

Attitudes towards smoking and the subjective importance of attributes: Implications for changing risk-benefit ratios

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This study examines the role of attribute importance in expectancy-value models. Attitudes towards smoking were assessed by a) a direct attitude measure (four semantic differentials) and b) a series of 15 attribute statements. These attributes (negative and positive consequences of smoking) were rated in terms of their probability and desirability. Attitude scores were derived by summing (over the various possible attributes) the perceived probability multiplied by the desirability of each attribute. Subsequently, participants were asked to select the five attributes they considered to be most important to their attitude towards smoking. Results show that smokers and non-smokers differ considerably in their selection of important attributes, and vary in the importance assigned to the positive and negative outcomes of smoking. Smokers tend to emphasize short-term benefits, while non-smokers stress the longer-term health consequences. Moreover, attitudinal differences between the two groups were more pronounced when focusing on individually selected important attributes than when using all attributes or the remaining less important attributes. Finally an attitude score based on the five important attributes is as predictive of attitude and behaviour as a measure based on all attributes and much more predictive than a measure based on the ten non-selected attributes. It is argued that a measure of attribute importance can provide additional insight in the structure of attitudes of smokers and non-smokers. Implications for attitude change programs with respect to smoking are discussed.

Key words: Smoking, attitudes, attributes importance

Tobacco use is probably the most frequently investigated behavioural practice in applied research on attitudes towards health-related behaviours. Research concerning attitudes toward smoking is often inspired by the Theory of Planned Behaviour (TPB; Ajzen, 1991). Numerous studies show that TPB is reasonably successful in predicting (smoking-)behaviour. For instance, Sherman, Presson, Chassin, Bensenberg, Corty & Olshavsky (1982) and Sutton (1989) investigated smoking initiation. Others focused on the frequency of smoking (Chasin et al., 1981; Fishbein, 1982; Godin, Valois, Lepage & Desharnais, 1992; Grube, Morgan & McGree, 1986), smoking cessation

(Black & Babrow, 1991; Babrow, Black & Tiffany, 1990; De Vries & Kok, 1986; Knight & Hay, 1989; Marin, Marin Perez-Stable, Otero-Sabogal & Sabogal, 1990; Marshall, 1990; Pederson, Wanklin & Baskerville, 1984), or the intention to smoke (Hanson, 1997). A recent overview of research on TPB and health behaviour, is provided by Conner & Sparks (1996).

In expectancy-value approaches such as Ajzen's TPB the relevant consequences of behavior, or attributes, are termed "beliefs". According to this theory, an attitude is assumed to be the outcome of a weighted-sum solution ($b \times e$), in which b is the expected likelihood that a specific

consequence will occur, and e is the subjective evaluation of that particular consequence. These products are summed and result in a $\bullet bxe$ score. In using this method of prediction, the composition of the set of beliefs or attributes is essential. Fishbein & Ajzen (1975) recommend to obtain a *modal* set of attributes on the basis of pilot research in which participants are asked to write down all their considerations concerning the attitude object or behavioural practice. The attributes which are mentioned most often are considered to be the “modally salient” beliefs. This modal set of attributes (15–20) is then presented to participants in the actual study.

Overall, decomposing attitudes in underlying attributes has proved to be useful and results in adequate predictions of overall attitudes and behavioural intentions (Fishbein & Ajzen, 1975; Conner & Sparks, 1996). Decomposing attitudes in beliefs and evaluations could also help to design interventions with the aim to change behaviour. For instance, persuasive messages are often directed at changing the perceived likelihood of a particular outcome of a behavioural practice, or at the perceived evaluation of that outcome. Not surprisingly, over the past decades the majority of anti-smoking campaigns stressed the likelihood and severity of adverse health consequences such as lung cancer and heart disease. Other campaigns emphasized aspects such as reduced fitness (De Vries & Kok, 1986), or the fact that smoking leads to bad breath, which makes smokers less desirable kissing partners (the slogan was “would you like to kiss an ashtray?”). Of course smokers should be, and probably are, aware of these aspects but how important are they to them? Although the focus on the adverse health and social consequences of smoking seems a straightforward and logical strategy, such an approach need not necessarily be effective.

