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Beliefs of Turkish and Moroccan immigrants in The Netherlands about smoking cessation: implications for prevention

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Abstract

Tobacco smoking is a very important preventable cause of mortality and morbidity, and this is also the case in immigrant populations. Therefore, smoking cessation interventions need to take these groups into account. Insight into the applicability of behavioral smoking cessation interventions for non-Western populations is necessary. The objective of our study is to gain insight into the beliefs of smoking cessation in Turkish and Moroccan immigrants in The Netherlands using the I-Change Model. In this model, intention and behavior are supposed to be determined by three types of (psychosocial) factors: attitudes, social influences and self-efficacy expectations. Face-to-face structured interviews among Turkish and Moroccan immigrants were conducted. Results indicate that in contrast to smokers, ex-smokers perceived fewer advantages of smoking and more advantages of smoking cessation. They also perceived less social pressure that encourages smoking (e.g. by being offered cigarettes) and a high self-efficacy of being able to quit. The I-Change Model explained 66% of the observed variance. We conclude that the basic factors identified in social cognition theories were replicated in this study. When developing smoking cessation interventions, the results show that it is important to include ethnic-specific salient beliefs, such as the subjective norms of the religious leader.

Introduction

Tobacco smoking is a very important preventable cause of mortality and morbidity (Murray and Lopez, 1997) not only in Western populations, but also in non-Western populations (US Department of Health and Human Services, 1998). In The Netherlands, where 33% of men and 27% of women smoke (Stivoro, 2002), 15% of the annual mortality is caused by smoking (Van Oers, 2002). There are indications that smoking prevalence is also high amongst immigrant groups, e.g. among Turkish men the prevalence of smoking is extremely high (Reijneveld, 1998). Obviously, smoking cessation interventions, including behavioral interventions, will improve public health (Bronnum-Hansen and Juel, 2001; Fagerström, 2002) for Western as well as non-Western groups.

Determinants of smoking cessation need to be assessed in order to develop behavioral smoking cessation interventions. For this purpose, social cognition theories have proved to be useful in that they explain a considerable proportion of smoking behavior (Godin and Kok, 1996; Norman *et al.*, 1999). In The Netherlands, the Integrated Model for explaining motivational and behavioral change (I-Change Model or previously referred to as the Attitude–Social influence–self-Efficacy Model) has been frequently used (Willemsen *et al.*, 1996;

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Bolman and De Vries, 1998; De Vries and Mudde, 1998; Bakker *et al*., 2003). The model integrates findings from the Theory of Reasoned Action (Fishbein and Ajzen, 1975), Bandura's Social Learning Theory (Bandura, 1977), the Transtheoretical Model (Prochaska and DiClemente, 1983), the Health Belief Model (Strecher and Rosenstock, 1997) and the Precaution Adoption Model (Weinstein, 1988).

The I-Change Model (Figure 1) postulates that behavior is a function of a person's intention (De Vries *et al*., 2003, 2005). Intention and behavior are determined by three types of proximal (psychosocial) factors: attitudes, social influences and self-efficacy expectations. A person's attitude is the result of the evaluation of expected positive and negative cognitive and emotional consequences towards a health behavior (the advantages and disadvantages). In contrast to the Theory of Reasoned Action, several types of social influences are taken into account (De Vries *et al*., 1995), including Fishbein and Ajzen's (Fishbein and Ajzen, 1980) 'subjective norm towards smoking of significant other people' as well as other influences such as 'the perceived smoking behavior' of other persons, and the 'pressure' and 'support' a person experiences from other persons. Self-efficacy refers to a person's expectations of his/her capability to perform the desired behavior (e.g. to stop smoking). By including the concept of behavioral phases of the Transtheoretical Model, it is acknowledged that behavioral change should be regarded as a process (Prochaska *et al*., 1994).

Most studies on psychosocial determinants, using social cognition theories, have been carried out in 'Western' populations (Godin *et al*., 1996). A growing percentage of the inhabitants of 'Western' countries such as the US and European countries nowadays have a non-Western background, however. For example, in The Netherlands, 10% of the population is of non-Western origin (Centraal Bureau voor de Statistiek, 2003). Hence, more information about the applicability of the model

