

“Nobody complies with it anyway. Well yes, those who do not smoke” – Combining methods for understanding adolescents’ approach to a smoke-free agreement.

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Abstract

Background: Non-smoking agreements has shown effective in preventing smoking among adolescents. However, to date, this is the first study to explore: 1) if adolescents who do or do not sign have specific characteristics, 2) adolescents' attitudes towards signing and committing to these smoke-free agreements (SFA).

Methods: This is explored by combining questionnaire and focus group data. The questionnaire data is gathered as part of the evaluation of X:IT study II; a smoking preventive intervention targeting adolescents in 7th-9th grade. In this paper data from second follow (8th grade) up is used. Eight focus groups (N=43) were conducted with the adolescents in 8th grade at two Danish secondary schools. Inspired by theory integration we draw from resistance theory to combine the results from the methods.

Results: The questionnaire data showed that adolescents who were partaking in smoking or smoking-related behavior including current or ever smoked as well as have ever tried hash, snuff or electronic cigarettes to a less degree signed a SFA. Focus group analysis showed that even though the adolescents at the two schools emphasized a lack of attention to the SFA, the lack of attention was ascribed to different approaches to smoking and the SFA. In general, adolescents at one of the schools had no intention of smoking and thus willingly signed and committed. Whereas, adolescents at the other school expressed a greater resistance to signing as well as committing to the SFA. Instead, what seemed important for the adolescents at this school was a desire to act freely and appear with no strains, including possibility to smoke, which the SFA seemingly threatened.

Conclusion: Although non-smoking agreements, implemented in the school setting, have been effective in decreasing smoking among adolescents in other studies, our results suggest that the SFA may appeal differently to adolescents according to certain characteristics, while getting overall very little attention.

Background

Adolescent smoking is among the top priorities in the public health domain, particularly in Western countries. This is reflected in the numerous health intervention programs developed to prevent young people from engaging in smoking practices (1–3). The development of smoking interventions aiming at children and adolescents rests on existing research stating that smoking is the most important causes of disease and early mortality (4). Children and adolescents are an obvious target group as smoking habits most often establishes in early life (5). Moreover, smoking has a significant role in the widening health inequalities due to the socially unequal distribution of smoking (6). This pattern is prominent already in children and adolescents (7–9).

Within the field of tobacco control, there is a growing focus on the parental role in their children's approach to smoking. As a result, recent years of smoking-preventive interventions have tried to also engage parents (3, 10). The assumption is that parents have a significant influence on adolescents' initiation and persistent use of smoking (11). Some research suggest that parental rules concerning

smoking (12) and parents own smoking behavior has a protecting effect against smoking initiation (13). Parental communication has likewise been associated to less smoking among adolescents as well as has a protecting effect against smoking initiation. However, in general it seems as if the quality of the communication is of bigger importance than the frequency of the smoking directed communication (14). One way of engaging the parents in smoking prevention among youth is through smoke-free contracts or commitment contracts (15–18). The use of contracts in attempts to promote or maintain a specific behavior is used within the health field e.g., as a behavior strategy in weight loss (19) and smoking cessation (20). The concept of commitment contracts draws from behavioral economics. It is often used to encourage people to follow through with behaviors in a specified period (21). Participants are required to deposit money when they commit to the contract, this money is returned to them if they reach the goal stated in the contract. These economical commitment contracts often build on the risk of loss as a motivation for commitment (21). For most commitment contracts aiming at preventing smoking among adolescents the economical incitement has been replaced with a prize. This means instead of a return of deposit money when reaching the goal, the participants get, or has the possibility to win a prize. Moreover, the commitment contracts have a social aspect because the contract also rely on the relation between the implied actors. In the case of contract signing as a strategy to prevent smoking among adolescents the adolescents commit to staying smoke-free by signing with actors like a parent, primary caregiver or classmates. Commitment contracts constitutes one of three elements in the Danish intervention X:IT - where the concept is called a smoke-free agreement (SFA). In X:IT the adolescents sign a SFA with their parents and is meant to facilitate a dialog about smoking between parents and adolescents (22). X:IT constitutes the empirical context of this paper.

Several interventions involve parents in smoking prevention by using a contract signing strategy between adolescents and their parents (15–18). Some of these studies show that contracts have the possibility to prevent or delay smoking prevention among adolescents (15–17) while den Exter Blokland, Engels (18) report no effect of the initiative. A review on incentives regarding preventive smoking among adolescents' reports that there is no clear evidence stating that incentives prevent young people from starting to smoke in the long term (23). Mainly, the review reports from the intervention 'smoke-free class competition' which has been implemented throughout Europe and the primary actors in the smoke-free class competition is the adolescent and the classmates. Meaning, that the smoke-free competition relies on social dependency and responsibility as the adolescents commit to stay smoke-free on a class level and only if the majority stays smoke-free they partake in the competition. The smoke-free class competition draws on social dependency and has been criticized for using peer-pressure as a method to decrease smoking (24). When evaluated in Canada, the results showed that the smoke-free class competition could yield negative side effects as the adolescents enrolled in the intervention were found to misreport their smoking status and marginalize classmates who smoke (25). The effect of the commitment contracts to prevent smoking thus seems contradictory. However, none of the identified studies examines what characterizes adolescents who do or do not sign a contract. In addition, neither of the studies address the adolescents' attitudes toward the concept of signing a contract. In a previously study we addressed gender differences in relation to aspects of the SFA and the results showed that boys and girls seem to

relate differently to the SFA which is suggested to reflect that girls, in general, are more positive towards parental involvement than boys (26). This indicates that the SFA appeal differently to adolescents with different characteristics. However, despite that several preventive smoking interventions targeting adolescents involve commitment contracts, little is known about who and why some adolescents' signs (and who and why they do not).

