Parental rules and communication: their association with adolescent smoking

Zeena Harakeh¹, Ron H. J. Scholte¹, Hein de Vries³ & Rutger C. M. E. Engels¹

Institute of Family and Child Care Studies, Radboud University of Nijmegen, the Netherlands¹ and Department of Health Education, Maastricht University, the Netherlands³

Correspondence to:
Zeena Harakeh
Institute of Family and Child Care Studies
Radboud University of Nijmegen
PO Box 9104
6500 HE Nijmegen
the Netherlands
Tel: 31 24 3612980
Fax: 31 24 3612776
E-mail: Z.Harakeh@pwo.ru.nl

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ABSTRACT

Aims To examine the association between parental rules and communication (also referred to as antismoking socialization) and adolescents' smoking.

Design and participants A cross-sectional study including 428 Dutch two-parent families with at least two adolescent children (aged 13–17 years).

Measurements Parents' and adolescents' reports on an agreement regarding smoking by adolescents, smoking house rules, parental confidence in preventing their child from smoking, frequency and quality of communication about smoking, and parent's reactions to smoking experimentation.

Findings Compared with fathers and adolescents, mothers reported being more involved in antismoking socialization. There were robust differences in antismoking socialization efforts between smoking and non-smoking parents. Perceived parental influence and frequency and quality of communication about smoking were associated with adolescents' smoking. The association between antismoking socialization practices and adolescents' smoking was not moderated by birth order, parents' smoking or gender of the adolescent.

Conclusions Encouraging parents, whether or not they themselves smoke, to discuss smoking-related issues with their children in a constructive and respectful manner is worth exploring as an intervention strategy to prevent young people taking up smoking.

KEYWORDS Adolescent smoking, antismoking socialization, parental factors, parenting.

INTRODUCTION

It is relevant to focus on the early phases of smoking onset because experimenting with smoking by, in particular, adolescents may result in becoming a regular smoker (e.g. Chassin et al. 1990; Fagerstrom 1991; Stanton 1995). Because in most western countries the prevalence rates of life-time and daily smokers among adolescents increase with age (King et al. 1996; Office for National Statistics 1997), it is important to understand which factors contribute to smoking initiation in adolescence.

The role of parents in their child's smoking has been studied extensively (e.g. Foshee & Bauman 1992; Chassin et al. 1998; Henriksen & Jackson 1998) but most studies on parenting and adolescents' smoking have investigated the impact of general parenting practices (e.g. Chassin et al. 1998; Foshee & Bauman 1992). However, more specific parenting practices, the so-called antismoking socialization practices, may also discourage or prevent their children from smoking initiation (Chassin et al. 1998). Antismoking socialization practices can include: setting rules not to smoke at home, establishing a non-smoking agreement with their children, warning children about the negative consequences of smoking, and discussing smoking-related topics (Fearnow et al. 1998; Engels & Willemsen 2004). The few studies that have examined parents' antismoking socialization practices in relation to adolescents' smoking behaviour have shown that when parents establish rules not to smoke at home, warn their children about the risks of smoking and pun-
ish their children when they smoke, the children are less likely to start smoking (Jackson & Henriksen 1997; Henriksen & Jackson 1998; Clark et al. 1999).

Furthermore, longitudinal studies have shown that when one or both parents smoke, their children will have a higher risk to start smoking or to stay a smoker compared to children with parents who do not smoke (e.g. Bauman et al. 1990; Bailey, Ennett & Ringwalt 1993; Vink et al. 2003; Harakeh et al. 2004).

It is known that older and younger siblings within a family generally react differently to parental authority (Sulloway 1995; Rohde et al. 2003). For example, older siblings often feel closer to their parents, are more susceptible to their parents' values, wishes and standards (Kagan 1971; Sulloway 1995) and are more likely to obey parental authority, whereas younger siblings tend to be more rebellious, feel less close to their parents and are more likely not to obey parental authority (Rohde et al. 2003). Because the present study includes the older and younger sibling, this allows investigation of whether the relation between antismoking socialization and adolescents' smoking differs between the two siblings.

The aim of the present study is to gain insight into how parents actually deal with smoking and what they can do to prevent their children from smoking. Data from a sample of 428 families (mother, father and two siblings) were used to address our five research questions: (1) are there differences in the reports of parents and children on antismoking socialization practices? (2) Do antismoking socialization practices differ between non-smoking and smoking parents? (3) What are the main effects of antismoking socialization practices on adolescent smoking? (4) Does birth order (older versus younger child) moderate the association between antismoking socialization practices and adolescent smoking? (5) Does parental smoking moderate the association between antismoking socialization practices and adolescent smoking?