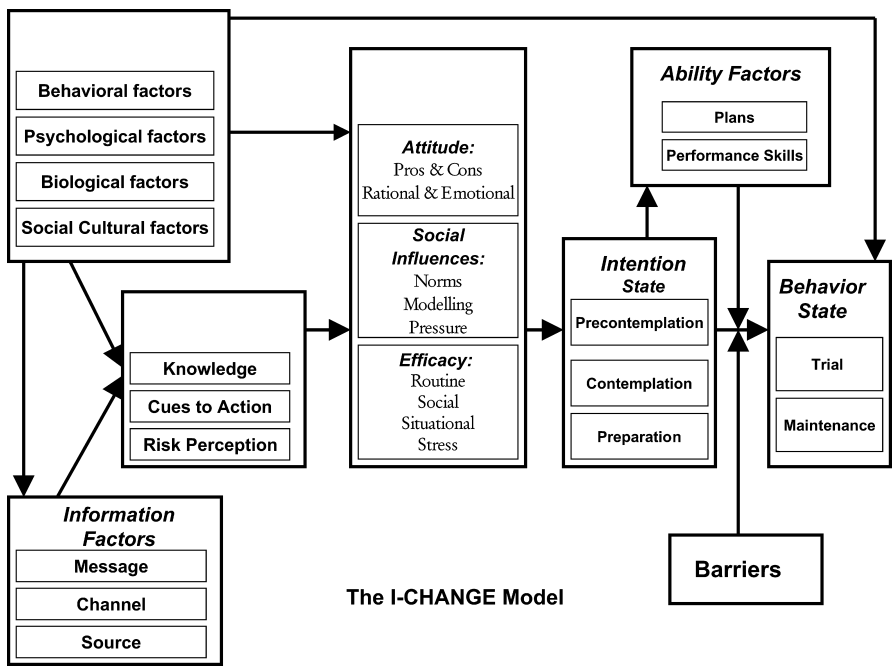

Fig. 1. The I-Change Model.

to non-Western populations is necessary. Specifically, information is needed to determine whether beliefs contributing to the attitude, social influences or self-efficacy differ between ethnic groups, whether determinants differ in relevance, or whether 'new' determinants need to be added. Information about this might have implications for the prevention of smoking in these groups by indicating which determinants need to be addressed in prevention programs. Studies about determinants of smoking cessation using social cognition theories among non-Western ethnic groups have mostly been carried out in African, Asian or Spanish-speaking groups in the US (VanOss Marin *et al.*, 1990; Nevid, 1996; King, 1997; Pérez-Stable, 1998; Lafferty *et al.*, 1999; Carvajal *et al.*, 2000). As far as we are aware, almost no studies have been carried out among immigrant groups in Europe. Two major immigrant groups in Continental Europe are Turks and Moroccans. In the 1960s and 1970s, Turkish and Moroccan men arrived as economic migrants; they were mostly unskilled workers (Lucassen and Penninx, 1997).

The aim of our study is to investigate the psychosocial factors and specific beliefs that are associated with smoking cessation among the Turkish and Moroccan immigrant groups in The Netherlands in order to gain insight into the need to adapt smoking cessation programs in these groups.

Methods

Respondents

In 2000, data were collected among Turkish and Moroccan people as part of the General Health Survey, carried out by the Municipal Health Organization Amsterdam. The study that is described here is based on a sample of Turks and Moroccans aged 35–54. The sample was selected from the municipal population register, stratified by 10-year age groups. Turkish or Moroccan persons were defined as people born in Turkey or Morocco who had at least one parent born in Turkey or Morocco, or people born in The Netherlands whose parents were both born in Turkey or Morocco.

Data collection

Allowing for the low educational level of the sample, data were collected in face-to-face interviews during home visits. In order to improve the response rate, the respondent and interviewer were matched by ethnic background and sex. Respondents were assured their answers were confidential and that the analyses were anonymous. The interview consisted of structured questions with response cards and lasted approximately 1 hour. After a number of questions relating to general health, respondents were asked about their smoking behavior, and their beliefs about smoking and smoking cessation.

We carried out focus-group interviews and a pilot study before performing the final study in order to explore potential salient beliefs among Turks and Moroccans (Nierkens *et al.*, submitted). A questionnaire was developed on the basis of the results of the focus group sessions and a review of the most salient beliefs for smoking cessation among the native Dutch population. In the pilot study, draft versions of the questionnaire were discussed by the project advisory committee (experts in the field of smoking behavior, health education research and ethnic-specific research), bicultural health educators and students from the relevant ethnic backgrounds. The complete (translated) questionnaire was pilot tested among 89 respondents and adapted where necessary. Based on their face validity and reliability, some questions were altered or dropped for the final version of the questionnaire.

The questionnaire was translated into Turkish and Moroccan Arabic. The forward and back translations were performed by certified translators, and discussed with the researchers in order to ensure that the meaning of the questions was not changed (Lange, 2002; Hunt and Bhopal, 2004).

