

## LETTER TO THE EDITOR

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**Attended with and head-turning sign can be clinical markers of cognitive impairment in older adults**

We read the paper by Soysal *et al.* (2017) with interest as we have experience of both the Attended With (AW) and the Head-Turning Sign (HTS) in a neurology-led cognitive disorders clinic.

In our studies, we focused on the “Attended Alone” (AA) sign as a marker of cognitive health, rather than AW as a marker of cognitive impairment. Re-examining our data (Larner, 2014), we present (Table 1) our findings for AW, rather than AA, for ease of comparison with the findings of Soysal *et al.* (2017).

Hence, AW is a high frequency sign (66.1% of all clinic attenders in our study; 69.7% in Soysal *et al.* (2017)) which is sensitive but not specific for cognitive impairment (hence, high false positive rate but low false negative rate) with low positive predictive value.

Our studies of HTS (see Larner, 2018 for details) encompass two patient cohorts ( $n = 398$  in total, of whom 246 AW) for whom the combined results are shown in the table.

In contrast to AW, we find HTS to be a lower frequency sign (43.1% of all those AW in our studies). In our clinic, we found that HTS is not sensitive but very specific for cognitive impairment (hence, low false positive rate but high false negative rate) with high positive predictive value (Table 1). These findings are consistent across our two patient cohorts, but contrast with the findings of Soysal *et al.* (2017), who found HTS to have high sensitivity and negative predictive value for cognitive impairment. The reasons for this discrepancy are not immediately apparent to us, but may possibly relate to methodological factors (HTS may be defined differently in different studies Tabuas-Pereira *et al.* (2016)) or cultural factors (HTS had a higher frequency in the Soysal *et al.* cohort,  $244/369 = 66.1\%$  of AW).

**Table 1.** Measures of discrimination with 95% CI for AW and HTS for any cognitive impairment (dementia and MCI) versus no cognitive impairment

|                           | AW               | HTS              |
|---------------------------|------------------|------------------|
| Sensitivity               | 0.93 (0.90–0.96) | 0.65 (0.58–0.73) |
| Specificity               | 0.47 (0.42–0.51) | 0.95 (0.90–0.99) |
| Positive predictive value | 0.45 (0.41–0.49) | 0.95 (0.91–0.99) |
| Negative predictive value | 0.93 (0.90–0.97) | 0.61 (0.53–0.69) |

Both AW and HTS have the potential advantage of being both easily observed and producing categorical data that is dichotomous. We believe that the diagnostic value of these non-canonical signs merits further examination.

**Conflict of interest**

The authors declare no conflict of interest.

**References**

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