Additional analyses examined whether antismoking socialization practices of the mother and father differ between the older and younger sibling, and whether the effects of antismoking socialization practices on adolescents' smoking depend on the gender of the child.

**METHOD**

**Participants**

This study included 428 Dutch families: each family comprised a mother, father and two adolescent children. All families fulfilled the following criteria: parents had to be married or living together, the family members had to be related to each other biologically and the participating siblings were neither twins nor mentally or physically disabled. The older siblings were aged 14–17 years ($M = 15.22$, $SD = 0.60$) and the younger siblings 13–15 years ($M = 13.36$, $SD = 0.50$). Of the 856 participating siblings, 430 were boys and 426 were girls. Most of the family members (>95%) were of Dutch origin, and the participating adolescents were representative for low (33.5%), middle (32.8%) and high (32.8%) educational level.

**Procedure**

The addresses of all families with both parents and at least two adolescent children (aged 13–16 years) were selected from the registers of 22 municipalities in the Netherlands. A letter was sent to all these families inviting them to participate in a longitudinal study: 885 families responded that they were willing to participate and gave their informed consent. These families were then telephoned to establish that they fulfilled all the entry criteria. Finally, of the 765 families fulfilling the criteria, 428 families were selected to participate. These families were selected to ensure an equal distribution of the educational level of adolescents, and an equal number of all the possible sibling dyads (i.e. boy–boy, girl–boy, boy–girl, girl–girl). Interviewers visited all the families at home between November 2002 and April 2003. During these home visits each family member filled completed individual questionnaire at the same time. To maintain anonymity, the interviewers asked the participants to sit apart from each other and not to discuss the questions while completing the questionnaires. Completing the questionnaire took approximately 90 minutes. Each family received €30 when all four family members had completed the questionnaire.

**Measures**

**Antismoking socialization variables**

All the measures listed below were rated separately by adolescents and their parents.

Adolescents’ smoking agreement was assessed with the question: ‘Do you have an agreement with your mother/father not to smoke?’ For mothers or fathers, the question was ‘Does your child has an agreement with you or your partner not to smoke?’ Respondents could respond 1, ‘no’ or 2, ‘yes’.

House rules indicated the rules imposed by the parents not to smoke in the house (Engels & Willemsen 2004). This scale consisted of five items (e.g. ‘I am not allowed to smoke at home’) scored from 1, ‘completely untrue’ to 5, ‘completely true’. Cronbach’s alphas were
0.75 for adolescents, 0.82 for mothers and 0.78 for fathers.

Availability referred to the availability of tobacco at home (Engels & Willemsen 2004). This scale consisted of three items (e.g. 'Do you have cigarettes or handrolled cigarettes laying on the table at home to offer to visitors?') scored from 1, 'never' to 4, 'always'. Cronbach's alphas were 0.81 for adolescents, 0.77 for mothers and 0.79 for fathers.

Perceived parental influence reflected adolescents' and parents' perceptions of the control or influence parents have on their children's smoking (Engels & Willemsen 2004). This scale was assessed with four items (e.g. 'Do you think your mother can stop you from smoking?') scored from 1, 'absolutely not' to 5, 'absolutely yes'. Cronbach's alphas were 0.78 for adolescent report about mothers, 0.85 for adolescent report about fathers, 0.79 for mothers and 0.79 for fathers.

Frequency of communication referred to how often in the past 12 months the parents talked individually to their children about smoking issues (Ennett et al. 2001). The scale consisted of eight items (e.g. 'During the past 12 months, how many times did your mother talk to you about how to resist peer pressure to use tobacco?') scored from 1, 'never' to 5, 'very often'. Cronbach's alphas were 0.87 for adolescent report about mothers, 0.91 for adolescent report about fathers, 0.87 for mothers and 0.87 for fathers.

Quality of communication represented the quality of communication between the parent and the child about smoking. This scale consisted of six items (e.g. 'My mother and I are interested in each other's opinion about smoking') scored from 1, 'completely untrue' to 5, 'completely true'. Cronbach's alphas were 0.78 for adolescent report about mothers, 0.82 for adolescent report about fathers, 0.87 for mothers and 0.82 for fathers.

Constructive reaction assessed the perceptions of the parents' reactions after finding out that the adolescent smoked (Engels & Willemsen 2004). This scale was measured with seven items (e.g. 'My mother would have no problem with this') scored from 1, 'completely untrue' to 5, 'completely true'. Cronbach's alphas were 0.83 for adolescent report about mothers, and 0.85 for adolescent report about fathers. 0.82 for mothers and 0.83 for fathers.