Questionnaire

Smoking behavior was measured by the question: 'Do you ever smoke?'. Respondents were classified as smokers, ex-smokers and never smokers according to WHO standards (World Health Organization 1998). For instance, ex-smokers were people who

had smoked at least 100 cigarettes, but had quit smoking at least 7 days previously.

Stages of change were measured by asking whether respondents intended to quit smoking in the future (Dijkstra and De Vries, 2000).

Factor analysis using principle component analysis with varimax rotation was used to construct the scales of the psychosocial factors and to assess whether the beliefs would load in the same scales as expected on the basis of the I-Change Model; reliability analyses were run for each factor separately (Tabachnick and Fidel, 2001; Walsh and Betz; 2001) (see Table AI in the Appendix for more information). For response categories for the scales and beliefs, see the footnotes to Tables I and II.

Attitude towards smoking was measured by 13 beliefs about the perceived consequences of smoking (e.g. 'If I smoke I have a higher risk of getting heart disease'). Two subscales were constructed: disadvantages of smoking ($\alpha = 0.88$, $n = 7$ items) and advantages of smoking ($\alpha = 0.93$, $n = 3$ items). Three items did not load on any factor and were excluded from the scale.

Attitude towards smoking cessation was measured by eight beliefs about perceived consequences of smoking cessation. An example of such a belief is 'If I stop smoking I am proud'. Two subscales were constructed: advantages of smoking cessation ($\alpha = 0.74$, $n = 3$ items) and disadvantages of smoking cessation ($\alpha = 0.91$, $n = 5$ items).

Social influences were measured by four components: subjective norms towards smoking, perceived behavior, direct pressure to smoke and social support for smoking cessation. Perceived behavior and social support were measured by questions about the respondent's partner, close family, other relatives and best friends. The subjective norms questions assessed the perceived beliefs about smoking from these people as well as those of the family doctor or the religious leader of Muslims, the imam (asked of men only). Because the results of the focus group indicated that social influences might markedly differ between both sexes, men were asked about male referents and

Table I. *Mean scores of determinants for male Turkish and Moroccan smokers and ex-smokers*

	Smokers (mean)	Ex-smokers (mean)	Mean difference (95% CI)	Significance *P*
Disadvantages of smoking[a]	−2.87	−3.47	0.60 (0.36; 0.85)	<0.001
Advantages of smoking[b]	2.16	1.19	0.98 (0.72; 1.23)	<0.001
Advantages of smoking cessation[c]	2.65	3.19	−0.54 (−0.77; −0.31)	<0.001
Disadvantages of smoking cessation[d]	−2.12	−0.82	−1.30 (−1.54; −1.07)	<0.001
Subjective norm towards smoking[e]	−0.31	−1.06	0.76 (0.54; 0.98)	<0.001
Subjective norm partner[e]	−0.72	−1.45	0.73 (0.44; 1.01)	<0.001
Perceived behavior[f]	2.11	1.16	0.95 (0.62; 0.29)	<0.001
Perceived behavior partner[g]	0.39	0.13	0.26 (−0.08; 0.59)	0.13
Perceived social pressure to smoke[h]	2.10	0.67	1.43 (1.17; 1.68)	<0.001
Social support[i]	1.23	1.53	−0.30 (−0.62; 0.02)	0.07
Social support partner[i]	1.93	2.48	−0.55 (−0.87; −0.24)	0.001
Self-efficacy[j]	−0.35	1.02	−1.37 (−1.59; −1.16)	<0.001

[a]−4 = many disadvantages; 0 = no disadvantages.
[b]4 = advantages; 0 = no advantages.
[c]4 = many advantages; 0 = no advantages.
[d]−4 = many disadvantages; 0 = no disadvantages.
[e]−2 = negative norm; 2 = positive norm.
[f]0 = no smoking people; 4 = much smoking people.
[g]0 = no smoking partner; 4 = smoking partner.
[h]0 = no pressure; 4 = much pressure.
[i]0 = no support; 3 = more support.
[j]−2 = low self efficacy; 2 = high self efficacy.

