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ORIGINAL ARTICLE

Emotional logic development profiles – validating the benefits and safety of emotional logic training

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ABSTRACT

Objective: Validation of the Emotional Logic Development Profile (ELDP) as a measure of improvements in emotional literacy and well-being resulting from emotional logic (EL) training; a programme designed to improve emotional literacy and reduce depression and anxiety.

Method: A general adult population sample was recruited to obtain normative ELDP data, from which clinically significant change, reliability and psychometric properties could be assessed against a patient sample. This consisted of 53 patients at a UK primary care medical practice who were offered EL while on a waiting list for other psychological therapies. Patients completed the PHQ-9, GAD-7 and ELDP at initial and two-month follow-up sessions. ELDP factor structure and sensitivity were assessed, and semistructured follow-up interviews provided additional qualitative data on acceptability.

Results: PHQ-9, GAD-7 and ELDP all showed significant improvements between pre- and post-EL measurement. The ELDP appears unidimensional, provides additional information to the PHQ-9 and GAD-7 and is sensitive to change. Furthermore, 17% of patients showed reliable, clinically significant improvements in ELDP scores. General practice (GP) consultations and medication use both significantly reduced.

Conclusions: The ELDP reliably measures ELs impact on reducing depression and anxiety. Further evaluation of EL viability for wider use in primary care, and in other age groups, may prove beneficial.

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Introduction

General practices (GPs) working at a UK health centre had noticed that there was poor uptake of referrals they had made to the local anxiety and depression service. From discussion with patients, this was found to be due to the long delay between assessment and initiation of therapy, which is a problem common across mental health services in the United Kingdom. A number of individuals had made use of and reported improvements in their anxiety and depression following a locally available programme called emotional logic (EL; Griffiths 2013). This is a freely available programme accessible through both online (www.emotionallogiccentre.org.uk) and local tutors. It provides a solution-focused method building on the concept of emotional intelligence (Goleman 2004) and value-based action plans to develop an understanding of emotional distress in order to help relieve it.

Given the accessibility of the EL programme and its potential benefits as an alternative or additional option for the treatment of anxiety and depression, the GP partners decided to employ two emotional logic tutors in the health centre and to audit the impact of EL. This included validating the emotional logic development profile (ELDP), a questionnaire developed by the emotional logic centre to measure changes in emotional literacy and well-being after learning EL.

The emotional logic development profile

Emotional logic (EL) is designed to help people understand how one emotion can evolve into another with useful purposes, recognition of which can motivate adjustment to the causes of emotional distress. The method reduces the harmful impact of

emotional chaos on health and relationships (Gleick 2008). The approach is designed to promote self-efficacy by helping individuals identify solution-focused ways through difficult situations. Unpleasant emotions are reframed from 'negative' to markers of change. The method also draws on ideas common in systemic family therapy (Byng-Hall 1995), by grounding these changes within a wider context of familial and social relationships.

The ELDP was developed in 2010 from post-event evaluation comments made by 19 people with enduring anxiety and depression in the UK South West who had attended weekly EL groups for 8–10 weeks. The core question in the evaluation was, 'As a result of understanding your emotions differently, what can you now do that you could not do before?' With input from an occupational psychologist specialising in learning theory (Downs 2008), 215 specific statements were identified in the reports and categorised separately by three investigators. These statements were reduced to a 36-item Likert-scale measure of capacity for personal adjustment to emotional stressors. The scale was cross-validated against sets of telephone interviews with participants from other EL courses. ELDP scores are expressed as percentiles, increasing with increased personal resilience.

Method

Emotional Logic (EL) is not counselling, and tutors are trained to focus on helping people to understand how their negative emotions may be complicating a situation, and how they can be used constructively. Learning is structured around a standardised activity pack consisting of information and reflective tools. However, the tutors' conversations around the pack are unstructured, allowing

person-centred learning to address the specific needs of each individual.

To validate the ELDP and thus improve the evaluation of change after EL training, ELDP scores were compared with PHQ-9 and GAD-7 scores. These measures are routinely used in UK primary healthcare to screen for referral to the Improved Access to Psychological Therapies programme (IAPT), in which low-impact cognitive behavioural therapy (CBT) is the treatment of first choice (Department of Health 2008; Richards & Borglin 2011). The three questionnaires would be completed before starting the EL programme, and two months later, with the learning programme expected to last from one to four sessions over one month.