It is known that smoking in adolescence is associated with factors like socioeconomic status, ethnicity, smoking among parents and friends, and use of other nicotine and smoking related products (11, 27). Additionally, people with certain characteristics, for instance, low socioeconomic status, tend to engage less in preventive initiatives (28). It is interesting to examine if such social and behavioral characteristics influence whether adolescent sign the agreement. We, therefore, aim to explore adolescents' approach to the SFA by addressing the following questions: (1) Which social and behavioral characteristics do adolescents who sign and who do not sign a smoke-free agreement have? And (2) what characterize the adolescents' attitudes towards signing and committing to the smoke-free agreement?

Theory

Existing research has explored adolescents' smoking behavior (29, 30) and attitudes toward parental smoking (31) as acts of resistance; explorations where the concept of resistance contributes to an understanding of behavior of youth situated in a social and cultural context. It is moreover suggested that sociology theories and concepts, for instance resistance, can be helpful informing interventions targeting adolescents (32). The concept of resistance is interesting to deploy as an analytical tool for investigating adolescents' approach to the SFA, as this concept take account of and reflects the social context in which the social practice of resistance is carried out (33, 34). Resistance thus function as an analytic lens through which the adolescents' approach to the SFA are explored. Refraining from signing will be explored from the premise that this is an act of resistance. However, in the analysis of the focus group data we will apply the notion of resistance to explore the adolescents' different approaches to the SFA including when they sign an agreement, and thus use resistance theory to shed light on the social context in which these act are embedded.

Analytically this paper draw from the Swedish sociologists Anna Johansson's and Stellan Vinthagen's conceptualization of everyday resistance (34). Johansson and Vinthagen understand resistance as a practice which take place in relation to power. The authors use a broad definition of power which also position resistance as a dynamic concept due to the interrelatedness of these two. The authors understanding of power includes, but are not limited to, a materialist and class understanding of who is in a powerful position. Instead, they advocate for a more comprehensive understanding, thus not only those subordinate of power (i.e. people with a lower SES) carries out resistance but also people who, from a structuralist point of view, are in a position of power practice resistance. As such, the concept of resistance does not become one dimensional but leaves room for interpretation and thus how to use the concept. To capture the concept of resistance Johansson and Vinthagen (34) have developed a framework with four intertwined dimensions all of which contribute to understand how acts of resistance

are embedded in a specific context: 1) Repertoires of everyday resistance, 2) Relationship of agents, 3) Spatialization, and 4) Temporalization of everyday resistance (34, p. 419). We will use the dimensions to explore the adolescents' approach to the SFA as social practices reflecting a repertoire of resistance especially available for the adolescents in their specific context. Repertoires are characterised as strategies and tactics of resistance available and develops from the specific social context and the individual's experiences with resistance. This means that the repertoires are culturally and socially learned (34, p. 421). Johansson and Lalander (35) argue that the relationship of the actors (resister, target and possible observers) is determining how the resistance is performed. Moreover, the relationship between the actors is influenced by spatiality and thus include the specific space where an act (of resistance) is carried out. For instance, the school denotes the actors with specific roles, identities and behaviors. Intertwined with spatialization is temporalization which concerns how acts of resistance take place in time. In this article we understand adolescence as temporal period in life in distinction to both adulthood and childhood (36). The two latter concepts (spatiality and temporality) contributes to the context in which the act of resistance should be interpreted. As the four dimensions are developed to support an analytical attention, the concept of spatiality and temporality will only briefly be touched upon in the discussion.

We understand the adolescents' approach to the SFA as expressions of resistance. By applying the concept of resistance, we explore the different attitudes and ways of committing, or abstinence from doing so, and how these 'acts of resistance' reflect the adolescents' behavioral and social characteristics as well as are influenced by social context.

Methods

For this explorative paper, we drew from material gathered among adolescents in grade eight (predominantly 14–15 years of age in the Danish educational system). We combined questionnaire data from 1,148 adolescents in eighth grade at 32 schools and eight focus group interviews with eighth graders at two intervention schools. Questionnaire data and focus groups were combined to obtain a comprehensive understanding of the adolescents' approach to the SFA comprising the characteristic of signers and non-signers of the SFA as well as the adolescents' attitudes to the SFA. The combination relies on the concept of resistance as a conceptual lens to interpret the adolescents' approach to the SFA (37).

The smoking preventive intervention X:IT

The X:IT intervention is developed by the Danish Cancer Society and comprises smoke-free school time, smoke-free educational material and SFA. The evaluation of the intervention is undertaken by the National Institute of Public Health. This paper is a contribution to this evaluation. The use of SFA in X:IT rests on research from Sweden and Norway (22), as these Scandinavian neighbours have succeeded in

lowering the smoking initiation among youth by the use of commitment contracts (15) or parental involvement (38).

In the X:IT intervention, the adolescents receive a SFA at school at the beginning of 7th, 8th, and 9th grade. When the adolescents sign the agreement, they commit to refrain from smoking the following school year. The SFA comprises of parental involvement and a competition. These elements are assumed to encourage adolescents to be smoke-free, help maintain their choice, and ensure support from an adult (39). The parents are encouraged to co-sign the agreement and engage in a smoke-free dialogue with their children. The agreement comprises further of the possibility for the parents to commit to preventive smoking activities such as not smoking inside the house or in the present of their children and not leaving cigarettes visible places. However, if and how many of the recommendations the parents commit to is optional. Further, when signing and committing to the SFA, the adolescents participate in a competition with the possibility of winning a prize (39). The competition is organized and conducted by the school. The prize is decided locally at the school by the school staff involved in X:IT or at the municipality level, dependent on where X:IT is anchored. The X:IT intervention has previously been evaluated from 2010-2013. Where 83.2% signed a SFA in grade seventh and 73.9 % in grade eighth (40).

Questionnaire data

The questionnaire data were collected as part of the X:IT II study, an evaluation of the X:IT intervention (39). Schools (n=300) were randomly selected from 31 municipalities and contacted by e-mail and postal letter, followed up by telephone calls, and 48 schools agreed to participate in the evaluation. Data were obtained through a web-based questionnaire at four timepoints (start and end of 7th grade, and end of 8th and 9th grade, i.e., baseline, 1st - 3rd follow-up) in 2017-2020. The questionnaire was conducted during a school lesson after a standardized instruction given by the teacher. This paper draws from data collected as part of second follow-up, which is eighth graders (14-15 y). A total of 1,148 students in 32 intervention schools completed the questionnaire (response rate=70.6% of eligible students).

