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Chapter 21
Creating active involvement interventions to effectively reduce adolescent health risk behaviors

Abstract: This chapter discusses how active involvement prevention interventions can be used to reduce adolescents' health risk behaviors. Considering the impact of these risk behaviors, it is essential to develop effective prevention and intervention strategies to reduce the uptake of such behaviors during adolescence. The active involvement prevention interventions allow for tailoring the program to the adolescent audience, which fosters engagement and therefore stronger effects of the program. We first discuss the theoretical foundations of the theory. Next, we discuss different programs which have incorporated these foundations in their intervention strategies. Finally, we discuss how future programs could integrate active involvement interventions and which research avenues are still open.

Keywords: health risk behavior, active involvement intervention, prevention

1 Introduction

Adolescence is consistently recognized as a period for pronounced changes in patterns of health and increased risk-taking (Patton et al., 2009). This life stage marks the onset of many health risk behaviors, such as smoking, drinking alcohol, and having unprotected sex (Willoughby et al., 2021). These changes not only pose a threat to adolescents' immediate health and well-being but also often accelerate in the following years and can lead to disorders and other long-term consequences in adulthood (Das et al., 2016; Willoughby et al., 2021). Considering the potential for risk behaviors in adolescence to have long-term negative impacts on health and well-being, it is crucial to develop effective prevention and intervention programs to reduce the uptake of health risk behaviors during adolescence. Therefore, it is important to consider both the timing of such a program and how well the program is tailored to an adolescent audience.

Adolescents are especially likely to engage in health risk behaviors in part because their developing brains make them more susceptible to peer influence (Casey et al., 2008; Pomery et al., 2009; Steinberg, 2008). In particular, adolescents' socio-emotional system (the brain system which processes social and emotional informa-

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tion) develops faster than their cognitive-control system (the system which helps with the control of behavior). This results in increased reward and sensation seeking, especially around peers, and lowered capacity for self-regulation (Casey et al., 2008; Steinberg, 2008). Adolescents are simultaneously undergoing a marked stage of social development, as their primary socialization agents change from their parents to their peers (Oetting & Donnermeyer, 1998; Oetting et al., 1998). Socializing agents explicitly and implicitly model which behaviors are acceptable and desirable. During childhood, parents are the most important socializing agents. However, during adolescence, friendships become increasingly more meaningful, and adolescents reorient from their parents to their peers for support and to learn socially appropriate and valuable behaviors (Oetting & Donnermeyer, 1998; Oetting et al., 1998). This shift makes adolescents more susceptible to both overt and covert peer influence, which can increase the potential for them to learn risk-taking norms and engage in health risk behaviors (e.g., experimenting with substance use and sex; Friedman et al., 1985; Kobus, 2003) (see Chapter 10). In addition, advertisements, social media influencers, and entertainment media that depict risky health behaviors often target adolescents or younger audiences (Fischer et al., 2011; Ward, 2003) (see Chapters 3 and 12). For instance, the "cool" or "popular kids" are often portrayed in movies and television shows as being more promiscuous and apt to drink alcohol and smoke. A wide range of studies have found media depicting health risk behavior to predict increased risk-taking, such as smoking (Dal Cin et al., 2013), drinking alcohol (Geusens et al., 2020; Vangeel et al., 2016), or engaging in risky sexual behavior (Smith et al., 2016; Vannucci et al., 2020). For example, research by Dal Cin et al. (2007) found that watching the protagonist smoke in the movie *Die Hard* and identifying with him led to greater implicit associations between smoking and the self, and increased intentions to smoke in smokers. Not only do these characters provide negative role models for adolescents but the consequences of their risk behaviors are rarely depicted (Slater & Rouner, 2002).

Given the addictive nature of many substances like alcohol and tobacco, as well as the harm that risk behaviors can have on adolescents in the short and long-term, interventions should prevent initiation of risk behaviors (Hale et al., 2014; Salam et al., 2016). Interventions will be more effective when they reduce the likelihood that adolescents adopt new, risky health behaviors, rather than when they try to address them after new behavior patterns have emerged. It is also important that messages are perceived as credible by adolescents (Greene, 2013), and that adolescents do not perceive their personal freedom at risk. Past research has found that when adolescents feel their freedom will be taken away, they become more resistant to the message and its claims – a response referred to as *reactance* (Grandpre et al., 2003). This response increases the likelihood that the desired behaviors will be avoided, and undesired behaviors will be adopted. Interventions will thus be more effective if adolescents' sense of freedom is protected or restored. For instance, offering adolescents the opportunity to be actively involved in the process of creating the intervention, such as generating campaign materials, could reduce the likelihood of reactance and im-

prove the overall effectiveness of the intervention. This chapter will examine one such intervention approach drawing on the Theory of Active Involvement (Greene, 2013): Active Involvement Interventions.

