



Predictive validity of the Motivation To Stop Scale (MTSS): a single-item measure of motivation to stop smoking

CAHAG Conference, Utrecht, 24 January 2013

Daniel Kotz, Jamie Brown, Robert West

Department of General Practice

CAPHRI School for Public Health and Primary Care

Maastricht University Medical Centre

The Netherlands

d.kotz@maastrichtuniversity.nl

www.daniel-kotz.de

Background

- Motivation to stop as measure for
 - effect of (population) interventions
 - tracking trends over time
 - comparing populations or subgroups
- Various (ad hoc) measures exist, many used in clinical samples
- No current standard with proven validity exists for population samples

MTSS

- Motivation To Stop Scale (MTSS)
 - Prof. Robert West and
 - English Department of Health
 - Central Office of Information
- Single-item measure of key elements of motivation (West, Theory of addiction 2005)
 - intention
 - desire
 - belief

Aims of this study

- Data from "Smoking Toolkit Study"
- Predictive validity
 - baseline > quit attempts during 6 months
- Diagnostic accuracy
 - sensitivity, specificity, ROC_{AUC}
- Divergent validity (no gold standard)
 - comparison measures of dependence

Smoking Toolkit Study

- All current smokers surveys November 2008 – January 2011
- **2,483** respondents to 6-month follow-up questionnaire (21% response)



The screenshot shows the homepage of the Smoking in England website. At the top left is a logo with the text "Smoking in England" and a red map of England. To the right of the logo is a navigation bar with the text "Funded by" followed by logos for "CANCER RESEARCH UK" and "DH Department of Health". Below the navigation bar is a main content area with a background of green hills and trees. The text in this area reads: "This website provides up-to-date information on smoking and smoking cessation in England. The main data source is the Smoking Toolkit Study: a monthly series of national household surveys with smokers and recent ex-smokers being followed up for 6 months. Data collection began in October 2006. The study is currently being funded by Cancer Research UK and the Department of Health. The fieldwork is being undertaken by BMRB." Below this text is the contact information: "Paper STS001 describes the methods. For information contact: robert.west@ucl.ac.uk".

MTSS categories

"Which of the following describes you?"

1. "I don't want to stop smoking"
2. "I think I should stop smoking but don't really want to"
3. "I want to stop smoking but haven't thought about when"
4. "I really want to stop smoking but I don't know when I will"
5. "I want to stop smoking and hope to soon"
6. "I really want to stop smoking and intend to in the next 3 months"
7. "I really want to stop smoking and intend to in the next month".

(1=lowest, 7=highest level of motivation to stop)

MTSS categories

"Which of the following describes you?"