The reason for this is that people with different attitudes might not always view the issue at hand in similar terms. Kerlinger (1984) was one of the first to note that people with opposing attitudes are likely to find completely different aspects of the attitudinal issue important. Similar findings were obtained by Luker (1984) and Tourangeau, Rasinski & D’Andrade (1991) who investigated attitudes towards abortion. Van der Pligt & Eiser (1984) stressed the necessity to explicitly consider the subjective importance of the various attributes underlying attitudes and behavioural preference. People with opposing attitudes and behavioural preferences may well be relatively indifferent to the attributes and/or consequences that are the prime determinants of attitudes of those with opposing attitudes. Thus, proponents and opponents of a specific attitude or behavioural practice could hold very different frames of reference, and consider different sets of attributes. In other words: People differ in the extent to which they consider certain attributes *important*. Coming

back to the examples above, smokers might simply find bad breath or reduced fitness not very important, thereby rendering the intervention to convince them of these consequences fruitless.

Unfortunately, most studies on smoking behaviour employing an expectancy-value framework do not incorporate a measure of attribute importance. There are a few exceptions; Eiser, van der Pligt & Friend (1983) assessed attribute importance of the various consequences of smoking for a group of adolescents. Budd (1986) and Van der Pligt & De Vries (1998) assessed attribute importance for smokers and non-smokers in the context of Ajzen’s theory of planned behaviour. These authors found that the predictive value of a composite score based on selected, individually important attributes out of a larger set of attributes is comparable or even better than a composite score based on all presented attributes. Moreover, they found that smokers and non-smokers tend to focus on different attributes or consequences of their behaviour. While smokers predominantly focus on the short-term positive effects of smoking, non-smokers attach more value to the long-term negative consequences for health. These differences in perceived importance could be of considerable value to attitude change strategies. Increased insight in the extent to which certain groups consider particular attributes or consequences as important might help to design intervention programs.

Overall, this research suggests that the *predictive* value of a composite attitude measure based on the most important attributes is more than adequate. Moreover the *descriptive* validity of this approach is likely to be better than that of solutions based on belief-based attitude scores that rely on large sets of beliefs or attributes. In our view, including a measure of attribute importance could help to prevent an endless proliferation of attributes, help to provide more insight into the *structure* of attitudes and help to develop more effective attitude change strategies.

The present study extends earlier research of Budd (1986) and Van der Pligt & De Vries (1998). Budd related belief-based attitude scores to a *direct* holistic measure of attitude towards smoking¹. In the current study we also relate the various belief-based scores to behaviour. Moreover, we address the usefulness of selecting varying numbers of attributes. Budd (1986) asked respondents to select five attributes. Van der Pligt & De Vries (1998) asked respondents to select three attributes. In our study we compare the relative efficacy of selecting various numbers

1 Generally, a direct, holistic measure of attitude is assumed to be better a predictor of behavioural intentions than belief-based measures, simply because it is difficult to incorporate all beliefs or attributes relevant to all respondents in the belief-based measure.

(1–5) of attributes. Another extension is that in the present study we also include a *direct* measure of importance in order to examine the efficacy of the various measures of attribute importance. Finally, we attempt to extend the findings of Budd and Van der Pligt and De Vries by also relating belief-based attitude measures to intention to quit smoking. We include this measure of intention because we are not only interested in differences between smokers and non-smokers, but also in differences between smokers with an intention to quit and smokers with no such intention.

In the present study participants' attitude towards smoking was measured by means of a direct attitude measure and correlated with various belief-based attitude measures based on the likelihood of attributes or outcomes (*b*) and their evaluations (*e*). Participants were required to select five (out of fifteen) attributes they considered to be important determinants of their attitude towards smoking. This enables us to construct three composite measures, one based on all attributes, one based on individually selected important attributes, and one based on non-selected, less important, attributes. Finally, we also included a direct rating task for each of the fifteen attributes.