Measures

Outcome measure: Adolescents were asked to report whether they had signed a SFA at the beginning of the school year. With the response categories, yes, no, I don't know/cannot remember.

Characteristics: We included the following characteristics: gender, socioeconomic status (SES), parental smoking, and best friend's smoking. Gender was determined by the adolescents answering following question: "Are you a boy or a girl?" with the response categories: boy, girl and do not fit into either category. SES was measured as family social class based on adolescents' responses to two items on fathers' and mother's occupations. The adolescents' information on parental occupation was coded from (1) high to (V) low social class, and (VII) indicating parents were receiving social benefits. Family social class was determined by the highest-ranking parent and were categorized into three social position

groups: High (I/II), medium (III/IV), low (V/VII) and unclassifiable. Parental and best friend's smoking was measured by frequency of mother's, father's and best friend's smoking and dichotomized into every day/sometimes vs. no/don't know/I don't have or see this person.

Tobacco use: Cigarette use was assessed by the question "How often do you smoke?" and was dichotomized into daily/weekly/monthly/less often than every month vs. I don't smoke. Use of electronic cigarettes, hash and snuff, were measured by regularity of use and dichotomized into no, never vs. yes, 1-2 times/3-5 times/6-9 times/10-19 times/20-39 times/40 times or more.

Attitudes: Adolescents who signed the agreement or who did not remember/or do not know if they signed the agreement were asked about their attitudes towards the SFA with the response options "... It helps me not to smoke", "... It is a good occasion to talk about smoking with my parents", "... My parents think it is a bad idea", "...I think it is a bad idea" "... It is easy to forget when you have signed it", "...It will not do any difference", "...It does not matter, I won't smoke anyway", "...It does not matter I smoke if I want to", The adolescents were asked to choose all of the reasons they identified with.

Adolescents who did not sign the agreement were asked to register which of the following repositions options they identified with as reasons for not signing with the agreement: "I smoke", "My parents did not want to sign", "I do not know", "I just did not do it", "I did not get a smoke-free agreement/was not in school that day", "I did not want to sign a smoke-free agreement with my parent", "I did not need it, as I do not smoke", "I do not know what a smoke-free agreement is" and "Other...". The adolescents could choose as many options as they liked.

Questionnaire analysis

SAS 9.4 was used for all analyses. We first analysed differences in the distribution of the independent variables in relation to whether the adolescents co-signed a SFA or not. For the status of the adolescents signing the agreement, a χ^2 test was used.

Subsequently, we looked at distributions of reasons for respectively signing and not signing a SFA in the quantitative material.

Focus groups

The eight focus group interviews are part of an ethnographic study conducted in fall 2018. The study that took place among grade eight students (aged 14) at two Danish schools, who partook in the evaluation of the X:IT intervention. The focus groups (four at each school) were conducted in spring 2018. The two schools were located in the same region of Denmark and were selected from an indicator of the SES of the adolescents at the schools, as reported by the schools. However, at the two schools there were observed differences in academical activities, engagement in sport and alcohol consumptions. These behaviors are found to be associated with SES (Li et al., 2020, Marks et al., 2005 & Stalsberg and Pedersen, 2010). When exploring the student responses in the questionnaires of their parent's occupation

the adolescents at eighth grade at the two schools seem to differ in regard to SES compared to each other and the general SES distribution of the sample (data not shown). Drawing from these data, this indicates the adolescents at school A seems to have a SES which is lower than average while the distribution of SES among the adolescents at school B is a bit higher than average.

All adolescents in eighth grade at the two schools were invited to participate, and a total of 43 adolescents participated in the focus group discussions with 4 to 8 participants in each focus group. We wished to facilitate a safe environment (Wilkinson, 1998) especially because of the sensitivity of the subject of smoking and the risk of stigmatize smokers (41). Therefore, the focus groups were composed based on information gathered through the ethnographic study, about the adolescents' social dynamics and smoking practices, and according to already existing social dynamics and groupings (Heary, 2002). Focus groups were chosen as this method especially provides insight to the social enactments and the co-creation of meanings and values in context (Wilkinson 1998). In the focus groups, the adolescents were invited to discuss their perception of smoking and attitudes toward the X:IT intervention and each of the three intervention components.

Analysis of focus group data

Thematic analysis was used to approach the material (Nowell et al., 2017). The coding process entailed reading the entire transcript, with a focus on the adolescents' attitudes to the SFA. The material was read several times by the first author and emerging themes were identified. Subsequently the material was reviewed following the concept of resistance. The analysis focused on how attitudes were informed and how the adolescents related to the SFA in general and each of the different aspects comprising the SFA (i.e., parental involvement, competition). The material was ordered according to patterns across, between and within schools, to preserve a contextual understanding. And moreover, in relation to the adolescents different (non) smoking practices.

Combining methods

The process of the analysis was inspired by the convergent design which is a concept within mixed method research, and the questionnaire data and focus groups were analysed separately (following the analysis strategies earlier described). The results were subsequently integrated by comparing the key findings of each analysis (Kristensen et al., 2019). To integrate the results from the questionnaire data and focus groups we use the concept of resistance. This approach is inspired by theory integration where a theoretical concept, in this case resistance, function as bridging the questionnaire and focus group data by adding a common ground for interpretation of the otherwise epistemologically differently grounded methods (37, 42). In practice this meant that when the adolescence in the questionnaire had reported that they did not sign the SFA, this was interpreted as acts of resistance and these findings were qualified and nuanced by the focus groups analysis where the adolescents statements were interpreted in light of resistance. The purpose of combining the methods and the integration was to enable a deeper

exploration of the adolescents' approach to SFA by exploring possibly patterns of characteristics for as well as the adolescents' attitudes towards signing the SFA.

