Introduction
Alcohol use among children and adolescents is of particular concern to policy makers, since these youngsters are facing disproportional physical and social alcohol-related harm (Boelema et al 2009). There is increasing evidence that exposure to media and alcohol marketing is associated with the likelihood that adolescents will start to drink alcohol, and with increased drinking amongst those who already drink alcohol (Anderson et al 2009). This association is not found for the population as a whole. This fact sheet describes reasons, found in the literature, why adolescents are in particular vulnerable to exposure to the influence of alcohol advertising and promotion.

Adolescents’ vulnerability to alcohol-related harm
The use of alcohol has negative individual and social consequences. Especially, adolescents are disproportionally vulnerable to alcohol-related harm. Three main consequences of adolescents’ alcohol use can be distinguished:
1. Recent tests with animals as well as humans suggest that alcohol can create functional and structural harm to the developing brain of adolescents (Boelema et al 2009; Verdurmen et al 2006);
2. Adolescents’ early onset of drinking is associated with later alcohol dependence and use, abuse/dependence on other drugs (Pitkänen et al 2005; Hingson et al 2006; Grant et al 2006; Grant et al 1997);
3. In the short term, adolescents’ alcohol use increases the likelihood of involvement in aggressive behaviour, and possibly involvement in risky sexual behaviour and accidents (Boelema et al 2009).

Adolescents’ vulnerability to alcohol advertising
Most studies that study the relation between alcohol marketing expenditures and alcohol use in a population, provide little evidence of an effect of alcohol advertising on alcohol sales (Hastings et al 2005). This suggests that alcohol advertising does not have a significant effect on the population as a whole.

There is, however, increasing evidence that exposure to alcohol marketing is one of the environmental factors that has a moderate but significant influence on drinking behaviour of adolescents. Although variation in the strength of association was found in different studies, recent research that study the long term impact of individuals consistently suggest that exposure to media and alcohol marketing is associated with the likelihood that adolescents will start to drink alcohol, and with increased drinking amongst baseline drinkers (Anderson et al 2009; Smith & Foxcroft 2009).

A short term effect of exposure to alcohol marketing was found in a recently conducted experiment by Engels and colleagues (2009). Male adolescents who were assigned to the conditions with substantial alcohol exposure in either movies or commercials consumed more alcohol than other participants. Those in the condition with alcohol portrayal in movies and commercials drank on average 1,5 glasses more within a period of 1 hour, than those in the condition with no alcohol portrayal.

The special vulnerability of adolescents to advertising was also found towards advertising of other products. Pollay and colleagues (1996) found that cigarette brand specific advertising expenditures had three times more influence on brand shares among adolescents than among adults. This is in line with a study by Tangari and colleagues (2007) that found a stronger relationship between the number of campaign ads recalled and beliefs on smoking for adolescents than for adults.

Brain response to advertisements and brands
Although technologies necessary to create visual representations of processes in the brain are developing rapidly (Wilson et al 2008), neuroscience on marketing practices are still not fully developed (Pechmann et al 2005). Existing research demonstrated that there is a significant effect of brand knowledge on brain response and expressed preference among adults (McClure et al 2004). When respondents tasted Coca Cola and Pepsi blindly, participants relied on different regions in the brain when brand information or purely sensory information
was presented during choice. In the experiment in which respondents knew the brand, brand knowledge of one of the drinks had a dramatic influence on expressed behavioural preferences and on measured brain responses (McClure et al 2004). Differences in response to brand knowledge and advertisement between adolescents and adults have not been measured yet.

**Adolescents’ brain response to advertisements and brands**

Already by four to six years of age, children have an appreciation of the persuasive and promotional intent of advertisements (Moses & Baldwin 2005). Children from this age understand that advertisers wish to promote their product and that positive biased information is given. Although young people may have a well-developed sense of the intentions underlying advertising, unless children and adolescents access that knowledge and keep it in mind, they may fail to guard against advertising’s potentially adverse effects on drinking behaviour (Moses & Baldwin 2005). In this regard, adolescents may respond differently to advertisements from adults due to the late maturing of the brain system. In the paper by Pechmann and colleagues (2005) possible reasons for vulnerability to marketing efforts of harmful products are described: impulsiveness and self-consciousness of adolescents.

**Impulsiveness**

Adolescents’ ability to resist immediate impulses is not yet fully developed due to a weak inhibitory control. Neuroscience research indicates that the prefrontal cortex, which is critical for inhibitory control, is not fully developed until late adolescence or early adulthood (Pechmann et al 2005). Research suggests that adolescents’ weak inhibitory control is a significant predictor of taking risky decisions and actions. Additionally, hormonal levels and hormonal receptivity are raised during adolescence, which may create negative emotions (e.g. feelings of depression and stress). Generally, people with emotional distress value short-term pleasures that may relieve their distress. Already having a weak inhibitory control, when experiencing negative emotions, adolescents’ may indulge in immediate impulses and may use risky products. This impulsivity makes adolescents far more vulnerable to use risky products such as alcohol. Alcohol might be especially attractive to young people if advertisers picture alcohol as a product associated with thrill seeking and immediate gratification (Pechmann et al 2005).

**Self-consciousness**

Due to the maturing of the brain, adolescents develop the capacity to engage in abstract thoughts. Abstract reasoning about the own and other people’s thoughts may create social threats that were never considered earlier (Pechmann et al 2005). Two main challenges perceived by adolescents are forming a personal identity and fitting in socially with peers (Pechmann et al 2005). The increased feelings of self-consciousness and self-doubt during adolescence tend to make them more receptive to image advertising and heavily advertised high-status brands. Due to their insecurity, adolescents need to rely on consumption symbols for self-expression and self-worth and to manifest materialism to a greater extent than adults.

**Policy implications**

Media literacy training is an often used tool to decrease the influence of alcohol advertising towards young people. Media literacy training is, however, often not adequate to change drinking behaviour of young people directly (Epstein et al 2008; Yates 2001). Adolescents already understand the persuasive intent of advertising (Moses & Baldwin 2005). Well conducted media literacy training can heighten adolescents’ vigilance towards alcohol advertising (Goldberg et al 2006). Experiments have found that media literacy training successfully decreased adolescents’ beliefs associated with risky behaviour. However, simultaneously, their positive attitude toward individuals portrayed in advertising increased (Austin et al 2007). Moreover, even if adolescents know that claims about a product are positively biased, they may nonetheless purchase or consume the product against their better judgement due to weak inhibitory control or decision making (Moses & Baldwin 2005).

Like the European restriction of tobacco advertising, policy makers may consider to restrict alcohol advertising to protect adolescents against the harmful effects of exposure to alcohol advertising (Anderson 2009). Allowing only alcohol advertising in which product information is shown can be a first step to limit the harmful consequences of adolescents’ vulnerability to advertising that show images which are perceived as attractive by adolescents.

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References