Our predictions can be summarised as follows: First, we expect the two groups (smokers and non-smokers) not only to differ in terms of the probability and the evaluation of the various consequences of smoking, but also in the *importance* attached to these consequences. Second, attribute-based attitude scores of smokers and non-smok-

ers will differ more when based on important attributes than when based on less important attributes. Third, we expect attitude scores based on selected, important attributes to be more closely related to direct attitude scores and behaviour than attitude scores derived from the remaining less-important attributes. We will explore the number of selected attributes that is necessary to predict overall attitudes, intentions and behaviour. Finally, we also explore differences in perceived importance for smokers with an intention to quit versus those who do not and discuss the implications for behavioural change programs.

Method

Participants

One hundred and ninety-six first year psychology students of the University of Amsterdam participated in the study in return for course credits. They completed a questionnaire regarding smoking cigarettes as part of other ongoing investigations. Age of respondents varied from 18 to 61 years ($M = 22.45$, $SD = 6.21$); 61 were male, 135 were female. In the present sample 82 participants were currently smokers (41.8 %). Female respondents more often reported that they smoked (45.9 %) than male respondents (32.8 %). Of the non-smokers ($n = 114$), 22 (19.3 %) were considered ex-smokers since they reported to have smoked for a period longer than six months.

Table 1: Mean *bxe* score for each item and importance of beliefs for smokers (2) and non-smokers (1)

Attribute-item	<i>bxe</i> score ¹		Importance selection ²	
	Smokers (n = 82)	Non-smokers (n = 112)	Smokers	Non-smokers
1. Reduces fitness (–)	–18.32	–20.75	50%	43%
2. Reduces nervousness (+)	7.50	9.14	24%	8%*
3. Increases coughing (–)	–14.70	–17.40	17%	21%
4. Helps to relax (+)	20.41	16.89*	62%	12%**
5. Increases one's popularity (+)	4.20	4.14	0%	2%
6. Causes discomfort to others (–)	–18.09	–26.71**	26%	67%**
7. Is bad for one's health (–)	–24.20	–28.57*	57%	84%**
8. Is smelly (–)	–18.55	–27.83**	14%	59%**
9. Prevents getting too heavy (+)	10.91	8.30	17%	3%**
10. Is addictive (–)	–22.83	–28.51**	62%	65%
11. Leads to tightness of the chest (–)	–16.37	–22.78**	13%	34%*
12. Increases the likelihood of lung cancer and heart diseases (–)	–30.04	–31.74	65%	80%*
13. Increases the ability to concentrate (+)	14.82	12.23**	52%	4%
14. Fosters social interaction (+)	21.16	12.23**	52%	4%**
15. Helps to conceal one's uneasiness (+)	10.95	6.80*	26%	13%*

* $p < .05$, ** $p < .001$

¹ Scores could range from –36 (extreme negative utility) to +36 (extreme positive utility). Differences between groups were tested with t-tests.

² Scores represent the percentage of respondents who selected the item as one of the five important considerations. Differences between groups were tested with chi-square.

Measures

The questionnaire first presented respondents with questions regarding their smoking status. They were asked whether they smoked at present (1 = non-smoker, 2 = smoker). Subsequently their general attitude towards smoking cigarettes was assessed with four, (9-point) semantic differential scales. The four items were: *bad – good*, *unpleasant – pleasant*, *for – against* and *favourable – unfavourable*. Scores on the second and fourth item were reversed. These four items were combined to form a direct measure of attitude towards smoking such that higher scores indicated more positive attitudes toward smoking. Cronbach's alpha of this measure was more than adequate (.80).