Negative reaction referred to the perceptions of the parents' negative reactions after finding out that the adolescent smoked (Engels & Willemsen 2004). This scale consisted of two items (e.g. 'My mother would be very angry with me') scored from 1, 'completely untrue' to 5, 'completely true'. Cronbach's alphas were 0.76 for adolescent report about mothers, 0.84 for adolescent report about fathers, 0.75 for mothers and 0.74 for fathers.

**Adolescents' and parents' smoking**

To assess adolescents' smoking, respondents were asked to report which stage of smoking applied to them (De Vries et al. 2003). On a nine-point scale responses ranged from 1 = 'I never smoked, not even one puff', to 9 = 'I smoke at least once a day': we recoded these responses as 1 = 'never smoked' (not even one puff), or 2 = 'ever smoked' [1]. The same item was used to measure parents' smoking. However, because one of the nine responses was not appropriate for parents ('I tried smoking once in a while'), parents could respond on an eight-point scale: we recoded these responses as 1 = 'non-smoker' (including 'never smoked' to 'I smoke less than once a month'), and 2 = 'smoker' (including 'I smoke at least once a month' to 'I smoke at least once a day').

**Data analyses**

Descriptive statistics (paired t-tests and independent sample t-test) were used to examine whether the reports of parents and children on antismoking socialization were different, and whether there was a difference in anti-smoking socialization between smoking and non-smoking parents.

To examine whether antismoking socialization was associated with adolescent's smoking, multivariate logistic regression analyses were performed because the outcome variable (i.e. adolescents' smoking) was dichotomous. To control for socio-demographic variables, gender and educational level were included in the analyses. The variable educational level of the adolescent consisted of three categories (low, middle and high); low educational level was the reference group in the analyses. We first tested the main effects of parents' smoking and antismoking socialization on adolescents' smoking. In the second step we examined the moderating effect for birth order by including in the analyses the interaction terms between the antismoking socialization variables and birth order as well as between parents' smoking and birth order. This method of examining differences in effects of parenting on two children in a family (thus in a within-family design) has been used previously (e.g. Vink et al. 2003; Tamrouti-Makkink et al. 2004). Separate logistic regression analyses were performed to test whether there was a moderating effect of parents' smoking on the association between antismoking socialization and adolescent smoking. The analyses included the interaction terms between antismoking socialization and birth order.

Additionally, we tested (paired t-tests) whether there were significant differences between the mothers' and fathers' reports about antismoking socialization towards the older and the younger child. Finally, we tested (logistic regression analyses) whether the effect of antismoking
socialization on adolescents’ smoking was differed between girls and boys.

RESULTS

Of the 856 adolescents, 35.7% of the younger and 48.1% of the older adolescents reported to have smoked at least once: 18.5% of the mothers and 19.4% of the fathers smoked regularly.

Reports of parents and children on antismoking socialization practices

Table 1 shows that the adolescents scored significantly higher than mothers on parental influence and negative reactions, but mothers scored significantly higher on frequency and quality of communication, and constructive reaction compared to their children. Adolescents scored higher than fathers on non-smoking agreement, quality of communication and constructive reaction, but lower on parental influence.

Mothers generally reported the highest involvement in antismoking socialization practices (although they scored the lowest on parents’ own influence), followed by the fathers and adolescents. Thus, mothers think that they use parenting practices more frequently to prevent their children from smoking.

Differences in antismoking socialization practices between smoking and non-smoking parents

Table 2 shows that, according to adolescent and mother reports, non-smoking mothers had more house rules and reacted more constructively to child experimentation with smoking than smoking mothers. Non-smoking mothers also reported higher perceived parental influence. Smoking mothers had more cigarettes available at home, according to both adolescents and mothers.

Smoking fathers more often had a non-smoking agreement with their children and also had more cigarettes available at home than non-smoking fathers (Table 2); this was reported by both the adolescents and the fathers. Adolescents and fathers reported that compared to smoking fathers, non-smoking fathers have more house rules. According to adolescents, non-smoking fathers assume to have more influence and react more constructively to adolescent smoking than smoking fathers.

Antismoking socialization and adolescents’ smoking

Preliminary analyses showed that parental smoking and availability of cigarettes were highly correlated (range 0.62–0.75, P < 0.001). To avoid multi-collinearity, the concept of ‘availability of cigarettes’ was omitted from further analyses. Pearson’s correlations among the other explanatory variables ranged from –0.47 to 0.54.