Patients referred by GPs to IAPT were offered the option of receiving EL free of charge in the health centre guided by EL tutors. An information leaflet was provided about the method, and about the study and informed consent obtained. Questionnaires were completed in the waiting room prior to the first of four 90-min learning appointments. Learning appointments were provided by two tutors with healthcare backgrounds who had been including EL in their work for 10 years. Follow-up two months later was by post, with a telephone call from an EL supervisor a week later to obtain semistructured qualitative feedback.

Prior to this evaluation, a normative group of adults was recruited in and around a large city in the South West of England to assess internal consistency of the ELDP and to provide a baseline against which the sample from the health centre could be compared.

Results

Normative group characteristics

The descriptive statistics by gender, age and educational level for the 118 normative participants recruited (30 male, 74 female, 14 undisclosed) are provided in Table 1.

Reliability and dimensionality

For this normative sample, the 36-item ELDP had a Cronbach's Alpha of 0.73 (95%CI: 0.65–0.79), indicating that the scale has good internal consistency. This is further supported by cluster analysis, which suggests that ELDP is unidimensional, providing a measure of a single construct (Figure 1).

Table 1. ELDP properties for a normative adult sample drawn from the general population.

Characteristics	ELDP (<i>N</i> = 118 total ^a)				
	<i>n</i>	Mean	SD	Min	Max
Gender					
Male	30	50.63	5.80	38.33	66.67
Female	74	49.32	7.24	35.56	65.56
Age					
18–27	10	49.61	3.97	43.33	55.00
28–37	14	50.87	7.83	38.33	65.56
38–47	27	47.94	6.00	37.22	57.78
48–57	29	50.00	7.30	35.56	63.33
58–67	23	50.34	7.18	37.78	66.67
68–77	7	48.81	5.56	39.44	56.11
≥78	5	49.11	9.10	38.33	60.00
Education					
School	27	49.01	7.70	37.22	65.56
College	34	48.92	7.24	35.56	66.67
University	50	50.81	5.64	39.44	63.33

^aThe difference between the sums of subgroups *n*'s and the total sample of 118 is due to missing data. 'Unknown' categories have not been reported as they are uninformative given the current aims.

Comparisons of ELDP to PHQ-9 and GAD-7

During the one-year trial period, a total of 56 patients learnt EL (mean age = 45 years, SD = 16.03. 44 female, nine male, three unrecorded). Scores on all scales showed statistically significant improvements between initial and two-month follow-up. PHQ-9 scores fell [$t(55) = 7.36$, $p < 0.001$], as did GAD-7 scores [$t(54) = 9.41$, $p < 0.001$], indicating significant improvements in levels of depression and anxiety. ELDP scores (percentiles) increased [$t(53) = -6.07$, $p < 0.001$], suggesting significant improvements in emotional resilience. Descriptive statistics are shown in Table 2.

In order to assess the sensitivity to change of the ELDP, effect sizes for the change in ELDP scores in three subgroups were compared (Löwe et al. 2004); those who showed increases, decreases and no change in PHQ-9 and GAD-7. The comparative statistics are shown in Table 3. The bottom three rows show that as PHQ-9 and GAD-7 scores go up ELDP scores go down, and as PHQ-9 and GAD-7 scores go down, ELDP scores go up. Changes in ELDP scores therefore track these changing measures of depression and anxiety very well. This table also indicates large effect sizes (1.13) for improvement in ELDP scores between initial and two-month session for those who showed reductions in the levels of depression (PHQ-9) and anxiety (GAD-7) following EL sessions.

Construct analysis

Although these sensitivity analyses indicate ELDP scores track changes in PHQ-9 and GAD-7 scores well, it is not evidence of the ELDP measuring a construct separate to depression and anxiety. Some support for there being a separate construct is supplied by regression analyses. Predicting changes in ELDP scores from PHQ-9 and GAD-7 changes alone suggests that PHQ-9 and GAD-7 changes account for 69% of the variance in ELDP change, which leaves 31% that is separate from PHQ-9 and GAD-7 changes. This remains at 30% even after accounting for variance due to age, gender and the number of emotional logic sessions attended.

Clinical outcomes

No patient offered EL declined the opportunity, though three patients discontinued after one EL session saying it was not for them. These three patients have not been included in any of the analyses reported here. Within the trial sample, there were nine patients who had been on psychotropic or hypnotic medication at referral. Seven reported reducing or ceasing medication during the EL trial. GP consultations during a three-month period prior to patient entry were counted and compared with the three months after completing EL sessions. GP consultations reduced significantly from a median of 2 (range 1–7) to 0 (range 0–6) (two-tailed $p = 0.02$).