Next, respondents were presented with a set of fifteen items describing various possible attributes or consequences of smoking (see Table 1). These consequences were based on previous research by De Vries & Kok (1986), and constituted the modal set of beliefs (see also Van der Pligt & De Vries, 1998). Each of these consequences had to be rated in terms of its likelihood, which was assessed on a 9-point scale ranging from *certainly not* (1) to *definitely* (9). Subsequently, the evaluation of each of these 15 possible consequences was measured on a 9-point scale ranging from *very negative* (1, recoded to -4) to *very positive* (9, recoded to +4). The summed products of the probability rating and the evaluation of each attribute resulted in the *bxe* score². Cronbach's alpha of this measure was .68.

To assess attribute importance, all consequences were presented again and respondents were required to select and rank the five they considered to be most important. After this selection task the importance of each of the 15 attributes was measured on a 9-point scale ranging from *unimportant* (1) to *important* (9). Finally, respondents were asked to indicate whether they intended to quit smoking in the near future on a 9-point scale ranging from *definitely not* (1) to *definitely* (9).

2 We are trying to improve on Budd's (1986) methodology regarding the computation of the *bxe* scores. Budd used bipolar measures for both evaluative and probability judgments (i.e. scales ranging from -3 to +3). Multiplying the two components of the *bxe* measure using these bipolar scales has a serious drawback in the fact that for someone who thinks a particular outcome is very unpleasant (-3), however considers this particular outcome as very unlikely (-3) the corresponding *bxe* score would be exactly the same (9) as for someone who considers a particular outcome both pleasant (+3) and very likely (+3). We tend to believe that it would be at least useful to distinguish between such responses and suggest a unipolar measure of probability judgments.

Results

Differences in perceived importance between smokers and non-smokers

For each attribute we compared the *bxe* scores and the importance ratings for smokers and non-smokers. Moreover, for each attribute we calculated the percentage of smokers versus non-smokers that selected it among one of the five most important. Results are presented in Table 1.

Table 1 shows that the mean individual *bxe* ratings of smokers and non-smokers vary considerably. This is also indicated by a MANOVA on the *bxe* scores with smoking status as a between-subjects factor which showed a highly significant multivariate effect; $F(15, 195) = 8.27, p < .001$. Smokers attribute more extreme utility to the positive consequences of smoking, while non-smokers tend to attribute more extreme utility ratings to the negative consequences, which supports our first prediction. These differences between smokers and non-smokers were even more pronounced for the direct ratings of importance, on which we also found a highly significant multivariate effect of smoking status; $F(15, 195) = 11.45, p < .001$. Table 1 presents the outcome of the selection task. Next we examined which attributes the two groups selected among the five most important. While smokers predominantly select the more hedonic short-term consequences ("reduces nervousness", "helps to relax", and "fosters social interaction") among the most important, non-smokers tend to select the long-term consequences ("causes lung cancer and heart diseases" and "is bad for one's health") and possible detrimental consequences for others ("causes discomfort to others", and "is smelly"). On the whole the direct measure of importance followed a similar pattern. On "Is addictive" and "Improves the ability to concentrate" we found no effect in the selection task, but we did find significant univariate effects on the importance ratings: $F(1, 193) = 8.06, p < .01$, for "addictive" and $F(1, 193) = 8.94, p < .01$, for "concentrate". The two consequences on which we did not find a significant difference between the groups on either of the importance measures are "increases one's popularity" and "reduces fitness". Both smokers and non-smokers found this consequence less important.

Overall, the hypothesis that smokers and non-smokers find different considerations important is supported by the current data. Interestingly, for some attributes we did not find a difference between smokers and non-smokers on the *bxe* score, but *did* find a significant difference on the importance measure. The most noticeable example concerns the item "smoking increases the likelihood of lung-cancer and heart-diseases". The average *bxe* score for smokers and non-smokers are both near the most negative end of the continuum. However, non-smokers select this

Table 2: Mean *bxe* score for important, non-important and total set of beliefs for smokers and non-smokers

	Smokers (n = 82)	Non-smokers (n = 114)	t-value
Important attributes	-2.70 (4.52)	-8.13 (3.04)	10.06**
Non-important attributes	-2.16 (3.36)	-0.83 (2.96)	-2.92*
All attributes	-4.86 (3.68)	-8.96 (3.59)	7.80**

* $p < .05$, ** $p < .001$; scores could range from -36 (extreme negative utility) to +36 (extreme positive utility). Standard deviations in parenthesis.

item much more often than smokers (80% vs. 65%). The fact that differences in the utility scores and in the perceived importance of the various items do not always coincide, underlines the added value of the inclusion of a measure of perceived importance.

