

Subjective attractiveness and perceived trendiness in smoking and snus use: a study among young Norwegians

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Abstract

In Norway, there has been a decline in smoking among adults and young people, but there has also been an increase in the use of snus, particularly among young males. Among females, snus use is less common. This study examines to what extent subjective attractiveness (SA) (the individual's personal opinion regarding how attractive a person who smokes/uses snus is) and perceived trendiness (PT) (the individual's impressions of how popular smoking/use of snus is) may contribute to explaining current trends in smoking and snus use among young people in Norway. Data were collected from a national representative sample of 2400 young people (age 16–20) by telephone interviews. Among males, regular smokers were also likely to be regular snus users and vice versa. SA and PT were significant predictors of their respective behaviours (smoking and snus use) and in some cases of the other behaviour. Smoking and snus use were perceived as unattractive, while snus use was perceived to be trendier than smoking. Males, more than females, perceived snus use to be attractive and trendy. This pattern is partly consistent with current changes in tobacco use in the Norwegian population.

Introduction

Smoking has been the most popular form of tobacco use for several decades in Norway. However, previous studies suggest a downward trend of this behaviour. The decline has not only been attributed to an increase in smoking cessation but also a drop in smoking initiation [1].

In Norway in 1973, 44% of young people between age 16 and 24 smoked daily. By 1997, the figure had dropped to 30%. Current statistics reveal a further decline in smoking prevalence (16% in 2007) among this sub-population [1]. While smoking prevalence has been on the decline in both males and females, there has been an increase in the use of snus, a type of moist smokeless tobacco commonly used in Sweden. Snus comes in loose forms or in small sachets and is usually tacked under the upper lip for several minutes before it is discarded [2]. The increase in snus use has generally been observed among males, especially among young males. In a national survey that was conducted in 2005, 14% of males between age 16 and 24 reported to be regular users of snus [3]. Among young females, snus use is less popular.

One set of factors accounting for the decline in smoking may be the various measures that have been put in place over the years to discourage the behaviour. A look at Norway's history of tobacco control indicates that educational approaches and smoking cessation offers were mostly the initial measures used. However, since the 1970s, restrictions and regulations on marketing of tobacco as well as purchase and use of tobacco products have been strong as well as strengthened repeatedly. The

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most recent change was the introduction in 2004 of a total ban on smoking in all restaurants and pubs [4]. A survey that was conducted among the general population revealed that personal attitudes towards these restrictions were mostly positive [5].

Like Sweden, Norway is not affected by the European Union (EU) ban on snus that has operated within the European region since 1992 as the country does not formally belong to the EU. Thus, snus is available to the general public although the product is not promoted in Norway. Most studies on Swedish snus have been carried out in Sweden, where an increase in snus use, presumed to be associated with a decline in smoking among men, has been documented in several studies [6, 7]. The decline in smoking has led to a reduction in smoking-related diseases and death recorded among Swedish men [2, 8]. However, Swedish snus is becoming increasingly popular in Norway and needs to be studied in the Norwegian context.

Despite considerable controversy in research on snus use and health, snus has repeatedly been promoted as a 'safer' form of tobacco in some countries such as Sweden and United States [8, 9]. Compared with smoking, snus is assumed to be at least 90% less damaging, depending on the type of snus product [10, 11]. Britton [12] has argued that doctors should recommend snus use as a strategy to stop smoking among patients who have tried all other cessation and substitution options and still not succeeded stopping. In the European region, the possible harm reduction effect of snus has been accepted and supported by a group of researchers who have called for the lifting of all bans on snus to make the product freely available [13]. To the extent that the general attitudes and norms surrounding smoking tend to be negative, while attitudes and norms surrounding snus use appear to be more positive, this may be linked to the de-marketing of smoking and the various restrictions against smoking on one hand and the understanding that snus is a safer alternative on the other hand.