Ethics

Besides the special ethical precaution which the sensitivity of the theme required, we further, in collaboration with the teachers at the two schools, informed the parents about the ethnographic study. A letter of consent was sent to the adolescents' parents, informing them about the study's purpose and that participation was voluntary for their children. Parents were given the possibility of providing passive consent; i.e., they only needed to contact us if they did not want their child to participate in the study and were also welcomed to contact the research team if they had any questions. The adolescents received written and verbal information about the purpose of the ethnographic study. They were informed that participation was voluntary, about the confidentiality of the data, and that no identifying information would remain accessible. Before conducting the X:IT study, parents were informed about their children's participation in a research project and about the possibility of withdrawal. The adolescents were reminded that their participation in the evaluation were voluntary prior to each questionnaire collection (baseline, 1st – 3rd FU) and was given the possibility to withdraw before answering the questionnaire, during the questionnaire, and skipping certain questions.

The X:IT II study is registered at the Danish Data Protection Agency, ref.: 2015-57-0008. There is no formal institution for ethical assessment and approval of interview-based studies in Denmark. The study is registered at the Research & Innovation Organisation at University of Southern Denmark, ref.: 10.035.

Results

Quantitative findings: Adolescent characteristics and motives for signing a SFA

Table 1 presents the characteristics of the adolescents in the study and compares adolescents who signed a SFA and those who did not. Overall, half (50.5%) of the adolescents, who answered the questionnaire, reported having signed the SFA, 27.4 % reported that they did not sign the agreement, while 22.1 % did not remember or did not know if they had signed the agreement. Further, 11.3 % of the adolescents identified as current smokers, and 19.0 % reported that they had tried smoking at some point.

In Table 1 it appears that for adolescents who signed a SFA, 71.7% live with both parents where 60.0% of the non-signing adolescents, live with both parents. Further, for those signing a SFA, 14.2% were from reconstructed families while among non-signers, 20.7% were from reconstructed families. Even though not statistically significant it appears that adolescents who signed a SFA were most likely to be characterized as high and mid-level of SES, e.g. for adolescents who did not sign an agreement, 9,2% had low SES while for adolescents who signed an agreement it was 5.7%. A statistically significant difference between adolescents who signed, did not remember whether they signed or not and did not sign, was found for the following characteristics: current smoker, ever smoked, mother's smoking, sibling's smoking,

best friend's smoking, ever tried hash, ever tried electronic cigarettes and ever tried snuff whereas the highest percentage did not sign a SFA.

Table 2 and Table 3 shows attitudes toward the SFA, for the adolescents who respectively signed and those who did not sign the SFA. Most of the adolescents who signed a SFA (Table 2) reported that signing the agreement does not matter because they do not smoke (58.4 %), that the agreement would not make any difference (43.0 %), or that it is easy to forget that you have signed it (25.3 %).

In table 3 the adolescents' different motives for not signing an agreement is illustrated. The adolescents most often responded that their refrainment from signing was due to them not smoking in the first place (43.5 %), while few adolescents did not sign because they smoked (8.5 %).

Some adolescents did not sign because they did not want to sign a SFA with their parents (21.4 %), while only few adolescents experienced that their parents did not want to co-sign (2.7 %). Others reported that they were not present at the time the agreement was distributed at the school (18.4 %).

Not smoking, or no intentions to initiate smoking, were prominent reasons for both signing and refraining from signing the SFA. Adolescents who signed reported that the agreement will not do any difference (43.0%) indicating that the meaning of the SFA is perceived as limited for some adolescents.

The agreement was perceived, for some adolescents who did or did not remember if they signed it, to be a good occasion to talk to their parents about smoking (20.7%).

At the same time, parents also operated as a barrier to signing the agreement, as some adolescents did not want to commit to a SFA with their parents (21.4%).

Qualitative findings

To substantiate the quantitative results, we draw from focus groups to elaborate how the adolescents approach the SFA by exploring their attitudes. To understand the adolescents' attitudes, we use Johansson and Vinthagens (2016) concept of resistance and will in the following sections draw from the dimension of repertoire of resistance and subsequently unfold resistance in relation to the power (imbalance) between adolescents and their parents.

Adolescents attitudes toward the SFA as reflecting repertoires of resistance

In the following, we address the adolescents' attitudes and reactions to the agreement and what these reactions illustrate when interpreted as acts of resistance. As illustrated in the questionnaire data, the adolescents had different explanations for signing the agreement.

In general, the adolescents from School B signed the SFA (89%) and expressed faith in the effectiveness of the agreement. Their attitudes and willingness to sign a SFA was explained in a focus group:

Felix: For some people it's really good, but I just signed it and thought that I won't be smoking anyway. So, no harm in signing.

Hellum: No harm in getting something out of it somehow.

Felix: There might be some people who go for it more. I don't think about it much – 'now I have to be aware that when I go into town, I must remember not to smoke.' I don't think about that.

Moderator: They 'go for it'?

Felix: Yes, go for not smoking.

(Focus group, School B)

The excerpt illustrates the general finding that SFA only seemed relevant for those with intention of or already partaking in smoking. Signing a SFA do not seem compromising when smoking is not a practice which one is engaged in and thus do not impose any constrains. This perspective was likewise presented in another focus group: "It's a bit like killing two birds with one stone. I had never thought of smoking, but I attend a competition" (Focus group, school B). Generally, adolescents at school B had no intention to engage with smoking, and therefore signing the SFA and partaking in a competition was perceived as a profitable situation. "I just think it was a good agreement in regard to you could win a prize for something you wouldn't do anyway" (Focus group, school B). The emphasize on a lack of desire and lust to smoke, express a general anti-smoking attitude among the adolescents at school B. By such, signing a SFA can be interpreted as part of their repertoire of resistance. As the adolescents are already complying with general anti-smoking attitudes signing put no strains on the adolescents at school B and thus the resistance is directed at smoking as phenomena.

Among the adolescents at school A, 41% signed a SFA. And the adolescents either refrain from signing the SFA or signed but expressed little attention to and trust in the effect of the agreement:

Jonas: I don't even have any idea what's written in it.