In the first section, we will review the theoretical underpinnings of Active Involvement Interventions. In the second section, we will provide an overview of empirical findings of existing Active Involvement Interventions. This section will also present a first study in the development of the #Smokefree intervention, a newly developed intervention built following the approach of active involvement interventions. We will conclude with a discussion of some potential next steps for interventions building on this line of research. These considerations may provide health researchers and intervention practitioners with a better understanding of how the Theory of Active Involvement can be used in effective prevention and intervention initiatives to reduce adolescent health risk behavior.

2 Active Involvement Interventions: Theoretical underpinnings

In order for a prevention approach to be effective, it has been argued that it should combine age-appropriate education, group or community-based approaches, and empowerment (Park et al., 2017). One promising newer approach to combine these three aspects is the Active Involvement Intervention (Greene & Hecht, 2013). By actively involving the target audience in the process of creating the prevention intervention, the intervention is expected to result in longer-lasting effects (Greene, 2013). This is different from an approach where adolescents provide input into the intervention development. In active involvement interventions, the target audience becomes part of the intervention creation throughout.

Active Involvement Interventions can be conceptualized based on the Theory of Active Involvement (TAI; Greene, 2013; see Figure 1 for a conceptual model). This theory describes four cognitive processes that occur to change long-term target behavior. The first process is to create engagement through arousal and involvement in the intervention. An increased level of engagement is, based on the Narrative Engagement Framework, linked to increased identification, liking and perceptions of realism (Miller-Day & Hecht, 2013). Based on cognitive dissonance (Festinger, 1954) and reactance theory (Brehm, 1966), the perception of forced compliance by the participant could potentially decrease the effects of the intervention, or even create adverse effects. By creating arousal and involvement, an active involvement intervention aims to stimulate motivation to participate in the intervention and overcome potential reactance in the early stages of the intervention (Greene, 2013).

Second, the intervention aims to increase participants' knowledge about a health risk behavior as well as improve their skills to compare their positions and behaviors

with those of others or peers. Consistent with Active Learning Theory (see Prince, 2004 for an overview), developing discussion skills and engaging in perspective-taking and critical thinking activities will enable adolescents to think about what they are doing and initiate what is referred to in TAI as *reflection*, the third step in the process. Adapting participants' cognitions (risk expectancies, subjective norms, and intentions) is the final step in the Theory of Active Involvement before target behavior is adopted (see Figure 1).

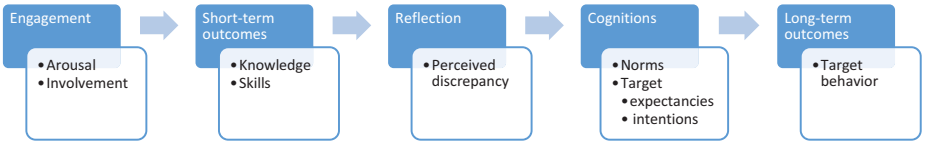

Figure 1: Conceptual model of Theory of Active Involvement (based on Greene, 2013).

By not only increasing knowledge but also stimulating perspective-taking and critical thinking, TAI involves participants in the intervention. Perspective-taking explicitly involves activities that, for example, ask participants to evaluate why a peer would choose to use (and not use) a specific substance. The critical thinking aspect of an intervention would use activities where participants generate and consider benefits and drawbacks, for example, with smoking to move beyond traditional health foci and consider cost, smell/staining, and addiction and how these aspects are in tension with social pressure. This focus on perspective-taking and critical thinking contrasts with more traditional interventions, such as, for example, social norms interventions or traditional didactic presentations, in which participants are considered more passive receivers. Participants do not merely receive information about the risk behavior, but they also receive information about how different factors in the message or the receiver (e.g., topical involvement, prior knowledge) can influence engagement and risk-taking. Even more important is that they learn the skills to discuss their positions with others and how to resist overt or covert influence from others (Greene, 2013). This active involvement approach is in line with recent co-creation attempts, whereby receivers are invited to help design the campaign or messages within a program. One advantage of such co-created campaigns is that the target audience is involved in creating the campaign and can show interest in the health issue (van den Heerik et al., 2017).

Moreover, given that the small group interactions (inherent to the perspective-taking and critical thinking training) provide the participant with feedback about their own behavior, these interactions are conceptualized to cause reflection about their own cognitions and risk behavior. This reflection will then reinforce existing cognitions or result in the adaptation of cognitions that are conflicting with some peer feedback. As such, it is not the result of the co-creation that is most important, but the co-creation process itself which is most important in TAI to facilitate perspective-taking. As a result,

TAI is appropriate for participants with different prior cognitions (Greene, 2013). That is another advantage over social norms or didactic interventions, which often employ an identical approach with different groups regardless of their prior cognitions. Although tailored health campaigns have incorporated prior cognitions in their messages (e.g., Kreuter & Strecher, 1995), Active Involvement Interventions, however, employ individual reflection as a key component.

3 Active Involvement Interventions: Examples

3.1 Media literacy interventions

Previous research has used TAI in school-based and community-based interventions that teach adolescents critical analysis and media literacy skills to engage them in the interventions and to increase their comprehension or knowledge of the media techniques (analysis phase) that are used to influence cognitions and behaviors. Second, these interventions provide the adolescents with opportunities to actively use the newly acquired media knowledge and discussion skills to engage and create their own anti-risk messages (planning phase). By discussing the topic, the adolescents move onto reflection. Adolescents engage in perspective-taking and critical thinking, which results in reflection and potential perceived discrepancy. Adolescents will start to compare their own viewpoints with that of their peer group.

First, the analysis phase is a more traditional prevention component that teaches individuals how different factors in the message, or the recipient, can influence engagement and risk-taking. Adolescents are taught information on the health risk behavior under consideration, skills to compare their position and behaviors to others (e.g., media literacy skills, refusal skills), and how their behavior can be overtly and covertly influenced by their peers, advertisers, and media (Greene, 2013). They learn to critically examine pro-risk messages, such as positively framed messages related to smoking found on social media.

The second, or the planning, phase introduces the novelty and strength of Active Involvement Interventions: after the analysis phase adolescents are invited to plan and create their own risk prevention messages (Greene & Hecht, 2013). These messages aim to counter dominant messages about risk behavior, often messages that promote positive aspects of risk behaviors. The actual production of the intervention (e.g., poster design or social media message) is subordinate to the planning of the message whereby adolescents come up with counter messages and engage with perspective-taking. In particular, adolescents apply their newly acquired skills and knowledge about health risk behaviors to actively consider and discuss the ways in which their environment can influence them, and how they can resist this influence. Because this intervention phase can be set up as a group exercise, Active Involvement Interventions encourage adoles-

cents to practice their discussion skills and engage in perspective-taking and critical thinking. Through active reflection, adolescents may alter their perceptions about their own risk behavior and ultimately reduce those behaviors (Greene, 2013). There remains a possibility that during these discussions young people learn about the health risk behavior of others, or even engage in discussions with peers in favor of this behavior. Therefore, it is important to monitor group discussions and engage participants in perspective-taking and counter-arguing.

TAI proposes three types of cognitions that are central in Active Involvement Interventions: expectancies, norms, and intentions. Risk expectancies refer to what participants believe will happen if they engage in the risk behavior (Greene, 2013). For example, an adolescent might believe that if they do not smoke a cigarette, they will be considered less cool by their peers, or that they will become addicted if they do. As such, Active Involvement Interventions can reinforce that negative (risk) outcome expectancy by hearing from other adolescents that, for example, they believe smokers are not cool. On the other hand, the perceptions of adolescents that thought that others would perceive them to be cool if they smoked can be challenged by hearing from others. As such, Active Involvement Interventions can challenge pre-existing positive outcome expectancies of the risk behavior. Active Involvement Interventions are especially interesting here because, in order to develop the counter-messages, adolescents discuss prevailing expectancies that they themselves may believe in, and actively counteract these (Greene, 2013). Thus, the curriculum is specifically designed to provide opportunities to practice refuting arguments which are pro-risk. The most popular reasons adolescents can think of in favor of the risk-behavior are included in the curriculum and counter-arguments are provided to help adolescents tackle these common pressures.

In addition, while risk-taking increases during adolescence (Arnett, 1995; Steinberg, 2008), many adolescents do not engage in health risk behaviors. Discussing the pattern of use and non-use can indicate the real behavioral norm to adolescents, which might be different from what they believe is the norm (descriptive norms). Previous research has shown that descriptive norms are important predictors of smoking initiation (Andrews et al., 2008). However, more recently scholars have also studied the effect of not only indicating descriptive norms but also the additional effect of injunctive norms: the approval of smoking by others has been shown to also predict smoking intentions (Zaleski & Aloise-Young, 2013). In research on alcohol use, Schroeder and Prentice (1998) discuss the role of pluralistic ignorance: there is a discrepancy between college students' behavior and their private attitudes because they assume that their peers' attitudes are closer to the behavioral norm. This misperception then plays a role in maintaining the risk behavior norms. As such, by exposing that their peers' attitudes (injunctive norms) are similar to their own attitudes, the behavioral norm might lose its power. TAI encourages these patterns of perceived discrepancy by engaging students in small group discussions. The role of norms also reinforces the importance of perspective-taking and counter-arguing in the interventions. Nevertheless, in this regard, it is crucial that the

participant can identify with the peer group for the intervention. Therefore, an exclusively adult-led intervention is not advised due to the absence of peer engagement (Greene, 2013).

The four elements of TAI (engagement, knowledge and skills, reflection, and cognitions) together can help adapting potential risk behavior. As such, they provide a theoretical ground for the development of effective health interventions that engage adolescents.

3.2 The YMD curriculum

Research has provided initial evidence on the effectiveness of Active Involvement Interventions. First, the Youth Message Development (YMD) curriculum is "an alcohol-targeted high school media literacy intervention delivered face-to-face by trained facilitators' (Greene et al., 2016, p. 1072). The analysis phase covered topics such as persuasion strategies, production components and message claims, evidence and counter-arguing, as well as an analysis of print substance use advertisements to stimulate discussion and application of newly acquired knowledge (Greene et al., 2016). In the planning phase of the curriculum students designed anti-alcohol posters that they believed would be effective for peers and students in their schools (Greene et al., 2016). A pilot study revealed that participants' self-efficacy to counter-argue increased when combining the analysis phase with a planning phase, where youth designed anti-substance messages in groups (Banerjee et al., 2015). This first study indicated the importance of combining an analysis phase with a planning phase. Next, in their formative study partnering with a community group, Greene et al. (2016) found that participants and mentors thought that the YMD curriculum, which combined an analysis phase with a planning phase (analysis + planning curriculum), was more interesting, engaging, and novel compared to the a curriculum only including the analysis phase. Given that engagement is a crucial first step in the Theory of Active Involvement (see Figure 1), this outcome supports the potential of an Active Involvement Intervention that includes planning and not just the analysis components, to create more engagement. Moreover, these perceptions were associated with increased critical thinking about the impact of advertising on themselves ("novelty: $r = .24$, involvement: $r = .47$, $p < .001$" (Greene et al., 2016, p. 1073)), lower alcohol use intentions ("involvement: $r = -.15$, $p < .01$" (Greene et al., 2016, p. 1073)), and fewer positive expectations of the effects of alcohol use ("involvement: $r = -.16$, $p < .01$" (Greene et al., 2016, p. 1073)).

After creating engagement, the idea of Active Involvement Interventions is to increase knowledge and improve skills (see Figure 1). In the YMD curriculum, this is done by participating adolescents in a planning phase. A content analysis of counter-advertisements created by the participants of the YMD pilot test (high school with an additional group of college students) (Banerjee et al., 2013) revealed that adolescents focus on negative consequences and negative-positive comparisons of using alcohol, rather than on positive consequences of not using alcohol. The focus of the created

messages was primarily on the short-term consequences of alcohol use (e.g., vomiting or hangovers) rather than on long-term consequences (e.g., liver damage). This is in line with delay discounting: the long-term consequences were potentially not valued by the adolescents because they are delayed and not immediately visible (Reynolds & Fields, 2012). Moreover, most of the posters used the persuasive strategy of fun but not sex and glamour or endorsement, despite the variety of these strategies that were included in the intervention content. Banerjee et al. (2013) suggest that these other persuasive strategies might be more difficult to produce in a short time which should be taken into account in future interventions.

3.3 The REAL media curriculum

The YMD curriculum was then adapted to create REAL media, "a self-paced, interactive, electronic-learning format" that no longer focuses solely on alcohol but also on tobacco and other drugs (Ray et al., 2019, p. 2). In five lessons, the REAL media curriculum aims to increase adolescents' knowledge of advertising techniques used to sell alcohol, tobacco, and other drug products, develop counter-arguing and critical-thinking skills in response to these products, and help them apply these skills in the creation of anti-substance use messages that they submit to a social media contest (REAL prevention).

Greene et al. (2020; 2021) tested the effects of participation in the REAL media curriculum in conjunction with a different community youth group. First, 639 middle adolescents completed a series of three online surveys. All participants received a pretest (Time 1) and were then randomly assigned to use REAL media or to serve as a control group. The intervention users completed an immediate posttest after using REAL media (Time 2). After three months, all participants (intervention users and control group) received another posttest (Time 3). Another posttest survey was conducted at 9 months (6 months after the intervention) (Time 4) after which the control group could also use REAL media. "Self-reported engagement was positively related with time 3 self-efficacy to counter-argue ($\beta = .13$, SE = .06, $p = .04$)" (Greene et al., 2021 p. 252). At time 3, participants' self-efficacy to counter-argue was significantly higher ("B = 0.12, SE = 0.06, $t(1834.5) = 2.01$, $p = .04$" (Greene et al., 2020, p. 5). Moreover, participants perceived significant other's approval to be less positive at time 3 ("B = −0.10, SE = .04, $t(1615.4) = -2.38$, $p = .02$", (Greene et al., 2020, p. 5); thus, the role of positive injunctive norms decreased. However, descriptive norms were unaffected.

Finally, Peña-Alves et al. (2019) report on a content analysis of the messages produced by REAL media participants. Messages were characterized as narrative (a character that is faced with a challenge may loosely resemble a story), informative (various characters or themes are used but not in story-form), or statistical (contains information about the relative risks of negative consequences). Most of the messages were informational (93.7%) in form rather than narrative (8.4%) or statistical (4.2%). Similar to

the findings of Banerjee et al. (2013), most messages presented negative health consequences of substance use. Moreover, most messages used a mix of different claims; the fear-claim was the most popular message appeal, of which risk of death was most common. Moreover, the use of comparisons between substance use and non-substance use was also frequently used as many messages seemed to juxtapose negative behavior with positive. The four persuasion strategies covered in the curriculum were also present in the messages, with fun with the group being the most popular, which is in line with the findings of Banerjee et al. (2013).

Moreover, Mandal et al. (2021) explored the engagement with messages that resulted from the REAL media contest and were shared on the Facebook contest page. Two types of messages were considered: stop and prevent messages. Stop messages focus on persuading others to stop substance use, whereas prevent messages focus on the prevention of substance uptake by non-users. Their analyses indicate that engagement rates were higher with stop messages compared to prevent messages. The authors conclude that prevention curricula might benefit from adopting different dissemination strategies for stop and prevent messages.

3.4 The #Smokefree curriculum

The #Smokefree curriculum is currently being developed as an Active Involvement Intervention to prevent adolescents' (13–15-year-olds) smoking initiation or uptake. It is based on the face-to-face YMD curriculum (Greene et al., 2016) and the REAL media curriculum (REAL prevention). The #Smokefree curriculum aims to adopt a three-phase approach, and thus adds a third phase to the analysis and planning phases used in the YMD curriculum, similarly to the REAL curriculum. In the analysis component of the #Smokefree curriculum participants will learn to discern different factors influencing engagement in risk-taking (e.g., peer influence, media influence) and improve their decision-making skills when confronted with the opportunity to try smoking. Second, the design and planning activities of the intervention encourage discussions with peers, perspective-taking, and self-reflection, focusing on anti-risk and pro-health messages. Third, the activity of sharing the self-created anti-risk messages on participants' social media offers additional opportunities to mitigate attitudes and norms. It can be expected that by creating and then sharing counter-argument messages on social media, adolescents may unconsciously alter their personal risk-related expectancies and behaviors. Such a finding could be explained by the Public Commitment Theory (Kiesler & Sakumura, 1966), which proposes that by sharing their self-created messages publicly and identifiably, adolescents are committing to the idea proposed in their message. In the social media context, Valkenburg (2017) also named this "social media self-effects," which entails the idea that people can affect their own beliefs and behaviors by how they self-present online because such presentations are then internalized. It has even been argued that self-effects might be stronger when resulting from *online* self-presentations

compared to *offline* self-presentations, because the self-presentations are communicated to a larger audience and are more permanently available and visible (Carr et al., 2021; Valkenburg, 2017). Thus, communicating counter-messages through social media could be even more effective than when they are only created as part of the Active Involvement Intervention but not shared (such as with YMD). Furthermore, when counter-messages are shared on social media, they might not only affect the adolescents who create and share the message, they might also reach a broader audience of adolescents whose schools do not participate in prevention programs. The sharing of these messages further spreads the information, which can reinforce the prevention message (Banerjee et al., 2015). Nevertheless, some adolescents might be unwilling to share their self-created messages exactly because it creates a public commitment and implies a specific self-presentation. Adding this third step introduces a novel and fruitful direction for future research on Active Involvement Interventions that requires an understanding of adolescents' willingness to share their created messages and which types of adolescents share.

Because engagement is a necessary first step in the success of Active Involvement Interventions, it is crucial to examine adolescents' perceptions of this type of prevention intervention because they also determine an intervention's effectiveness (Keller & Lehmann, 2008). Given these insights, it is remarkable that a recent meta-analysis on the effectiveness of school-based anti-smoking prevention curricula indicated that none of the examined intervention studies reported focus groups, surveys, or design workshops to ask for student evaluations on the intervention content and format (Thomas et al., 2015). Both the YMD and REAL media curricula have been developed using extensive formative research (Greene et al., 2016; Ray et al., 2019). As a result, we believe a first step in the development of the #Smokefree curriculum should be to test how adolescents would perceive such a curriculum. Moreover, understanding adolescents' perceptions of this type of prevention intervention allows health practitioners and intervention researchers to develop more target-appropriate prevention interventions.

In an interview, participants from Flanders (Belgium) (n = 52, 46.1% boys, age range 13–16, 71.1% in general education) were asked to evaluate existing smoking prevention strategies, and specific campaigns (not discussed in this chapter). Then, participants were asked to assess the attractiveness and feasibility of Active Involvement Smoking Prevention Interventions to obtain their different perceptions of this type of interventions. First, the interviewer briefly explained the phases (analysis, planning, and sharing) in such an intervention. Respondents were then asked how they perceived the three phases and whether they would like to participate in such an intervention. In this part of the interview, we also explored how they felt about the social media component of the intervention, and whether they would be willing to share their own creations through their own social media channels. After transcription of the interviews, NVivo coding software was used to code the data. We followed the guidelines for inductive thematic analysis (Braun & Clarke, 2006). Recurring themes

that emerged from the interviews were identified, and overarching themes were constructed from related initial themes. Finally, these themes were reviewed, defined, and labeled.

Overall, the adolescents in our sample were open to receiving a school-based smoking prevention program, in general. They indicated that, at the moment, their school has a smoking ban but does little else to prevent students from smoking. Some adolescents mentioned existing school-based initiatives, such as in-class conversations with teachers, guest speakers, and posters to reinforce the ban on smoking but almost all adolescents believed more should be done in school to reduce tobacco uptake.

When explaining how an Active Involvement Intervention works, adolescents were convinced that discussing media depictions of smoking (e.g., advertisements or movies) could affect their and others' behavior. They pointed out that having friends advocating not to initiate smoking would be especially influential. Moreover, the first phase of the intervention would also provide them with information they currently feel they are missing, such as about what happens to their body if they smoke, the economic impact of addiction, or debunking myths.

Although many adolescents were open to receiving this information, at the same time they also acknowledged that the information might not affect everyone equally. There was disagreement among the respondents regarding whether or not the information provided in the first phase of the intervention would work for smokers and those who have already developed a more positive attitude towards smoking. Respondents who smoked or experimented with smoking explicitly mentioned that the intervention's first phase would not affect them because they do not want to be told what to do. This is contradictory to the TAI framework (Greene, 2013) which indicates that given the adaptive nature of Active Involvement Interventions these engaging interventions with planning could be effective regardless of the adolescents' cognitions prior to the intervention. These findings give rise to caution in the future development of the #Smokefree curriculum because adolescents believe this type of intervention could also initiate reactance.

The perceptions of the design phase of the Active Involvement Intervention in which adolescents would be tasked with developing their own counter-messages were overall very positive, especially among non-smokers. Adolescents enjoyed the idea of creating their own campaigns because they can use their creativity, because they believe their campaign can help other people, or because they believe smoking prevention is an important cause. This shows that they are both intrinsically and extrinsically motivated to participate in the task. Only a few adolescents, especially the smokers, expressed that they would not like to develop their own counter-messages. Furthermore, adolescents believed that their self-developed campaigns would be beneficial to others because they are the best experts on the wants and needs of their peers. They argued the importance of depicting peers in these campaigns and of using adolescent language and phrasing. At the same time, there was also the concern that some participants would create a campaign that promotes smoking instead of demoting smoking.

Currently, campaigns created as part of an Active Involvement Intervention are typically only shared within schools or groups (e.g., by hanging the posters in the hallways or sharing within a social media group). We asked participants whether they would be open to share their campaigns on their own social media as well. Because they created the campaigns themselves, most adolescents expressed that they would share their own campaigns on their social media channels. Adolescents mentioned they would be proud to show what they made and would want to inform and persuade as many people as possible. These responses further demonstrate adolescents' social consciousness and desire to help others, and the benefits they see in these types of interventions to reach these goals.

The adolescents expressed that one of the main reasons they would not want to share their campaign was because they were insecure and self-conscious about the quality of what they created. Some adolescents doubted whether to share their campaign primarily because they would want some confirmation that their campaign is actually good. The adolescents who indicated that they did not want to share such a campaign mentioned a willingness to share it in private messaging. However, most did not want to look like they were bragging, or they did not want to involve others in what they were doing at school.

4 Implications for intervention development

This chapter explored the possibilities of using an Active Involvement Intervention to reduce adolescent health risk behavior. Previous research (see Greene et al., 2017 for an overview) has indicated that using an active involvement approach in health intervention programs for adolescents seems promising. Our findings concur that (non-smoking) adolescents are open to this approach and are convinced that peer discussions about how smoking is portrayed in the media will affect them. Moreover, they would appreciate the information gained from the analysis phase and would enjoy the design and planning phase of the intervention. Notably, adolescents stressed the idea of not being pressured and to retain their autonomy during such an intervention. This reinforces the potential for an Active Involvement Intervention because the discussions are peer-led, rather than adult-led (e.g., by teachers or parents). However, it also seems important that clear instructions are given and that someone is appointed as the moderator of the discussions to keep the adolescents on track. This is particularly important because some adolescents worried that others would use these discussions to promote risk behavior instead of preventing it. Considering the importance of developing perspective-taking and critical thinking skills in these discussions, pro-risk messages could also be an opportunity to dissect and negate these messages and strengthen the counter-argument even further. Moreover, there are also indications that, especially adolescents who already engage in smoking would still react nega-

tively toward an Active Involvement Intervention. They are asked to engage in an activity that contradicts their own behaviors and cognitions. This potentially indicates that this type of intervention might be primarily effective to prevent, or delay, risk behavior rather than stopping the behavior altogether. Future research and interventions should take this into account, in particular how to adapt the intervention based on current risk behavior (e.g., non-initiated, experimenters, and regular users). Moreover, future intervention projects should carefully consider the timing of their interventions since it will be most effective before typical age of onset of the risk behavior.

A potential future avenue to further develop Active Involvement Interventions is to incorporate social media. Although both in-class and online curricula are currently being distributed, the anti-risk messages resulting from the Active Involvement Intervention are only being displayed within participating groups (schools or Facebook community) (Greene et al., 2017). Encouraging adolescents to share their self-developed counter-messages could potentially further reinforce the prevention effect of this type of prevention intervention. In an offline context, Banerjee et al. (2015) found that interpersonal communication about the intervention strengthened the effects of the intervention on self-efficacy to counter-argue. An increasing number of studies have demonstrated that online communication about risk behavior can alter individuals' risk-related cognitions and behaviors (e.g., George et al., 2021; Geusens & Beullens, 2017; Moreno et al., 2013; Moreno et al., 2018; Unger et al., 2018), albeit usually studied from a risk-encouraging perspective (e.g., sharing pro-alcohol messages on social media can increase alcohol consumption; Moreno et al., 2013). Building on this line of work, it can be expected that by creating and then sharing counter-argument campaigns on social media, adolescents may unconsciously alter their personal risk-related beliefs and behaviors. This would be in line with the Public Commitment Theory (Kiesler & Sakumura, 1966) and with the idea of social media self-effects (Valkenburg, 2017). By communicating, counter-messages through social media could be more effective because they are shared with others in the adolescents' social media networks.

