EDITORIAL

A DOUBLE DISSOCIATION BETWEEN IMPACT FACTOR AND CITED HALF LIFE

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A journal impact factor (IF) is calculated as the ratio between the number of citations in a given year to any item published in that journal in the previous two years and the number of research items published in the same journal in the same two years. IF, widely acknowledged as the standard measure for scientific quality, places great emphasis on current research, favouring fast moving disciplines, while penalising slower moving topics; the latter would fare much better were the citation interval longer.

It is well known within the "journalology" (Lock, 1989) discussion that the Journal Citation Reports (JCR) 2-year period for calculation of IFs does not provide as complete a picture as would a 5- or 10- year period, in fact journal representing slow pacing disciplines, like physiology, have on average a much lower IFs than, for instance, physics. Indeed, when journals are assessed across disciplines, physiology journals fare much better as the number of years considered to calculate IF increases. The usual counter argument is that, precisely for this reason, for all purposes journals should be evaluated within categories and not across categories (e.g., Garfield, 2006). When this is done, the ranking based on 1, 7, or 15 year IF do not differ significantly (Garfield, 1998). However, this is where the problems rest with neuropsychology journals. Currently, neuropsychology journals are not ranked within their own category but are listed together with other disciplines. Neuropsychology is a typical slow-pace and interdisciplinary topic; hence authors may choose to submit their papers to mainstream neuropsychology journals as well as to neuroscience or clinical neurology journals.

One way to examine this issue is to compare the IF for neuropsychology and neuroscience and contrast this with the cited half-life (CHL) for these two disciplines. (The CHL is a measure of citation survival measuring the number of years, going back from the current year, that covers 50% of the citations in the current year of the journal – Garfield, 2001). This is what was done by Della Sala and Crawford (2006) using the IF and CHL figures for 2004. The analysis revealed that Neuroscience had a higher IF than neuropsychology but that the position was reversed for CHL. Although these effects were large and statistically significant, it would be useful to examine their robustness. The recent publication of the IF and CHL data for 2005 provides an opportunity to do this.

The 2005 figures were used to compare the IFs and CHLs for neuropsychology and neuroscience using the same set of five journals from each discipline previously examined by Della Sala and Crawford (2006). The results are presented in Table I.

Independent samples *t*-tests revealed significant differences in means for both IF: neuroscience = 5.84 (1.58), neuropsychology = 2.98 (.94); and for CHL: neuroscience = 5.66 (1.22), neuropsychology = 8.74 (1.50), though in the opposite direction (see Table II and Figure 1). For both comparisons, Cohen's *d* (an index of effect size) was very large: $d = 2.20$ for IF, and -2.25 for CHL.

The results confirm the pattern previously observed by Della Sala and Crawford (2006) and demonstrate a "double dissociation" between IF and CHL when neuropsychology and neuroscience are compared. They also demonstrate that, if authors choose their outlet by IF ranking, neuropsychology journals would be greatly penalised due to the fact that clinical journals and neuroscience journals have a much faster turnover than classic neuropsychology. Slow-moving

TABLE I

The 2005 two-year impact factor (IF) and cited half-life (CHL) of five neuropsychology and five neuroscience journals

		Neuroscience
Journal	2005 Impact Factor	2005 Cited Half-life
Brain	7.5	7.0
Human Brain Mapping	4.3	6.2
Journal of Cognitive Neuroscience	4.5	5.6
Journal of Neuroscience	7.5	5.8
NeuroImage	5.2	3.7
Average	5.84	5.66
		Neuropsychology
Journal	2005 Impact Factor	2005 Cited Half-life
Cognitive Neuropsychology	3.0	8.1
Cortex	3.6	> 10.0
Journal of Clinical and Experimental Neuropsychology	1.7	9.3
Neuropsychologia	4.1	8.3
Neuropsychology	2.5	7.0
Average	2.98	8.74

TABLE II

Independent sample t-tests comparing neuropsychology and neuroscience journals in terms of mean 2005 impact factor (IF) and mean 2005 cited half-life (CHL): effect sizes (Cohen's d) are also reported

	Neuropsychology		Neuroscience				
Index	Mean	SD	Mean	SD	*t*	*p*	*d*
IF	2.98	0.94	5.84	1.58	3.47	.008	2.20
CHF	8.74	1.50	5.66	1.22	3.56	.007	– 2.25

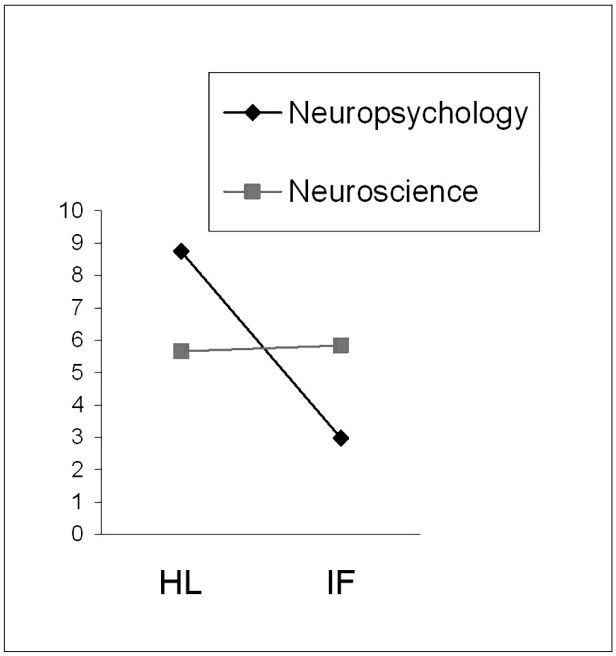

Fig. 1 – *Interaction between impact factor (IF) and cited half life (CHL) considering 2005 citations in neuropsychology and neuroscience journals.*

disciplines, including psychology and neuropsychology, should adopt a longer citation interval (e.g., five years) as their gold standard to evaluate the quality of their research output. These are now readily available in a database called Journal Performance Indicators (http://scientific.thomson.com/products/jpi/). Moreover, to avoid penalising biases, for the purposes of IFs neuropsychology should form a category in its own right.

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