The variables entered into the multivariate analyses explained on average for 15.5% of the variance in adolescents’ smoking (Table 3). However, the percentage of explained variance differed between parent and adolescent reports, being higher in the model with the adolescent reports on antismoking socialization than in the models with parental reports. When adolescents reported on their mothers, the proportion of explained variances of adolescents’ smoking behaviours was 20%, compared with 17% for fathers. These percentages were 12% when mothers reported on their children and 13% when fathers reported on their children.

Table 1 Comparison of indicators of antismoking socialization reported by adolescents, mothers and fathers.

<table>
<thead>
<tr>
<th></th>
<th>Adolescent–mother</th>
<th>Adolescent–father</th>
<th>Mother</th>
<th>Father</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>Non-smoking agreement</td>
<td>1.36 0.48</td>
<td>1.35b 0.48</td>
<td>1.34c 0.47</td>
<td>1.31c 0.46</td>
</tr>
<tr>
<td>House rules</td>
<td>3.37 1.00</td>
<td>3.37 1.00</td>
<td>3.36 1.04</td>
<td>3.41 1.03</td>
</tr>
<tr>
<td>Availability</td>
<td>1.37 0.67</td>
<td>1.37 0.67</td>
<td>1.33 0.66</td>
<td>1.37 0.70</td>
</tr>
<tr>
<td>Parental influence</td>
<td>3.38a 0.89</td>
<td>3.34 0.99</td>
<td>3.18c 0.74</td>
<td>3.29c 0.78</td>
</tr>
<tr>
<td>Frequency of comm</td>
<td>1.89a 0.72</td>
<td>1.83b 0.76</td>
<td>2.18a 0.73</td>
<td>2.11b 0.72</td>
</tr>
<tr>
<td>Quality of comm</td>
<td>3.57a 0.65</td>
<td>3.54b 0.69</td>
<td>3.94a 0.57</td>
<td>3.83c 0.62</td>
</tr>
<tr>
<td>Constructive reaction</td>
<td>4.23a 0.59</td>
<td>4.20a 0.63</td>
<td>4.46c 0.52</td>
<td>4.35c 0.55</td>
</tr>
<tr>
<td>Negative reaction</td>
<td>2.74a 1.09</td>
<td>2.77b 1.16</td>
<td>2.10b 0.98</td>
<td>2.13b 0.93</td>
</tr>
</tbody>
</table>

Means with similar superscripts (a, b or c) are significantly different (P < 0.01). Paired t-tests were used. Adolescents’ reports about the mother on the antismoking socialization practices were compared with the mothers’ reports, while adolescents’ reports about the father were compared with the fathers’ reports. Mothers’ reports were also compared with the fathers’ reports.

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Parental rules and communication 865
Table 2 Comparison of indicators of antismoking socialization between non-smoking parents and smoking parents.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Adolescent Report</th>
<th>Mother Report</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonic smoking agreement</td>
<td>1.35 (0.48)</td>
<td>1.34 (0.47)</td>
</tr>
<tr>
<td>House rules</td>
<td>3.59a (0.93)</td>
<td>3.55b (1.00)</td>
</tr>
<tr>
<td>Availability</td>
<td>1.14a (0.38)</td>
<td>1.09b (0.36)</td>
</tr>
<tr>
<td>Parental influence</td>
<td>3.43 (0.86)</td>
<td>3.24b (0.70)</td>
</tr>
<tr>
<td>Frequency of communication</td>
<td>1.89 (0.70)</td>
<td>2.15 (0.71)</td>
</tr>
<tr>
<td>Quality of communication</td>
<td>3.61 (0.66)</td>
<td>4.03 (0.53)</td>
</tr>
<tr>
<td>Constructive reaction</td>
<td>4.29a (0.54)</td>
<td>4.52b (0.44)</td>
</tr>
<tr>
<td>Negative reaction</td>
<td>2.82 (1.09)</td>
<td>2.15 (1.01)</td>
</tr>
</tbody>
</table>

