

Visual and auditory sensitivity in CRPS and fibromyalgia suggest changes within the central nervous system

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Aims

Complex Regional Pain Syndrome (CRPS) (see Fig 1) and **fibromyalgia** are severe chronic pain conditions of mysterious origins. Patients report changes to vision and other sensations or bodily functions, and 'neglect-like' symptoms for the affected side. However, it is unclear if these changes are more than what would be expected due to normal ageing, chronic pain generally, or common comorbidities of chronic pain such as somatisation associated with depression or anxiety.

We measured whether sensory sensitivity, bodily changes and neglect-like symptoms in people with CRPS and fibromyalgia were greater than in those with other chronic pain conditions and pain-free controls, independent of several possible confounding factors. This could indicate involvement of the central nervous system.

Materials and Method

On-line survey with global recruitment.

Respondents: we included **390** people with CRPS (89% female, 46±13 years old), **425** with fibromyalgia (93% female, 47±13 years old), **88** with CRPS and fibromyalgia (96% female, 46±11 years old), **311** pain controls (79% female, 42±17 years old), and **441** pain-free controls (73% female, 35±16 years old).

Measures of sensory sensitivity, bodily changes and neglect-like symptoms: number of pain triggers, discomfort triggers, distress triggers, and pain intensifiers, Patient Health Questionnaire-15 (PHQ-15), number of bodily changes per category, and neglect-like symptoms.

Analyses:

- **Group** (CRPS, fibromyalgia, CRPS+fibromyalgia, pain control, pain-free control) by **Gender** (male, female) ANOVAs.
- **Covariates** (possible confounds): Age, PHQ-9, Generalized Anxiety Disorder-7 (GAD-7), pain duration in years, hours of pain per day, and number of pain-related medical diagnoses.



Fig 1. Picture of someone with CRPS in the left hand.

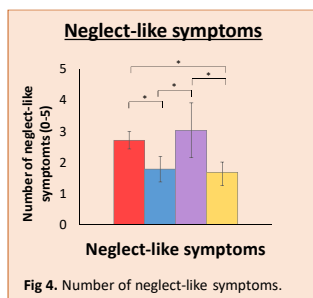


Fig 4. Number of neglect-like symptoms.

Results

- **Sensory sensitivity:** People with CRPS and/or fibromyalgia reported more pain triggers and intensifiers than pain controls and pain-free controls (Fig 2 and Table 1). A mixed pattern was seen for the discomfort and distress triggers.
- **Bodily changes:** People with fibromyalgia reported more somatic symptoms than the other groups (Fig 3A). People with CRPS and other pain reported more somatic symptoms than the pain-free control group. People with CRPS reported more infection, hair, skin, and nail changes, and people with fibromyalgia reported more vision, hearing, digestive, drinking, and eating changes than control groups (Fig 3B). People with CRPS and/or fibromyalgia reported more changes in movement and biological responses than control groups.
- **Neglect-like symptoms:** People with CRPS reported more neglect-like symptoms for the most painful limb compared to people with fibromyalgia only and pain controls (Fig 4).

Discussion and Conclusions

People with CRPS and/or fibromyalgia report higher sensory sensitivity and more bodily changes, and people with CRPS report more neglect-like symptoms than (pain) control groups. These group differences cannot be attributed to sex differences, normal ageing, having chronic pain in general, having more intense or complex pain, or other clinical factors that were controlled for as covariates in the analyses. These findings suggest that the central nervous system is involved, and that the diseases spread beyond those circuits related to sensory-motor processing of the extremities.

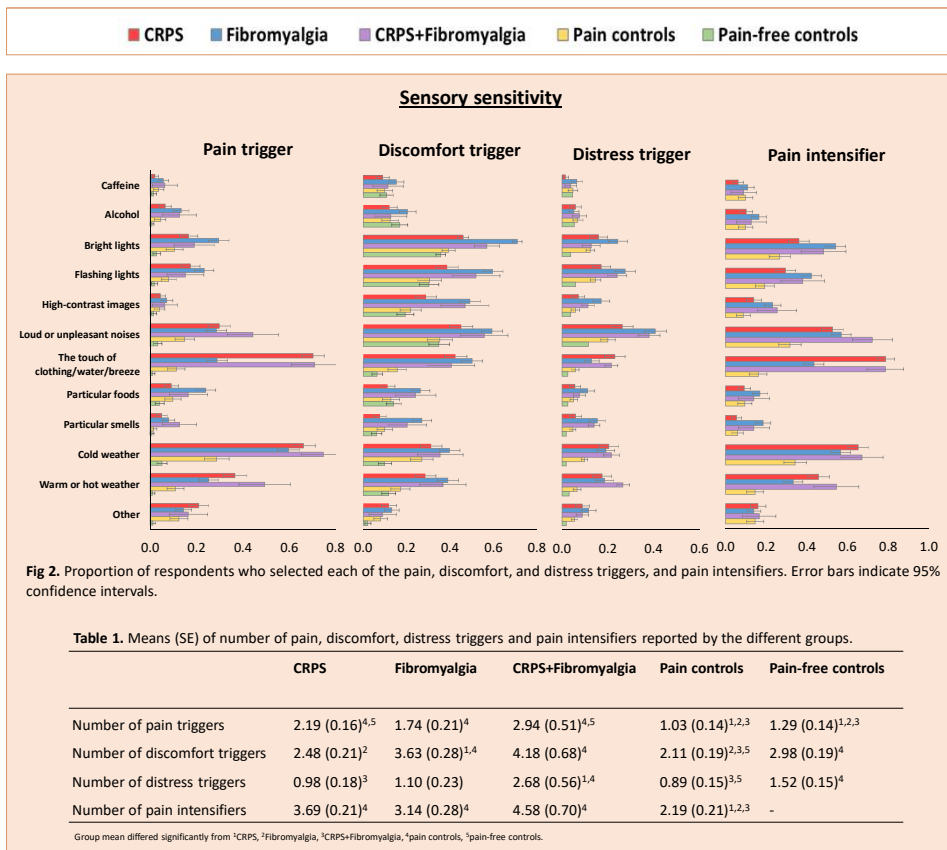


Table 1. Means (SE) of number of pain, discomfort, distress triggers and pain intensifiers reported by the different groups.

	CRPS	Fibromyalgia	CRPS+Fibromyalgia	Pain controls	Pain-free controls
Number of pain triggers	2.19 (0.16) ^{4,5}	1.74 (0.21) ⁴	2.94 (0.51) ^{4,5}	1.03 (0.14) ^{1,2,3}	1.29 (0.14) ^{1,2,3}
Number of discomfort triggers	2.48 (0.21) ²	3.63 (0.28) ^{1,4}	4.18 (0.68) ⁴	2.11 (0.19) ^{2,3,5}	2.98 (0.19) ⁴
Number of distress triggers	0.98 (0.18) ³	1.10 (0.23)	2.68 (0.56) ^{1,4}	0.89 (0.15) ^{3,5}	1.52 (0.15) ⁴
Number of pain intensifiers	3.69 (0.21) ⁴	3.14 (0.28) ⁴	4.58 (0.70) ⁴	2.19 (0.21) ^{1,2,3}	-

Group mean differed significantly from ¹CRPS, ²Fibromyalgia, ³CRPS+Fibromyalgia, ⁴pain controls, ⁵pain-free controls.