Table II. *Differences in beliefs between male Turkish and Moroccan smokers and ex-smokers*

Item	Smokers (mean)	Ex-smokers (mean)	Mean difference (95% CI)	Significance *P*
Attitude towards smoking				
Advantages[a]				
do you feel more comfortable?	2.12	1.00	1,12 (0,83; 1,42)	<0.001
do you think that's normal?	2.01	1.10	0.90 (0.59; 1.21)	<0.001
does it helps to take time for yourself when you have problems/are stressed?	2.36	1.46	0.90 (0.59; 1.21)	<0.001
Disadvantages[b]				
would be a waste of money	−2.88	−3.79	0.91 (0.60; 1.21)	<0.001
it is bad for the health of people around me	−2.78	−3.40	0.62 (0.32; 0.93)	<0.001
it is annoying for people around me	−2.67	−3.45	0.77 (0.48; 1.07)	<0.001
it is bad for my health	−3.08	−3.61	0.53 (0. 26; 1.02)	<0.001
I have a higher chance of getting lung diseases	−3.02	−3.61	0.59 (0.32; 0.87)	<0.001
I have a higher chance of getting heart diseases	−3.08	−3.63	0.55 (0.28; 0.82)	<0.001
I must cough more	−2.53	−2.81	0.28 (−0.07; 0.62)	0.116
Attitude towards smoking cessation				
Advantages[c]				
I would be proud of it	3.05	3.73	−0.69 (−0.95; −0.43)	<0.001
I would eat more	2.46	2.72	−0.26 (−0.91; 0.05)	0.095
I would get rid of the addiction	2.43	3.19	−0.77 (−1.08; −0.46)	<0.001
Disadvantages[d]				
it would be less sociable	−2.08	−0.73	−1.35 (−1.65; −1.06)	<0.001
I would miss the taste of a cigarette	−2.20	−0.78	−1.43 (−1.72; −1.13)	<0.001
I would get 'retraction symptoms'	−2.12	−0.77	−1.34 (−1.62; −1.07)	<0.001
I would miss the relaxing effect	−2.01	−0.89	−1.12 (−1.41; −0.83)	<0.001
I would become bored more	−2.14	−0.91	−1.23 (−1.51; −0.95)	<0.001
Subjective norm[e]				
close family	−0.31	−1.10	0.79 (0.56; 1.02)	<0.001
'other' relatives	−0.27	−1.02	0.75 (0.51; 0.98)	<0.001
best friends	−0.31	−1.05	0.73 (0.51; 0.96)	<0.001
Subjective norm partner[e]	−0.72	−1.45	0.73 (0.44; 1.01)	<0.001
Perceived behavior[f]				
close family	2.09	1.21	0.88 (0.52; 1.25)	<0.001
'other' relatives	2.04	1.03	1.01 (0.64;1.37)	<0.001
best friends	2.21	1.24	0.97 (0.61; 1.32)	<0.001
Perceived behavior partner[g]	0.39	0.13	0.26 (−0.08; 0.59)	0.13
Perceived pressure[h]				
cigarettes offered on 1 day	1.99	0.66	1.33 (1.06; 1.59)	<0.001
cigarettes offered at a feast	2.21	0.67	1.53 (1.26; 1.81)	<0.001
Social support9				
close family	1.26	1.62	−0.36 (−0.69; −0.02)	0.036
'other' relatives	1.15	1.40	−0.25 (−0.58; 0.09)	0.146
best friends	1.24	1.45	−0.21 (−0.53; 0.11)	0.205
Social support partner[i]	1.93	2.48	−0.56 (−0.87; −0.24)	0.001
Self efficacy (How difficult 'not to smoke' if)[j]				
you are together with respected people	−0.37	0.79	−1.16 (−1.44; −0.88)	<0.001
you are craving for a cigarette	−0.42	0.93	−1.35 (−1.62; −1.08)	<0.001
you are at home alone	−0.29	1.10	−1.39 (−1.65; −1.13)	<0.001
you are together with friends	−0.31	1.07	−1.38 (−1.65; −1.11)	<0.001
you are nervous	−0.46	0.98	−1.44 (−1.71; −1.17)	<0.001
you have problems	−0.43	0.96	−1.40 (−1.67; −1.12)	<0.001

Table II. *Continued*

Item	Smokers (mean)	Ex-smokers (mean)	Mean difference (95% CI)	Significance *P*
you are gloomy/depressed	−0.50	0.96	−1.47 (−1.73; −1.21)	<0.001
you get offered a cigarette	−0.15	1.27	−1.42 (−1.67; −1.16)	<0.001
you see other people enjoy a cigarette	−0.23	1.25	−1.48 (−1.73; −1.22)	<0.001
Items not included in the scales				
Attitude towards smoking				
Are you ashamed?[a]	−1.66	−2.02	0.35 (−0.02; 0.72)	0.061
I am not a good example for my children[b]	−1.72	−1.03	−0.69 (−1.10; −0.28)	0.001
I do not live according the 'rules' of my Religion[b]	−1.68	−1.57	−0.11 (−0.47; 0.25)	0.548
Subjective norm[e]				
physician	−0.63	−1.27	0.46 (0.39; 0.88)	<0.001
religious leader of Muslims, the imam	−0.49	−1.29	0.80 (0.55; 1.05)	<0.001