Mother does not smoke

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Adolescent</th>
<th>Father</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonic smoking agreement</td>
<td>1.34a (0.47)</td>
<td>1.29b (0.45)</td>
</tr>
<tr>
<td>House rules</td>
<td>3.57a (0.95)</td>
<td>3.61b (0.99)</td>
</tr>
<tr>
<td>Availability</td>
<td>1.13a (0.42)</td>
<td>1.13b (0.40)</td>
</tr>
<tr>
<td>Parental influence</td>
<td>3.41a (0.94)</td>
<td>3.37b (0.77)</td>
</tr>
<tr>
<td>Frequency of communication</td>
<td>1.84 (0.76)</td>
<td>2.09 (0.70)</td>
</tr>
<tr>
<td>Quality of communication</td>
<td>3.59 (0.67)</td>
<td>3.90 (0.60)</td>
</tr>
<tr>
<td>Constructive reaction</td>
<td>4.27a (0.56)</td>
<td>4.42 (0.49)</td>
</tr>
<tr>
<td>Negative reaction</td>
<td>2.83 (1.15)</td>
<td>2.20 (0.93)</td>
</tr>
</tbody>
</table>

Father does not smoke

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Adolescent</th>
<th>Father</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tonic smoking agreement</td>
<td>1.44a (0.50)</td>
<td>1.37b (0.48)</td>
</tr>
<tr>
<td>House rules</td>
<td>2.65 (0.82)</td>
<td>2.60a (0.75)</td>
</tr>
<tr>
<td>Availability</td>
<td>2.15b (0.80)</td>
<td>2.20b (0.85)</td>
</tr>
<tr>
<td>Parental influence</td>
<td>3.08a (1.09)</td>
<td>3.01 (0.71)</td>
</tr>
<tr>
<td>Frequency of communication</td>
<td>1.81 (0.78)</td>
<td>2.16 (0.75)</td>
</tr>
<tr>
<td>Quality of communication</td>
<td>3.35 (0.75)</td>
<td>3.60 (0.61)</td>
</tr>
<tr>
<td>Constructive reaction</td>
<td>3.99a (0.74)</td>
<td>4.13 (0.58)</td>
</tr>
<tr>
<td>Negative reaction</td>
<td>2.60 (1.18)</td>
<td>1.84 (0.88)</td>
</tr>
</tbody>
</table>

Means with similar superscripts (a or b) are significantly different (P < 0.01). Paired t-tests were used.

Table 3 Logistic regression analyses of antismoking socialisation on adolescent smoking.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Adolescent-mother (n = 812)</th>
<th>Adolescent-father (n = 802)</th>
<th>Mother (n = 826)</th>
<th>Father (n = 821)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender adolescent</td>
<td>OR 95% CI</td>
<td>OR 95% CI</td>
<td>OR 95% CI</td>
<td>OR 95% CI</td>
</tr>
<tr>
<td>Low (reference group)</td>
<td>1.00 (0.82-1.54)</td>
<td>0.99 (0.72-1.35)</td>
<td>1.08 (0.80-1.46)</td>
<td>1.04 (0.77-1.40)</td>
</tr>
<tr>
<td>Middle</td>
<td>0.59*** (0.26-0.57)</td>
<td>0.39*** (0.27-0.58)</td>
<td>0.39*** (0.27-0.56)</td>
<td>0.40*** (0.28-0.59)</td>
</tr>
<tr>
<td>High</td>
<td>0.46*** (0.31-0.68)</td>
<td>0.39*** (0.26-0.58)</td>
<td>0.48*** (0.33-0.70)</td>
<td>0.48*** (0.33-0.70)</td>
</tr>
<tr>
<td>Birth order</td>
<td>0.59** (0.43-0.82)</td>
<td>0.44** (0.44-0.84)</td>
<td>0.56** (0.41-0.76)</td>
<td>0.54** (0.40-0.73)</td>
</tr>
<tr>
<td>Smoking behaviour of parent</td>
<td>1.25 (0.80-1.96)</td>
<td>1.11 (0.74-1.68)</td>
<td>0.89 (0.58-1.36)</td>
<td>0.96 (0.64-1.43)</td>
</tr>
<tr>
<td>Non-smoking agreement</td>
<td>1.29 (0.92-1.80)</td>
<td>1.27 (0.92-1.77)</td>
<td>1.07 (0.78-1.47)</td>
<td>1.39 (0.99-1.94)</td>
</tr>
<tr>
<td>House rules</td>
<td>1.14 (0.95-1.38)</td>
<td>1.09 (0.92-1.30)</td>
<td>0.99 (0.84-1.17)</td>
<td>1.06 (0.89-1.25)</td>
</tr>
<tr>
<td>Parental influence</td>
<td>0.49*** (0.40-0.60)</td>
<td>0.45** (0.46-0.68)</td>
<td>0.60*** (0.48-0.75)</td>
<td>0.58*** (0.46-0.73)</td>
</tr>
<tr>
<td>Frequency of communication</td>
<td>1.64*** (1.29-2.08)</td>
<td>1.45** (1.17-1.81)</td>
<td>1.40** (1.11-1.76)</td>
<td>1.43** (1.13-1.80)</td>
</tr>
<tr>
<td>Quality of communication</td>
<td>0.52** (0.39-0.68)</td>
<td>0.46** (0.46-0.78)</td>
<td>0.70* (0.52-0.93)</td>
<td>0.70* (0.53-0.92)</td>
</tr>
<tr>
<td>Constructive reaction</td>
<td>0.83 (0.58-1.19)</td>
<td>0.95 (0.68-1.33)</td>
<td>0.74 (0.53-1.03)</td>
<td>0.75 (0.54-1.04)</td>
</tr>
<tr>
<td>Negative reaction</td>
<td>0.95 (0.79-1.15)</td>
<td>0.97 (0.83-1.14)</td>
<td>1.01 (0.85-1.20)</td>
<td>1.00 (0.82-1.21)</td>
</tr>
</tbody>
</table>