Differentiating between smokers and non-smokers using the various attitude measures

To test the impact of these differences in perceived importance on composite belief-based attitude scores, we calculated the mean *bxe* score for important (selected), less important (non-selected) and the total set of attributes, for smokers and non-smokers.

Table 2 shows that the score based on important attributes discriminates significantly better between the two groups than the measure based on all attributes. This is illustrated by the confidence intervals for the differences between the two groups ($-3.06 < \Delta < -5.14$ for the measure based on all attributes, $-19.49 < \Delta < -12.89$ for the measure based on the important attributes). These two intervals do not overlap and therefore we can conclude that the latter measure is more adequate in discriminating between smokers and non-smokers. Interestingly, the measure based on the non-selected attributes also discriminates significantly between smokers and non-smokers, however in a direction contrary to expectations. Table 2 shows that the overall utility based on non-selected attributes is *more negative* for smokers than for non-smokers.

Predicting the overall attitude and behaviour using the various composite measures

Next, we examined the correlations between the various composite attitude measures, a direct attitude score and

behaviour (smoking status). We calculated a direct attitude score based on the four items described in the previous section, an overall *bxe* score based on all fifteen attribute statements, a *bxe* score based on the five selected important attributes, and a mean *bxe* score for the remaining ten attributes. The correlations between these measures are presented in Table 3.

This table shows that the measure based on the five important attributes correlates equally high with the direct attitude measure as the measure based on all attributes. The score based on the ten less important attributes showed a *negative* correlation with the both direct attitude measures and with the score based on the important attributes (see Table 3). The differences between the score based on important attributes and the score based on all attributes are more apparent when they are related to behaviour. The measure based on important attributes correlated significantly higher with self-reported behaviour than the measure based on all attributes ($t(195) = 2.45$, $p < .01$). As would be expected, less important attributes did not correlate with self-reported behaviour, this correlation was even negative. We also carried out two stepwise regression analyses to test the prediction that non-important attributes do not contribute significantly to the prediction of attitude and behaviour. The independent variables in this regression were the measure based on the important attributes and the measure based on the non-important attributes. The dependent measures were the direct attitude measure and behaviour respectively. In both analyses the non-important attributes were not included in the regression and hence do not add to the predictive value of the measure.

One of the reasons we asked respondents to select the five (instead of three in Van der Pligt & De Vries, 1998) most important attributes was to enable us to examine how many attributes need to be included to allow a reasonably adequate prediction of the direct attitude measure and behaviour. In order to do this, we calculated *bxe* scores based on the attribute that was selected as the most important, a

Table 3: Correlations between the various attitudinal measures and behavior (non-smoking vs. smoking)

		1)	2)	3)	4)	5)
Direct attitude Score	2)	1.00	.62**	.66**	-.15*	.56**
All attributes	2)		1.00	.75**	.23**	.49**
Selected attributes	3)			1.00	-.47**	.59**
Non-selected Attributes	4)				1.00	-.21**
Behaviour	5)					1.00

* $p < .05$, ** $p < .01$

measure based on the two most important attributes, a measure for the three most important attributes and a measure for the four most important attributes. These measures and the measure based on the five important attributes showed correlations with the direct attitude measure of .49, .52, .57, .65 and .66 respectively. With the behavioural measure these composite measures showed correlations of .44, .52, .52, .55, and .56. Apparently four important attributes are as adequate in predicting the direct attitude measure and behaviour as all 15 attributes, while a measure consisting of less than four attributes still shows a high correlation. One can even predict attitude and behaviour significantly ($p < .001$) with only *one* attribute, although the correlations of the composite measure based on five attributes are higher. Further support is found when entering the five selected attributes in a stepwise multiple regression analysis; four attributes were included in the equation resulting in a multiple R of .67 ($F(4,191) = 38.74$, $p < .001$). The regression of behaviour on the selected attributes resulted in an equation consisting of four attributes and a multiple R of .59 ($F(4,191) = 25.48$, $p < .001$). Apparently, in this particular attitude domain, four attributes are sufficient to adequately predict the overall attitude as well as behaviour³.

