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Editorial

Laterality entering the next decade – The 25th anniversary of a journal devoted to asymmetries of brain, behaviour and cognition

In 1996, Phil Bryden, Mike Corballis, and Chris McManus released the first issue of *Laterality*. These founding editors pointed out in their editorial how surprisingly long it took to have a journal devoted entirely to laterality, its unanswered questions and wide-ranging problems. They mentioned left-right asymmetries inside sub-atomic structures, the pharmacology of chiral molecules, anatomical asymmetries of the viscera, Broca's discovery of the left-brain dominance in language production, and the relation of these to handedness and other lateralised functions.

In the first issue of *Laterality*, the founding editors published a figure illustrating the rapid growth of publications indexed broadly under the heading "laterality" since 1960. Although - as predicted by the founding editors - Experimental Psychology predominated in *Laterality*, researchers from other academic disciplines, such as Anthropology, Behavioural Biology, Clinical Neurology, Linguistics, Neurosciences, Psychiatry, Sport Sciences, and others were important contributors. Laterality research today explicitly includes findings from both human and non-human species (e.g., see *Laterality* Issues 1 and 2 published in 2021). Therefore, and unsurprisingly, a bibliometric analysis a quarter of a century after the first release of *Laterality* shows that the interest in laterality is still growing as indicated by the continuing rise in publication numbers in *Laterality* and other journals (Figure 1).

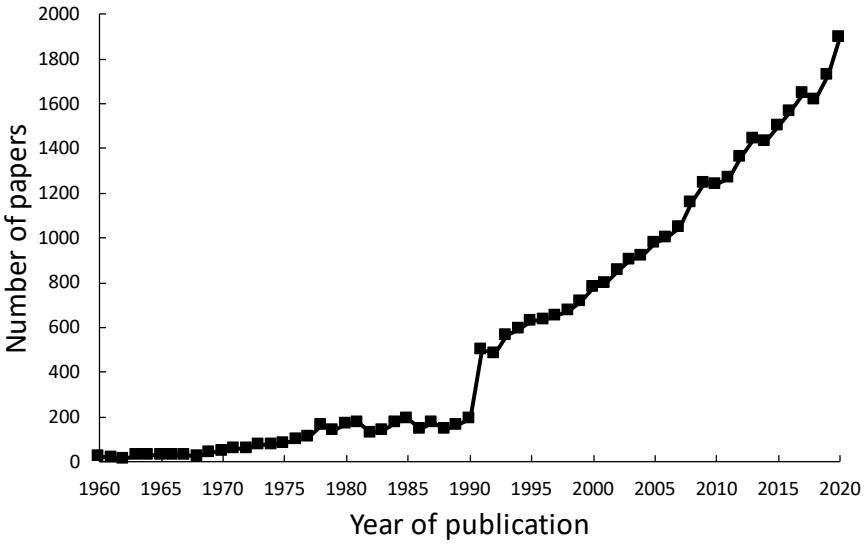

Figure 1. The numbers of papers published in the broad area of laterality. Data from 1960-2020 are based on Web of Science citations (Science, Social Science) including the terms "*laterality*", "*lateral dominance*", "*lateral preference*", "*lateralisation*", "*lateralization*", "*cerebral dominance*", and "*handedness*".

The papers published in the first issue of *Laterality* investigated the relationship between handedness and eye-dominance (Bourassa, 1996), attempts to switch the writing hand (Porac, 1996), handedness in professional cricket players (Edwards and Beaton, 1996), and the magnitude of laterality effects and sex differences in functional asymmetries (Voyer, 1996), all topics still of interest today, as shown by recent papers published in *Laterality* on handedness (e.g., Bruckert et al., 2021; Tzourio-Mazoyer et al., 2021; Papadatou-Pastou et al., 2021) and cognitive sex differences (e.g., Hirnstein, Hugdahl and Hausmann, 2019).

One-hundred and twenty-eight issues later, *Laterality* celebrates its 25th anniversary with a special Issue on 'Laterality research entering the next decade'. The special issue starts with an opinion paper by Ocklenburg, Berretz, Packheiser and Friederich (2021) outlining ten

trends the authors believe will shape laterality research in the 2020s. The opinion paper is followed by eleven commentary papers from leading experts in the field - many of them editorial board members of *Laterality* – commenting critically on Ocklenburg et al. (2021) and presenting their own views on the trends, challenges and expectations that will shape laterality research over the next decade. The special issue concludes with a reply by Ocklenburg and his co-authors to all commentators.

Some of Ocklenburg et al.'s views may be considered quite generic applying to many research areas, such as (i) addressing the replication crisis, (ii) integrating non-W.E.I.R.D. (Western, Educated, Industrialized, Rich, and Democratic) samples, (iii) combining meta-analysis and large-scale databank studies, and (iv) enhancing ecological validity, whereas other recommendations are more laterality specific, such as (v) understanding atypical laterality in some psychiatric and neurodevelopmental groups, and (vi) exploring its clinical potential. I must admit that the editors' own TOP 10s looked quite different from Ocklenburg et al.'s list, and indeed to each other. At the same time, however, the opinion paper and the eleven commentaries will hopefully stimulate interesting discussion of the direction laterality research should be heading.

Invited authors of commentaries were given the choice of focussing on specific aspects of the target paper and/or presenting their own TOP 10 which might inspire future laterality research. All article commentaries underwent full review, although the aim of the review process was not so much to agree or disagree with the commentators' opinions, but to double check whether there were any factual and/or logical issues that needed to be addressed before publication. Realising that the debate got quite heated at times, the review process was also intended to realise a fair discussion. The intensity with which some

authors defended their positions proved again that laterality research is clearly not a dead discipline.

A recurring theme in the target article and many of the commentaries is the importance of converging evidence from laterality research in human and non-human species. These complementary research approaches are critical for understanding the (epi)genetics of laterality, dynamic/plastic aspects of asymmetry, and the relationship between neural systems and behaviour. *Laterality* remains one of the only journals to explicitly invite submissions including both human and non-human research paradigms, and to include researchers in both areas on the editorial board. We hope this special issue provides a compass for future integrated endeavours, and stimulates new and exciting research.

Happy Birthday *Laterality*!

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