Eske: I don't think I handed mine in last year. I forgot.

Ann: I did, but I don't think it's very important.

Sofie: No, I don't think it makes any difference.

Simone: No, I don't think it makes much difference.

Sofie: You forget it two weeks later.

Eske: Yes

[They laugh]

(Focus group, School A)

As illustrated in the excerpt adolescents at school A stress a lack of trust in the effect of SFA as well as familiarity with the concept of the SFA. Even though this was the general approach to the SFA other adolescents at school A hold a more positive attitude to the concept, however, still emphasize the distrusts in the effect of the SFA.

It doesn't make that much of a difference, but it's okay to consider it, I think, and you kind of try to do something from the outside too. It doesn't change much, but it's okay that someone is trying to do it – I mean, from the outside – trying to make you not do it. But I don't think the effect is very big

(Focus group, School A)

This indicates that despite a lack of trust in the effect of the agreement some of the adolescents are accepting and acknowledging the purpose of it. This approach to the SFA, among others, rest on a perception of certain adolescents' non-compliance with the initiative. "Nobody complies with it [SFA] anyway. Well yes, those who do not smoke. But otherwise..." (Focus group, School A). The effect of the agreement is thus ascribed those who are not partaking in smoking and indicates that the effect of the SFA has limited influence on the adolescents' behavior. This was especially prominent among the adolescents at school A.

Like for the adolescents at school B, the competition and the possibility of winning a prize worked as an incentive to sign the agreement. And even though the SFA was not something the adolescents put a lot of thought to and eventually forgot, the possibility of winning a prize in particular received the adolescents' attention. This was, among others, illustrated by an adolescent when asked about the SFA during a focus group.

Eske: Was it the thing [the SFA] where you could win a prize?

Simone: Yes

Eske: (..) I can't remember that I signed it but when they [school staff] told us who the winner was, then I remembered. You forget the smoke-free agreement very quickly.

(Focus group, School A)

The adolescent does not give the SFA a lot of attention after having signed. As such, the prize loses its symbolic meaning of being a reward for staying smoke-free, as one phrased it: "You can win a prize but those who win they can have smoked anyway, without telling" (Focus group, school A). The distrust in the agreement, among others, is influenced by an anticipated lack of correspondence between signing a SFA and staying smoke-free.

Moreover, some adolescents dismissed the influence of the SFA on the adolescents' smoking behavior as well as the motivational value of possible winning a prize:

I maybe though it was a bit strange that there was like... Out of all those who haven't done it, it's only one who gets anything out of not having done it – not having smoked. I think it's strange that there is a gain for only one person. Because there are lots who haven't done it, and they get nothing out of not having done it. I'm just thinking that there are probably some people who can't be bothered to sign it if only one student has any real benefit. You might just as well not sign it and keep away from smoking anyway, if it doesn't make any sense to sign it

(Focus group, School A).

The excerpt shows that the cost of signing the SFA expand the benefits as there is only one who wins a prize. This further indicates that signing the SFA can be perceived as challenging the individual choice to smoke and that the adolescents can have resistance toward being subject to such limitations. As previously described, the prospects of winning a prize could act as a motivation for signing a SFA however, as expressed in the excerpt above, the prize also yield a contrary reaction.

All together this indicates that the SFA seem to have little meaning for the adolescents at school A. As their approach to the SFA is tainted with a general resistance expressed as which therefore appear to have little meaning for the adolescents at school A. Thus, the adolescents at school A display a comprehensive repertoire of resistance expressed as a lack of interest, attention and trust in the SFA.

Parental involvement and repertoire of resistance

The adolescents at the two schools' express differences in regard to how and if they involve their parents in the SFA and moreover in how much they experience their parents to be involved in the concept. From Johansson and Vinthagen (34) resistance perspective the different ways the adolescents involve their parents in the SFA reflects the relationship between the agents i.e., the parents naturally possess power over the adolescents. This relation furthermore influences the repertoire of resistance which the adolescents' use.

At school B, the adolescents involved their parents in the agreement, and experienced that they were positive towards the initiative:

Andy: My mum, she just signed it straight away and said, 'bloody good concept'. She's been smoking for a long time, and my grandpa did die from lung cancer. Well, maybe not a long time, but almost five years, and now she's quit completely, which is really good going for her. She signed it straight away without asking any questions. I think my dad did too. I can't remember if they both had to sign.

Ella: My mum just signed it.

Moderator: Did you talk about tobacco when you signed?

Andy: No, because we've talked about it before. So, I have a very good understanding of smoking.

Ella: My parents said that it was stupid, and that they would be disappointed in me if I did it and so on.

Sasha: And there's nothing worse than your parents being disappointed in you.

(Focus group, school B)

The adolescents emphasize their parent's active involvement in the SFA indicated by them willingly signing an agreement.

While the agreement did not always drive a dialog about smoking the adolescents emphasized the parents non approval of smoking.

As such, the adolescents portray their parents as opposing smoking which reflect their own approach. One adolescents at school B described how the agreement brought about a concern with the parents but fostered a dialog:

As soon as I came home with it [SFA], they asked, 'why are you suddenly coming home with this; has something happened?' or something like that, and I was just like, 'no, no', so that was all good. And then they asked me about my opinion, and we started talking about it.

(Focus group, school B)

This anti-smoking approach underlines the alignment between the parents' and adolescents' understanding of smoking. From this we understand that adolescents and parents both resist smoking thus signing and talking about smoking seem to pose no threat to the adolescents at school B.

Contrary to the adolescents at school B, the adolescents at school A expressed a general resistance toward involving their parents in the SFA and when they involved them, the adolescents experienced that their parents showed little interest in the initiative.

The latter was, among others, expressed by some non-smoking adolescents.

Mads: I think they're [the parents] just like, 'yeah, yeah'. They don't really care about it [SFA].

Ruben: We also just put it to one side and quickly signed it. But it doesn't really make any difference, if you can say it like that. You can still start smoking and sign.

Mads: It's the same as saying to your parents, 'I don't smoke', but you can still do it – that's the same thing.

(Focus group, School A)

This indicates that the adolescents resist parental involvement (in the sense of the power the parents have).

This we draw from two points the adolescents make in the excerpt. First, the adolescents emphasise the lack of parental attention to and interest in the SFA. This also imply that the agreement did not foster a dialog about smoking and consequently no parental restrictions in this matter.

Second, the adolescents challenge the influence of the parents by indicating that there might be a lack of correspondence between what the adolescents actually do and what they say to their parents that they do (framing themselves as non-smokers).

Which, moreover, suggests that parents hold little control over the adolescents.

When emphasising the lack of parental involvement in and attention to the SFA as well as the possible lack of correspondence between smokers and non-smokers this operate as a way to (silently) resist the power of their parents.

Other adolescents, primarily those who partook in smoking either daily or occasionally, refrained from involving their parents in the agreement.

This was illustrated in a focus group when talking about whether the participants brought home the agreement.

Fie: Yes, I have it in my room [laughs].

Moderator: Have you shown it to you mum or dad, or...?

Fie: No, it's – they know... They [the school] have contacted the parents, so my dad knows. But he hasn't tapped me on the shoulder yet.

[Some laugh].

(...)

Henriette: Well, my parents know that I have it, but they couldn't care less.

Marikka: Well, my parents couldn't care less either. They say to me that those who want to ... if I want to sign it or not...

Moderator: Yes, it's your own choice?

Marikka: Yes.

(Focus group, school A)

As shown in the above excerpt the adolescents at school A in general emphasize their parents' lack of involvement in SFA.

The adolescents take a position as having power to decide how and whether the parents get the possibility to involve in the agreement.

However, worth noticing is that the power to decide themselves whether (or not) to sign the SFA is partly "given" to them by the parents.

Thus, the adolescents at school A are in general accepting the power imbalance between them and their parents but, nonetheless, positioning themselves as being in power of signing.

This in the sense that to or not to sign is their own choice. In general, the adolescents' and their parents do not engage in a dialog about smoking.

Discussion

To our knowledge, this is the first study to address adolescents' approach to a SFA by exploring social, behavioral and attitudinal characteristics of adolescents who do or do not sign a SFA. In the following we will provide a more comprehensive understanding of how the adolescents approach the SFA, based on both the quantitative and qualitative results. We use the concept of resistance as presented by Johansson and Vinthagen (34) as a common theoretical approach to integrate the results from the questionnaire and focus group material (Frederiksen, 2013). Signing (or refraining from signing) as an act of resistance unfolds and gives meaning through the exploration of the adolescents' attitudes toward the SFA. The questionnaire and focus group data drawn from in this paper suggest that adolescents in general give little attention to the smoke-free agreement. Moreover, the results show that the approach the SFA in different ways and consequently that the SFA appeal differently to different adolescents. This we derive from data showing that adolescents who do and do not sign the SFA have some specific social and behavioral characteristics. Additionally, when exploring the adolescents' attitudes to the SFA, the findings suggest that the SFA in general is ascribed little meaning. This is drawn from results proposing that signing a SFA was not perceived as a problem for those who also expressed resistance against smoking, and that some adolescents expressed a general resistance to signing and complying with a SFA.

Adolescents in the study overall acknowledge the intention with the SFA, however, hold different attitudes towards the concept. The conflicting approaches to the agreement were demonstrated by half (50.5%) of the adolescents signing an agreement. However, some adolescents (18.8 %) did not sign as they did not get a SFA in the first place. Still, we observed that adolescents who partake in smoking-related behavior tend not to sign an agreement. From a resistance perspective, this indicates that adolescents with certain social and behavioral characteristics express resistance differently. These tendencies were qualified and nuanced by the focus group data analysis as this analysis contributes to an understanding of why some adolescents do while others do not resist signing a SFA. In the focus group data, we observed similarities and differences between the schools. Common for the adolescents at the two schools was their emphasis on their lack of attention to the SFA. However, these attitudes expressed different approaches to the SFA. Resistance theory unfolds how these attitudes are shaped by the social context in which the adolescents are embedded. What appeared from the analysis of the focus groups was that where there was a congruence between the adolescents' values (expressed as anti-smoking norms) and the aim of the SFA, the agreement posed no threat. From a resistance point of view the adolescents did not resist the SFA but rather resisted smoking. For these adolescents (school B) strong anti-smoking norms existed. This is in line with research suggesting that health messages and initiatives (including smoking) resonate better with middle-class values and norms including health as a personal choice and under personal control and that this furthermore increases the possibility of the initiatives being accepted. (43). On the contrary, the adolescents at school A show resistance to the SFA which, among others, was expressed as

1) a complete refrainment from signing the agreement and 2) a willingness to sign but followed by an emphasis on the magnitude and lack of trust in the concept. A general trait for the adolescents at school A is an opposing behavior where also smoking is perceived as acceptable behavior. In the school context it is demonstrated that in situations where adolescents' values and norms do not resonate with the practice of the institution, the adolescents to a higher degree express resistance (44). Moreover, Factor, Kawachi (45) suggest, that people who are marginalised (e.g., have a low SES) cope with their position in society by partaking in behavior that is in opposition to existing norms of the larger society. And it is suggested that not following health advice or actively resist health messages is a way to demonstrate freedom and independence from society at large (43). This can be a shared experience for the adolescents and thus something which constitutes the basis of their repertoire of resistance (34). Therefore, not signing can demonstrate a way for the adolescents to signal that power structures, including those in a school context as well as the inherent power in parent-child relation, have their limits.

What seemed to be important is the adolescents' smoking-status which influenced how relevant the SFA appeared to be for them. The quantitative findings illustrate that adolescents' smoking status understood as current or ever smoked was associated with whether they did or did not sign a SFA, with a larger percentage not signing among those who ever had or currently did smoke. However, no intention of smoking was the most prominent reason for signing (58.4 %) as well as not signing (43.5 %) a SFA. This was elaborated in the focus groups where adolescents who expressed no desire to smoke willingly signed the SFA because signing made no difference for them in regard to their non-smoking behavior. Different attitudes were expressed by adolescents at school A who, in general, displayed a repertoire of resistance constituted by distrust in the effect of and thus meaning with the SFA. Additionally, the questionnaire data suggest that adolescents who have experience with tobacco or tobacco related products such as hash, e-cigarettes or snuff influence whether the adolescents sign an agreement. Following the concept of resistance, these behavioral characteristics can express acts of resistance. In addition, youth who use alternative tobacco products often also use regular cigarettes (46). Thus, there might be an overlap between the adolescents who are current smokers or have ever smoked and adolescents using other tobacco related products. Following Johansson and Vinthagen (34) this might indicate that adolescents with certain behavioural characteristics have developed a specific repertoire to distance themselves from the larger society and thus not partaking in initiatives like the SFA.

One motivation for signing the SFA was the competition and especially the prospects of possible winning a prize seemed to motivate some to sign the SFA. For others, the competition is undermining the SFA as the motive is to win (which requires that they sign) but not necessarily to comply. This is in line with an article by Martinson, Lazovich (47) who found that the possibility of winning a prize increased the adolescents' willingness to participate in a survey but not to participate in a smoking prevention or cessation intervention (47). This indicates that even though the prize function as motivation for some to sign, some adolescents question the actual function of the possibility of winning a prize.

Questionnaire data showed that some adolescents who signed an agreement thought it was a good occasion to talk to their parents about smoking (20.7%). At the same time, 21.4% refrained from signing

as they did not want to sign an SFA with their parents. These contradictions were also prominent in the focus group data. For example, at school B the adolescents portrayed that they and their parents shared values regarding smoking. When emphasising an alignment in their approach to smoking, they indirectly resist their parents' control, as the control the parents seem to be given when handed the SFA becomes a symbol rather than actual power.

In addition, the adolescents at this school framed their parents as caring and engaging in their lives. However, the adolescents did not always experience that the SFA facilitate a dialog about smoking between parents and children, as this had already taken place.

At school A, the adolescents were more concerned with not appearing to be under the control of their parents.

This was illustrated when they either stressed that their parents paid little attention to the agreement or in cases when they abstained from including their parents.

It is suggested that parental styles, including high quality communication and reactions to smoking uptake, are influential on adolescents smoking-related behavior (48) and that parenting strategies differs according to parental SES, however, the results are not consistent (49, 50).

Our results suggest that there could be some difference in regard to how parents receive and engage with such an initiative.

The results in this paper thus raise questions about how to meaningfully integrate the parents in smoking preventive initiatives directed at adolescents and how to facilitate a high qualitative dialog about smoking.

The results of this study should be interpreted in the light of the methods used. For instance, the resistance repertoire, the adolescents draw from, is derived from focus groups with the adolescents. Thus, the adolescents' attitudes towards the SFA are collected in a social setting and not observed in the encounter between the adolescents and parents. The act of resistance is not observed but instead analysed from the adolescents' expression of their actions in regard to the SFA taken from discussions. Following Johansson and Vinthagen (34) the focus groups thus represent a space (which though represents configurations of the adolescents as they appear at the school) in which specific resistance repertoire and relations operate. The focus groups thus create a space in which the adolescents are held socially responsible for their use (or lack) of resistance. Therefore, the statements in the focus groups are influenced by what is considered socially acceptable. Still, when addressing the motives to as well as not to sign we observed congruency between the adolescents' statements in a social setting, during the focus groups, as well as when they were on their own answering questions related to X:IT. Also, this spatialization is interwoven with the temporal of adolescents' as a specific time period (in life) as adolescence is known to be a period where people transform from children to adults (36). This also represents a process where young people liberate themselves from parental control. Adolescence represent a specific time in life where, some argue, resistance is inherent (33, 34).

Thus, when the adolescents express resistance to disclosing their relation to their parents, this expresses a temporality of adolescents.

The questionnaire data derives from a large sample size with a reasonable response rate and with the possibility of generalizing beyond this sample. Additionally, the questionnaire data is self-reported which can result in bias.

As mentioned, some studies find a positive effect of SFA on smoking among adolescents (15–17). The result of these studies might be biased as the effect ascribed to the concept could be an expression of an inherent resistance to smoke. This is supported by the findings in the present paper which suggests that the agreement appeal more to some adolescents who, for instance, do not take part in smoking-related behaviors. With the little attention the adolescents seem to give the SFA and the fact that those signing mostly report that the agreement do not make a difference either in general (43.0 %) or because they had no intention of smoking in the first place (58.4 %) and was easy to forget (25.3 %), the influence of SFA on the adolescents included in this study appear limited. On one hand, the results of the present paper question the relevance of the SFA due to the little attention and lack of meaning the adolescents ascribe it. On the other hand, the SFA aim at influencing the adolescents' intention to smoke which thus could influence the adolescents' attitudes toward smoking and consequently the SFA. Still, the overall lack of meaning for the adolescents ascribed to the SFA call for further research into which methods effectively reach different groups of adolescents. The SFA is one of three components in the X:IT intervention. In a review of the effect of incentives in preventing smoking among adolescents, as for instance prize, SFA was not found effective, even when combined with other initiatives as smoking preventive education (23). Whereas evaluation of the X:IT study conducted in 2010–2013 showed that adolescents more often refrained from smoking when they were exposed for all three intervention components 1) smoke-free school grounds, 2) smoke-free education and 3) parental involvement, including a smoke-free agreement (39, 40). In these two papers, smoke-free agreement was included in a measure for parental involvement and was measured as signing an agreement, having a dialog with parents about smoking and if the intervention was measured at parent-teacher meeting.

We are aware that existing research point at the possibilities of parental smoking rules and dialogs to prevent adolescent smoking (11–13), however, this study points at some challenges with involvement of parents and the facilitation of smoking dialog by using smoke-free agreements. This we rest on adolescents' own expressions, thus, future research should investigate how parents from different backgrounds perceive the concept of SFA. Moreover, as this study is explorative in its nature, future research should investigate if special characteristics are clustered, and if other characteristics are influential.

