Adolescents' rationalizations to continue smoking: The role of disengagement beliefs and nicotine dependence in smoking cessation

Marloes Kleinjan a,d,* , Regina J.J.M. van den Eijnden b , Rutger C.M.E. Engels c

a Addiction Research Institute (IVO), Heemraadssingel 194, 3021 DM Rotterdam, The Netherlands
b Faculty of Social Sciences, Utrecht University, PO Box 80.140, 3508 TC Utrecht, The Netherlands
c Behavioural Science Institute, Radboud University Nijmegen, PO Box 9104, 6500 HE Nijmegen, The Netherlands
d Department of Public Health, Erasmus University Medical Centre, PO Box 2040, 3000 CA Rotterdam, The Netherlands

ARTICLE INFO

Keywords:
Adolescents
Smoking cessation
Motivation to quit
Nicotine dependence
Disengagement beliefs

ABSTRACT

Adult smokers were found to reduce cognitive dissonance regarding their smoking behaviour by adhering to rationalizations or justifications to continue smoking, also known as disengagement beliefs. These beliefs were found to be an important barrier with regard to smoking cessation practices. Neither the occurrence of disengagement beliefs, nor its effect on motivation to quit and actual smoking cessation have been studied among adolescent smokers. Therefore, this prospective study among a sample of 363 adolescents examined the extent to which adolescents adhere to disengagement beliefs, and the relations between disengagement beliefs and adolescents’ motivation to quit smoking, motivation change and smoking cessation. The association and interplay between disengagement beliefs and level of nicotine dependence was also assessed. Results showed that the degree to which adolescent smokers adhere to disengagement beliefs was similar to that of adults, if not stronger. Higher levels of dependence coincided with stronger adherence to disengagement beliefs. Further, when controlling for nicotine dependence, disengagement beliefs were strongly negatively associated with motivation to quit, but only marginally inversely associated with smoking cessation one year later. Nicotine dependence was the strongest barrier for smoking cessation at follow-up.

© 2009 Elsevier Ltd. All rights reserved.

1. Introduction

Despite increasing smoking prevention efforts and the well-known harmful health effects of smoking, a significant proportion of adolescents still initiate a smoking habit and, subsequently, continue to smoke. The high prevalence of smoking among adolescents, together with the risk of onset of dependence and the negative health consequences of smoking, underscore the need to develop and implement smoking cessation programs for adolescents.

With regard to smoking cessation, adolescent smokers form a particularly difficult group. For instance, compared to adult smokers, adolescents are generally less motivated to quit smoking and show relatively low rates of ‘spontaneous’ quit attempts (Mermelstein, 2003; Pallonen, 1998). The relatively low motivation to quit among adolescents may be present because they do not seem to consider quitting as urgent (Balch, 1998). Adolescents plans for quitting are often relatively vague and far in the future (Mermelstein, 2003). Thus, compared to adults, adolescent smokers seem to be less interested in quitting and more resistant and unwilling to change their smoking behaviour.

For adult smokers, it has been proposed that those who are highly resistant to quit, and continue to smoke despite their knowledge of the hazardous effects of smoking, experience forms of cognitive dissonance reduction (Chapman, Wong, & Smith, 1993; McMaster & Lee, 1991). Cognitive dissonance is usually experienced when an individual has two or more cognitions that are dissonant in relation to one another resulting in motivational tension (Festinger, 1957; Wicklund & Brehm, 1976). In adult smokers dissonance reduction was found to appear in the form of rationalizations or justifications for continuing smoking. These rationalizations or justifications for continuing smoking are referred to as disengagement beliefs (also known as self-exempting beliefs or permission giving beliefs). For example, to lower cognitive dissonance, a smoker might adhere to beliefs such as “I know heavy smokers that lived long”, thereby ignoring the fact that smoking and age of death are negatively related (Dijkstra, in press; Solomon & Manson, 1997). Having these beliefs may make it easier for smokers to disengage from the idea that it would be better to quit their smoking habit (Oakes, Chapman, Borland, Balmford, & Trotter, 2004). In adult samples, disengagement beliefs were found to have a significant negative effect on several aspects of smoking cessation, such as the motivation to quit, the likelihood of undertaking a quit attempt and actual smoking cessation (Bandura, 1986; Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Dijkstra, De Vries, Kok, & Roijackers, 1999; Dijkstra & Brosschot, 2003; Johnson, 1968; Kleinjan,
Van den Eijnden, Dijkstra, Brug, & Engels, 2006; Oakes et al., 2004; Olshavsky & Summers, 1974).