OR = odds ratio. 95% CI = 95% confidence intervals. * P < 0.05. ** P < 0.01. *** P < 0.001.

Adolescents’ educational level, birth order, parental influence and frequency and quality of communication were all significantly associated with adolescent smoking. A higher educational level was a protective factor: adolescents with a middle or high educational level were at a lower risk to start smoking than adolescents with a low educational level. Also, the younger sibling was at less risk to start smoking than the older sibling. The odds ratios (OR) for parental influence ranged from 0.49 to 0.60, implying that when adolescents and parents indeed perceived the influence of parents, adolescents were less likely to smoke. Furthermore, adolescents were more...
likely to start smoking the more their parents talked about smoking-related issues. The quality of communication appeared to be a protective factor. Adolescents were less likely to smoke when the quality of the parent–child communication was high. Mothers' report on constructive reaction was marginally associated with adolescents' smoking. Adolescents with mothers who would react constructively if they found out that their child experimented with smoking were less likely to smoke.

Association between antismoking socialization variables and adolescents' smoking for older and younger siblings

The model with the main effects and the interaction terms (birth order x antismoking socialization practices) yielded an additional 1.3% of the variance of adolescents' smoking behaviour compared to the model with only the main effects (data not shown).

We report here only those interaction effects that were significant in both the univariate and the multivariate analyses [2]. In general, birth order did not moderate the effect on the association between antismoking socialization practices and adolescent smoking. There was, however, one exception: birth order had a moderating effect on the association between adolescent report on the negative reaction of the father and adolescent smoking (OR = 1.63, P < 0.01, 95% CI = 1.17–2.27). Older and younger siblings who did not smoke perceived the same amount of negative reactions from their father should they start to smoke. However, when comparing older siblings who already smoked with younger (smoking) siblings, the younger children perceived that their fathers would react much more negatively should he find out that they were smoking.

Association between antismoking socialization variables and adolescents' smoking for smoking and non-smoking parents

The model, including the main effect and interaction terms (parents' smoking x antismoking socialization practices) in the equation, added 1.3% to the variance of adolescents' smoking compared to the model with only the main effects.

Again, we report only those interaction effects that were significant both in the univariate and multivariate analyses. Parents' smoking generally did not moderate the effect on the association between antismoking socialization practices and adolescents' smoking. There were two exceptions. First, fathers' smoking moderated the association between (adolescent reports on) non-smoking agreements of parents' and adolescents' smoking (OR = 0.34, P < 0.01, 95% CI = 0.15–0.76). Non-smoking children with smoking fathers more often had a non-smoking agreement compared to non-smoking children from non-smoking fathers. Smoking children with a smoking father did not differ in having a non-smoking agreement compared to children with a non-smoking father. Secondly, mothers' smoking moderated the association between (the mothers' report of) the quality of the parent–child communication on adolescents' smoking (OR = 3.29, P < 0.01, 95% CI = 1.51–7.16). Although non-smoking mothers generally perceived a higher quality of communication with their children compared to smoking mothers, the difference in the quality of communication between non-smoking and smoking children was smallest for smoking mothers.

Additional results

Additional analyses were conducted to test whether mothers' and fathers' antismoking socialization practices differed between the older and younger sibling. Only for the frequency of communication (fathers' reports) were significant differences found between the older (M = 2.09; SD = 0.03) and younger sibling (M = 2.13; SD = 0.04; t(427) = 2.71, P = 0.007). Fathers reported that they communicated more with the younger sibling than with the older one.