[a]−4 = total agreement; 0 = total disagreement.
[b]−4 = total agreement; 0 = total disagreement.
[c]4 = total agreement; 0 = total disagreement.
[d]−4 = total agreement; 0 = total disagreement.
[e]−2 = negative norm; 2 = positive norm.
[f]0 = no smoking people; 4 = much smoking people.
[g]0 = no smoking partner; 4 = smoking partner.
[h]0 = never; 4 = frequently.
[i]0 = no support; 3 = more support.
[j]−2 = very difficult; 2 = 'not difficult at all'.

women about female referents. Because the item on the partner did not fit into the perceived behavior scale and the partner was the reference person of the 'other sex', it was decided to analyze the items about the partner according to subjective norms, perceived behavior and social support as a separate factor. Because the 'subjective norms' of the physician and the imam were not measured for 'perceived behavior' and social support', these were also excluded from the scale. The internal consistencies of the scales with regard to 'subjective norms', 'perceived behavior' and 'social support' were 0.95, 0.94 and 0.95 (n = 3 items), respectively. Direct pressure was measured by two questions about the occasions respondents were offered cigarettes (α = 0.95, n = 2 items).

Self-efficacy expectations were measured by nine items about the difficulties respondents expected when they had stopped or would stop smoking and found themselves in difficult situations, such as seeing another person smoke or feeling gloomy. The items constituted one scale (α = 0.95).

The mean scores of the scales were used as variables in the statistical analyses (see below).

Statistical analyses

Only one Moroccan woman was a smoker and one an ex-smoker. They could therefore not be included in the analyses. As the inclusion of Turkish women would impede the comparison between the Turkish and Moroccan group, we decided to exclude the Turkish women as well. Differences between the mean scores in beliefs, and in the factors, attitudes, social influences and self-efficacy between smokers and ex-smokers were tested by Student's t-tests (Altman, 1991). Differences between smokers and ex-smokers were significant when $P < 0.05$.

Logistic regression analysis was used to assess the relationship between smoking cessation and psychosocial correlates (Hosmer and Lemeshow, 1989). All factors that were univariately correlated with smoking cessation ($P \leq 0.25$) were included in the analyses. In the multivariable analysis factors were excluded from the model if they had a marginal contribution to the model (model $\chi^2 < 3.84$; d.f. = 1). The final model was tested for interactions between ethnicity and the associates selected in the univariate analyses (Hosmer and Lemeshow, 1989). *Post-hoc* analyses were

conducted on items that had been excluded from the scales, in order to assess their potential single contribution. In these analyses, single items were included in the model if they had a substantial contribution to the model. Because the analyses involved multiple testing ($n = 7$), $P \leqslant 0.01$ was chosen as the cut-off value for statistical significance (Altman, 1991). For the statistical analyses, SPSS 11.5 for Windows (SPSS, Chicago, IL) was used.

In order to assess whether our results differed from these in the native Dutch population, the results were compared with the results from studies in this population.

Results

Response rate

Persons were classified as non-responders if they could not be contacted after five attempts or refused to participate. Among the Turks, the response rate was 42.3% (385 valid interviews); 49.4% were approached fewer than the required five attempts, implying that they were not necessarily non-responders. Furthermore, 6.4% were classified as 'real' non-responders and 1.9% interviews were invalid. Among the Moroccans, the response rate was 42.2% (316 valid interviews); 39.5% were approached fewer than the required number of attempts, 15.9% were classified as 'real' non-responders and 2.4% of the interviews were invalid.

Characteristics of the sample

The mean age of the sample was 45.8 (SD 5.87). All respondents were born in Turkey or Morocco and 89.2% were Muslims (81.4% of the Turks and 98.4% of the Moroccans). More Turks than Moroccans smoked cigarettes (44.2 and 16.7%, respectively) and fewer Turks than Moroccans had stopped smoking (8.4 and 15.1%, respectively; $\chi^2 = 60.95$, $P < 0.001$). In both ethnic groups more men than women smoked. Among Turks, 58% of the men and 30.2% of the women smoked; among Moroccans, 29.1% of the men and 0.7% of the women smoked. Three percent of the Turks and 6.3% of the Moroccans were ex-smokers who had quit within the last 6 months. Turks and Moroccans did not differ in their intention to quit. Of all smokers, 85.4% were unaware of being at risk (precontemplators), 10.7% were aware of being at risk, but did not intend to quit within 1 month (contemplators) and 4.1% were intending to quit within 1 month (preparators).