Smokers' reasons to quit

First, we carried out a discriminant analysis to examine the differences between smokers with the intention to quit and smokers with no such intention. We included all evaluative ratings, probability ratings and direct importance ratings in the analysis. Using a median split on the intention measure, smokers were categorised as having either a high or low intention to quit. A discriminant function of three variables results, that adequately predicts participants' intention in 75.31 % of the cases (Rao's $V = 20.99$, $p < .05$). The set of three variables contained two importance ratings ("smoking is smelly" and "smoking fosters

3 To examine how many attributes would be useful in an attribute-based measure to ensure the best predictive power and discrimination between smokers and non-smokers, we also examined the most important attributes on group level. First we assessed which five attributes were most often selected as important by smokers and non-smokers. There was some overlap between the two groups regarding the most important items and a total set of seven attributes would have been enough to derive adequate belief-based attitude scores for both smokers and non-smokers. Correlational analyses show that this measure correlates equally well with the direct attitude measure (.66) as the measure based on individually selected important attributes. Interestingly, the group-level measure is much better in predicting behaviour (.88) than both other measures.

social interaction") and one evaluation ("lung cancer"). The average *bxe* score on these attributes for smokers with an intention to quit were $M = 4.03$ (for "smoking fosters social interaction"), $M = 6.96$ for ("smoking is smelly") and $M = -3.73$ (for "lung cancer"). For smokers with no intention to quit, these means are 6.53, 4.46 and -3.37 respectively. We will return to these findings in the discussion.

Discussion

Our results show that the perceived importance of the various attributes of smoking differ between smokers and non-smokers, to the extent that smokers predominantly selected hedonistic short-term attributes as important, while most non-smokers selected the long-term negative consequences for one's health. Moreover, our findings show that it is easier to discriminate between the two groups if one focuses on subjectively important attributes rather than on all attributes. Attitude scores based on the less-important attributes also discriminated between smokers and non-smokers, however in a direction opposite to what one would expect. Moreover, a belief-based attitude score consisting of the selected attributes correlates slightly higher with a direct measure of attitude towards smoking than a composite score based on all attributes. The less-important attributes had a significant negative correlation with both the direct attitude measure and the composite measure based on important attributes. In general, this study provides evidence for our assumption that people use a limited number of important attributes in the construction of their attitude. Moreover, assessing attribute importance helps to discriminate more adequately between smokers and non-smokers, and provides a less diluted attitude measure.

A possible explanation for the negative correlation between the non-selected attributes and the direct attitude measure, might be found in the fact that for smokers the non-selected attributes mostly concern negative consequences of their behaviour, while for non-smokers the non-selected attributes refer to positive consequences of behaviour they *do not* perform. The average *bxe* scores indicate that smokers do not deny the negative consequence of their behaviour. Smokers *know* that lung cancer is a possible consequence of their habit. On the other hand, non-smokers acknowledge that smoking may have some positive consequences. The average *bxe* scores for non-smokers on these positive attributes are moderately positive. Since non-smokers hold very negative attitudes and smokers hold moderate attitudes towards smoking, both groups might experience both ambivalence and dissonance. One

way in which both groups can reduce this dissonance is by downplaying the relative importance of the consequences which do not support their behaviour.