Conclusion

Even though other studies have found that the concept of a commitment contract is beneficial in relation to prevent smoking initiation of smoking among adolescents this paper point to some challenges with the concept. Altogether, the results of this paper indicate that the SFA seem particularly to appeal to adolescents who do not or have not been partaking in smoking-related behavior. The SFA seem to have little meaning for the adolescents as a part of the adolescents who sign have either no intention to smoke

in the first place or are not complying with the agreement, while others completely refrain from signing. The results raise some questions about how to meaningfully integrate the parents in smoking preventive initiatives directed at adolescents and how to facilitate a high-quality dialog about smoking.

Declarations

Data Availability Statement: The data are not publicly available due to [participant not providing consent to publicly share data].

Ethical approval: The study by the Institutional Review Board of Research and Innovation Organization at the University of Southern Denmark, (reference: 10.035. Date: 18.07.18). Before conducting the fieldwork, parents, teachers, and students were informed about the presence of the researcher, and the parents were given the opportunity to withdraw their children from the study beforehand.

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List of abbreviation: Socio-economic status (SES), Smoke-free agreement (SFA)

Author contribution: SG analyzed and interpreted data and were the leading on writing the manuscript. TTT, AA and LSB all supervised the main author, assisted with interpretation of the data analysis, and gave valuable comments to the manuscript. All authors read and approved the final manuscript.

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Tables

Table 1. Characteristics of adolescents distributed on smoke free agreement status in eighth grade (2. FU)

	All N=1.100	Signed the agreement	Do not know/cannot remember	Did not sign the agreement	p
		N=551 (50.5 %)	N=244 (22.1 %)	N=305 (27.4 %)	
Sex % (missing 0)	47.9	48.3 (266)	44.7 (109)	49.8 (152)	
Boys	(527)	50.1 (276)	52.5 (128)	46.6 (142)	
Girls	49.6	1,6 (9)	2.9 (7)	3.6 (11)	
Do not identify with the binary sex categories	(546) 2.6 (27)				0.276
Socioeconomic status, % (missing 78)					
High	40.3 (412)	43.4 (228)	36.2 (81)	37.9 (103)	
Middle	44.2 (452)	43.9 (231)	48.2 (108)	41.5 (113)	
Low	7.2 (74)	5.7 (30)	8.5 (19)	9.2 (25)	
Non-classifiable	8.2 (84)	7.0 (37)	7.1 (16)	11.4 (31)	
Family structure, % (missing 2)					0.069
Lives with 2 biological parents	66.9 (735)	71.7 (395)	64.9 (157)	60.0 (183)	
Single-parent family	9.7 (106)	8.7 (48)	9.5 (23)	11.5 (35)	
Reconstituted family	16.6 (182)	14.2 (78)	16.9 (41)	20.7 (63)	
Other (E.g., foster care, institution)	6.8 (75)	5.4 (30)	8.7 (21)	7.9 (24)	
Origin % (non-classifiable 13)					0.038
Danish origin	91.9 (1011)	92.7 (511)	92.2 (225)	90.2 (275)	
Descendants of immigrants	4.2 (46)	4.17 (23)	4.1 (10)	4.3 (13)	
Immigrants	2.7 (30)	2.2 (12)	3.3 (8)	3.3 (10)	
Non-classifiable	1.2 (13)	N/A	N/A	2.3 (7)	0.40
Current smokers, % (missing 1)	11.3 (124)	8.5 (47)	11.9 (29)	15.7 (48)	0.007
Ever smoked, % (missing 2)	19.0 (208)	14.4 (79)	21.7 (53)	24.9 (76)	0.0004
Father's smoking, % (missing 0)	22.8 (251)	20.2 (111)	27.9 (68)	23.6 (72)	0.053
Mother's smoking, % (missing 4)	18.5 (202)	15.0 (82)	19.8 (48)	23.6 (72)	0.007
Sibling's smoking, % (missing 19)	18.6 (201)	15.8 (86)	18.0 (43)	24.1 (72)	0.012
Best friend's smoking, % (missing 1)	24.6 (270)	22.0 (121)	23.5 (57)	30.2 (92)	0.027
Other friends smoking, % (missing 1)	46.2 (591)	52.6 (290)	47.3 (115)	61.9 (186)	0.004
Ever tried hash, % (Missing 1)	6.6 (72)	4.5 (25)	6.6 (16)	10.2 (31)	0.008

Ever tried electronic cigarettes, % (Missing 2)	24.4 (268)	19.3 (106)	25.1 (61)	33.1 (101)	<.0001
Ever tried snuff, % (missing 3)	11.1 (122)	7.4 (41)	13.9 (33)	15.8 (48)	

Table 2. Attitudes to the smoke-free agreement for those who signed a SFA or did not remember if they signed (N=795). The adolescents were asked to report all the statements which they identified with.

	% (n=740)
... It helps me not to smoke	16.6 (129)
... It is a good occasion to talk about smoking with my parents	20.7 (161)
... My parents think it is a bad idea	1.9 (15)
... I think it is a bad idea	6.4 (50)
... It is easy to forget when you have signed it	25.3 (197)
... It will not do any difference	43.0 (335)
... It does not matter, I won't smoke anyway	58.4 (455)
... It does not matter I smoke if I want to	11.3 (88)

Table 3. Attitudes to the smoke-free agreement for those who did not sign a SFA (N=305). The adolescents were asked to report all the statements which they identified with.

	% (n=289)
I smoke	8.5 (25)
My parents did not want to sign	2.7 (8)
I do not know	13.6 (40)
I just did not do it	19.7 (58)
I did not get a smoke-free agreement/was not in school that day	18.8 (54)
I did not want to sign a smoke-free agreement with my parent	21.4 (63)
I did not need it, as I do not smoke	43.5 (128)
I do not know what a smoke-free agreement is	9.5 (28)
Other ...	5.8 (17)