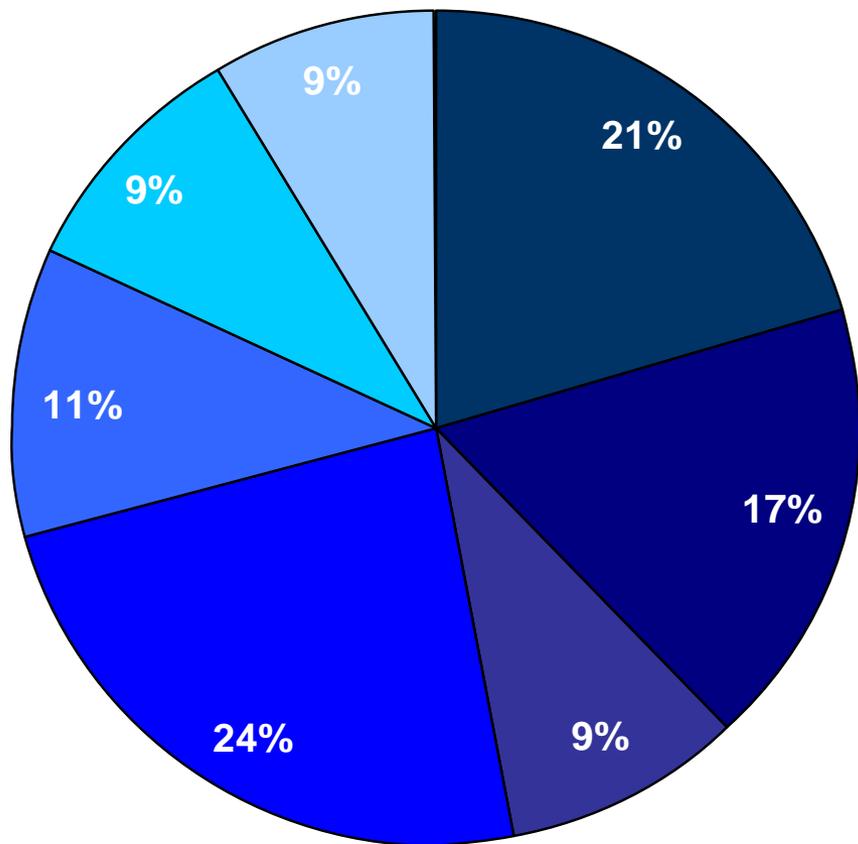
1. "I don't want to stop smoking"
2. "I think I **should** stop smoking but don't really want to"
3. "I **want** to stop smoking but haven't thought about when"
4. "I **really want** to stop smoking but I don't know when I will"
5. "I **want** to stop smoking and **hope to soon**"
6. "I **really want** to stop smoking and **intend to in the next 3 months**"