The socioeconomic status of the sample was low—45.8% of all respondents had no education and 40.5% of the respondents had primary education only. Fewer Turks than Moroccans had no education (31.9 versus 62.7%; $P < 0.05$). In the total sample 49.5% had an income lower than 1000 Euros per month. There was no significant difference between Turks and Moroccans. Only 8.2% had a moderate or high occupational level (self-employed with personnel, lower-grade professionals, routine non-manual workers and higher-grade professionals) (6.0 and 10.8% for Turks and Moroccans; $P < 0.05$).

Differences in factors and specific beliefs about smoking cessation

Table I presents the mean scores for each factor, for smokers and ex-smokers separately, for men only. In Table II, the differences between smokers and ex-smokers for every single item (belief) are shown. Most beliefs differed between smokers and ex-smokers, even after applying the Bonferroni correction for multiple testing ($P < 0.001$) (Altman, 1991). Ex-smokers had a more negative attitude towards smoking; they expected fewer advantages and more disadvantages from smoking than smokers. Seven out of 10 disadvantages differ significantly (Table II). Ex-smokers had a different attitude towards smoking cessation than smokers: they expected more advantages and fewer disadvantages from smoking cessation than smokers. Except the advantage 'to eat more when stopping smoking', all items discriminate significantly between both groups.

Both male smokers and ex-smokers perceived negative norms towards smoking for the 'subjective norms of significant others' as well as for the 'subjective norms of the partner', but ex-smokers reported more negative norms. Furthermore, smokers had more smokers around them. However, smokers did not have significantly more frequently a smoking partner (Table II). Moreover, smokers expressed

a lower self-efficacy towards smoking cessation than ex-smokers. Social support did not significantly differ between smokers and ex-smokers. Social support of the partner seemed to differ significantly between smokers and ex-smokers.

Correlates of smoking cessation

Table III summarizes the results of the univariate logistic regression analyses of the association between the potential associates and smoking cessation. The strength of the association is presented by the odds ratio (OR)—an approximation to the relative risk. All factors were associated to smoking cessation ($P < 0.25$).

The multivariable logistic regression analyses showed that the associates, the absence of advantages of smoking, perceiving advantages of smoking cessation, perceiving pressure when being offered cigarettes, perceiving social support of the partner and a high self-efficacy about being able to quit, all contributed significantly to smoking cessation ($\chi^2 = 84.413$; $P < 0.001$), although the OR of the social support of the partner was not significant. The Nagelkerke R^2, an approximation to the r^2 in linear regression (Tabachnick and Fidell, 2001), was 0.66, which indicates that the model explained a substantial part of the variance (Table IV).

Post-hoc analyses were carried out to assess whether single items that were excluded from the scales improved the final model. The analyses showed that the subjective normative beliefs of the imam significantly improved the model, although the OR was not significant [$\chi^2 = 20.08$; $P < 0.01$; OR = 1.32; confidence interval (CI) 0.23–7.45]. The other subjective normative beliefs and single attitudinal beliefs did not contribute significantly to the final model.

Table III. *ORs from logistic regression associating smoking cessation in Turkish and Moroccan men*

Factors	OR[a]	95% CI
Ethnicity		
Turkish	1	
Moroccan	4.81	2.61–8.88
Disadvantages of smoking		
yes	1	
no	3.91	2.14–7.13
Advantages of smoking		
yes	1	
no	9.06	4.61–17.79
Advantages of smoking cessation		
much	1	
no/a few	3.89	2.06–7.36
Disadvantages of smoking cessation		
much	1	
no/a few	7.36	3.54–15.30
Subjective norm towards smoking		
neutral/positive	1	
(very) negative	5.59	2.83–11.06
Subjective norm partner		
neutral/positive	1	
(very) negative	4.00	2.02–7.90
Perceived behavior		
many smokers	1	
a few smokers	6.46	3.46–12.06
Perceived behavior partner		
smoker	1	
non smoker	3.13	0.67–14.60
Direct pressure		
much	1	
little/no	10.85	5.35–22.00
Social support		
no	1	
yes	1.90	1.02–3.53
Social support partner		
no	1	
yes	1.95	1.00–3.78
Self efficacy		
low	1	
high	54.76	21.93–136.74

[a]Reference group is the group we expected to have the highest risk to continue smoking.

