ELSEVIER

Psychiatry Research 110 (2002) 125–135

PSYCHIATRY RESEARCH

www.elsevier.com/locate/psychres

Perceptual organization deficits in psychotic patients

Emmanuelle R. Peters[a,*], Julia A. Nunn[b], Alan D. Pickering[b], David R. Hemsley[a]

[a]*Psychology Department PO77, Institute of Psychiatry, Denmark Hill, London SE5 8AF, UK*
[b]*Psychology Department, Goldsmiths College, London SE14 6NW, UK*

Received 24 March 2001; received in revised form 19 February 2002; accepted 4 March 2002

Abstract

It has been proposed that a characteristic of schizophrenic processing is an abnormality of top-down processing. The relationship between impaired top-down processing and symptoms of reality distortion was investigated using a 'degraded interference' task. In this task, fragmented stimuli (Stroop words, control words and crosses) are presented on a computer screen, and the extent to which they are visually integrated is inferred by their interfering properties. It was predicted that psychotic individuals would fail to show an interference effect with degraded Stroop stimuli. This predicts the *absence* of a delay in reaction time in the experimental condition, which therefore cannot be attributed to a generalized deficit. A sample of inpatients experiencing positive symptoms was compared to a healthy control group. The results provided support for a deficiency in top-down processing, with the psychotic group failing to show the significant degraded interference effect found in the healthy controls. Degraded interference was associated with low verbal IQ, but with no other symptomatic or demographic variables. © 2002 Elsevier Science Ireland Ltd. All rights reserved.

Keywords: Schizophrenia; Top-down processing; Perceptual organization; Degraded Stroop

1. Introduction

There is a plethora of experimental work attempting to pinpoint the cognitive abnormality underlying schizophrenia which leads to the symptoms of intrusions and discontinuities in conscious experience. Hemsley (1987) has suggested that 'it is a weakening of the influences of stored memories of regularities of previous input on current processing which is postulated as basic to the schizophrenic condition' (p. 182). Thus, the use of 'top-down' processing (also known as 'conceptually driven', or 'Gestalt' processing), in which new stimuli are compared with stored regularities and memories of past experience for their interpretation, is thought to be reduced in schizophrenic processing. Such a dysfunction is likely to affect processing throughout the cognitive repertoire, including the automatic sphere of processing involved in visual perception. In this context abnormal top-down influences will lead to a failure to make use of the structure and patterning of sensory input to reduce processing demands in the organization of perceptions, resulting in an inabil-

*Corresponding author. Tel.: +44-20-7848-0347; fax: +44-20-7848-5006.

E-mail address: e.peters@iop.kcl.ac.uk (E.R. Peters).

0165-1781/02/$ - see front matter © 2002 Elsevier Science Ireland Ltd. All rights reserved.
PII: S0165-1781(02)00096-3

ity to perceive stimuli in a Gestalt or holistic fashion.

Such an impairment has also been articulated by Cutting (1985) as 'schizophrenics concentrate on detail at the expense of theme' (p. 300), and by Knight (1984) as 'individual elements of a stimulus are processed separately rather than as parts in cohesive wholes' (p. 120). Some experiences reported by individuals with schizophrenia strongly suggest such a deficit: 'I may look at a garden, but I do not see it as I normally do. I can only concentrate on details. For instance I can lose myself looking at a bud on a branch, but then I do not see anything else' (Matussek, 1952, p. 92).

Several studies have demonstrated that patients with schizophrenia are deficient in perceptual organization in a variety of tasks, including visual search (Cox and Levanthal, 1978; Knight, 1992; Silverstein et al., 1996a) and numerosity paradigms (Schwartz-Place and Gilmore, 1980; Rabinowicz et al., 1996; Wells and Leventhal, 1984). Typically, individuals with schizophrenia display relatively superior target detection or counting of elements in conditions with little stimulus grouping compared to baseline, an advantage not shown by controls where normal processing interferes with effective performance in such conditions. In general, these data have been interpreted as indicating that the impairment involves top-down influences on perceptual processing.

Empirical evidence for the specificity of this dysfunction has been accumulating for some time. Firstly, patients with schizophrenia do not show a perceptual organization deficit when processing aspects of visual form that do not require matching current percepts to memory representations (i.e. top-down influences; Peterson, 1994), such as symmetry (Knight et al., 2000) or closure (Chey and Holzman, 1997). These types of feature have been termed 'geons' (Bierderman, 1987) and are considered to be the fundamental visual primitives to which the visual system is predisposed to respond.

Secondly, Schwartz-Place and Gilmore (1980) reported that controls demonstrated superior grouping of stimuli that occurred 33% of the time when these stimuli were presented in the context of other grouped stimuli (Study 2) compared to when they were presented among non-grouped stimuli (Study 1). In contrast, patients with schizophrenia did not demonstrate this superiority in their Study 2. This implies that the perceptual organization deficit may reflect an impairment in the ability to generate top-down feedback to earlier perceptual processes.

Finally, Silverstein et al. (1996a,b) provided conclusive evidence that deficiencies in perceptual organization in patients with schizophrenia are not simply a product of 'bottom-up' processing, wherein stimulus components are grouped solely on the basis of physical characteristics, but also involve top-down factors. Silverstein et al. (1996a) showed that a clear perceptual organization deficit could be eliminated by a task manipulation thought to aid in context processing, i.e. an enhancement of top-down feedback to perceptual processes (Kosslyn and Koening, 1992). Silverstein et al. (1996b) found that a contextual manipulation that allowed controls to reduce the interfering effect of an irrelevant stimulus in an auditory task, did not affect schizophrenia patients' performance, i.e. they had a reduced ability to utilize contextual (top-down) cues. In contrast, a task manipulation which relied on physical (bottom-up) characteristics improved performance in both controls and patients.

Recently, attempts have been made to link cognitive disturbances with the expression of specific aspects of schizophrenic symptomatology. The diagnostic category represented by schizophrenia encompasses a widely heterogeneous set of symptoms, from paranoia to catatonia. A limitation in interpreting cognitive and perceptual studies of schizophrenia is that the symptom constellations of the sample are often not provided, and it is unclear whether one particular symptom cluster is over- or under-represented in the sample. Furthermore, there are no clear dividing lines between schizophrenia and normal functioning (Claridge, 1994; Peters et al., 1999), or between schizophrenia and the affective disorders (Kendell, 1991). This has led to the recent adoption of a symptom approach across diagnostic categories, which so far appears promising (e.g. Bentall et al., 1994; Garety et al., 1991).

Hemsley (1993) relates cognitive aberrations specifically to the development of positive symp-

دریافت فوری ← متن کامل مقاله

ISIArticles
مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات