



Research Paper

Smokers' identity and quit advice in general practice: General practitioners need to focus more on female smokers



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ABSTRACT

Objective: We examined smoker and non-smoker self-identities among smokers visiting their general practitioner (GP) for other reasons than smoking cessation counselling. We determined whether identity impacted on patients' appreciation of GP-initiated conversations about smoking and quit advice, and subsequent quit attempts, and examined the role of gender.

Methods: Secondary analyses of a cluster-randomised controlled trial in which baseline and 12-month follow-up data were collected among 527 daily ($n=450$) and non-daily smokers ($n=77$).

Results: Participants identified more with smoking than non-smoking. Participants with stronger non-smoker self-identities were more often female, appreciated the conversation about smoking more, were more likely to receive quit-advice and to have attempted to quit at 12-month follow-up. Participants with stronger smoker self-identities were also more often female, and appreciated the conversation more. Men with stronger non-smoker self-identities were more often asked about smoking and advised to quit, and appreciated the conversation more than women.

Conclusion: Non-smoker identity was more important for receiving quit-advice, appreciation, and quit attempts than smoker identity. Future research needs to unravel why female smokers appreciated the conversation less than male smokers.

Practice implications: We suggest to incorporate an identity-component in smoking cessation interventions. GPs should increase their focus on female patients who smoke.

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1. Introduction

A brief advice to quit smoking provided by a general practitioner (GP) effectively increases quit rates with 1–3% compared to an unassisted quit attempt [1]. Overall, acceptance of an unsolicited conversation about smoking is relatively high, both among the general population and smokers [2,3]. However, some smokers may become annoyed or report guilt because they perceive their smoking as personal failure [4]. This contradiction is

also reflected in other studies, where some smokers found it encouraging when their GP linked their symptoms to smoking [5], whereas others expressed resistance to this [6]. Another study showed that overall, smokers appear to make more negative than positive statements about quitting smoking when this subject is brought up by their GP or nurse [7].

Previous work in general practice has shown that how smoking is discussed, or quit advice is provided, is important for how smokers respond [5]. In addition, several smoker characteristics play a role [8]. For example, women and older smokers were found to be less open to a GP-initiated conversation about lifestyle [2]. Another potentially important factor is how smokers perceive themselves, that is, their *identity* as a smoker or non-smoker. People are motivated to behave in line with their identity, and to protect their identity in the face of threat [9–11]. PRIME theory

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states that identity exerts a stable influence on behaviour, in contrast to other factors that may change from moment to moment, such as urges, or less immediate factors such as outcome expectations [9]. In addition to identifying with smoking, smokers may also identify with non-smoking (i.e., they can see themselves as non-smokers). Already in 1998, Butler et al. suggested that “considering how the patient views himself or herself as a smoker (. . .) may be useful to doctors when talking to patients about smoking” ([4], p. 1881). However, to our knowledge, the role of smokers’ identity has not yet been investigated in the general practice setting.

Research on smoking and identity has shown that smokers’ self-perceptions are related to their responses to anti-smoking messages and regulation. These studies have shown that smokers respond more negatively (e.g., defensively, feeling victimized) when they identify more strongly with smoking and more positively (e.g., compliance, increased motivation to quit) when they identify more strongly with non-smoking [12–14]. Smokers’ self-perceptions are also found to be associated with subsequent smoking behaviour. Controlling for important factors such as nicotine dependence and perceived behavioural control, smokers who identified more strongly with smoking had weaker intentions to quit and were less likely to attempt to quit, whereas smokers who identified more strongly with quitting or non-smoking were more likely to intend and attempt to quit [15–23]. Furthermore, smokers who increasingly perceived themselves as non-smokers after quitting were less prone to relapse [24,25]. In sum, identity appears to be related to smoking cessation and to responses to anti-smoking messages and regulation. Given these findings, we hypothesise that smokers’ identities also play a role during GP visits. In addition, there is some evidence to suggest that female smokers identify more with non-smoking and less with smoking than male smokers [16,23], which led us to examine the role of gender as well. The current prospective study therefore aimed to answer the following research questions (RQs):

1. How strongly do smokers who visit their GP identify with smoking and non-smoking, and are smoker and non-smoker self-identities related to patient characteristics (RQ1)?
2. To what extent are smokers asked about their smoking status and advised to quit (RQ2A), and does this relate to their smoker and non-smoker self-identities (RQ2B)?
3. To what extent do smokers appreciate and accept conversations about smoking with their GP (RQ3A), and does this relate to their smoker and non-smoker self-identities (RQ3B)?
4. To what extent do quit advice and smoker and non-smoker self-identities predict quit attempts at one-year follow-up (RQ4A), and do quit advice and identity interact in predicting quit attempts (RQ4B)?
5. To what extent do the relations examined in RQ2–RQ4 differ between men and women?

2. Methods

2.1. Design

This study presents secondary analyses of data collected in a cluster-randomized controlled trial that examined the effectiveness of a low-intensity, practice-tailored training programme in smoking cessation counselling among 47 GPs [26]. The study was approved by the Medical Ethical Board of the Leiden University Medical Centre (P10.125). Data collection took place at pre-training, at one month post training, and at one year follow-up. Further details about the trial and GP characteristics are described elsewhere [26].¹ The current study focuses on the smokers that visited participating GPs during the intervention period, and includes a baseline (pre-training and one month post-training combined) and one year follow-up measurement.

2.2. Participants and procedure

At baseline, patients of participating GPs aged 18 and older completed a paper-and-pencil questionnaire after their GP visit ($N=3401$; 677 smokers). Participants were included in the current analyses ($N=527$) if they were daily ($n=450$, 85%) or non-daily, but regular smokers ($n=77$, 15%) at baseline, and had complete data for identity, gender, and at least one of the three acceptance variables (see Measures). At baseline, participants smoked on average 13.31 ($SD=8.65$) cigarettes per day. Eighty-two (16%) participants had never attempted to quit smoking previously, 253 (48%) attempted to quit smoking more than a year ago, and 188 (36%) in the last year (Table 1). All participants were sent a postal follow-up questionnaire (completed by 172 participants, 34%), approximately 11 months after baseline.² Baseline data were collected from January to December 2011, and follow-up data were collected between January and September 2012.

2.3. Measures

2.3.1. Baseline

2.3.1.1. Background characteristics. Date of birth, gender, nationality (Dutch/Non-Dutch), educational level, having children (yes/no), and educational level (recoded into lower [no education, only primary school, or lower level vocational education], middle [pre-vocational secondary education, middle level vocational education], and higher education [senior higher secondary education or pre-university education, polytechnic education, or university level]).³

¹ Twenty-six GPs (55%) were male and 30 GPs (64%) had been working as GP for over 15 years. Average age of GPs was 51.17 years ($SD=7.61$), average working experience 7.11 years ($SD=1.52$), average number of conversations with patients about smoking during the past week 4.00 ($SD=2.59$), and average attitude toward implementing smoking cessation care was 2.80 ($SD=0.48$); on a 10-item scale ranging from 0 [negative] to 4 [positive]; $\alpha=0.69$). Multivariate logistic regression analyses showed that these GP characteristics were not significantly related to acceptance or appreciation of an unsolicited conversation about smoking by patients (see Supplementary material).

² Attrition was not significantly related to gender ($p=0.45$), educational level ($p=0.26$), number of cigarettes smoked daily ($p=0.65$) and presence of smoking-related condition ($p=0.14$). Participants who completed the follow-up questionnaire were more likely to be aged 61 or older ($\chi^2(4)=13.53$, $p=0.01$) and to have children ($\chi^2(1)=7.52$, $p=0.01$), and had stronger smoker self-identities ($t(525)=-1.99$, $p=0.047$) and non-smoker self-identities ($t(525)=-2.12$, $p=0.04$). A marginally significant effect of nationality suggested that participants at follow-up were more likely to be Dutch ($\chi^2(1)=2.99$, $p=0.08$).

Table 1
Smoker and non-smoker identity in relation to participant characteristics: *t*-tests and ANOVAs.

Participant characteristic	n	Smoker self-identity		Non-smoker self-identity		
		<i>M</i> (<i>SD</i>)	Statistic	<i>M</i> (<i>SD</i>)	Statistic	
Gender	Female	289	3.99 (0.95)	$t(458.49) = -2.47, p = 0.03, d = 0.19$	3.72 (1.13)	$t(525) = -2.47, p = 0.01, d = 0.21$
	Male	238	3.79 (1.15)		3.47 (1.24)	
Age	18–30	99	3.78 (1.06)	$F(4,522) = 2.71, p = 0.03, \Pi_p^2 = 0.02$	3.62 (1.05)	$F(4,522) = 2.96, p = 0.02, \Pi_p^2 = 0.02$
	31–40	88	3.70 (1.01)		3.83 (1.21)	
	41–50	131	3.99 (1.09)		3.73 (1.17)	
	51–60	121	4.10 (0.86)		3.57 (1.16)	
	>60	88	3.80 (1.18)		3.27 (1.32)	
Educational level	Lower	122	3.97 (1.00)	$F(3,523) = 1.48, p = 0.22, \Pi_p^2 = 0.01$	3.46 (1.27)	$F(2,523) = 1.65, p = 0.18, \Pi_p^2 = 0.01$
	Middle	214	3.95 (1.00)		3.58 (1.15)	
	Higher	178	3.76 (1.14)		3.75 (1.18)	
	Other	13	4.08 (0.86)		3.77 (1.01)	
Nationality	Dutch	496	3.89 (1.05)	$t(525) = 0.75, p = 0.45, d = 0.13$	3.59 (1.19)	$t(525) = 1.71, p = 0.09, d = 0.32$
	Non-Dutch	31	4.03 (0.98)		3.97 (0.98)	
Children	No	207	3.88 (1.01)	$t(525) = 0.29, p = 0.77, d = 0.03$	3.60 (1.14)	$t(525) = 0.25, p = 0.81, d = 0.03$
	Yes	320	3.91 (1.07)		3.63 (1.22)	
Number of cigarettes smoked daily	≤10	237	3.62 (1.16)	$t(421.08) = -5.99, p < 0.001, d = 0.54$	3.58 (1.19)	$t(516) = -0.69, p = 0.49, d = 0.06$
	>10	281	4.16 (0.84)		3.65 (1.20)	
Smoking-related condition	No	393	3.80 (1.08)	$t(283.47) = -3.98, p < 0.001, d = 0.36$	3.55 (1.18)	$t(525) = -2.17, p = 0.03, d = 0.21$
	Yes	134	4.17 (0.87)		3.80 (1.20)	

Note. Cohen's *d* effect sizes are adjusted for unequal sample sizes.

2.3.1.2. Smoking behaviour. Number of cigarettes/roll-your-own cigarettes/cigars/cigarillos/pipes smoked per day (≤10 and >10).

2.3.1.3. Smoking-related condition. We asked which of the following applies [1] 'I have chronic respiratory complaints (e.g., asthma, COPD)', [2] 'I have diabetes', [3] 'I have coronary heart disease', or [4] 'I am pregnant' (smoking-related condition present), or [5] 'None of the above' (smoking-related condition absent).

2.3.1.4. Smoker and non-smoker identity. Measured with two separate items, i.e., 'I see myself as a person who smokes' and 'I would rather be a non-smoker', respectively. Answer categories ranged from [1] 'completely agree' to [5] 'completely disagree', and were recoded such that higher scores indicate stronger identity.

2.3.1.5. GP counselling behaviour. Participants were asked whether their GP had asked about their smoking status (yes/no) and, if so, advised them to quit (yes/no). Participants with missing values for ask ($n = 4$) or advice ($n = 168$) were considered as not being asked or advised, respectively.

2.3.1.6. Acceptance. Measured with 3 items: 'If my GP pays unsolicited attention to my smoking behaviour, this negatively affects my relationship with my GP', 'My GP interferes with my personal life too much if he/she brings up my smoking behaviour unsolicited', and 'I respond negatively if my GP brings up my smoking behaviour unsolicited' (adapted from [27]). Answer categories ranged from [1] 'completely agree' to [5] 'completely disagree'. Scores were averaged ($\alpha = 0.90$) and recoded into 'no acceptance' (≤3) and 'acceptance' (>3).

2.3.1.7. Appreciation. Measured among participants who had been asked or advised (see GP behaviour) with one item, i.e., 'To what extent did you appreciate the conversation with your GP about (quitting) smoking?'. Answer categories ranged from [1] 'strongly

appreciated' and [2] 'slightly appreciated' (recoded into 'appreciation'), and [3] 'not appreciated', [4] 'not at all appreciated', and [5] 'no opinion' (recoded into 'no appreciation').

2.3.2. Follow-up measurements

2.3.2.1. Quit attempt since baseline. At one year, participants were asked whether or not they had undertaken a serious quit attempt since they had filled out the previous questionnaire.

2.4. Statistical analyses

For RQ1 we performed *t*-tests and ANOVAs for predictors with two or more than two categories, respectively. Significant main effects in ANOVA were followed by Tukey and Games-Howell post hoc tests for equal and unequal variances, respectively. For RQ2 and RQ3 we first performed separate univariate logistic regression analyses for each predictor of being asked about smoking and advised to quit (RQ2) and acceptance and appreciation (RQ3). Predictors were gender, age, educational level, nationality, having children, number of cigarettes smoked daily, smoking-related condition (yes/no), GP training, and (non)smoker self-identity. For the purpose of the current analyses, GP training was recoded as 'training' (i.e., training group post-test) and 'no training' (i.e., training group pre-test and control group). Univariate analyses were followed by hierarchical multivariate logistic regression analyses with the predictors ($p < 0.10$) that were identified in the univariate models. We included both identity variables and controlled for GP training in all multivariate models. A similar approach was used for RQ4, such that univariate analyses were followed by a multivariate model, with quit advice at baseline as an additional predictor. Furthermore, we used a hierarchical multivariate model with main effects added in Step 1, and the interactions between quit advice and smoker and non-smoker self-identity, respectively, added in Step 2. Because of the interactions in Step 2 we included smoker and non-smoker self-identity in Step 1 regardless of their significance in the univariate models. We performed both per protocol analysis (i.e., complete cases for quit attempts) and intention-to-treat analysis (i.e., participants with missing follow-up data considered as not having quit [28]). Finally, we performed separate subgroup analyses for

³ Missing values for age and number of cigarettes were imputed with the overall mean for these variables, and missing values for nationality and children were imputed with 'Dutch' and 'no children', respectively. Participants with missing values for educational level were considered as 'other'.

men and women for receiving quit advice, appreciation of the conversation about smoking and quit attempts (RQ5). Except for gender, the same predictor variables were inserted in the model as described before.

3. Results

3.1. Identity and patient characteristics

Participants identified relatively strong with both smoking ($M = 3.90$, $SD = 1.05$) and non-smoking ($M = 3.61$, $SD = 1.19$). Overall, participants identified significantly stronger with smoking ($t(526) = 4.49$, $p < 0.001$). Women identified more strongly with both smoking and non-smoking than men (Table 1).⁴ Strength of smoker and non-smoker self-identity differed with age; participants aged 51–60 identified more strongly with smoking than those aged 18–30 ($p = 0.03$). Similarly, we found that people aged 61 or older identified less strongly with non-smoking than those aged 31–40 ($p = 0.02$) or 41–50 ($p = 0.04$). Furthermore, smoker self-identity was stronger among smokers who smoked more than ten cigarettes per day, and those with a smoking-related condition identified more strongly with both smoking and non-smoking.

3.2. Being asked about smoking and advised to quit

We found that half of the participants ($n = 268$, 51%) had been asked about their smoking status by their GP. Univariate logistic

regression analyses showed that smoker self-identity ($OR = 1.14$, 95% $CI = 0.97–1.35$, $p = 0.12$) and non-smoker self-identity ($OR = 1.09$, 95% $CI = 0.94–1.23$, $p = 0.17$) were not significantly associated with being asked about smoking status. We therefore did not fit a multivariate model.⁵ Furthermore, 28.3% of all participants ($n = 149$) were advised to quit. Univariate logistic regression analyses showed that men, participants aged over 50 (vs. 18–30), participants who smoked more than 10 cigarettes per day or had a smoking-related condition, and participants with stronger non-smoker self-identities were more likely to be advised to quit (Table 2). The association between non-smoker self-identity and receiving quit advice remained significant in the multivariate model; participants who identified more strongly with non-smoking were more likely to be advised to quit, controlled for Step 1 and 2. The relation between smoker self-identity and quit advice was no longer significant.

3.3. Acceptance and appreciation

The majority of participants accepted an unsolicited conversation about their smoking behaviour ($n = 425$, 82%), whereas only 102 participants (19%) did not. Univariate logistic regression analyses showed that acceptance was not significantly related to smoker self-identity ($OR = 0.85$, 95% $CI = 0.68–1.06$, $p = 0.15$) or non-smoker self-identity ($OR = 1.09$, 95% $CI = 0.9–1.30$, $p = 0.37$). Furthermore, 184 (69%) of participants who had been asked or advised about smoking by their GP, appreciated this conversation, whereas 84 (31%) did not appreciate this. Univariate logistic regression analyses showed that men, participants aged between 31 and 60 (vs. 18–30), and participants with stronger smoker and non-

⁴ Gender was not significantly related to educational level ($p = 0.14$), nationality ($p = 0.71$), children ($p = 0.32$) or smoking-related condition ($p = 0.61$). However, women were significantly less likely to be aged 61 or older ($\chi^2(4) = 13.53$, $p = 0.01$) and to smoke >10 cigarettes per day ($\chi^2(1) = 3.81$, $p = 0.048$) than men. Multivariate linear regression models including cigarettes per day and age as control variables, and smoker and non-smoker self-identity as dependent variables, respectively, showed that the gender difference in smoker self-identity remained significant ($\beta = 0.12$, $p \leq 0.01$), whereas the gender difference in non-smoker self-identity became marginally significant ($\beta = 0.08$, $p = 0.08$).

Table 2

Prediction of receiving advice to quit smoking ($n = 149$) or not ($n = 378$): Logistic regression analyses.

Predictors	Category	% advice	Odds ratio (95% confidence interval) of receiving advice	
			Univariate models	Multivariate model
Gender	Female	23%	1	1
	Male	35%	1.74** (1.19–2.55)	1.79** (1.18–2.72)
Age	18–30	18%	1	1
	31–40	27%	1.69 (0.84–3.38)	1.54 (0.75–3.16)
	41–50	26%	1.58 (0.83–3.00)	1.29 (0.66–2.53)
	51–60	35%	2.39** (1.27–4.51)	1.68 (0.85–3.30)
	>60	35%	2.48** (1.25–4.79)	2.03† (0.99–4.18)
Educational level	Lower	32%	1	
	Middle	28%	0.83 (0.51–1.36)	
	Higher	27%	0.79 (0.48–1.30)	
	Other	15%	0.39 (0.08–1.83)	
Nationality	Dutch	28%	1	
	Non-Dutch	32%	1.22 (0.56–2.66)	
Children	No	27%	1	
	Yes	29%	1.11 (0.75–1.63)	
Number of cigarettes smoked daily	≤10	21%	1	1
	>10	34%	1.94** (1.30–2.89)	1.65* (1.07–2.53)
Smoking-related condition	No	24%	1	1
	Yes	40%	2.12*** (1.40–3.21)	1.70* (1.07–2.68)
GP training ^a	No training	28%	1	1
	Training	29%	0.83 (0.62–1.82)	0.98 (0.55–1.74)
Smoker self-identity			1.20† (0.99–1.46)	1.05 (0.85–1.30)
Non-smoker self-identity			1.31** (1.10–1.55)	1.33** (1.11–1.60)

Note. Multivariate model $\chi^2(2) = 42.87$, $p < 0.001$, Cox & Snell $R^2 = 0.08$, Nagelkerke $R^2 = 0.11$.

^a 'No training' refers to training group post-test and 'no training' refers to training group pre-test and control group.

† $p < 0.10$.

* $p < 0.05$.

** $p < 0.01$.

⁵ Univariate logistic regression analyses showed that men ($p < 0.001$), participants aged 61 or older ($p = 0.01$; vs. 18–31), and participants with a smoking-related condition ($p = 0.049$) were significantly more likely to be asked about smoking. Educational level ($p > 0.70$), nationality ($p = 0.93$), having children ($p = 0.26$) and number of cigarettes smoked daily ($p = 0.83$) were not significantly related to being asked.

smoker self-identities were more likely to appreciate the conversation (Table 3). The effects of smoker and non-smoker self-identity on appreciation of the conversation remained significant when patient characteristics and the GP training were controlled for in the multivariate model. Non-smoker self-identity appeared more strongly related to appreciation than smoker self-identity.

3.4. Quit attempts

At one year follow-up, 67 participants had attempted to quit since baseline (38% of follow-up sample; 13% of baseline sample).⁶ Both the per protocol and intention-to-treat analyses showed that smokers who identified more strongly with non-smoking were more likely to attempt to quit, whereas smoker self-identity was not significantly related to quit attempts (Tables 4A and 4B). The association between non-smoker self-identity and quit attempts remained significant in the multivariate models in Step 1 in both analyses. No significant interactions were found in Step 2.

3.5. Gender differences

Results showed that, compared to men, women identified more strongly with both smoking and non-smoking. Furthermore, women were less frequently asked about smoking or advised to quit by their GP, and were less appreciative of the conversation about smoking (see 3.1–3.3). Separate analyses for men and women for receiving quit advice showed that, whereas men with stronger non-smoker self-identities were more likely to be advised to quit (OR = 1.42, 95% CI = 1.10–1.83, $p = 0.01$), this association was not significant among women (OR = 1.21, 95% CI = 0.93–1.57, $p = 0.16$). Furthermore, whereas both men and women with stronger non-smoker self-identities appreciated the conversation

about smoking more (OR = 2.01, 95% CI = 1.40–2.91, $p < 0.001$ for men and OR = 1.66, 95% CI = 1.16–2.38, $p = 0.01$ for women), only women with stronger smoker self-identities were more appreciative (OR = 1.69, 95% CI = 1.07–2.68, $p = 0.03$), but this association was not significant among men (OR = 1.10, 95% CI = 0.69–1.77, $p = 0.68$). Results for quit attempts for men and women separately were very similar to the findings in the total sample for both the per protocol and intention-to-treat analyses.

4. Discussion and conclusion

4.1. Discussion

To our knowledge, this study is the first to examine identity among smokers who visit their general practitioner (GP) for reasons other than smoking cessation counselling. We examined whether their identity relates to acceptance and appreciation of GP-initiated conversations about smoking and quit advice, and to subsequent quit attempts. Results showed that smokers who visited their GP identified more strongly with smoking than with non-smoking. Participants with stronger *non-smoker* self-identities were more often female, more often had a smoking-related condition, and were younger. These smokers with stronger *non-smoker* self-identities were more frequently advised to quit by their GP, appreciated the conversation about smoking more, and were more likely to have attempted to quit at one year follow-up. However, subgroup analyses showed that only men with stronger *non-smoker* self-identities were more likely to be advised to quit, whereas this was not the case for women. Those with stronger *smoker* self-identities were more often female and more often had a smoking-related condition, were older and smoked more cigarettes per day. Identification with smoking was unrelated to receiving quit advice or attempting to quit, but participants with stronger smoker self-identities appreciated the conversation more.

⁶ 23 participants indicated that they were abstinent since their last quit attempt.

Table 3

Prediction of appreciation (n = 184) or no appreciation (n = 84) of the conversation about smoking: Logistic regression analyses.

Predictors	Category	% appreciation	Odds ratio (95% confidence interval) of appreciation of conversation	
			Univariate models	Multivariate model
Gender	Female	63%	1	1
	Male	74%	1.69 [*] (1.00–2.84)	1.96 [*] (1.08–3.57)
Age	18–30	52%	1	1
	31–40	74%	2.66 ^{**} (1.06–6.69)	2.26 (0.77–6.62)
	41–50	79%	3.46 ^{**} (1.49–8.02)	2.32 [†] (0.85–6.30)
	51–60	71%	2.29 [*] (1.03–5.08)	1.39 (0.51–3.78)
	>60	64%	1.62 (0.73–3.55)	1.46 (0.50–4.27)
Educational level	Lower	67%	1	
	Middle	72%	1.24 (0.63–2.45)	
	Higher	66%	0.94 (0.47–1.88)	
	Other	68%	0.98 (0.17–5.78)	
Nationality	Dutch	68%	1	
	Non-Dutch	80%	1.88 (0.52–6.86)	
Children	No	62%	1	1
	Yes	73%	1.63 [†] (0.96–2.75)	1.49 (0.72–3.09)
Number of cigarettes smoked daily	≤10	63%	1	1
	>10	74%	1.67 [†] (0.99–2.83)	1.30 (0.71–2.40)
Smoking-related condition	No	66%	1	
	Yes	75%	1.50 (0.82–2.73)	
GP training ^a	No training	67%	1	1
	Training	76%	1.50 (0.70–3.22)	1.39 (0.59–3.27)
Smoker self-identity			1.44 ^{**} (1.11–1.87)	1.36 [*] (1.00–1.85)
Non-smoker self-identity			1.73 ^{***} (1.38–2.18)	1.82 ^{***} (1.41–2.33)

Note. Multivariate model $\chi^2(2) = 46.92$, $p < 0.001$, Cox & Snell $R^2 = 0.16$, Nagelkerke $R^2 = 0.23$.

^a 'Training' refers to training group post-test and 'no training' refers to training group pre-test and control group.

[†] $p < 0.10$.

^{*} $p < 0.05$.

^{**} $p < 0.01$.

^{***} $p < 0.001$.

Table 4A

Prediction of quit attempt (n=67) or no quit attempt (n=110) at follow-up (complete cases): Logistic regression analysis.

Predictors	Category	% quit attempt	Odds ratio (95% confidence interval) of quit attempt		
			Univariate models	Multivariate model (Model 1)	
				Step 1	Step 2
Gender	Female	43%	1		
	Male	32%	0.63 (0.34–1.16)		
Age	18–30	35%	1		
	31–40	54%	2.19 (0.69–6.93)		
	41–50	47%	1.63 (0.57–4.64)		
	51–60	30%	0.81 (0.28–2.39)		
	>60	29%	0.75 (0.25–2.23)		
Educational level	Lower	37%	1		
	Middle	32%	0.82 (0.38–1.79)		
	Higher	45%	1.41 (0.65–3.05)		
	Other	33%	0.86 (0.07–10.18)		
Nationality	Dutch	37%	1		
	Non-Dutch	50%	1.67 (0.33–8.53)		
Children	No	44%	1		
	Yes	35%	0.70 (0.37–1.35)		
Number of cigarettes smoked daily	≤ 10	41%	1		
	>10	36%	0.79 (0.43–1.46)		
Smoking-related condition	No	38%	1		
	Yes	39%	1.04 (0.53–2.02)		
Quit advice	No	34%	1	1	1
	Yes	48%	1.78 [†] (0.91–3.48)	1.32 (0.64–2.73)	0.07 (0.00–7.50)
GP training ^a	No training	39%	1	1	1
	Training	33%	0.79 (0.35–1.74)	0.86 (0.36–2.05)	0.92 (0.38–2.23)
Smoker self-identity			1.08 (0.80–1.48)	0.88 (0.63–1.25)	0.74 (0.50–1.10)
Non-smoker self-identity			2.08 ^{***} (1.51–2.88)	2.09 ^{***} (1.49–2.93)	2.19 ^{***} (1.46–3.28)
Interaction quit advice/smoker self-identity					2.22 [†] (0.93–5.25)
Interaction quit advice/non-smoker self-identity					0.92 (0.42–1.99)

Note. Multivariate model Step 1 $\chi^2(2)=26.19$, $p < 0.001$, Cox & Snell $R^2=0.14$, Nagelkerke $R^2=0.19$; Step 2 $\chi^2(2)=3.48$, $p=0.18$, Cox & Snell $R^2=0.15$, Nagelkerke $R^2=0.21$. Complete cases were used for quit attempts at follow-up.

^a 'No training' refers to training group post-test and 'no training' refers to training group pre-test and control group.

[†] $p < 0.10$.

^{***} $p < 0.001$.

Exploratory analyses showed that this was only the case for women, but not men, who identified more with smoking.

In line with previous studies outside the general practice setting, we found that stronger non-smoker self-identities were related to more appreciation of an unsolicited conversation about smoking behaviour with the GP [12–15]. We also found that stronger non-smoker self-identities – not weaker smoker self-identities – were associated with successful quit attempts at follow-up. This corresponds with findings of previous studies in which identities associated with the 'new behaviour' of non-smoking (i.e., non-smoker or quitter identities) appear more important for smoking cessation than identities that relate to the 'current behaviour' of smoking (i.e., smoker identities) [15–17,25].

The differences we found in identity across different age-groups (i.e. older smokers identified more with smoking and less with non-smoking) and smoking behaviours (i.e., heavier smokers identified more with smoking) correspond with findings in the general smoking population [15,16,21]. As such, it seems likely that the longer and more heavily people smoke, the more this behaviour becomes part of their identity and the more difficulty they have picturing themselves as quitters or non-smokers [29,30].

Furthermore, gender played an interesting role in the current study, with women identifying more strongly with both smoking and non-smoking than men. In contrast, previous studies among the general smoking population found that female smokers overall have stronger non-smoker self-identities and weaker smoker self-identities than male smokers [16,23]. However, another study showed no gender differences in smoker and non-smoker identity [15].

Women in the current study were also less likely to be asked about smoking or advised to quit, and they appreciated the

conversation about smoking less than men. The latter corresponds with previous work showing that women are less positive than men about GP-initiated discussions about smoking, alcohol consumption and nutrition [2]. According to Ulbricht et al., women may be more comfortable with asking questions than being advised, which could also explain our findings. The female responses to receiving quit advice (e.g., 'I decide for myself whether I smoke or not') may also reflect the changed position of women in society. A third explanation might be that women who were not open to quitting more often received quit advice than their male counterparts, as receiving advice was not related to identity among women. However, we also found that women who identified more with smoking appreciated the conversation more than women with weaker smoker identities, possibly because the conversation was perceived as more relevant, or because they believed that they would need help in quitting. Another explanation for the gender differences in our study relates to the cross-sectional nature of measuring quit advice and identity; rather than identity preceding quit advice, it could be that a non-smoker identity became more salient among men who are advised to quit, such that they (temporarily) came to perceive themselves more strongly as non-smokers, whereas this did not happen (as much) among women., the context of the current study (a GP visit) may have differently affected how male and female smokers perceived themselves. More research is needed to better understand the relation between gender, smokers' identity, and (receiving, accepting and appreciating) quit smoking advice. Given that the smoking epidemic had a late onset among (Dutch) women [31], and that female smokers have more difficulty quitting long-term than men [32], GPs should pay more attention to helping female smokers quit.

Table 4B

Prediction of quit attempt (n = 67) or no quit attempt (n = 460) at follow-up (imputed quit attempts): Logistic regression analyses.

