

The reliability and predictive validity of the Heaviness of Smoking Index and its two components: Findings from the International Tobacco Control Four Country study

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Abstract

Background: There is increasing recognition that the two measures in the Heaviness of Smoking Index (HSI), time to first cigarette of the day (TTFC) and daily consumption (cigarettes per day [CPD]), are strong predictors of quitting behavior.

Methods: Use of Waves 1–4 of International Tobacco Control cohort with around 8,000 respondents per wave and 6,000 for prediction of quit outcomes at the next wave. We measured TTFC and CPD at each wave and quit outcomes at the next wave. We also looked at the relative utility of the standard categorical scoring compared with a continuous score using the square root of CPD minus the natural log of TTFC in minutes.

Results: We found considerable consistency of the measures across years with a small decrease as duration between measurements increased. For a 3-year gap, the correlations were .72 and .70 for the continuous and categorical composite HSI measures, respectively, and were at least .63 for the individual components. Both TTFC and CPD independently predicted maintenance of quit attempts (for at least 1 month) in each of the three wave-to-wave replications, and these effects were maintained when controlling for demographic factors. CPD also predicted making attempts consistently, but the results for TTFC was not consistently significant.

Discussion: Both TTFC and CPD are fairly reliable over time and are important predictors of quitting. There are only small effects of mode of computing the scores, and the two items can be used either individually or combined as the HSI.

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