The message that snus is a safer alternative seems to have had an impact primarily with men as they

are more likely to use the product as a smoking cessation tool [14]. The difference between men and women reflecting itself in their respective use of snus raises interesting questions such as why snus use appears to be widespread among males and what are the factors accounting for the low prevalence of snus use among females, in spite of the product being generally promoted as less harmful to health.

A number of theories and theoretical models are of relevance when explaining individual-level variation in health behaviours such as smoking and snus use [15]. The purpose of the present paper is, however, not to explain individual level variation, but to examine the role of two factors in explaining the current decrease in smoking among adolescents and young adults in Norway and the increase in snus use. The latter takes place primarily among young males. The two factors are (i) the subjective attractiveness (SA) and (ii) the perceived trendiness (PT) of each of the two behaviours—smoking and snus use. There has been very little use of these concepts in the literature on tobacco use. SA is, in the context of this study, defined as an individual's opinion regarding how attractive a person who smokes (or uses snus) is. PT refers to the individual's impressions of how popular smoking (or use of snus) is. SA and PT may, in this sense, be seen as parallels to Ajzen's [16] concepts, personal attitudes towards a behaviour and subjective norms, or perhaps PT is even closer to concept of descriptive norms Cialdini *et al.* [17].

The central objective of marketing is consumer satisfaction through use of products. Persuading consumers to believe that use of specific products will contribute to their personal attractiveness is a common motivational approach in marketing. And feeling more attractive has been linked to outcomes such as positive reactions from others, greater self-esteem and a more positive mood [18]. Smoking was for decades marketed as sophisticated, attractive and even sporty, and the positive image associated with being a smoker undoubtedly contributed to its successful diffusion. Steele *et al.* [19] have shown how attractiveness constitutes an

aspect of what they termed 'social utility' and found that high scores on perceived utility of smoking were strongly associated with smoking. Other studies have shown that non-smokers more than smokers perceive smoking to be unattractive [20, 21]. To the extent that behaviours such as smoking and use of snus are perceived to be attractive, this will most likely contribute towards more use of these products, while lack of perceived attractiveness (or unattractiveness) will contribute to reduced use of these products.

From research on voting behaviour, it is well known that success (support from voters) which is effectively communicated to the public leads to more success (more support) [22]. This is frequently referred to as the 'bandwagon effect'. This persuasion strategy is frequently utilized in commercial marketing. Sales and marketing professionals make a special point out of informing us when a product is the 'largest selling' or 'fastest growing' in its market [23]. By creating an impression that a certain brand of a product is widely used, increasing its market share, or becoming more popular among consumers, it is expected that new customers will be recruited. If an impression has emerged that the prevalence of smoking is decreasing, this may contribute towards accelerating the decline. Rhoads and Cialdini [23] maintain that the effectiveness of this technique of demonstrating that using a certain product is trendy may be explained by our need for social validation of our choices.

In the present study, we want to examine to what extent SA and PT may contribute to explaining current trends in smoking and snus use among young males and females in Norway. Thus, the following hypotheses were suggested: smoking is perceived to be untrendy and unattractive in both genders and snus use is perceived to be trendy and attractive among males but less so among females. If these hypotheses are confirmed, this may contribute to explaining current population-level changes in each of these behaviours. Furthermore, we will examine SA and PT of smoking and snus use among groups defined by their smoking habits and use of snus, and we will examine how SA and PT predict smoking and snus use. We will

also examine the association between smoking and snus use.

Methods

The present study forms part of a cross-sectional survey among a representative sample of Norwegian adolescents and young adults undertaken to examine the use of tobacco. Included in the study are items and scales for measurement of SA and PT in smoking and in snus use.

Sample

For the study sample, the Norwegian Population Registry provided a randomly selected sample of 16 to 20 year olds living in Norway (6642 persons). Persons listed were contacted and interviewed until the sample reached 2400 respondents, a sample size considered large enough to obtain significance at the 0.05 level for any of the most central associations to be examined separately for males and females by these data with a statistical power of 0.80 or higher.

