

OFF LIMITS

THE EFFECTIVENESS OF AGE LIMITS IN REDUCING UNDERAGE SALES

JORDY GOSSELT



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IN REDUCING UNDERAGE SALES.

Jordy F. Gosselt

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CHAPTER 1

GENERAL INTRODUCTION: ADOLESCENTS AND RISKY PRODUCTS

Parts of this chapter are based on:
Gosselt, J.F., Van Hoof, J.J., & De Jong, M.D.T. (2011).
Adolescents and risky products: licensing and supply practices.
Encyclopedia of Addictive Behaviors, in press.

INTRODUCTION

Some products in the modern world are associated with risks. The potentially negative effects of drinking alcohol, smoking tobacco, using illicit drugs, gambling, and exposure to violent or otherwise detrimental movies or games are widely acknowledged. Risks may involve harm to people's mental or physical health and/or their social well-being. These risks may be especially valid for specific groups in society. Societies generally aim to protect children and adolescents from risky products. In order to reduce underage sales, so-called age limits have been introduced in many countries.

This first chapter will introduce the subject of this dissertation. First, I will outline the products that can be regarded as detrimental to the physical and/or mental health of adolescents. Because this dissertation focuses on the use of risky products by adolescents, I subsequently will briefly describe the adolescence phase and explain why this phase is critical when it comes to the consumption of risky products. The next section discusses the availability of risky products. I argue that availability is one of the most prominent factors influencing the consumption of risky products by adolescents and distinguish between four types of availability: physical, economic, social, and legal availability. To control availability (in particular, physical, economic, and legal availability), three main types of regulations may be used, depending on the role of the parties involved (i.e., government vs. industry): governmental legislation, self-regulation, and co-regulation. Co-regulation can be seen as a combination of the first two types of regulation. This chapter concludes with an introduction of the concept of age limits, followed by an overview of the age limits that are currently employed in the Netherlands and the underlying Dutch legislation and/or regulations designed to prevent underage use of risky products.

RISKY PRODUCTS

Consequences and prevalence

Many risky products involve risks that are associated not with moderate and incidental use, but rather with prolonged and/or excessive use. Three general tendencies, however, are relevant in this respect. First, habituation and addiction

are important risk factors for the use of most risky products. Consumers may become accustomed to, or even physically or mentally dependent on, such products (Grant, Scherrer, Lynskey, Lyons, Eisen, Tsuang, True, & Bucholz, 2006). Second, research has shown that early use of risky products is a strong predictor of problematic use during adulthood (e.g., Paschall, Grube, & Kypri, 2009; Popova, Giesbrecht, Bekmuradov, & Patra, 2009). Third, the consumption of different risky products may be related; the use of one risky product may lead to the use of another. For example alcohol use predicts tobacco use and vice versa (e.g., Jackson, Sher, Cooper, & Wood, 2002), or, according to the so-called 'gateway theory of drug use', the use of entry drugs (e.g., alcohol, cigarettes) may eventually result in more severe and illicit drug use (e.g., marijuana, ecstasy, or cocaine).

Below, I distinguish between five types of risky products: alcohol, tobacco, illicit drugs, gambling products and detrimental media. I will discuss these products and explain briefly why they should be regarded as problematic.

Alcohol

Alcohol is the number one recreational drug in the world and can be divided into the categories of beer, wine and distilled alcohol. It is embedded in social life in many countries, and positive effects have been reported for moderate use. For example, moderate consumption of alcohol may fight coronary heart disease (Bagnardi, Zatonski, Scotti, La Vecchia, & Corrao, 2008). However, there are several risks associated with alcohol consumption. In the short term, alcohol use may lead to traffic accidents (Sindelar, Barnett, & Spirito, 2004), involvement in fights (Macdonald, Cherpitel, Borges, DeSouza, Giesbrecht, & Stockwell, 2005), unprotected sex (Sen, 2002), and intoxication (Wilsterman, Dors, Sprij, & Wit, 2004). Long-term excessive alcohol consumption is known to negatively affect physical health (Graham, Leonard, Room, Wild, Pihl, Bois, & Single, 1998; Anderson & Baumberg, 2006), mental health (Brown, Tapert, Granholm, & Delis, 2000; Tapert, Brown, Kindermann, & Cheung, 2001; Grant & Dawson, 1997), and social relationships (Graham, Bernards, Knibbe, Kairouz, Kuntsche, Wilsnack, Greenfield, Dietze, Obot, & Gmel, 2011; Bushman, 1993; Holder & Wagenaar, 1994; Graham et al., 1998). When these negative outcomes occur, addiction is often involved (Grant et al., 2006). Alcohol use during pregnancy may cause birth defects (Gallicano, 2010).

