INTRODUCTION

In absence of any stimulation, spontaneous non-painful sensations often arise from the body. Over the hands, tingling, itching and other sensations project on the skin.

Yet, the origins of SS are still unknown, and discovering them was the aim of this study. That SS resemble real tactile sensations and that they are better perceived when subjects are attending to, suggests that they may emerge through interactions between peripheral tactile units and central attention processes.

METHODS

TASK: Focus during 10sec on one hand while fixating it (convergent focusing) or while fixating a red disc (divergent focusing) and then map the location and spatial extent of the perceived SS on a standard picture of the hand.

SUBJECTS: 70 righthanders (laterality: 0.87±0.02; age 20.6±2.3)

INDEPENDENT VARIABLES: Focusing (convergent vs. divergent) and Hand (left vs. right)

DEPENDENT VARIABLES: Localisation; percent surface (other measures are not shown here)

RESULTS & DISCUSSION

1. Except that they were reported over the whole glabrous surface of the hands, SS followed a proximo-distal gradient: 36% distal, 17% intermediate, 13% proximal phalange, and 20% over the palm ($\chi^2 (3)=13.9; p<0.003$). This strikingly resembles the gradient of receptive units (Johansson & Vallbo, 1984).

2. Convergent focusing: the spatial extend of SS was perceived as larger; this was produced through an expansion of some areas and restriction of others, reflecting the two mechanisms of attention, enhancement and suppression, respectively (Chelazzi et al., 1993; LaBerge, 1995).

3. The effects of convergent focusing were more pronounced over the left hand, reflecting modulation by attention of the right-lateralized cortical somatosensory processing.

These three particular patterns suggest that SS projected on the hands may result upon interactions between spontaneous impulses of skin receptors, cortical somatosensory processing and attention processes. Peripheral receptor activity itself may not suffice for spontaneous sensations to reach awareness, yet orienting and sustaining spatial attention on the involved body part is likely to influence its representation in cortical somatosensory areas.

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