Data collection

Data collection was carried out by a commercial marketing research institute (Opinion Inc.). Prior to the survey, letters were sent to all 6642, informing them of the content of the study and the procedure involved. During the period, 4–23 October 2004, 2400 young people were interviewed on the phone by trained interviewers from Opinion. For the interviews that were not successful ($n = 3642$), 736 were because of wrong telephone numbers, 790 were because people on the list were not within the required age, 1768 were because no one answered the phone call, while 348 refused to participate in the survey. Six hundred people were not contacted because the 2400 target was reached.

Measurement

Subjective attractiveness

The following items were used to assess SA of smoking: (i) It looks stupid to smoke, (ii) It is cool

to smoke and (iii) Smoking is sexy. Responses were coded from (1) strongly agree to (5) strongly disagree. After recoding and statistical analyses to confirm internal consistency, the three items were combined to form a composite score ranging from -2 to $+2$. Similar items and statistical procedures were used to construct a composite score for SA towards snus use. For statistical analysis, some items were recoded in order to obtain scale consistency. The higher the score, the more attractive the behaviour was to the individual.

Perceived trendiness

For the assessment of PT, a global measure was used for both smoking and snus use: 'It is unpopular to smoke (to use snus)'. Responses were coded from (1) strongly agree to (5) strongly disagree. Like for SA, responses were recoded ranging from -2 to $+2$. The higher the score, the trendier the individual perceived the behaviour.

Use of tobacco

Adolescent smoking behaviour was measured by two items. For the first item—'Have you ever smoked tobacco', responses were coded (1) 'Yes' and (2) 'No'. Participants answering 'Yes' were asked a second question: 'How often do you smoke tobacco at present?' The responses were coded using a four-point scale: (1) 'Every day', (2) 'Every week' (3) 'Less than once a week' and (4) 'Not at all'. Smoking status was computed using the two items with options (1) and (2) on the second item representing regular smoking, while (3) and (4) on the second item and (2) on the first item represented non-smoking. Smoking status was coded as '1' (regular smokers) and '0' (non-smokers). Similar items were used to measure the status of snus use and the same procedure was used to compute a dichotomous variable with '1' representing regular snus users and '0' representing non-users of snus. In further analysis, the smoking and snus dichotomous variables were combined to construct a four-category tobacco use variable with the following categories—(1) non-smokers and non-users of snus, (2) exclusive

snus users, (3) exclusive smokers and (4) smokers and snus users.

Statistical analysis

As the proportion of missing cases on each variable was quite low (3% or lower), cases with missing on at least one item within a scale were given a missing code on the mean score. Principal components analyses were carried out to examine the dimensionality of scales that measured SA towards smoking and snus use. The statistical analyses also included use of percentage distributions and calculations of means and standard deviations. Chi-square and analysis of variance (ANOVA) analyses were run to examine the significance of gender and age differences, and ANOVA was used for testing interaction effects between gender and age. Logistic regression analyses were used to examine the prediction of smoking and snus use with SA, PT and age as predictors, separately for males and females. Snus use was used as one of the predictors for smoking and vice versa. As already described, the scales for measurement of SA and PT were coded from -2 to $+2$ with zero indicating neutrality. Values on the minus side could then be interpreted as degrees of unattractiveness or untrendiness, while values higher than zero could be interpreted as degrees of attractiveness or trendiness. Bar graphs were used to illustrate differences among mean scores of the four categories of tobacco use described above.

Results

In the present study, 51% of the participants were males. Age of participants ranged from 16 to 20, with a mean age of 18 for both males and females.

Smoking and snus use

Among males and females, daily smoking increased with age up to 19 with females at the various age categories smoking more than their male counterparts. The highest daily smoking rate was reported by 19-year-old females (27.4%). Chi-square analyses revealed significant age differences

among males and females ($P < 0.001$ and $P < 0.01$, respectively) (Table AI). Overall, 19.3% of females smoked daily, while 16.7% of males reported the same behaviour but the analysis showed no significant gender difference.