Even though endorsement of disengagement beliefs seems to be an important predictor of a lack of motivation to quit and unsuccessful quit attempts in adult smokers, it has not been studied to what extent adolescents adhere to disengagement beliefs and whether having disengagement beliefs is important in explaining adolescents' motivation to quit and actual smoking cessation. Since adolescents generally do not consider smoking cessation as urgent and continue to smoke even when aware of the negative consequences (Tewolde, Ferguson, & Benson, 2006), it is likely that disengagement beliefs indeed play a role. However, since adult smokers may be more likely to have an established smoking pattern and to have developed more stable dissonance reduction mechanisms for effectively withstanding anti-smoking messages, disengagement beliefs among adults may be stronger and play a more profound role in smoking cessation as compared to adolescents. The first goal of the present study is, therefore, to establish whether adolescents adhere to disengagement beliefs and, if so, to what extent they engage in these beliefs in comparison to adults.

Among adolescents, levels of nicotine dependence are negatively associated with motivation to quit smoking (Fagan et al., 2007; Kleinjan et al., 2008a; Prokhorov et al., 2001), and to actual cessation (Kleinjan et al., 2008b; Horn, Fernandez, Dino, Massey, & Kalsekar, 2003). Thus, smoking continuation among adolescents can, at least in part, be explained by the magnitude of nicotine dependence. In addition, studies among adults found that heavier and more dependent smokers displayed more cognitive dissonance in the form of minimizing, denying, or avoiding information about the dangers of smoking (Halpern, 1994). Since adolescents are reported to be well informed about the relation between smoking and health problems (Tewolde et al., 2006), it seems plausible that, besides experiencing physical and psychological dependence symptoms, adolescent smokers experience a fairly constant threat, knowing that smoking makes them susceptible to possible health damage and other negative consequences. Subsequently, the threat of negative health consequences may be perceived as less worrisome when disengagement beliefs are used to deny or distort this knowledge. Therefore, it is expected that among adolescents, disengagement beliefs are associated with nicotine dependence levels and that, besides levels of nicotine dependence, disengagement beliefs play an important role in the continuation of smoking behaviour. To test these hypotheses, the second goal of our study is two-fold. First, to assess whether the adherence to disengagement beliefs is associated with nicotine dependence, motivation to quit and smoking cessation one year later. In line with adult studies, it is expected that higher levels of dependence will be associated with a greater adherence to disengagement beliefs (Dawley, Fleischer, & Dawley, 1985; Halpern, 1994), and that both nicotine dependence and disengagement beliefs are negatively related to the outcome variables (e.g., Dijkstra & Brosschot, 2003; Fagan et al., 2007; Horn et al., 2003; Kleinjan et al., 2006, 2008b). Second, the interplay between nicotine dependence and disengagement beliefs in explaining motivation to quit and smoking cessation will be explored. Based on the assumption that both nicotine dependence and disengagement beliefs will be negatively related to the outcome variables, it is hypothesized that the combination of being highly dependent and adhering strongly to disengagement beliefs will be more negatively related to the smoking cessation cognitions and practices as compared to being either highly dependent or adhering strongly to disengagement beliefs.

2. Method

2.1. Procedure and sample

The present study uses data from the fourth and fifth wave of a larger longitudinal study that started in January 2003, focusing on psychological and environmental processes in relation to tobacco use among Dutch adolescents. Schools in four regions of the Netherlands were randomly selected and approached to take part. The main reason given for refusal to join this study was participation in other studies. The Medical Ethical committee (CMO Arnhem-Nijmegen) approved this study.

