

Development of the Mental Clutter Scale

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INTRODUCTION

Memory loss in fibromyalgia syndrome (FMS) is often characterized by a distinctive combination of disturbances that sets people with FMS apart from other medical patients with memory complaints. The view has arisen (Leavitt and Katz 2002), that both forgetfulness and mental fog characterize their condition, suggesting that memory and mental clarity deteriorate together in FMS. By contrast, deterioration in memory is not accompanied by disturbances in mental clarity in other medical patients reporting memory loss. The great majority of cognitively-compromised medical patients without fibromyalgia who reported memory loss did so in a state of good mental clarity, with only 8.8% of a non-FMS sample connecting memory disturbance to diminished mental clarity.

The label fibrofog entered the clinical language as convenient shorthand to describe the symptom combination of memory loss and mental fog. We propose that pattern of cognitive difficulty in FMS may signify a syndrome of cognitive difficulty that distinguishes them from other patients with cognitive problems.

PURPOSE

To investigate this cognitive model, a new scale was developed to capture the varying appreciation of disturbances in the cognitive state of people with fibromyalgia.

METHOD

Three studies involving a sample of over 800 subjects were carried out to determine the structure and stability of a new scale, the Mental Clutter Scale. An initial item pool of 13 items was formulated from self-statements of patients presenting with a history of memory complaints and a review of the literature. Seven items relating to problems with cognitive skills were rated on a 10-point likert scales from 1=no problem to 10=severe problem. Six items relating to the frequency of diminished mental clarity were rated on a 10-point likert scale from 1=not at all to 10=all the time.

The 13 item measure was administered to a sample of 223 patients with various rheumatic disorders. Data of 88 patients who met the ACR criteria for FMS were subjected to factor analysis with varimax rotation. The criteria of Eigenvalue greater than one combined with a visual inspection of the Scree Plot were used in identifying the number of factors to be extracted. A 2-factor structure solution met these criteria. Studies 2 and 3 were used to confirm factor structure found in the initial sample. For studies 2 and 3, we modified the scales by adding one additional item to Factor 1 (mental speed) and two additional items to Factor 2 (Fuzzy headedness and Information overload).

SAMPLES

SAMPLE 1. The sample comprised of 88 females with memory complaints who met ACR criteria for fibromyalgia. They had a mean age of 50.3±10.5 years and a mean level of education of 15.0±3.7 years.

SAMPLE 2. The sample of the first replication was roughly comparable to sample 1 and comprised of 128 FMS subjects with memory complaints drawn from the same clinical setting. They had a mean age of 49.5±11.7 years and a mean level of education of 14.3±2.0 years. The gender breakdown was 93.7% female and 6.3% male.

SAMPLE 3. The sample of the second replication consisted of 592 subjects with memory complaints who completed a Web based version of the scale over the internet. The gender breakdown was 88.3% female, and 11.7% males. The median age of the sample was 48 years.

RESULTS

STUDY 1

The factor analysis produced a two-factor solution (Eigenvalues = 9.6 and 1.1 respectively) with 7 variables loading highly (0.7) on the first factor and six variables loading highly on the second factor (Table 1). Factor loadings of (0.7) indicate a close association of variables with a factor and formed the basis for inclusion of variables in Factors. Seven variables cover a broad range of cognitive skills and formed the Cognition Factor (I). They are shown in bold in Table 1. Six variables associated mainly with intrinsic qualities of the brain relating to clear headedness formed the Mental Clarity Factor (II). The two factors explained 82.4% of the total variance.

STUDIES 2 AND 3

Confirmatory factor analysis in studies 2 and 3 produced highly similar 2 factor solutions, with eigenvalues of 11.0 and 1.5 in study 2 accounting for 77.7% of the variance, and 10.1 and 1.2 in study 3 and accounting for 70.7% of the variance. The two -factor solution across studies 2 and 3 displays a high degree of overlap with the original 2 factor inventory of variables indicating a high amount of factor stability.

Next, we examined group differences in the presentation of cognitive difficulties on the basis of this two dimensional framework, As can be seen in Table 2, groups with and without memory complaints differed on both factor scales. Those with memory complaints on average produced significantly higher scores on both cognitive skills and mental clutter. Higher scores represent increased disturbance in cognitive skills and mental clarity. As expected, individuals with fibromyalgia presented the highest level of disturbance in both cognitive skills and mental clarity.

TABLE 1. Comparison of factor loadings across 3 studies.