These results extend those obtained by Van der Pligt & De Vries (1998) in a number of ways. First of all, we examined the relative predictive and descriptive value of composite measures based on various numbers of attributes, while Van der Pligt and De Vries focussed on selecting a maximum of three attributes. Second, we tried to shed more light on the issue of measuring attribute importance. We included a direct measure of importance but the results indicate that a simple selection task is the most efficacious approach. Third, we have investigated the differences between smokers with an intention to quit and smokers with no such intention. Discriminant analysis showed that the importance measures of the attributes "smoking is smelly" and "smoking fosters social interaction" and one evaluation ("lung cancer"), can adequately predict whether or not a smoker has an intention to quit.

These findings can be related to stage theories of behavioural change. According to Prochaska, DiClemente & Norcross (1992) smokers move to different motivational stages from "no motivation to quit" to "maintaining the new behaviour". These subsequent stages are dubbed *precontemplation*, *contemplation*, *preparation*, *action* and *maintenance*. Dijkstra, De Vries & Bakker (1996) showed that smokers, when asked for the consequences of their behaviour, report more pros of quitting in the contemplation stage than in the precontemplation stage. Former smokers in the maintenance stage report fewer cons of quitting than smokers in any of the first three stages. In the light of the findings obtained by Dijkstra et al. (1996), we are inclined to believe that the differences we found between smokers with an intention to quit and smokers without such an intention, can be attributed to the various stages they are going through. Our findings suggest that what actually happens in between these stages might also be related to changes in the subjective *importance* of attributes.

On a more applied level, we believe that these findings can be of considerable value for attitude change programmes. First of all, improved insight in the attitudinal structure of both smokers and non-smokers should help to design efficacious behavioural change programmes. Although most anti-smoking campaigns aim at convincing smokers of the adverse consequences of smoking for one's health, our results show that there is more to the issue than that. Both smokers and non-smokers know that smoking can damage one's health and the corresponding messages on cigarette boxes could by now well be redundant and less effective. Focussing on the perceived importance of attributes might provide a more fruitful strategy. This is indicated by our finding that the extent to which smokers

consider specific attributes as important, is also an important determinant of their intention.

The limited importance attached to long-term consequences is probably due to discounting (e.g. Shelley, 1994; Stevenson, 1993). Apparently smokers need to be convinced of the *importance* of the adverse health consequences. Stressing the need to use a long term perspective might therefore be a more adequate way of persuading smokers to quit. De Vries & Kok (1986) have described a number of ways in which smokers can be persuaded to quit: stressing the short-term negative consequences of smoking, the short-term positive consequences of not smoking, the long-term negative consequences of smoking or trying to instruct smokers of other means to obtain the short term gains that seem to be important to them. The short-term *negative* consequences (e.g. bad smell) do not seem important to smokers, indicating that the anti-smoking campaign we mentioned in the introduction (concerning the limited desirability of smokers as kissing partners) focusses on an attribute which is not relevant to the target group. The fact that bad smell was one of the three variables predicting smokers intention to quit might seem to contradict this point. However, most smokers do not consider these short term negative consequences important, only the smokers with an intention to quit.

We agree with De Vries & Kok (1986) that there are more ways in which smokers might be persuaded to quit, one could for example also choose to downplay the short-term positive consequences. We think that including a measure of attribute importance can make it easier to determine which of these different approaches is likely to be most effective. For example, the results indicate that concerning the likelihood of lung cancer and heart diseases smokers and non-smokers seem to be equally convinced of the likelihood and evaluation of this consequence, however differ significantly in the perceived importance. Obviously, smokers need to be convinced of the *importance* of this attribute. On the other hand, one could focus on an attribute like the relaxing effects of smoking and try to convince smokers that there are *other ways* to achieve this goal (relaxation). There are many ways in which attitude change might come about and investigating the target group's frame of reference, i.e. the attributes which are important to that particular group, might help to design more effective anti-smoking campaigns.

Finally, the fact that people with opposing behavioural preferences (e.g. smokers vs. non-smokers) consider different attributes important raises the question whether we should also assess whether people with the *same* behavioural preference might consider different attributes important. For instance, it might well be that some smokers do so because of social motives, while others smoke because it helps them feel relaxed. Although this was not

the focus of the present research, it is most likely that different motives for the same behaviour also require different behavioural change programs.

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