A total of 17 secondary schools participated in the fourth and fifth wave of the study. At the schools, respondents completed questionnaires in the presence of their teachers during school hours in grades ten and eleven. Respondent-specific codes were used to link the data from one time point to the next. To assure confidentiality, respondents received an unmarked envelope in which they had to return the completed questionnaires. At T1, data were collected for 3508 respondents aged 15–18 years (M = 15.9, SD = 0.79). In November 2006 (T2), 2504 respondents participated again (response rate 71.4%). Sickness, truancy, leaving school, and repeating class were noted by teachers as the primary causes for non-response at T2. Comparing the respondents lost at follow-up with the remaining respondents on the variables gender, age, education level, and smoking showed that respondents lost at follow-up were more likely to be boys χ²(1, N = 3504) = 5.40, p < 0.05, older χ²(3, N = 3486) = 8.45, p < 0.001, to have preparatory vocational training, junior general secondary training, χ²(3, N = 3478) = 413.11, p < 0.001, and to be smokers χ²(1, N = 3506) = 48.70, p < 0.001.

The questionnaire consisted of two sections: one for respondents who indicated that they had smoked at least once in the past month, and one for respondents who had not smoked during the past month. A total of 363 of the 2504 respondents (14.5%) indicated at T1 that they had smoked at least once in the past month. For more information on demographic variables see Table 1.

2.2. Measures

2.2.1. Disengagement beliefs

Disengagement beliefs were assessed using a scale consisting of 12 items. This scale has been tested and validated in earlier studies (Dijkstra et al., 1999; Dijkstra & Brosschot, 2003). The items consisted of reasons or rationalizations why it would be okay to smoke, regardless of the well-known harmful health effects. Examples of items are: “I know heavy smokers who lived long” and “I have to die of something”. The items could be scored on a 5-point scale ranging from 1 (I do not agree) to 5 (I do agree) and were constructed such that the respondent had to finish the sentence: “Smoking can make me ill, but...”. Cronbach's alpha was 0.88. Table 1 shows the means and standard deviations (SD) of the 12 items of the disengagement beliefs scale as measured among 363 adolescent smokers in the present study and, additionally, the means and SDs of these items as previously assessed among a sample of 367 adult smokers (see Kleinjan et al., 2006).

2.2.2. Nicotine dependence

Self-reported nicotine dependence was measured by a newly developed multidimensional scale based on both the modified Fagerstrom

| Table 1: Demographic and smoking specific statistics for adolescent smokers compared to adult smokers |
|---------------------------------|------------------|------------------|
| **Demographic variables**       | **Adolescents**  | **Adults**       |
| **Age**                         | 15.9 (0.78)      | 43.8 (13.5)      |
| **Gender**                      |                  |                  |
| Female                          | 57%              | 71%              |
| Male                            | 43%              | 29%              |
| **Education Level**             |                  |                  |
| Low                             | 27.5%            | 21.8%            |
| Middle                          | 44.9%            | 45.7%            |
| High                            | 26.5%            | 31.9%            |
| **Cigarettes (SD)**             | 34 per week (36.5) | 19 per day (9.7) |

Note: Schooling systems in the Netherlands refer to vocational training as low, advanced vocational training as medium, and college/university training as high.
Tolerance Questionnaire (mFTQ; Prokhorov, Pallonen, Fava, Ding, & Niaura, 1996) and the Hooked on Nicotine Checklist (HONC; DiFranza et al., 2002). This 11-item scale was validated in a study by Kleinjan et al. (2007). Cronbach’s alpha of the total 11-item scale was 0.89.

2.2.3. Readiness to quit

Readiness to quit was assessed using a 9-point ordinal scale ranging from 1) ‘within the next 10 days’, 2) ‘within 1 month’, 3) ‘within 6 months’, 4) ‘within 1 year’, 5) ‘within 5 years’, 6) ‘within 10 years’, 7) ‘somewhere in the future but not within the next 10 years’, 8) ‘keep smoking but planning to cut down’, 9) ‘keep smoking and not planning to cut down’ (Dijkstra, Tromp, & Conijn, 2003; Kleinjan et al., 2009). The items were recoded so that a higher score on this scale represented a higher readiness to quit.

2.2.4. Smoking cessation

Respondents were considered to have quit smoking when they indicated they were no longer smoking and had not done so during the past month (see also Kleinjan et al., 2009). This distinction is based on studies on adolescent smoking cessation in which participants were considered to have quit smoking if they were current smokers at baseline, but had not smoked for 30 days at the time of the follow-up measurement (US Department of Health and Human Services, 1994; Zhu, Sun, Billings, Choi, & Malarcher, 1999).