Predictors	Category	% quit attempt	Odds ratio (95% confidence interval) of quit attempt		
			Univariate models	Multivariate model (Model 2)	
				Step 1	Step 2
Gender	Female	14%	1		
	Male	11%	0.80 (0.47–1.34)		
Age	18–30	8%	1		
	31–40	16%	2.15 (0.86–5.41)		
	41–50	15%	2.05 (0.86–4.87)		
	51–60	11%	1.37 (0.54–3.45)		
	>60	14%	1.80 (0.70–4.62)		
Educational level	Lower	15%	1		
	Middle	10%	0.63 (0.32–1.23)		
	Higher	15%	1.03 (0.54–1.97)		
	Other	8%	0.48 (0.06–3.93)		
Nationality	Dutch	13%	1		
	Non-Dutch	10%	0.72 (0.21–2.45)		
Children	No	12%	1		
	Yes	13%	1.18 (0.70–2.02)		
Number of cigarettes smoked daily	≤10	14%	1		
	>10	12%	0.79 (0.48–1.33)		
Smoking-related condition	No	12%	1		
	Yes	15%	1.29 (0.73–2.27)		
Quit advice	No	12%	1	1	1
	Yes	15%	1.38 (0.80–2.39)	1.10 (0.62–1.94)	0.06 (0.00–2.97)
GP training	No training	12%	1	1	1
	Training	15%	1.22 (0.61–2.44)	1.23 (0.59–2.53)	1.26 (0.61–2.61)
Smoker self-identity			1.23 (0.94–1.60)	1.05 (0.80–1.39)	0.92 (0.68–1.26)
Non-smoker self-identity			2.11*** (1.58–2.82)	2.07*** (1.53–2.79)	2.01*** (1.42–2.84)
Interaction quit advice/smoker self-identity					1.75 (0.89–3.44)
Interaction quit advice/non-smoker self-identity					1.13 (0.56–2.26)

Note. Multivariate model Step 1 $\chi^2(2)=32.67$, $p < 0.001$, Cox & Snell $R^2=0.06$, Nagelkerke $R^2=0.11$; Step 2 $\chi^2(2)=3.25$, $p=0.20$, Cox & Snell $R^2=0.07$, Nagelkerke $R^2=0.12$. Participants with missing values for quit-attempts at follow-up were considered as not having undertaken a quit attempt.

*** $p < 0.001$.

This study has limitations. Firstly, data were collected through self-report, which may be prone to bias. A recall bias may have occurred when GPs asked about smoking status or advised to quit without the participant recognizing or remembering this [33]. Also, participants may have provided socially desirable answers about quit attempts at follow-up. However, most participants indicated that they had not attempted to quit, and results remained consistent in the intention-to-treat analyses. Secondly, the questionnaires were administered after the GP consultation only. As such, we were unable to disentangle whether participants' identity evoked certain GP behaviours (e.g., advising to quit) or, alternatively, that identity changed compared to pre-consultation levels among smokers who received quit advice. Thirdly, in order to decrease questionnaire length, smoker and non-smoker self-identity were measured with only one item each. More comprehensive measures of identity may be used in future work [34,35]. Finally, the sample contained relatively few non-Dutch smokers, such that results with regard to nationality may have been different if more non-Dutch participants had been included.

4.2. Conclusion

This study provides new insights into how smokers who visit their GP perceive themselves in relation to smoking, and whether their identity is related to their responses to GP's questions about smoking status and quit advice, and to subsequent quit attempts. Results showed that smokers who identify more with non-smoking appreciate a conversation with their GP about their smoking more and are also more likely to attempt to quit. Furthermore, female smokers were less often asked about smoking or advised to quit, and were less appreciative of the conversation about smoking. More research is needed to investigate why female smokers appreciated the conversation less than male smokers.

4.3. Practice implications

Based on our findings we argue that incorporating an identity component in (brief) smoking cessation interventions (e.g., stimulating smokers to think about why non-smoking fits with who they are, or want to be) may increase the effectiveness of these interventions. We also suggest that GPs more often advice female smokers to quit.

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Conflicts of interest

None.

Disclosure

We confirm all patient/personal identifiers have been removed or disguised so the patient/person(s) described are not identifiable and cannot be identified through the details of the story.

Authors contributions

EM contributed to the statistical analyses and interpretation of the data, drafting of the manuscript, and gave final approval for submission of the manuscript. MV contributed to the conception and design of the study, acquisition of the data, statistical analyses and interpretation of the data, drafting of the manuscript, and gave

final approval for submission of the manuscript. NC, AK, WA and MS contributed to the conception and design of the study, drafting of the manuscript, and gave final approval for submission of the manuscript. MC contributed to the conception and design of the study, acquisition of the data, statistical analyses and interpretation of the data, drafting of the manuscript, and gave final approval for submission of the manuscript.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <https://doi.org/10.1016/j.pec.2017.11.009>.

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