Snus use increased with age among males with the highest prevalence of daily use (17.5%) reported among 19 year olds. A chi-square value of 36.133, $df = 12$, $P < 0.001$, revealed significant differences in snus use across age groups among males. In general, snus use seemed to be almost as prevalent as smoking among males. Snus use was not as widespread as smoking among females, the daily and weekly prevalence for all age cohorts combined being a mere 2.4%, although 5.7% were using the product occasionally. There was a significant gender difference in the use of snus ($\chi^2 = 163.087$, $df = 1$, $P < 0.001$).

SA of smoking and snus use

Principle component analysis of the items on SA towards smoking and snus use showed one factor for smoking and one for snus use with three items obtaining high loadings on each. Eigenvalues after rotation were 1.65 for smoking and 1.68 for snus use. Cronbach's alphas were 0.50 and 0.58 for smoking and snus use, respectively.

As shown in Table AII, the mean score of SA was higher for smoking than for snus use (-1.35 and -1.51 , respectively; $P < 0.001$). SA of smoking increased with age for both males ($P < 0.001$) and females ($P < 0.05$). However, for females, the increase reached its peak at age 19. Overall, males scored higher on SA towards smoking than females (-1.32 versus -1.39). Also, a significant interaction was observed between age and gender with older males having the highest score on SA towards smoking (Table AII). The associations with gender and age for SA towards snus use were quite different. While the mean score showed a non-significant increase with age for males until age 19, there was no particular pattern found among females. ANOVA analysis revealed significant overall gender differences with males scoring higher on this variable than females (-1.42 and -1.60 , respectively) (Table AII).

PT in smoking and snus use

The overall mean scores for PT were 0.03 and 0.57 for smoking and snus use, respectively ($P < 0.001$). PT in smoking increased with age among males ($P < 0.01$) and females ($P < 0.05$) up to age 19. The increase in PT in snus use, however, was only observed among males ($P < 0.01$). For smoking and snus use, the mean scores turned out to be 0.02 and 0.70 for males and 0.05 and 0.42 for females, respectively. While there were no significant gender differences (main or interaction) regarding PT in smoking, there was a significant gender difference regarding PT in snus use (Table AII). The assumption that males would score higher on PT in snus use was thus confirmed.

SA and PT by tobacco use

Concerning the four-category tobacco use variable, out of the 2400 who participated in the present study, 71.2% fell in Category 1, the non-smokers and non-users of snus group; 7.6% in Category 2, the exclusive snus users group; 18.2% in Category 3, the exclusive smokers group and 3% in Category 4, the smokers and snus users group. Bar graphs were used to examine the mean scores of SA and PT for each of the four categories. Because males differed from females especially in relation to the use of snus, separate figures were constructed for males and females. Comparing Fig. A1(a) and (b), males and females were similar in many ways but there were also some differences.

Participants in all four categories perceived snus use to be trendy. Among all four categories of participants, smoking and snus use were perceived as unattractive. For non-smokers and non-users of snus, males scored higher on SA towards snus ($P < 0.001$) and they perceived the behaviour to be trendier than their female counterparts ($P < 0.001$). For the other categories (smokers, snus users and the combined group), there was only one significant gender difference. Among smokers who were also snus users, females more than males regarded smoking to be unattractive. The number of females who smoked and used snus was, however, quite low ($n = 7$).

When data were analysed for males and females combined, smokers, more than non-smokers, tended to regard smoking as attractive (less unattractive) and trendy. Snus users, more than non-users, tended to regard snus use to be attractive (less unattractive) and trendy (all at $P < 0.001$).