2.3. Statistical analyses

To compare the adherence to disengagement beliefs of adolescent smokers with that of adults, we compared the data derived from our current 363 adolescent smokers with earlier data derived from 367 adult smokers (Kleinjan et al., 2006). Both studies utilized the same disengagement beliefs measure. A t-test for independent samples was conducted to compare the scores on disengagement beliefs of both groups.

To examine the relation between disengagement beliefs, nicotine dependence and the outcome variables of readiness to quit and smoking cessation, we first applied correlation analyses with the variables using the software package MPLUS 4.1 (Muthén & Muthén, 1998–2006). MPLUS was used because of its ability to accommodate non-normality and ordinal variables without reliance on large samples (Kaplan, 2000). The outcome variable ‘readiness to quit’ is considered to be ordinal whereas the dependent variable ‘smoking cessation’ is a binary variable (0=no smoking cessation, 1=smoking cessation). To establish the relative value of disengagement beliefs and nicotine dependence in relation to readiness to quit, regression analyses were performed in MPLUS. The relative value of disengagement beliefs and nicotine dependence in relation to smoking cessation was assessed by applying logistic regression analyses, also within MPLUS. In all regression analyses, sex, age and education level were entered as covariates.

To assess any possible interaction effects, we computed a product term of nicotine dependence with disengagement beliefs. To avoid problems with multi-collinearity, the independent variables were centred before the interaction terms were computed. Logistic regression analyses in MPLUS were performed with the independent variables and the interaction terms in one run.

Before applying the analysis in MPLUS, the missing data in the raw data matrix (with missing data between 0.3% and 9.1%) were estimated with the Expectation-Maximization (EM) algorithm in SPSS.

3. Results

3.1. Smoking-specific demographics

For smoking specific demographics of adolescent smokers and adult smokers, see Table 1. Among adolescent smokers, a total of 23.4% (N=85) were categorized as having quit at T2.

3.2. Adherence to disengagement beliefs

As shown in Table 2, adolescent smokers’ adherence to disengagement beliefs is comparable to that of adult smokers. It can be seen that the mean score on disengagement beliefs is higher among adolescents than among adults (M=41.06 and M=38.54, respectively); this difference was significant [t (728)=3.67; p<0.001]. Only the beliefs ‘pollution is just as unhealthy’, ‘not everyone gets sick smoking’ and ‘I live healthy otherwise’ scored higher among adults. Beliefs most strongly adhered to by both adolescents and adults are: ‘not everyone gets sick smoking’, ‘there are lots of risks in life’, ‘everyone acts unhealthy sometimes’, ‘I live healthy otherwise’, and ‘I know heavy smokers that lived long’. Beliefs with the lowest adherence among both adolescents and adults were: ‘You have to die of something’ and ‘Medical science will invent something’. Two beliefs that were rather strongly adhered to by adolescents, but not by adults were: ‘if it were really bad, it would be forbidden’ and ‘health is not the only thing in life.’ Thus, adults seem to adhere more strongly to beliefs that may be true in themselves but that ignore the fact that smoking and the occurrence of disease or the age of death have a negative relation. Adolescents, on the other hand, seem to adhere more strongly to beliefs that trivialize the value of health, or that allow them to relocate the responsibility for their health elsewhere.

3.3. Correlations between the dependent and independent variables

Correlations as shown in Table 3 indicate that a stronger adherence to disengagement beliefs is associated with higher levels of nicotine dependence. In addition, disengagement beliefs are negatively related to readiness to quit, as well as smoking cessation. Specifically, having stronger disengagement beliefs is associated with a lower psychological readiness to quit and a lower chance of having quit at follow-up. Nicotine dependence is marginally (negatively) associated with readiness to quit and strongly negatively associated with smoking cessation.

