

The question of symptom lateralization in conversion disorder

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Abstract

Objective: The purpose of this study was to determine whether or not conversion symptoms are lateralized. Studies have shown a predominant left-oriented manifestation of symptoms for most somatoform disorders. The reports in the literature on the lateralization of conversion symptoms, however, are rather conflicting. They show left-sided, right-sided, or no symptom lateralization in conversion disorders. **Methods:** One hundred

fourteen patients with conversion disorder were screened for symptom lateralization. **Results:** Those patients with unilateral symptoms (32.5%) showed no significant bias toward left or right symptom presentation. **Conclusion:** Based on these results, and the conflicting findings from previous studies, we conclude that there is insufficient support for lateralization theories in conversion disorder. © 2000 Elsevier Science Inc. All rights reserved.

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Introduction

Are conversion symptoms lateralized? This question is often confronted in clinical practice and gave rise to numerous publications in the 1970s. A more recent publication by Min and Lee [1] has made it clear that a definitive answer is still lacking. Many studies show the symptoms of somatoform disorders other than conversion disorder to be mostly located on the left side of the body. This lateralization has been reported for pain symptoms [1–6] and hypochondriac symptoms [7]. The reports with regard to symptom lateralization in conversion disorders, however, are rather contradictory (for review, see Table 1). Left-sided lateralization of conversion symptoms has been found by Galin et al. [8] for females only, and by Pascuzzi [9] and by Stern [10]. Others have found a predominantly right-sided lateralization of conversion symptoms in both adults [11] and children and adolescents [12]. Three studies found no symptom lateralization in conversion disorder [13–15].

Three hypotheses have been put forth to explain the observed left-sided predominance of symptoms in somatoform disorder [2]. The hypotheses have been applied to

conversion symptoms as well [10]. The so-called *evaluative hypothesis* suggests that negative connotations are associated with the left side of the body and that somatoform symptoms are therefore left-lateralized. Little empirical support has been found for this hypothesis, however. As part of the so-called *convenience hypothesis*, Stern [10] tested the possibility of symptoms developing on that side of the body where they produce the least inconvenience. The finding that both right- and left-handed patients show the same predominance of left-sided conversion symptoms [8,10], however, disproved this hypothesis as well. Yet another hypothesis explains the left lateralization of somatoform symptoms in terms of the functional asymmetry of the cerebral hemispheres and is often therefore referred to as *hemispheric specialization theory*. According to this theory, the right cerebral hemisphere is more involved in emotional reactions and thus mediates the manifestation of affectively determined somatic symptoms on the left side of the body [10]. Although the hemispheric specialization theory is the predominant theory at present, the mechanism by which the right cerebral hemisphere transforms negative emotions into somatic symptoms on the left side of the body remains unclear [16]. Recent findings from two brain mapping studies, one case of left-sided paraesthesia [17] and one case of left-sided conversion paralysis [18], have suggested the involvement of higher level cognitive, attention systems from the right hemisphere in conversion

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Table 1
Overview of studies examining lateralization of conversion symptoms^b

Patient group	Symptoms studied	Number of patients: total (M/F)	Percentage of patients with unilateral symptoms	Number of patients with left/right/both-sided symptoms	Conclusion L/R lateralization (% patients)	Reference
Patients evaluated by neurology service (1986–1987)	Unilateral motor/sensory	31 (7/24)	—	26/5/—	L (84%)*	Pascuzzi [9]
Hysterical neurosis, conv. type		191 (51/140)				
	Motor conv	146 ^a	56% (81) ^a	52/29/65 ^a	L (64%) ^{a,*}	
	Sensory conv	155 ^a	74% (114) ^a	78/36/41 ^a	L (68%) ^{a,*}	Stern [10]
Psychiatric hospital patients	Conv.	40 (36/4)	83% (33)	8/25/7	R (76%)*	Fallik and Sigal [11]
Child and adolescent in-patients at psychiatric hospital	Conv.	15 (9/2) ^b	73% (11)	1/10/4	R (91%)**	Regan and LaBabera [12]
One or more of Engel's [25] criteria of conv. disorder	Unilateral conv.	22 (11/11)	—	12/10/—	L – R: NS (L: 55%)	Bishop et al. [13]
Conv. disorder according to Engel [25]	Unilateral conv.	52 (10/42)	—	33/19/—	L – R: NS (L: 63%) ^c	Galín et al. [8]
Patients with hysterical disorders	Gait disorders	60 (23/37)	7.8% (13)	9/4/—	L – R: NS (L: 69%)	Keane [14]
“Hysterical neurosis conv. type” + conv. prior to DSM-II	Conv.	64 (21/43) 205 ^a	15% (31) ^a	12/19/— ^a	L – R: NS (R: 61%) ^a	Stefansson et al. [15]

Conv., conversion; L, left; R, right; NS, nonsignificant.

^a The numbers refer to symptoms instead of patients.

^b Gender was not identified for all participants.

^c In the female sample, 71% showed left-lateralized symptoms ($p < 0.01$).

* $p < 0.05$.

** $p < 0.01$.

symptoms. Stern [10] and Sierra and Berrios [19] have attempted to explain left-sided symptom lateralization by drawing an analogy between anosognosia and the phenomenon of *la belle indifférence* in conversion disorder. Anosognosia is the denial of a (mostly left-localized) physical disorder associated with damage to the right parietal cortex and hypothesized to result from a failing attention function in the right hemisphere. As argued by Spence [16], however, this analogy is based on rather superficial phenomenological resemblances. Denying an organic impairment is not necessarily the same as going undisturbed by a psychogenic impairment, which is sometimes observed in conversion patients. Furthermore, pointing at the left hemispheric involvement in (equally lateralized) depressive symptomatology, Spence [16] criticized the simple localization of affect to one hemisphere.

As already pointed out, the reports on symptom lateralization in cases of conversion disorder have been less consistent and showed both left- and right-sided symptom lateralization. Additional hypotheses have therefore been developed to explain the predominantly right-sided localization sometimes observed in cases of conversion disorder [11,12].

The first hypothesis is more or less the opposite of the convenience hypothesis. According to the inconvenience hypothesis, the dominant limb is “chosen” because the resulting disorder will thereby offer greater inconvenience [11,12]. Studies have indeed shown 88% [10] and 100% [12] of patients with unilateral conver-

sion symptoms to display their symptoms on their dominant (mostly right) side. This observation alone does not provide support for the causal relation suggested by the inconvenience hypothesis, however.

The second lateralization hypothesis predicts a relation between *previous organic lesions* and current conversion complaints. Fallik and Sigal [11], for example, found the conversion symptom to occur most often in the area or limb where a previous injury or organic defect has occurred (65% of the 40 studied cases). They then suggested that conversion symptoms may more frequently appear on the dominant (mostly right) side of the body because injuries more frequently occur on the right side. A study by Axelrod et al. [2], however, showed no asymmetry in the bodily manifestation of organic damage.

In sum, the findings and theories on the lateralization of conversion symptoms are contradictory and tend to suggest either no, left-, or right-sided symptom lateralization. This fact alone demands further research. Furthermore, the aforementioned lateralization theories have found little empirical support for the proposed causal relations to date. Unfortunately, several of the preceding studies of the lateralization of conversion symptoms have also not been limited to cases of a full-blown conversion disorder [9,11–14]. Such heterogeneity prevents us from establishing whether conversion disorder is indeed an exception when compared with other somatoform disorders. In several studies [8,10,13–15], moreover, systema-

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