Follow-up telephone interviews with patients revealed no comments critical of EL, even though two patients felt that it had not particularly helped them. Comments indicated positive perceptions of life changes in all five domains of emotional intelligence (Goleman 2004), which are as follows:

Self-awareness: 'I'm thinking differently; seeing things differently. There is reason behind this, and it's not all my fault'.

Self-regulation (managing feelings): 'I'm not charging ahead now, and I'm not doing what my emotions are saying. I wait and think'.

Motivation: 'I can do what I used to do! I have more perspective of understanding of how I need to get from A to B without getting stuck in the middle'.

Empathy: 'Now, whenever any of my friends get annoyed, I look for what's deeper'. And, 'I take other people into account now'.

Social skills: 'I'm looking at situations differently. I'm stepping back in confrontations and asking, "Do I need to get involved?"'

Although this group showed improvements in their understanding of and reported ability to respond effectively to, emotional difficulties, the nature of self-report and emotion-related scales means that they are inherently variable. One way of assessing change while also taking into account this variability is the reliable change index shown in Figure 2 (Jacobson & Truax 1991).

Figure 2 shows ELDP scores at time one (horizontal axis) and at two-month follow-up (vertical axis). The central diagonal line is a line of no-change, where both initial and follow-up scores are identical. The diagonal lines above and below this bound an area within which any change might be attributable to variability in the measure. Points outside of this area show individuals who have changed beyond what might be expected from natural or scale-related variation.

Of the 53 people with ELDP scores at both initial and follow-up time points, 11 individuals (21%) appear above the upper diagonal line. These individuals can thus be thought of as having shown reliable, significant improvement in ELDP scores over and above that which might be expected by natural scale variability.

Furthermore, the dashed horizontal line in Figure 2 is derived by comparing the score distributions for the patient group with that for the normative group. The midpoint between these two distributions (36th percentile) indicates the point at which the score is more like the normative than the patient group; where there may be a clinically significant change towards normative levels of ELDP. The vertical line at $x = 36\%$ shows where points on its left may have starting scores that are clinically significant; closer to the patient group than the normative group. The horizontal line shown at $y = 36\%$ suggests that final scores above this line show significant clinical improvement. As such, nine patients (17%) above the dashed horizontal line and above the upper diagonal

line can be thought of as having shown improvements in ELDP scores above what might be accounted for by scale variability, and which is clinically significant (ending closer to the normative group than the patient group).

Discussion

This paper presents the results of a validating study within a health centre, comparing changes in ELDP scores with concurrent changes in PHQ-9 and GAD-7 scores. This new measure of emotional resilience (the ELDP) has good internal consistency, factor structure and sensitivity. This study also provides evidence of the utility of the ELDP in assessing changes in emotional coping skills that could have health benefits. The supported learning, through EL sessions, that achieves this health benefit could be implemented throughout primary healthcare with little difficulty and also be made available to the public as a health promotion method through open-access community centres.

EL does not require an assessment, diagnosis and delayed therapy programme model, which often contributes to long delays and waiting lists. EL tutors do need specific training to learn how to become guides to support learning, but this training is short and inexpensive compared with therapy training, and learning can also happen informally and conversationally anywhere, anytime. In addition, the systemic approach of EL means that a small amount

Table 2. Descriptive statistics for PHQ-9(%), GAD-7(%) and ELDP(%) scores at initial session and two-month follow-up.

Measure	N ^a	Initial session		2 Months		Change	
		M	SD	M	SD	M	SD
PHQ-9 (%)	56	48.15	25.67	26.26	22.19	-21.89	22.26
GAD-7 (%)	55	59.83	24.79	27.10	22.35	-32.73	25.79
ELDP (%)	53	25.69	9.37	34.28	8.74	8.59	10.39

^aOne participant failed to return their two-month GAD-7 form, and three failed to return their two-month ELDP form. These participants could not be included in these analyses.