Table 2

Means and standard deviations (SD) for disengagement beliefs among adolescent smokers compared to adult smokers

<table>
<thead>
<tr>
<th>Smoking can make me ill, but...</th>
<th>Adolescents</th>
<th>Adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td></td>
</tr>
<tr>
<td>Pollution is just as unhealthy</td>
<td>3.27 (1.20)</td>
<td>3.47 (1.43)</td>
</tr>
<tr>
<td>There are lots of risks in life</td>
<td>3.92 (1.07)</td>
<td>3.70 (1.30)</td>
</tr>
<tr>
<td>Everything is unhealthy</td>
<td>3.44 (1.14)</td>
<td>3.08 (1.40)</td>
</tr>
<tr>
<td>You have to die of something</td>
<td>2.86 (1.38)</td>
<td>2.47 (1.44)</td>
</tr>
<tr>
<td>Everyone acts unhealthy sometimes</td>
<td>3.85 (1.04)</td>
<td>3.76 (1.22)</td>
</tr>
<tr>
<td>Not everyone gets sick smoking</td>
<td>3.97 (1.01)</td>
<td>4.13 (1.04)</td>
</tr>
<tr>
<td>Know heavy smokers that lived long</td>
<td>3.72 (1.22)</td>
<td>3.77 (1.26)</td>
</tr>
<tr>
<td>Medical science will invent something</td>
<td>2.69 (1.16)</td>
<td>2.46 (1.22)</td>
</tr>
<tr>
<td>Rather a short/good life than a long/boring life</td>
<td>3.42 (1.34)</td>
<td>3.13 (1.45)</td>
</tr>
<tr>
<td>If it were really bad, it would be forbidden</td>
<td>3.15 (1.24)</td>
<td>2.38 (1.43)</td>
</tr>
<tr>
<td>I live healthy otherwise</td>
<td>3.74 (1.05)</td>
<td>3.58 (1.18)</td>
</tr>
<tr>
<td>Health is not the only thing in life</td>
<td>3.03 (1.19)</td>
<td>2.50 (1.44)</td>
</tr>
<tr>
<td>Total score</td>
<td>41.06 (8.98)</td>
<td>38.54 (9.51)</td>
</tr>
</tbody>
</table>

Note: Results for adult smokers were previously published (Kleinjan et al., 2006).

Table 3

Correlations between disengagement beliefs, nicotine dependence, readiness to quit, and smoking cessation

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Disengagement beliefs</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2. Nicotine dependence</td>
<td>0.23***</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3. Readiness to quit</td>
<td>-0.20***</td>
<td>-0.10†</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4. Smoking cessation</td>
<td>-0.21*</td>
<td>-0.35***</td>
<td>0.17**</td>
<td>-</td>
</tr>
</tbody>
</table>

*p<0.05; **p<0.01; ***p<0.001; †p=0.06, n=363.
cessation at follow-up: 1) if it were really bad, it would be forbidden

Disengagement Beliefs
Nicotine Dependence
−0.20 **
−0.01
0.97 (0.95–1.00)
0.91 (0.86–0.96)**

Note: OR=Odds Ratio; CI=Confidence Interval. Results are controlled for age, sex and education. Results for readiness to quit are cross-sectional. Results for smoking cessation are longitudinal p<0.05, ** p<0.01, *** p<0.001, † p=0.05.

3.4. Readiness to quit regressed on disengagement beliefs and nicotine dependence

Path analysis establishing the relative value of disengagement beliefs and nicotine dependence in relation to readiness to quit (controlled for sex, age and education level), showed disengagement beliefs to be associated with readiness to quit, while nicotine dependence was not (Table 4). The total variance explained was 13.8%.

3.5. Smoking cessation regressed on disengagement beliefs and nicotine dependence

Results of the logistic regression analysis (controlled for age, sex and education level), showed that nicotine dependence predicted smoking cessation one year later (Table 4). Disengagement beliefs were marginally (negatively) related to smoking cessation. Whereas greater adherence to disengagement beliefs seems to be of some relevance in explaining smoking cessation, high levels of nicotine dependence were most strongly inversely related to actual smoking cessation. The total variance explained was 20.9%.