7. "I **really want** to stop smoking and **intend to in the next month**".

(**belief**, **desire**, **intention**)

Outcome and covariates

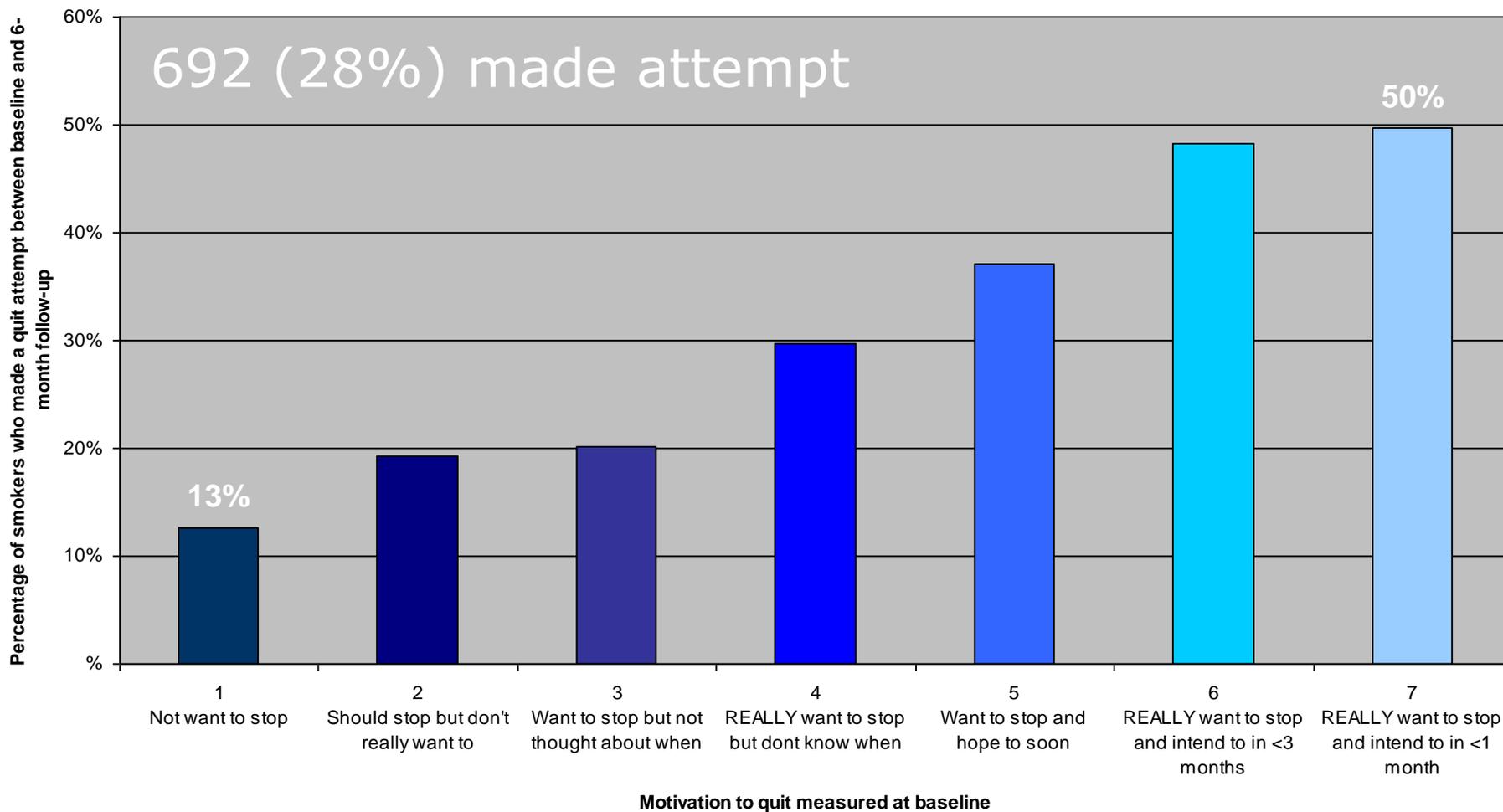
- Any serious quit attempt between baseline and 6-month follow-up
- Sensitivity: 3-month follow-up
- Covariates
 - age, sex, social grade
 - Heaviness of Smoking Index (Kozlowski, Drug Alcohol Depend 1994)
 - Strength of urges to smoke (Fidler, Addiction 2011)