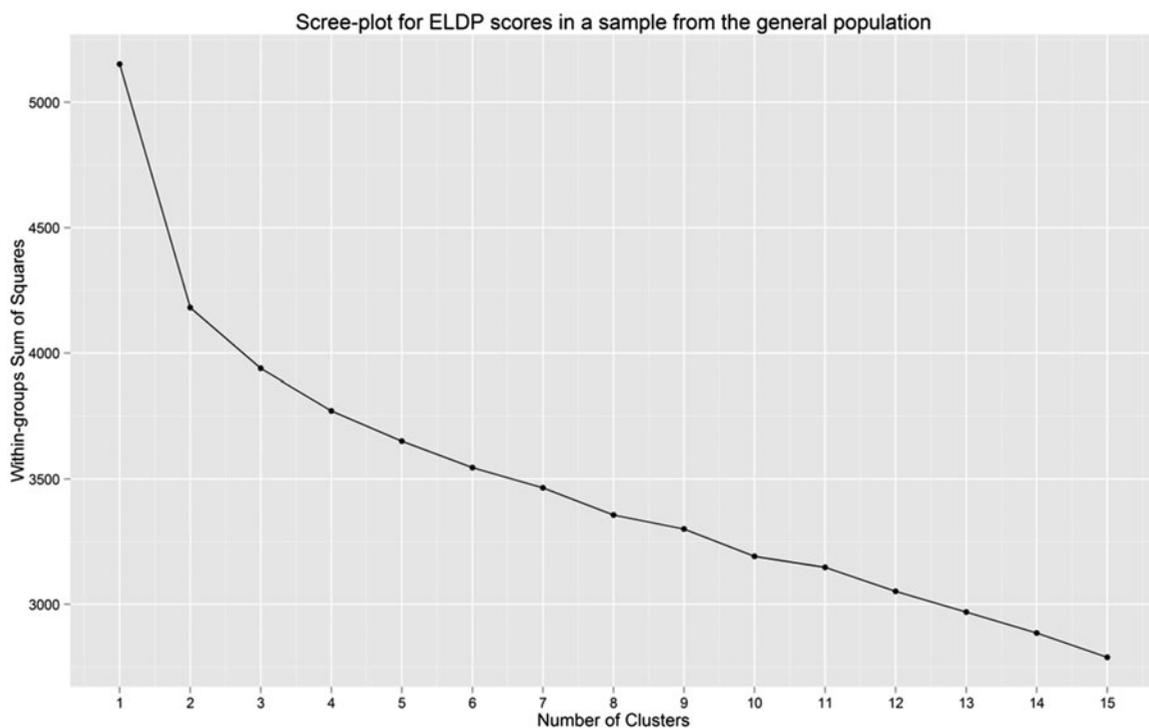


Figure 1. Scree plot showing a single primary factor measured by the ELDP.

Table 3. Sensitivity statistics.

ELDP statistics	PHQ-9 groups			GAD-7 groups		
	Increase	No change	Decrease	Increase	No change	Decrease
N	6.00	1.00	46.00	5.00	3.00	45.00
Initial mean (M_1)	31.02	15.56	25.77	29.33	28.89	25.64
Initial SD (SD_1)	9.67	n/a	8.50	9.84	8.62	8.74
Two-month mean (M_2)	27.87	21.11	35.42	28.44	26.11	35.49
Two-month SD (SD_2)	10.08	n/a	8.24	7.53	13.10	8.31
Mean ELDP change	-3.15	5.56	9.65	-0.89	-2.78	9.85
SD of ELDP change (SD_3)	6.29	n/a	9.46	8.17	5.36	9.39
Effect size ^a	-0.33	n/a	1.13	-0.09	-0.32	1.13
Standardised response mean ^b	-0.50	n/a	1.02	-0.11	-0.52	1.05
Responsiveness index ^c	n/a	n/a	n/a	-0.10	-0.32	1.14

^aEffect size = $(M_2 - M_1) / SD_1$.

^bStandardised response mean = $(M_2 - M_1) / SD_3$.

^cResponsiveness index = $(M_2 - M_1) / SD_{\text{no-change-group}}$.

