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# The history of crossed aphasia: confluence of concepts

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## Abstract

In 1899, Byrom Bramwell introduced the concept of crossed aphasia (CA) as a deviation from the prevailing insight of an inherent association between cerebral dominance for language and hand preference. He defined as such the phenomenon of aphasia caused by brain damage ipsilateral to the dominant hand (i.e. aphasia resulting from a lesion to the left hemisphere in sinistrals and aphasia following a lesion to the right hemisphere in dextrals). Notable in the development of the concept of CA is the absence of any reference to the understanding of acquired childhood aphasia (ACA) in which aphasia following a right hemisphere lesion was considered a frequent phenomenon. Following an erosion of Bramwell's positions on CA and the decay of the feasibility of so-called Broca's doctrine, a confluence of concepts was established between CA and ACA seven decades later. This paper reviews the history of the collusion of concepts of acquired aphasia in these atypical populations.

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## 1. Formation of concepts

### 1.1. The standard view on acquired childhood aphasia (ACA)

Only a few years after the seminal contributions of Paul Broca, Cotard (1868) first systematically studied and brought to the fore the phenomenon of acquired aphasia in children. In his 'Etude sur l'atrophie cérébrale', Cotard (1868) reported the post-mortem

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findings of adults who had exhibited hemiplegia since childhood. He found seven adults with right hemiplegia and normal neurocognitive development with damage to the left frontal lobe, or even to the entire left hemisphere. He concluded from this observation that language in these patients had developed in the right hemisphere, and that, in general, following damage to one hemisphere at a young age, the functions are taken over by the intact one. As a consequence of this process, Cotard (1868) postulated that aphasia does not occur in children.

After analyzing 50 published cases of childhood aphasia, Clarus (1874) disputed Cotard's position (Cotard, 1868) and concluded that: (1) childhood aphasia is not a rare phenomenon; (2) the prognosis of childhood aphasia is not invariably benign, but depends in part on both the etiology and the extent of the lesion; and (3) the right hemisphere can take over language functions when the left hemisphere is damaged. Clarus (1874) was joined in these convictions a few years later by Seeligmüller (1879) and Förster (1880), among others. These authors indicated that the onset of hemiplegia in children who already have a command of language can be associated with aphasia. Moreover, in 1884, Strümpell (1884) reported a connection between the occurrence of language impairment and clinical irregularities of the right hemicorpus. Jendrassik and Marie (1885) did not share this view; instead they subscribed to Cotard's notion (Cotard, 1868), rejecting the existence of ACA. In addition, both authors claimed that aphasia is seen in children only within the context of a generalized cognitive impairment. In spite of the controversy surrounding the theme, Bernhardt (1885) defined ACA on five characteristics. He posited that ACA: (1) is not a rare phenomenon; (2) is predominantly of the expressive (motor) type; (3) entails a benign prognosis; (4) lasts only a short time; and (5) is entirely compensated for by the expansion of language functions in the right hemisphere.

In 1886, Wallenberg (1886) described two patients with hemiplegia following an infectious disease. In the first case study, a 9-year-old girl was reported without aphasia, who contracted rubella at the age of three, complicated by nephritis, convulsions and sustained hemiplegia. In the second case study, he reported an 8-year-old girl who exhibited scarlatina together with aphasia and right hemiplegia. Without acknowledging any connection between the language impairment and the hemiplegic side, Wallenberg posited that the aphasiogenic lesion in ACA can be situated in either the right or the left hemisphere. Sachs and Peterson (1890) already subscribed to the opinions of Wallenberg (1886) in their manifesto, which contained the hypotheses that were later to be designated as 'the hemispheric equipotentiality and progressive lateralization of language development' by Bassler (1962) and Lenneberg (1967). Based on the relatively larger proportion of children with a left hemiplegia, compared to adults, Sachs and Peterson (1890) concluded that during the first years of life, both hemispheres are equally equipped for the development of language and that during the expansion of language ability, the role of the left hemisphere increases progressively. In his monograph on infantile cerebral paralysis, Freud (1897) seconded the position of Sachs and Peterson (1890) with his observation that aphasia in children, entirely unlike aphasia in adults, occurs relatively frequently following lesions to the right hemisphere. Near the end of the 19th

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