We also tested whether the effects of antismoking socialization practices on adolescent smoking depended on the gender of the child. The interaction terms in these models explained an additional 0.3% of the variance of adolescent smoking compared to the model with only the main effects. There were no significant moderating effects of gender of the adolescent on the association between antismoking socialization practices and adolescents' smoking.

DISCUSSION

The present study investigated the associations between antismoking socialization practices in families and adolescents' smoking. Mothers are generally more positive about their antismoking socialization practices to prevent their children from smoking than fathers and adolescents, a finding also reported by others (Fearnow et al. 1998; Engels & Willemsen 2004). An explanation for this may be that because mothers spend more time with their children during the day, they may have a better insight into occurrences within the family and have more control over daily parenting compared to fathers. A second explanation could be that mothers are expected to conform to (cultural) standards of being a 'good' mother and therefore may overestimate positive parenting behaviours. In accordance with Engels & Willemsen (2004), our findings suggest that adolescents think that their par-
parents will react more negatively (by being angry or punitive) when finding out that they would smoke, whereas parents think they would react more positively by using a problem-solving and constructive approach. To understand antismoking socialization it is therefore essential that the perspectives of adolescents as well as parents are taken into account.

Smoking parents may differ from non-smoking parents in the ways they try to prevent their children from smoking (see also Chassin et al. 1998; Henriksen & Jackson 1998; Clark et al. 1999). We found that non-smoking parents are engaged in antismoking socialization practices more frequently and more constructively than smoking parents. Some smoking parents may even believe that smoking in the presence of their children is inevitable (Clark et al. 1999) and therefore may make fewer efforts to prevent their offspring from doing similarly.

A main question of the present study was whether antismoking socialization was related to adolescents’ smoking. It was found that some antismoking socialization practices by parents are related to a decreased risk of the adolescent’s engagement in smoking. First, if parents perceive that they can influence their child not to smoke, adolescents are less likely to smoke. Engels & Willemse (2004) indicated that parents who perceive that they have some influence are also those parents who are more involved in setting rules at home not to smoke, talked about smoking and warned their children about the negative effects of smoking. Conversely, if parents think that they are unable to influence their children’s opinions and behaviours, they are more likely to end up with smoking children (Engels & Willemse 2004).

Secondly, the more frequently parents talk about smoking-related issues with their children, the more likely adolescents are to smoke. There are ambiguous reports regarding the effects of the frequency of parent–child communication on children’s smoking. Similar to our study, Ennett et al. (2001) also reported that parent–child communication was a risk factor for adolescents’ smoking, and Engels & Willemse (2004) reported that the frequency of parent–child communication was associated negatively with self-efficacy. Thus, parents who communicated often with their children were more likely to have children who were less confident to resist or refrain from smoking, and subsequently are more likely to experiment with smoking. In contrast, other studies (e.g. Jackson 1997; Chassin et al. 1998; Clark et al. 1999) suggest that if parents discuss the issue of smoking with their children, adolescents have a lower risk smoking. The longitudinal findings of Ennett et al. (2001) suggest that when adolescents experiment with smoking, parents communicate more often with their children in an attempt to prevent them from continuing to smoke. Thus, the timing of smoking-specific communication seems to be important. Parents should initiate smoking-specific communication before the child has experimented with smoking, as waiting might be counterproductive (Ennett et al. 2001). Finally, our findings indicated that the better the quality of parent–child communication, the less likely are adolescents to smoke. This indicates that merely talking frequently to the child about smoking is less important than whether or not these discussions take place in a constructive and respectful manner, and that the child appreciates it.

When one or both parents smoke their children are more likely to smoke than when neither of the parents smoke (e.g. Chassin et al. 1984; Bauman et al. 1990; Conrad, Flay & Hill 1992; Bailey et al. 1993; Petraitis, Flay & Miller 1995). In our study, multivariate analyses showed no significant association between parents’ smoking and adolescents’ smoking. However, additional univariate analyses demonstrated clearly that children with smoking parents are more likely to engage in smoking themselves. This is an important finding, showing that the residual effect of parental smoking is non-significant when variables that should theoretically mediate the relationship are included in the model (for a review, see Avenevoli & Merikangas 2003).

We also examined whether birth order, parents’ smoking or gender of the child moderated the associations between antismoking socialization practices and adolescents’ smoking. It is important to stress that ours is the first study to examine the effects of specific parenting practices on adolescent smoking with a full family, consisting of both parents and two children. Antismoking socialization practices generally do not differ between the older and younger sibling (except for the frequency of communication), and the associations between antismoking socialization practices and adolescents’ smoking are similar for younger and older children. These findings indicate that parents treat their older and younger child in the same way when it comes to smoking, and that the impact of their parenting is identical for both siblings.

Antismoking socialization practices are related to lower rates of adolescent smoking for both non-smoking parents and for smoking parents (see also Kandel & Wu 1995; Jackson & Henriksen 1997; Chassin et al. 1998; Henriksen & Jackson 1998; Clark et al. 1999). Thus, smoking parents can prevent their child from smoking by endorsing specific parenting practices. Our study suggests that (smoking) parents who do not use antismoking socialization practices may actually miss the opportunity to prevent their offspring from smoking.

Finally, given that no gender differences were found in the associations between antismoking socialization and adolescent smoking, our findings imply that the role of
antismoking socialization in adolescents' smoking is similar for boys and girls.

Limitations and strengths

Some limitations of this study should be addressed. First, we used a cross-sectional design. The relations between all eight antismoking socialization practices and adolescents' smoking are bi-directional by nature. For example, a longitudinal study by Ennett et al. (2001) showed that the relationship between parent–child communication of rules and consequences for adolescents' smoking behaviour is bi-directional; smoking by adolescents at baseline predicted parent–child communication at a follow-up measurement, and vice versa. Therefore, longitudinal studies are essential to confirm our cross-sectional findings. Secondly, in our study the adolescents may have under-reported their actual smoking because their questionnaire was completed in the presence of their parents. However, in an attempt to diminish this problem, interviewers were also present when the four family members completed the questionnaire, and family members were asked to complete the forms separately, without discussing matters with each other, and if possible in a different part of the house. Thirdly, the meaning and interpretation of birth order deserves some attention because birth order is strongly related to age, and age is strongly related to adolescent smoking. In our study design the older siblings were aged 14–17 years and the younger siblings from 13 to 15 years, which means that the ages partly overlap. Thus, because it is difficult to measure the effect of age it is more likely that we are measuring the effect of birth order (which has no overlap). To disentangle birth order and age effects, longitudinal data are needed; however, we can report that the effects of birth order were minimal. Fourthly, although we did not aim to generalize the findings to the Dutch population as a whole, it should be acknowledged our findings can not be representative for all families in the Netherlands because, for example, we included only intact families in the present study. Finally, we did not examine adolescents’ smoking onset or adolescents’ regular smoking, but focused solely on the association between antismoking socialization practices and adolescents’ life-time smoking. Further studies are needed to investigate whether similar findings would emerge when predicting adolescent smoking onset or adolescent regular smoking.

This study also has a number of strengths. For example, most studies on antismoking socialization and adolescents’ smoking behaviour included a selected set of antismoking socialization practices (e.g. communication, negative reactions, house rules, monitoring) and often assessed these practices using a singular item. In the present study, we aimed to assess a wide range of antismoking socialization practices and measured each of them with two or more items (except for non-smoking agreement). Furthermore, ours is the first study to include parents and their children allowing to acquire a more intersubjective viewpoint.

Implications

Antismoking socialization practices may be an important component of public health campaigns to discourage adolescent smoking, since it is easier to achieve a change in parents’ antismoking socialization practices than to change parents’ global parenting practices (Ennett et al. 2001). Further, smoking parents are less likely to take action to prevent their children from smoking (e.g. Farnow et al. 1998). Smoking parents may think that engaging in antismoking socialization practices will do more harm than good when they give their children mixed messages, such as ‘don’t do what I do, but do what I say’. Findings of the present study, however, imply that what parents do (their own smoking) is not more important than what they say. Although the benefits of parents who quit smoking should not be underestimated (Den Exter Blokland et al. 2004), smoking parents should nevertheless be encouraged to communicate antismoking messages to children (e.g. Henriksen & Jackson 1998).

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Notes

[1] In the present study we focused on experimenting with smoking among adolescents, examining the first phase of smoking onset by dividing adolescents into the two groups (ever smoked versus never smoked). This division is also applied in other studies (e.g. Bailey et al. 1993; Jackson & Henriksen 1997; Henriksen & Jackson 1998). If we had used the same groups as applied in the parents (not a current/regular smoker versus current/regular smoker) the number of younger siblings who smoke regularly (n = 24) would be too small to allow proper analyses.

[2] Before interpretation of the significant interaction effects found in the multivariate analyses, we also conducted univariate analyses. Interaction effects showing to be multivariately as well as univariately significant are reported in the paper.

References