Because of the marginal significance of disengagement beliefs we additionally explored the extent to which each of the twelve disengagement belief items predict smoking cessation. When controlled for age, sex, education level and nicotine dependence, three separate disengagement beliefs remained significantly related to smoking cessation at follow-up: 1) if it were really bad, it would be forbidden [OR=0.78, CI=0.63–0.96, p<0.05], 2) you have to die of something [OR=0.83, CI=0.70–0.99, p<0.05], and 3) everything is unhealthy [OR=0.72, CI=0.57–0.90, p<0.01].

No evidence was found for interaction effects between nicotine dependence and disengagement beliefs in relation to motivation to quit, motivation change and smoking cessation (data not in Tables).

3.6. Additional analyses

Because of the rather limited association between disengagement beliefs and smoking cessation (when controlled for nicotine dependence), it was decided to additionally assess the impact of disengagement beliefs and nicotine dependence on another important variable with regard to smoking behaviour in adolescents, namely smoking escalation. Both at T1 and T2, respondents were classified either as ‘triers’, ‘monthly smokers’ or ‘daily smokers’. Those categorized as triers had tried smoking or had experimented with cigarettes, but had not been smoking on a monthly basis. Monthly smokers reported to smoke at least once a month and daily smokers reported to smoke at least once a day. Between the first and second measurement, participants could either make the transition from one category to another or remain unchanged. In the analyses, those participants who made a forward transition (escalation) were compared to those who did not.

Outcomes regarding the impact of disengagement beliefs and nicotine dependence on smoking escalation resemble the results on smoking cessation. Univariate analyses showed that having stronger disengagement beliefs are associated with smoking escalation one year later. However, multivariate logistic regression analyses showed that having high nicotine dependence levels is a strong predictor of smoking escalation one year later, whereas disengagement beliefs were marginally associated with escalation.1

4. Discussion

Similar to adult smokers, adolescent smokers adhere to rationalizations and justifications to continue smoking. By making the consequences of smoking less severe or by perceiving themselves to be less vulnerable to adverse health effects, adolescents appear to reduce cognitive dissonance and ‘permit’ themselves to continue to smoke despite the harmful health effects. Remarkably, adolescent smokers’ adherence to disengagement beliefs appears to be even stronger than that of adults.

As expected, having stronger disengagement beliefs is associated with higher levels of nicotine dependence. This is in line with results among adults (Halpern, 1994). It has been suggested that whilst most adolescents start smoking for social reasons, eventually the majority will smoke for the pharmacological effects of nicotine (Benowitz & Henningfield, 1994). Even adolescents with an irregular and sporadic smoking pattern may experience nicotine withdrawal symptoms and craving when deprived of nicotine (Jacobsen et al., 2005; Rojas, Killen, Haydel, & Robinson, 1998; Killen, Fortmann, Newman, & Varady, 1991). Highly dependent smokers are considered to have a strong desire to preserve smoking and to avoid withdrawal symptoms. Therefore, in high dependent smokers, disengagement beliefs may be more strongly adhered to because they are a means to cope with dissonance produced by not quitting smoking.

Also consistent with studies among adults, disengagement beliefs were related to a lower motivation to quit smoking in adolescents (e.g., Kleinjan et al., 2006). We found that reported disengagement beliefs were significantly related to the motivation to quit smoking, while the level of nicotine dependence was not. However, when controlling for nicotine dependence, disengagement beliefs were only marginally significantly associated with smoking cessation one year later. Nicotine dependence was the strongest predator of smoking cessation at follow-up. No evidence was found for interaction effects of disengagement beliefs and nicotine dependence in relation to the outcome variables. Thus, adolescents’ adherence to disengagement beliefs mainly determines whether or not adolescents are motivated to quit smoking, whereas nicotine dependence mainly determines whether or not adolescents actually quit smoking. However, when testing the separate disengagement beliefs items, three items remained significantly related to smoking cessation when controlled for nicotine dependence, namely if it were really bad it would be forbidden, you have to die of something and everything is unhealthy. It appears that especially these beliefs, that either make light of the value of health, or allow adolescents to relocate the responsibility for their health elsewhere, have a significant negative effect on prolonged smoking cessation.