Campaign messages created by adolescents may be particularly effective in convincing other adolescents because the messages will use peer or colloquial language and will address topics that they find important, which will make the messages more personal and targeted. Research on personalization (De Keyzer et al., 2022) and targeting (Youn & Shin, 2020) of social media advertisements has shown that more personalized advertisements increase the relevance of an advertising message. As such, we would argue that using language that targets adolescents would increase the relevance of a message and therefore engagement with the message, and this engagement would subsequently increase the likelihood of the intervention having effects beyond the participant group. Moreover, this approach would more effectively draw on social norms, as counter-messages would be created and shared by actual peers within the age group instead of by health practitioners and government institutions using professional models. Indeed, opinions, norms and behaviors communicated are more likely

to be adopted when they are presented by someone similar to oneself (i.e., an actual peer; Festinger, 1954).

At the same time, it is important to consider the potential for boomerang effects of the intervention – especially of the self-created messages – because these messages might not be the most effective appeals or strategies in line with previous research. For example, as shown in the content-analysis of Peña-Alves et al. (2019), despite intervention content advocating for other approaches, adolescents seem to resort to fear appeals when creating their own campaigns and messages. However, previous literature reports at best mixed effects of the use of fear appeals (Kok et al., 2018). Particularly, in line with Reactance Theory (Brehm, 1966), using fear might not be effective because adolescents, in particular, might react towards the feeling of being persuaded and limiting their decisions. This motivation was evident throughout the interviews, in which adolescents mentioned the importance of having the freedom to pursue their own choices and not feel pushed or persuaded.

5 Future research suggestions

To our knowledge, most research has primarily focused on testing the immediate, short-term outcomes (e.g., increased engagement, self-efficacy) of Active Involvement Interventions. For instance, Greene et al. (2015) have developed measures for testing involvement with intervention, personal reflection, perceived novelty, and critical thinking which can be used to test the immediate outcomes of an Active Involvement Intervention. However, as the Theory of Active Involvement depicts different underlying cognitive processes leading up to behavior(-al intentions), it is necessary for future research to test the downstream and long-term effects of these interventions. Although there are preliminary findings that indicate that this approach can affect perceived injunctive norms (Greene et al., 2020; 2021), more research is needed to examine the effects of these interventions on reflection, cognitions, and target behaviors.

Without longitudinal research into Active Involvement Interventions, it is unclear what the long-term effects are or what potential boundary conditions exist for these types of interventions. For instance, there could be a need to repeat this intervention regularly or over a series of months to boost or maintain the intervention's effectiveness. Indeed, research has found that repetition is crucial in sustaining health behavior (Gilbert et al., 2011). Therefore, future research should investigate the effects of intervention repetition, for example, by examining the appropriate interval rate of administering the intervention or the use of boosters. Repeating the Active Involvement Intervention could, on the other hand, stop decay effects. However, wear-out can also take place when people get used to, in this case, a specific type of intervention (Woelbert & D'Hombres, 2019). Since the Theory of Active Involvement suggests that arousal is created by the novelty of this type of intervention, it is crucial to exam-

ine what happens with repeated exposure to this type of intervention. As such, future research investigating the repetition rate should also take the possibility of wear-out effects into account.

We further suggest that future research also explores for which age group(s) this active involvement prevention intervention can be best utilized. Media and advertising literacy interventions, for example, focus on creating the necessary skills and abilities to recognize, interpret, and critically evaluate media and advertising (Hudders et al., 2017). The development of media and advertising literacy is built gradually through life (Friestad & Wright, 1994) as children develop cognitively (Hudders et al., 2017). To control cognitions, which are necessary for a critical evaluation of media and/or advertising, requires self-control, resistance to interference, attention, and working memory (Moses & Baldwin, 2005). These skills, referred to as executive functioning skills, develop during childhood and adolescence, with a peak around the age of 15. This implies that for young children, Active Involvement Interventions might be less suitable as this age group is not able to perform the cognitive skills that are required to obtain the theorized effects. As such, it is essential to find the right balance between age of onset and developmental skills and further research is thus needed to find the right timing for interventions to reduce risk-behavior most effectively.

Finally, most research on Active Involvement Interventions has focused on reducing substance use (Greene et al., 2017; Krieger et al., 2013). Nevertheless, Catona (2015) studied the potential of using Active Involvement Interventions with older adults to engage in fall prevention. As a result, future research is encouraging to employ the Theory of Active Involvement in other health communication contexts.

Taken together, Active Involvement Interventions may provide a uniquely effective way to prevent risk behaviors in adolescents. Although more research into this intervention approach is needed to parse out when and under what circumstances the interventions will be effective – as well as identify their potential boundaries – the theoretical underpinnings and preliminary evidence of this intervention approach suggests that such research would prove a fruitful endeavor.

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