Distribution scores baseline



- 1: Not want to stop
- 2: Should stop but don't really want to
- 3: Want to stop but not thought about when
- 4: REALLY want to stop but dont know when
- 5: Want to stop and hope to soon
- 6: REALLY want to stop and intend to in <3 months
- 7: REALLY want to stop and intend to in <1 month

Attempts according to MTSS

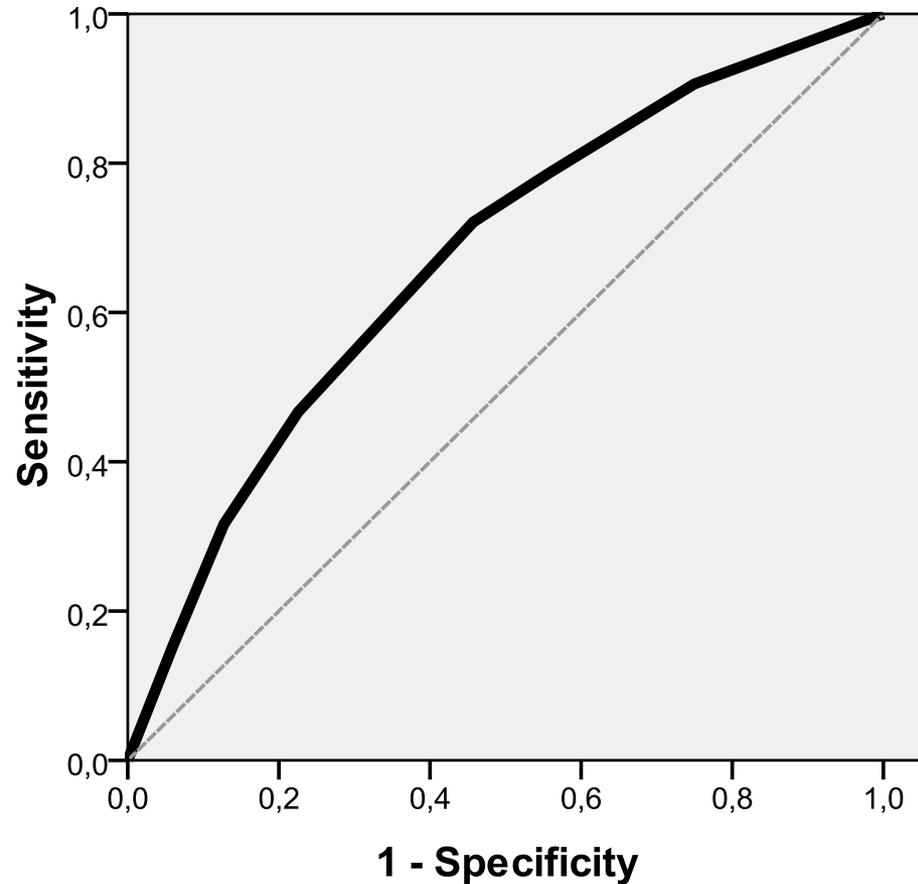


Odds of making an attempt

	OR	95% CI	aOR	95% CI
1	1.0		1.0	
2	1.65	(1.16-2.36)	1.70	(1.19-2.44)
3	1.74	(1.15-2.63)	1.75	(1.14-2.69)
4	2.92	(2.14-4.00)	2.96	(2.14-4.09)
5	4.07	(2.85-5.81)	4.20	(2.90-6.08)
6	6.43	(4.46-9.28)	6.30	(4.31-9.22)
7	6.83	(4.70-9.92)	7.16	(4.87-10.53)

(1=lowest, 7=highest level of motivation to stop)

ROC for MTSS



MTSS

$ROC_{AUC} = 0.67$
(95% CI = 0.65 - 0.70)

HSI

$ROC_{AUC} = 0.47$ (0.45 - 0.50)

Urges

$ROC_{AUC} = 0.53$ (0.50 - 0.55)

Sensitivity analysis

- MTSS baseline, quit attempt 3 months
- Association slightly stronger
 - OR level 7 = 9.2 (vs. 6.8)
- Accuracy similar
 - $ROC_{AUC} = 0.69$ (vs. 0.67)

Strengths & limitations

- Low response (21%) to follow-up (association underestimated?)
- Retrospective self-report attempts over 6 months (small bias according to 3m data)
- No other measure for comparison (divergent validity)
- + Large sample, long follow-up

Conclusions

- MTSS single-item measure combining belief, desire and intention to quit
- Strong ordinal association with quit attempts
- Acceptable level of accuracy for this field of research
- Valuable, cost-efficient tool for studies on motivation to stop
- Future research: external validation

Disclosures

Role of funding source

The Smoking Toolkit Study is funded by the English Department of Health, Cancer Research UK, Pfizer, GlaxoSmithKline, and J&J. Pfizer, J&J, and GlaxoSmithKline are manufacturers of smoking cessation products who had no involvement in the design of the study, collection, analysis or interpretation of the data, the writing of the report, or the decision to submit the paper for publication.

Conflict of interest

Robert West undertakes research and consultancy for, and has received travel expenses and hospitality from, companies that develop and market smoking cessation medications. He has a share on a patent for a novel nicotine delivery device. Daniel Kotz and Jamie Brown have no conflict of interest to declare.

Acknowledgements

We would like to thank Jennifer Fidler for her contribution to the design and coordinating of the Smoking Toolkit Study.

G Model
DAD4528 1-5

ARTICLE IN PRESS

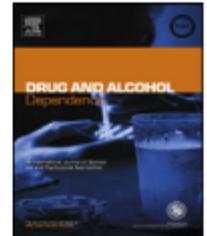
Drug and Alcohol Dependence xxx (2012) xxx-xxx



Contents lists available at [SciVerse ScienceDirect](#)

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdp



Predictive validity of the Motivation To Stop Scale (MTSS): A single-item measure of motivation to stop smoking[☆]

www.daniel-kotz.de