Discussion

The main aim of this paper was to gain further insight into the psychosocial factors and the single beliefs associated with smoking cessation among Turks and Moroccans in The Netherlands, taking into account culturally specific beliefs. The results have implications for the development of smoking cessation programs for these immigrant groups. More Turks than Moroccans smoke. Smoking cessation was explained by not perceiving advantages of smoking, perceiving advantages of smoking cessation, encountering less social pressure to

Table IV. *ORs in final model: smoking cessation in Turks and Moroccan men*

Factors	OR[a]	95% CI
Ethnicity		
Turkish	1	
Moroccan	0.68	0.18–2.57
Advantages of smoking		
yes	1	
no	4.49	1.07–18.77
Advantages of smoking cessation		
much	1	
no/a few	4.86	1.21–19.50
Direct pressure		
much	1	
little/no	5.54	1.60–19.20
Social support partner		
no	1	
yes	1.91	0.55–6.64
Self-efficacy		
low	1	
high	27.74	6.92–111.18

[a]Reference group is the group we expected to have the highest risk of continuing smoking.

smoke (by being offered cigarettes) and high self-efficacy beliefs about being able to quit. These associates explained 66% of the observed variance. Almost all individual items differ between smokers and ex-smokers, except some items about social support and some disadvantages.

Because the number of women who ever smoked was low, mainly among the Moroccan group, we excluded the women from the analyses. More research is necessary to assess the associates of smoking cessation among women.

Given the results of this study, what can we conclude about the applicability of the factors in social cognition theories, such as the I-Change Model, to the smoking behavior of Turkish and Moroccan immigrants? The basic factors of the I-Change-Model as observed in this study appeared to be comparable to those found in the native Dutch or other Western populations [*cf.* (Godin and Kok, 1996; Willemsen, 1996; De Vries *et al.*, 1998; Armitage and Conner, 2001)]. Advantages and disadvantages of smoking and of smoking cessation, constructs of social influence and self-efficacy, for instance, could also be distinguished in our sample.

In addition, as in the native Dutch and other 'Western' populations, self-efficacy expectations and advantages of smoking cessation appeared to be the most important associates of quitting smoking (Bolman and De Vries, 1998; Boudreaux *et al.*, 1998; De Vries *et al.*, 1998; Bakker *et al.*, 2003). For instance, perceived advantages such as 'smoking does make me feel more comfortable' and 'smoking helps to take time for myself when I have problems' appeared to be more important than perceived disadvantages about health and money. The belief about 'coughing' did not differ significantly between smokers and ex-smokers.

Also, the outcome that expecting advantages of quitting was more strongly associated with smoking cessation than expecting no disadvantages is similar to what is known about the native Dutch population (Dijkstra *et al.*, 1996; De Vries *et al.*, 1998; Van Harreveld *et al.*, 1999). Moreover, the explained variance was similar to explained variances in other studies about smoking cessation among native Dutch and other 'Western' populations (explained variance varied between 0.26 and 0.79) (Godin and Kok, 1996; Armitage and Conner, 2001). The results of this study, therefore, suggest that the factors derived from social cognition theories are useful when trying to understand smoking cessation among Turkish and Moroccan immigrants in The Netherlands.

However, it seems that the salient beliefs among these immigrant groups differ from that of the native Dutch population. The advantage that 'smoking is normal' is not found in studies among native Dutch populations, but seemed to be important for Turks and Moroccans. Also, the subjective norms of the imam seemed to be important in the decision to quit smoking. Also, contrary to the native Dutch, the belief that quitting will result in more eating appeared not to be important for Turks and Moroccans (De Vries *et al.*, 1998). Finally, perceived pressure to smoke by being offered cigarettes appeared to be an important factor in our study, but not in studies among the native Dutch. Therefore, this issue should be revisited in future studies.

We measured perceived pressure as 'being offered cigarettes' instead of feeling 'pressured by

other persons' in order to address the view that it is considered impolite to refuse a cigarette. Additionally, social influence was measured in a 'gender-specific' way by asking men about male friends and family. Moreover, we made the distinction between close family and 'other family' to ensure that the items are more consistent with the family context of Turks and Moroccans. Our results indicated that these decisions were correct, because the perceived pressure scale as well as the social influence scales showed a high internal consistency.

Not all 'culturally specific beliefs' were found to be important for smoking cessation, such as the belief that smoking does not comply with 'religious rules'. Since this item was mentioned in focus group interviews, this may imply that these beliefs may be important with regard to the general idea about smoking but not in the decision to *quit smoking*.

The results of our study support the notion that social cognition theories can be used to explain the behavior of non-Western immigrants. Previous studies about smoking cessation among non-Western populations concluded that social cognition theories could be applied to Southeast Asian men (Lafferty *et al*., 1999), and to Hispanics and non-Hispanic whites in the US (VanOss Marin, 1990). Our study shows that the social cognition theories can also be applied to Mediterranean immigrant groups in The Netherlands, such as Turks and Moroccans. These groups differ from the Asian or Hispanic groups in terms of their language, cultural background, main religion, migration history and socioeconomic position (VanOss Marin, 1990; Lafferty *et al*., 1999; Schmidley and US Census Bureau, 2001).