Predicting tobacco use

In Table AIII, SA and PT were examined as possible predictors of smoking (for males and females separately) and snus use (only for males because of the very low prevalence of snus use among females). Among males, the odds of being a smoker increased with age, snus use and the SA and PT of smoking, but decreased with PT of snus use. Among females, the odds of being a smoker increased with age, the SA of snus use and the SA and PT of smoking. Among males, the odds of being a snus user increased with smoking and the SA and PT of snus use. P -values for all reported associations were <0.01 . SA turned out to be the strongest predictor of each of the behaviours.

Discussion

Smoking and use of snus

The proportion of daily smokers was only marginally higher (not statistically significant) among females (19.3%) than among males (16.7%), while daily use of snus was much more common among males (13.5%) than among females (1.1%). Comparing the prevalence in smoking and snus use in the present study to figures presented in previous studies [1, 3] confirmed the downward and upward trends in smoking and snus use, respectively. Consistent with previous studies on tobacco use in Sweden [6], the increase in snus use was mainly found among males but not among females. It is interesting to note that the highest prevalence in smoking and snus use was among 19-year-old females and 19-year-old males, respectively. This may be due to the legal age (18 years) at which tobacco products are sold to individuals in Norway. The 19 year olds may simply be enjoying their freedom to buy tobacco and to smoke or use snus.

While it is tempting to attribute the decrease in smoking to an increase in snus use, a cause–effect relationship cannot easily be established. This is not only because of the cross-sectional design of the present study but also because of the several other factors that influence smoking and snus use. Although, snus use seems to have increased after the 1 June 2004 ban on smoking in public places, the increase may also be associated with high taxation on cigarettes, anti-smoking campaigns as well as the fact that it is relatively cheaper to use snus. Thus, attributing the current decrease in smoking prevalence to one particular factor may be misleading [24].

The relationship between smoking and snus use

In the present study, it was shown that among young males, smoking is associated with use of snus. Even though previous studies [25] indicate that smokers may use snus as a supplementary source of nicotine, other studies also suggest that snus may be used as a smoking cessation tool [7, 14]. In the present study, it is not very clear whether snus was being used as a cessation tool or as a supplementary source of nicotine. What is clear, however, is that, among young males, snus use is almost as widespread as smoking. This is consistent with previous studies in Sweden [26]. Also, among males, regular snus users are more likely to be regular smokers. This raises a public health concern as Hatsukami and Severson [27] suggest that the onset of snus use tends to precede that of smoking for young people and thus could serve as gateway behaviour. While it cannot be shown in our study that snus users proceed to become smokers, the initiation of snus use could point to a fear, which has been expressed by some health professionals. The fear is that social acceptance and promotion of snus as a less harmful product may lead to a situation where young people engage in the use of snus that may later serve as a gateway to the use of a more harmful product—cigarette, for people who might otherwise not have started using any tobacco product [28].

While snus use is less harmful than smoking, it may not be safe especially because of its addictive nicotine content. Consistent with previous studies [27, 29], regular use of snus is capable of delivering high dosages of nicotine, comparable to or even higher than levels observed among regular smokers. The similarity in nicotine concentration is likely to be what makes snus an effective smoking cessation tool [30]. Unfortunately, the nicotine content of snus makes regular use of the product lead to a situation where users become physically dependent on nicotine [31]. Thus, while the total effect of snus may not yet be known, there is the potential of an indirect health risk for individuals who use snus as they may prove to be more likely to start smoking.

Attractiveness, trendiness and tobacco use

Consistent with our expectations and with Hays *et al.* [32], the present study showed that smoking was perceived as unattractive. The earlier glamorous, sporty and fashionable attributes given to smoking seem to have changed over the years [32]. The unattractiveness of smoking may be linked to the tobacco control programmes that have been carried out against smoking for the last decades. The demarketing of smoking appears to have been successful. Smoking is, however, not seen as particularly untrendy. The mean scores come close to the neutral point on the scale. Although smoking is uncommon among well-educated segments of the population, more than one in five adult Norwegians are daily smokers and approximately one out of 10 are occasional smokers. In spite of a rather steep reduction in the prevalence of smokers during the last few years, the prevalence may still be too high to create an impression that smoking has become untrendy.