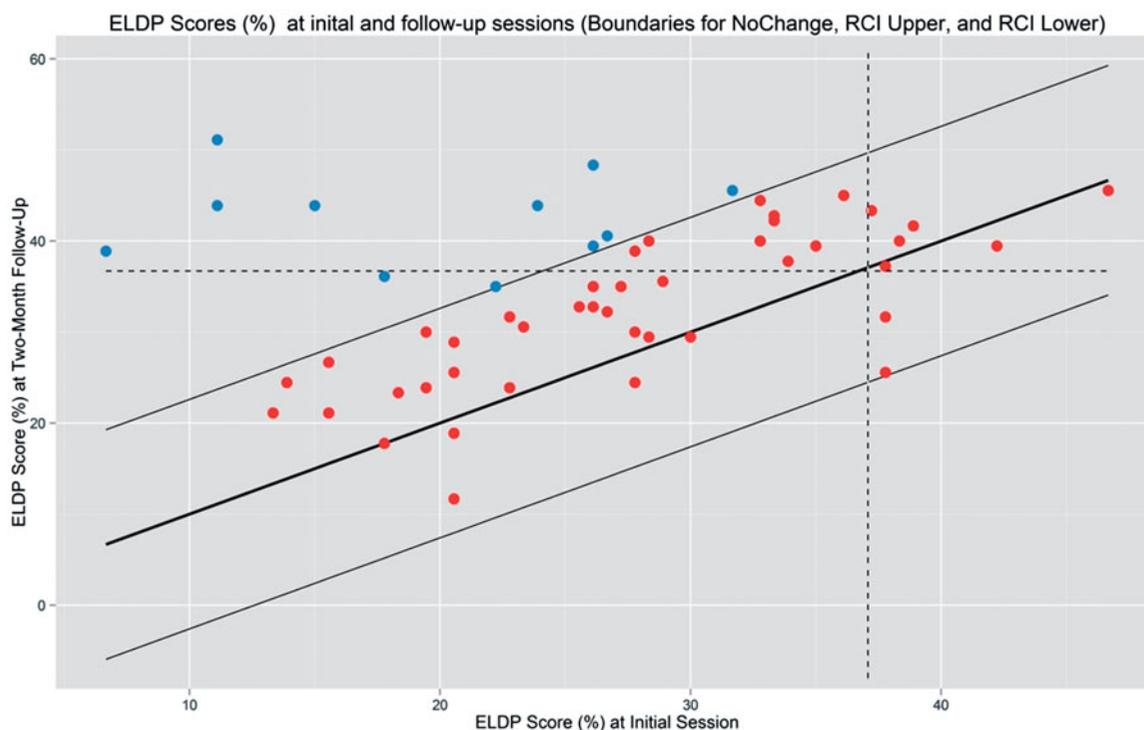


Figure 2. Changes in ELDP scores between initial and two-month follow-up sessions, including boundaries for no-change (central diagonals), reliable (upper and lower diagonals) and clinically significant change (dashed horizontal).

of learning by one individual has the potential to change the whole dynamic of that family, classroom, workplace or neighbourhood.

The effect size of 1.13 can be interpreted as showing a large to very large impact of learning EL on ELDP scores, with concurrent reductions depression and anxiety. The regression analysis on this patient sample suggests that emotional resilience as measured by the ELDP captures a different dimension of mental health to those primarily assessed in mental health services by the PHQ-9 and GAD-7. Future work with a larger sample and longer time frame could investigate further the construct validity and causal relationships which may underlie these effects. In particular, with a larger sample, increase, decrease and no-change groups on measures such as the PHQ-9 and GAD-7 could be determined by the established clinical cut-offs for these scales. This would allow the sensitivity analyses reported here to be related to accepted 'outcomes' on these scales across a wider range of anxiety and depression severities – something which the relatively small sample of the current study does not currently capture. Further studies with

larger samples may also benefit from more rigorous control of data collection methods to avoid potentially non-random missing data. Missing data in the current study were so few that an analysis of the causes would be unreliable, but we have made clear where this occurs, and present as complete a picture as possible of the ELDPs properties.

Although nine patients may seem a relatively small number to show reliable, clinically significant improvement, the vast majority show a general improvement that may be significant for the individual. Improvements in capacity to manage changing circumstances may improve quality of life even while some measurable depression or anxiety remains. Earlier pre-audit pilots had suggested that learning EL first improves social functioning and sleep, before a sense of well-being itself improves. It is notable that no one showed deterioration outside the realm of natural variability, which emphasises the clinical safety of EL.

Learning EL has high face validity for patients. None declined the offer of EL sessions. The lifelong-learning approach was highly acceptable. The cost-benefit to reducing therapy time, GP

consultations and medication prescribing could be significant, justifying the inclusion of evaluation studies of EL in commissioned service developments.

EL teaches a core transferable skill to manage emotional distress. This skill is currently being taught in school pilots in the United Kingdom and abroad using appropriate materials available through the Times Educational Supplement (Bunce & Jagelman 2015). Children as young as eight years have participated, and a programme to help teenagers at risk of exclusion has received a 'highly approved' report from the UK governments Office for Standards in Education. This is extremely positive as recognition of skills, such as emotional logic, within the school curriculum may serve as a preventative measure against anxiety and depression in future generations. Further normative studies could be conducted with the ELDP for children aged 8 and older to support the UK government's drive to promote positive mental health through schools and primary healthcare youth services (NICE 2009; Department of Education 2014). The normative data presented here and possible future normative data on different age groups will provide benchmarks against which the wider efficacy of EL can be evaluated. Furthermore, adopting an adaptive approach to emotional distress through programmes, such as EL, may also serve to de-medicalise mental health, and simultaneously re-humanise, families and organisations at every level of society.

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