	Study 1		Study 2 Replication		Study 3 Replication	
	Factor 1	Factor 2	Factor 1	Factor 2	Factor 1	Factor 2
Concentration	.87	.37	.82	.36	.79	.36
Memory	.75	.47	.83	.28	.75	.31
Staying Focused	.87	.32	.85	.28	.78	.36
Multitasking	.81	.38	.77	.41	.75	.26
Expressing Self	.83	.38	.74	.36	.66	.34
Thinking Clearly	.86	.44	.82	.40	.78	.44
Perceptual Clarity	.78	.48	.80	.40	.77	.39
Mental Speed			.81	.39	.78	.33
Spaciness	.49	.71	.55	.62	.43	.69
Haziness	.29	.91	.34	.83	.42	.74
Confusion	.49	.73	.50	.73	.49	.72
Cluttered Thinking	.42	.82	.40	.81	.44	.77
Fogginess	.41	.85	.44	.82	.56	.69
Rushing Thoughts	.32	.75	.24	.78	.12	.77
Fuzzy headedness			.36	.84	.40	.75
Information overload			.30	.80	.37	.70

TABLE 2. Group differences in the presentation of cognitive difficulties on the basis of a two dimensional framework involving cognitive skills and mental clutter.

	Cognitive	Mental Clutter
Fibromyalgia Sample		
Memory complaints (142)	5.7(2.0) ^a *** #	5.0(2.1)*** #
No memory complaints (56)	2.2(1.3)	2.0(1.4)
Medical Sample (n=207)		
Memory complaints (n=80)	4.4(2.2)***	3.2(2.1)***
No memory complaints (n=207)	1.6(0.9)	1.4(0.8)
Community Sample		
Memory complaint (n=47)	3.1(1.8)***	2.4(1.5)***
No memory complaints (n=116)	1.4(0.8)	1.4(0.8)

^aFrequency ratings: 1 Not at all to 10 All the Time.

***p <0.001 memory vs. no-memory complaints

p<0.05 Fibromyalgia vs. Medical Sample Comparison

p<0.01 Fibromyalgia vs. Medical Sample Comparison

Name _____ Education _____ Date _____
Age _____

Do you have fibrofog? Yes ___ No ___ Don't Know ___
Do you have memory problems? Yes ___ No ___

Circle the one number that best describes problems during the past week with:

CONCENTRATION
1 2 3 4 5 6 7 8 9 10
NO PROBLEM SEVERE PROBLEM

MEMORY
1 2 3 4 5 6 7 8 9 10
NO PROBLEM SEVERE PROBLEM

STAYING FOCUSED
1 2 3 4 5 6 7 8 9 10
NO PROBLEM SEVERE PROBLEM

MULTITASKING
1 2 3 4 5 6 7 8 9 10
NO PROBLEM SEVERE PROBLEM

EXPRESSING YOURSELF
1 2 3 4 5 6 7 8 9 10
NO PROBLEM SEVERE PROBLEM

THINKING CLEARLY
1 2 3 4 5 6 7 8 9 10
NO PROBLEM SEVERE PROBLEM

PERCEPTUAL CLARITY
1 2 3 4 5 6 7 8 9 10
NO PROBLEM SEVERE PROBLEM

MENTAL SPEED
1 2 3 4 5 6 7 8 9 10
NO PROBLEM SEVERE PROBLEM

Circle the one number that best describes how frequently you experienced the problems listed below during the past week.

SPACINESS
1 2 3 4 5 6 7 8 9 10
NOT AT ALL ALL THE TIME

LOOKING AT LIFE THROUGH A HAZE
1 2 3 4 5 6 7 8 9 10
NOT AT ALL ALL THE TIME

CONFUSION
1 2 3 4 5 6 7 8 9 10
NOT AT ALL ALL THE TIME

CLUTTERED THINKING
1 2 3 4 5 6 7 8 9 10
NOT AT ALL ALL THE TIME

FOGGINESS
1 2 3 4 5 6 7 8 9 10
NOT AT ALL ALL THE TIME

RUSHING THOUGHTS
1 2 3 4 5 6 7 8 9 10
NOT AT ALL ALL THE TIME

FUZZY HEADEDNESS
1 2 3 4 5 6 7 8 9 10
NOT AT ALL ALL THE TIME

INFORMATION OVERLOAD
1 2 3 4 5 6 7 8 9 10
NOT AT ALL ALL THE TIME

CONCLUSIONS

Fibrofog derives from the description of mental fogginess and short term memory loss in people with fibromyalgia. A new Mental Clutter Scale was developed to measure this construct.

Factor analysis suggests that cognitive disturbance may be divided into two parts: one represented by disturbances in cognitive skills, the second by disturbances in the state of the mind relating to mental clarity. Stability of the factor structure was demonstrated by similar results across 3 samples. The two symptom domains proved useful in describing different clinical populations with memory complaints, suggesting that two aspects of the cognitive state need to be monitored.

Cognitive loss was accompanied by changes in mental clarity to a much higher degree in fibromyalgia.