The lower the age, the lower were the scores on SA and PT of smoking. It is unclear whether this is an age effect or a cohort effect. If it is a cohort effect, it means that younger cohorts perceive smoking to be less attractive and less trendy than the older ones. This may reflect a change towards young people having more negative opinions and attitudes towards smoking.

Our assumption that snus use would be perceived as attractive was not confirmed. Snus use was per-

ceived to be unattractive, but consistent with our expectations, it was perceived to be even more unattractive by females than by males. Use of snus was, however, perceived to be trendy and more so by males than by females. These particular patterns may to some extent explain the current changes in snus use among young Norwegians. Since snus use is perceived to be trendy across all groups of tobacco users (smokers and non-smokers, those who use and those who do not use snus), this may not only reflect current increases in the use of snus but also contribute to further increase. Regular snus use is not yet widespread among young females and this is consistent with our findings that it is perceived as particularly unattractive by females, and females, less than males, perceived snus use to be trendy.

The fact that snus use was perceived as trendier than smoking may suggest a shift in social norms away from smoking towards favouring snus use, a factor that is seen to be quite influential in the prediction of health behaviour among young people [33]. Other factors such as the general assumption that snus use is less harmful than smoking may, however, also have contributed to this change. Presently, we have a rather paradoxical situation where snus use is perceived as unattractive and yet trendy.

Exclusive smokers regarded snus use to be less attractive than smoking. Exclusive snus users perceived smoking to be less attractive than snus use. Snus users meant that snus use was particularly trendy. SA and PT were both predictors of their respective behaviours and in some cases predictors of the other behaviour. These findings all illustrate patterns of associations which exist between SA and PT on one side and tobacco use on the other. Consistent with Bandura's [34] principle of reciprocal determination, we may assume that the relationships may be understood as two-way processes. According to Cognitive Dissonance Theory and Self Perception Theory [35–37], snus users may see snus use as more attractive and trendier as a way of explaining or defending their behaviour, and similar mechanisms may operate as regards smoking. When larger and larger population

segments perceive smoking to be unattractive, this might contribute to a further decrease in smoking. And when snus use is perceived as trendy, this may contribute to recruit more young people to start using snus.

Limitations of study

Our measures of SA of smoking and snus use consisted of only three items each, and Cronbach's alpha indicated moderate internal consistencies of these scales. PT was measured with only one item for each of the behaviours. Thus, alpha values could not be estimated. In future studies, better scales for SA and PT need to be developed. Not only internal reliability estimates are needed but also test-retest studies should be carried out. Yet, through the patterns of associations and group differences described in the present study and in spite of the obvious weaknesses of the instruments used, the construct validity of the scales has to some extent been confirmed.

Attrition is an increasing problem in survey-based studies such as the present one. The prevalence of smokers and snus users, however, compares well to previous Norwegian studies, and it is likely that attrition has rather limited impact on patterns of associations such as those presented in this study.

Single cross-sectional studies have their obvious limitations when the aim is to examine processes of change which occur over time. Series of cross-sectional studies where changes in SA and PT could be systematically compared with changes in smoking habits would throw more light on the population-level processes assumed to take place. Parallel changes in the factors mentioned with possible time lags in one or the other direction might confirm hypothesized causal processes and provide new insights. Individual-level processes might better be examined through prospective panel studies.

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Conflict of interest statement

None declared.