Some limitations need to be considered. First, the results are based on cross-sectional data, implying that we cannot be sure that the factors indeed precede smoking cessation, as they might also be the result of this behavior. This does not detract from our general conclusion, however. The main aim was to explore the associates of smoking cessation among Turkish and Moroccan populations in order to gain insight into the need to adapt smoking cessation programs in these groups. In future research, a longitudinal design in which our results can be tested is recommended.

A second limitation is that there are no figures about the exact response rates. A proportion of the sample was approached less than the required 5 times and therefore it is not known if these persons would be responders or non-responders in the study. A comparison of respondents with all Turks and Moroccans aged 35–54 in Amsterdam on marital status show that there are relatively more married Turks in the sample (Dijkshoorn *et al*., 2003). Since it is likely that single people are less likely to quit (Chandola *et al*., 2004), the associates with smoking cessation would probably be stronger than we found.

A third limitation is the absence of a native Dutch reference group, due to lack of resources. This could be a problem for interpreting the additional 'culturally specific' beliefs, because these were not elicited from native Dutch persons. However, the fact that these were not found in previous studies among native Dutch persons gives reason to consider these beliefs as 'culturally specific'. Nevertheless, to assess whether the additional beliefs are really 'culturally specific', a study with all significant beliefs for all ethnic groups in The Netherlands, including the native Dutch population, might be useful.

In conclusion, the basic factors identified in many social cognition theories were replicated in this study. This suggests that factors derived from social cognition theories apply to non-Western populations also, e.g. Turks and Moroccans in The Netherlands. Moreover, we found indications that it is necessary to include ethnic-specific beliefs in order to fully understand quitting smoking in these populations. This seems to imply that developing ethnically specific smoking cessation programs is, indeed, necessary. This is especially the case for the Turkish group, because the prevalence of smoking is highest in this group. Although this study provided indications as to how to adapt current prevention programs for the native Dutch population in order to make them effective for the Turkish and Moroccan immigrants (e.g. by paying more attention to the norm of the imam or to the sharing of cigarettes), further research is necessary to obtain a more complete picture of determinants of smoking cessation. For example, this research could include differences between men and women as well as differences between age groups.

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Appendix

Table AI. *Scales of determinants of smoking behavior*

Item	Factor[a]	
Attitude towards smoking	advantages (α = 0.9246)	disadvantages (α = 0.8827)
do you feel more comfortable?	0.887	
do you think that's normal?	0.875	
does it help to take time for yourself when you have problems/are stressed?	0.844	
would be a waste of money		0.694
it is bad for health of people around me		0.829
it is annoying for people around me		0.802
it is bad for my health		0.930
I have a higher chance of getting lung diseases		0.911

Table AI. *Continued*

Item	Factor[a]	
I have a higher chance of getting heart diseases		0.903
I must cough more		0.682
Attitude towards smoking cessation	advantages (α = 0.7441)	disadvantages (α = 0.9147)
I would be proud of it	0.757	
I would eat more	0.796	
I would get rid of the addiction	0.878	
It would be less sociable		0.850
I would miss the taste of a cigarette		0.898
I would get 'retraction symptoms'		0.836
I would miss the relaxing effect		0.876
I would become bored more		0.835
Subjective norm	(α = 0.9529)	
close family	0.951	
'other' relatives	0.968	
best friends	0.949	
Subjective norm partner	one item	
Perceived behavior	(α = 0.9440)	
close family	0.959	
'other' relatives	0.958	
best friends	0.929	
Perceived behavior partner	one item	
Perceived pressure	(α = 0.9505)	
cigarettes offered on 1 day	0.977	
cigarettes offered at a feast	0.977	
Social support	(α = 0.9532)	
close family	0.959	
'other' relatives	0.956	
best friends	0.954	
Social support partner	one item	
Self efficacy (How difficult 'not to smoke' if)	(α = 0.9537)	
you are together with respected people	0.687	
you are craving for a cigarette	0.862	
you are at home alone	0.874	
you are together with friends	0.891	
you are nervous	0.898	
you have problems	0.878	
you are gloomy/depressed	0.904	
you get offered a cigarette	0.819	
you see other people enjoy a cigarette	0.868	
Items not included in the scales		
Attitude towards smoking		
are you ashamed?		
I am not a good example for my children		
I do not live according the 'rules' of my religion		
Subjective norm		
physician		
religious leader of Muslims, the imam		

[a]Factors with loadings on the factor >0.60 and <0.30 on the other factors were included in the scales.