Coyne et al (1991) suggested that depressed people elicit supportive behaviours in others which tend to be intermixed with an underlying attitude of rejection. Sensitive to this underlying rejection, depressive individuals are prone to display more depressive behaviour in order to elicit more support. Rather than yield the support desired, a depressive’s appeal for support may
lead their partner eventually to withdraw from the interaction. In a similar vein, Horowitz & Vitkus (1986) cogently illustrated how the particular support-seeking strategies used by depressives (characterized by self-derogation and submission) tend to elicit controlling behaviour in their partners that may at first be affectionate (as in giving friendly advice), but may eventually become rejecting and hostile, as irritation and frustration about the depressive’s lack of improvement (and increasingly clinging behaviour) grows.

Hence, the development and course of depression is seen as a dynamic interactional process. Once a vulnerability to depression has evolved, the individual is likely to end up in a vicious circle in which depressive support-seeking tends to meet with detrimental responses, that is, responses reflecting rejection (Coyne et al, 1991), dominance (Horowitz & Vitkus, 1986) or put down (Gilbert, 1993). If we accept the LEE scales, in particular the criticism and irritability scales, as fair operationalisations of such detrimental responses (expected or perceived), the results found in the healthy sample of this study might reflect a lenient stage of the interactional process, where a depressive reacting coping style is related with the perception of EE. This would corroborate the notion that depressive behaviour induces EE and EE induces depressive behaviour (Hooley et al, 1995). Couples from the clinical sample may find themselves in a more desperate stage of the dynamic process. We may assume that all depressive patients used a depressive reacting coping style; statistically the reality of a major depression would be translated into a lack of (relevant) variance in this variable, thus attenuating the correlation between a depressive reacting coping style and the LEE scales. Having progressed thus far in the vicious circle, patients may seek support when they expect a favourable response, whereas those who have learned to expect criticism and irritability in response, refrain from doing so altogether. Giving up on this may have impeded early recovery; the more EE the patients perceived, the less they sought support and the less they improved in the course of the following six months.

These explanations are tentative but testable in future studies. The LEE, as a measure of perceived EE, may be a useful tool in this respect, both in research and clinical contexts.
CHAPTER FIVE

CLINICAL IMPLICATIONS

• The LEE can be used as a predictor of depression improvement in clinically depressed patients.

• As an easy and practical measure of patients’ perception of EE, the LEE may be useful for diagnostic and therapeutic purposes.

• Assessment of partner’s actual level of EE, patients’ perceived level of EE, and the possible discrepancies between the two may provide guidelines for therapeutic intervention.

LIMITATIONS

• The predictive validity of the LEE was tested in a fairly small sample of clinically depressed out-patients.

• The predictive validity of the LEE was tested while no control of patient’s psychological and pharmacological treatment was made.

• The actual interactional behaviour in terms of EE was not assessed.
REFERENCES


CHAPTER FIVE