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Appendix

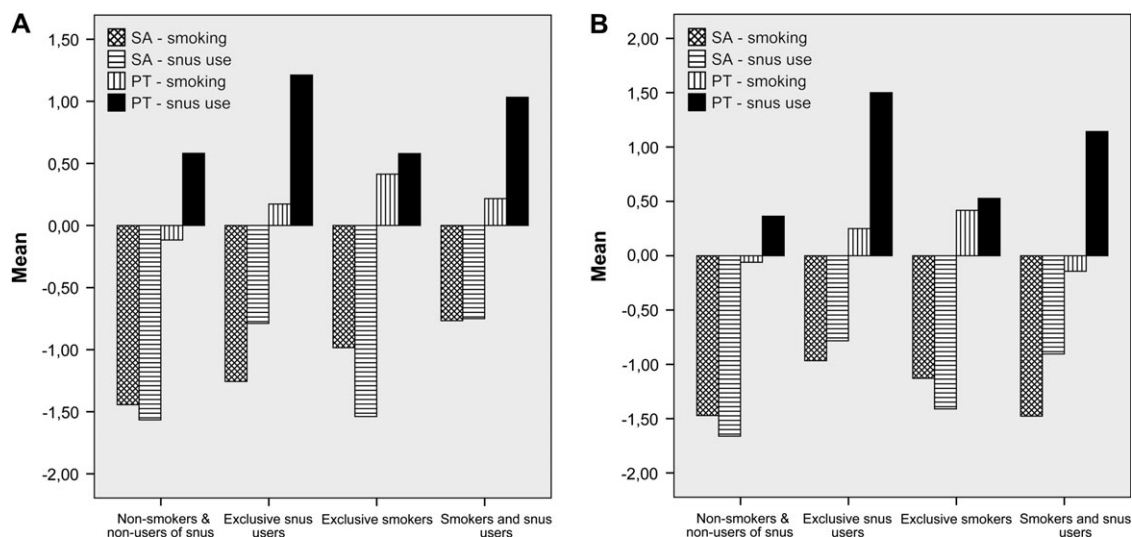


Fig. A1. (a) Males’ SA and PT by tobacco use. (b) Females’ SA and PT by tobacco use.

Table AI. *Smoking and snus use by age and gender*

	Gender	Age	No use %	Occasional %	Every week %	Every day %	Total % N	χ^2	df	Significance (two sided)
Smoking	Males	16	87.4	3.2	0.8	8.7	100.0	71.258	12	0.000
		17	74.9	9.2	4.0	12.0	100.0			
		18	68.4	13.1	3.3	15.2	100.0			
		19	68.8	5.4	3.8	22.1	100.0			
		20	59.8	8.7	5.4	26.1	100.0			
		Total	72.0	7.9	3.4	16.7	100.0			
	Females	16	79.4	7.4	2.1	11.1	100.0	29.765	12	0.003
		17	68.5	11.1	1.7	18.7	100.0			
		18	66.2	10.4	3.9	19.5	100.0			
		19	60.0	9.1	3.5	27.4	100.0			
		20	66.8	8.3	4.4	20.5	100.0			
		Total	68.3	9.2	3.1	19.3	100.0			
Snus use	Males	16	80.2	7.9	5.5	6.3	100.0	36.133	12	0.000
		17	67.7	13.5	5.2	13.5	100.0			
		18	69.0	11.4	4.9	14.7	100.0			
		19	66.3	11.3	5.0	17.5	100.0			
		20	60.4	19.6	4.2	15.8	100.0			
		Total	68.8	12.7	5.0	13.5	100.0			
	Females	16	94.2	4.9	0.4	0.4	100.0	10.995	12	0.529
		17	90.6	6.4	1.7	1.3	100.0			
		18	90.5	6.1	1.3	2.2	100.0			
		19	91.4	6.9	1.7	0.0	100.0			
		20	92.6	4.4	1.3	1.7	100.0			
		Total	91.9	5.7	1.3	1.1	100.0			