Challenging adolescents’ disengagement beliefs therefore seems to be a means to increase their motivation to engage in a quit attempt, and to some extent also to increase the chances of prolonged cessation. A study among adults showed that smokers who strongly adhered to disengagement beliefs had a low spontaneous quit rate (Dijkstra, 2008). However, this quit rate was significantly increased by providing persuasive information on the negative consequences of smoking. According to Dijkstra, disengagement beliefs may thus be viewed as “weak beliefs”, since the inhibiting influence of disengagement beliefs on quitting was found to be overruled by giving persuasive information. Thus, one strategy to target disengagement beliefs among adolescent smokers may be to make the relative risks of smoking more salient. Therefore, smoking cessation programs for adolescents could aim at making the negative consequences of

1 Detailed descriptions of these analyses can be obtained from the first author.
smoking more salient and credible. However, providing persuasive information on the negative consequences of smoking may not have the same effect on adolescent smokers as on adult smokers.

Recent studies on adolescent neurological development indicate that adolescents are cognitively immature in the neurological processes related to decision making. Because of this, adolescents seem to be more inclined to engage in risky behaviours as compared to adults (Lopez, Schwartz, Prado, Campo, & Pantin, 2008; Steinburg, 2007). Also, adolescents were found to consider people their own age invulnerable to the serious health consequences of smoking (Balch, 1998). Indeed, most smokers do not experience health problems immediately after initiation, but are most likely to experience adverse health effects around 35–69 years of age (WHO, 2004). Nevertheless, young smokers are in fact susceptible to short-term health effects such as damage to the respiratory system (USDHHS, 1994). Among adolescent smokers it may therefore be useful to stress the less well-known short-term health consequences. Providing relevant and new de-biasing information on immediate negative health consequences might undermine the denial of information by using disengagement beliefs and inhibit adolescents’ impulses to engage in smoking behaviour.

Whereas targeting of adolescents’ disengagement beliefs seems an important aim to realize an increase in the motivation to quit and the chance of prolonged cessation, it also seems essential to overcome dependence in order to bring about prolonged smoking cessation. Besides targeting disengagement beliefs, it is suggested to also concentrate on approaches aiming to lower the levels of nicotine dependence in adolescent smokers. Although the use of nicotine replacement therapy (NRT) among adolescents remains controversial, among adolescent smokers NRT can be effective (Adelman, 2004; Ginzel et al., 2007; Moolchan et al., 2005).

4.1. Limitations

The present study has some limitations. First, because the data are based on adolescent self-report of their own smoking intensity and frequency, under or over-reporting may have occurred (e.g. Patrick et al., 1994; Stein et al., 2002). However, self-reported smoking behaviour measured with self-administered questionnaires was previously found to be reliable and valid compared with methods such as biochemical validation (Dolcini, Adler, & Ginsberg, 1996; Hunter, Webber, & Berenson, 1980). Stanton and colleagues (1996) found that smoking and information obtained from adolescents on smoking and quitting was reliable and had high internal consistency and validity. Second, attrition analysis of our sample indicates under-representation of lower educated adolescent male smokers. A lower educational level has been associated with higher levels of nicotine dependence and lower readiness to quit (e.g. Hu, Davies, & Kandel, 2006; John, Meyer, Rumpf, & Halpe, 2003). Nicotine dependence levels may lie somewhat lower in our sample than among the general adolescent smoking population, whereas the readiness to quit may lie somewhat higher. Caution in interpreting and generalizing the findings to the general adolescent smoking population is therefore warranted.

Third, the adolescent and adult samples differ to some extent with regard to gender distribution. These differences should be kept in mind when interpreting the differences between adults and adolescents in their adherence to disengagement beliefs.

4.2. Conclusion

Despite these potential limitations, this study was the first to investigate the phenomenon of disengagement beliefs in an adolescent smoking population. We showed that disengagement beliefs are common among adolescent smokers and even more strongly present than among adult smokers. Furthermore, adolescents’ adherence to disengagement beliefs negatively affects smoking cessation related cognitions and practices. Challenging disengagement beliefs may not only increase the motivation to quit, but in combination with targeting nicotine dependence, might increase chances of smoking cessation as well.

Acknowledgements

This study was partly financed by the Dutch Asthma Foundation and STIVORO for a Smoke-Free Future.

References


The roles of readiness to quit, nicotine dependence, and smoking of parents and peers. Drug and Alcohol Dependence, 59, 204–214.