Table AII. *SA and PT by age and gender: univariate analyses of variance*

Gender	Age	SA—smoking ^a		SA—snus use ^a		PT—smoking ^a		PT—snus use ^a	
		Mean (SD)	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	N
Males	16	−1.53 (0.63)	250	−1.51 (0.65)	249	−0.19 (1.31)	248	0.52 (1.41)	244
	17	−1.39 (0.70)	248	−1.44 (0.77)	249	−0.02 (1.33)	247	0.59 (1.40)	247
	18	−1.27 (0.76)	242	−1.43 (0.73)	241	−0.04 (1.29)	239	0.66 (1.33)	238
	19	−1.24 (0.76)	236	−1.34 (0.83)	240	0.11 (1.20)	238	0.77 (1.29)	232
	20	−1.14 (0.79)	238	−1.39 (0.74)	240	0.22 (1.23)	240	0.96 (1.21)	238
	Total	−1.32 (0.74)	1214	−1.42 (0.75)	1219	0.02 (1.28)	1212	0.70 (1.34)	1199
Females	16	−1.50 (0.62)	239	−1.63 (0.65)	243	−0.10 (1.34)	231	0.33 (1.50)	237
	17	−1.41 (0.72)	233	−1.58 (0.67)	235	−0.05 (1.24)	232	0.48 (1.42)	226
	18	−1.37 (0.65)	225	−1.58 (0.69)	228	0.10 (1.27)	223	0.47 (1.39)	226
	19	−1.29 (0.67)	229	−1.65 (0.57)	232	0.24 (1.20)	224	0.49 (1.36)	220
	20	−1.38 (0.67)	225	−1.58 (0.75)	228	0.06 (1.17)	223	0.35 (1.42)	219
	Total	−1.39 (0.67)	1151	−1.60 (0.67)	1166	0.05 (1.25)	1133	0.42 (1.42)	1128
Total	16	−1.51 (0.62)	489	−1.57 (0.65)	492	−0.14 (1.32)	479	0.43 (1.46)	481
	17	−1.40 (0.71)	481	−1.50 (0.72)	484	−0.03 (1.28)	479	0.54 (1.41)	473
	18	−1.32 (0.71)	467	−1.51 (0.71)	469	0.03 (1.28)	462	0.57 (1.36)	464
	19	−1.26 (0.72)	465	−1.49 (0.73)	472	0.18 (1.20)	462	0.63 (1.33)	452

Table AII. *Continued*

Gender	Age	SA—smoking ^a		SA—snus use ^a		PT—smoking ^a		PT—snus use ^a	
		Mean (SD)	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)	N
	20	−1.25 (0.74)	463	−1.48 (0.75)	468	0.14 (1.21)	463	0.67 (1.35)	457
	Total	−1.35 (0.71)	2365	−1.51 (0.72)	2385	0.03 (1.26)	2345	0.57 (1.38)	2327
P_{gender}		0.01		0.001		0.515		0.001	
P_{age}		0.001		0.368		0.001		0.099	
$P_{\text{gender} \times \text{age}}$		0.042		0.226		0.318		0.057	

^aRange: −2 to 2, high score represents positive attitudes and norms; SD, standard deviation.

Table AIII. *Smoking and snus use by selected predictors: multiple logistic regression analyses*

Variables	Smoking						Snus use		
	Males			Females			Males		
	OR	95% CI	P value	OR	95% CI	P value	OR	95% CI	P value
Age	1.38	1.24–1.55	0.001	1.20	1.08–1.34	0.001	1.05	0.94–1.19	0.377
SA—smoking	2.01	1.64–2.46	0.001	1.72	1.38–2.13	0.001	—		
SA—snus use	—			1.36	1.11–1.67	0.004	3.26	2.64–4.03	0.001
PT—smoking	1.22	1.07–1.40	0.003	1.23	1.09–1.40	0.001	—		
PT—snus use	0.85	0.75–0.96	0.01	—			1.28	1.11–1.49	0.001
Smoking ^a	—			—			1.73	1.18–2.52	0.005
Snus use ^a	1.61	1.12–2.32	0.01	—					

OR, odds ratio; CI, confidence interval.

^aSmoking and snus use are coded as dichotomous variables. No use = 0; regular use = 1.