Adolescent alcohol use is associated with an important additional risk: alcohol use at young ages may lead to permanent brain damage (Sowell, Trauner, Gamst, &

Jernigan, 2002; Medina, Schweinsburg, Cohen-Zion, Nagel, & Tapert, 2007), as the brain is still developing during adolescence. Therefore, in many ways, alcohol consumption at a young age can exert a decisive influence over the rest of an individual's life.

In 2009, nearly 80% of the Dutch population consumed alcohol (this figure constitutes a decrease from statistics obtained for 2001 and 2005, when 85% of all inhabitants consumed alcohol) and 10% were heavy drinkers (CBS, 2010). Consumption increases with age. In 2009, 41% of twelve-year-old adolescents had consumed alcohol, and 54% of adolescents consumed alcohol by the age of thirteen and 70% by the age of fourteen. Within the 15- to 25-year-old age group, 85% reported that they drink alcohol and 18% were heavy drinkers (Trimbos, 2011). In addition to the percentage of respondents who indicated that they had consumed alcohol at some point in their lives, the percentage of respondents who reported that they had consumed alcohol in the last month also increases with age (10% for 12-year-olds, 20% for 13-year-olds, 39% for 14-year-olds, and 60% for 15 year-olds). Of the 15- to 25-year-olds, 7% reported that they had consumed three glasses or more of alcohol per day (CBS, 2010). In general, differences exist between the consumption levels of boys and girls (e.g., Dijck & Knibbe, 2005).

Tobacco

Despite governmental attempts to reduce tobacco consumption, tobacco products are still very popular worldwide. It is generally recognized that tobacco products are addictive and have detrimental effects on tobacco users and their immediate environment (passive smoking) (Hatsukami, Stead, & Gupta, 2008). In the short term, smoking may lead to allergic reactions and respiratory problems. In the long term, tobacco use may cause heart problems (McBride, 1992), lung cancer (Peto, Darby, Deo, Silcocks, Whitley, & Doll, 2000), emphysema (Auerbach, Cuyler Hammond, Garfinkel, & Benante, 1972), and strokes (Robbins, Manson, Lee, Sattersfield, & Hennekens, 1994). Longitudinal research conducted over a 50-year time period showed that half of lifetime smokers will eventually die from their habit, and half of these deaths will occur in middle age (Doll, Peto, Boreham, & Sutherland, 2004). Smoking during pregnancy may cause birth defects impacting the fetus's growth and development (Davies, Gray, Ellwood, & Abernathy, 1976).

Most smokers start at a young age, and, therefore, the first years of adolescence are important. Studies show that adolescents may be particularly vulnerable to various aspects of nicotine dependence (Kota, Robinson, & Imad, 2009) even after minimal

tobacco exposure (Kandel & Chen, 2000) and that early users are less successful in their attempts to quit (Substance Abuse and Mental Health Services Administration, 2004; Chen & Millar, 1998). In sum, the earlier someone starts smoking, the higher the chance of long-term addiction.

Worldwide, the prevalence of smoking varies greatly, from less than 5% to more than 55% in different countries (Hatsukami et al., 2008). In the Netherlands, 27% of the population reported that they smoked in 2009 (CBS, 2010). Among children younger than 15 years old, less than 4% were smokers, but this percentage increases dramatically within the 15- to 25-year-old age group (29% indicate that they smoke, and of these respondents, 12% can be regarded as heavy smokers).

Illicit drugs

Apart from alcohol and tobacco, which are legal in most countries, many illicit drugs are available. The main types of drugs are opiates (e.g., heroin), cocaine, cannabis, and amphetamine-type stimulants (e.g., ecstasy, amphetamines, and methamphetamine). Cannabis is the most widely cultivated, trafficked and abused illicit drug (UNODC, 2010).

A large body of evidence has confirmed the potentially detrimental health effects of all illicit drugs. Early cannabis use is strongly associated with subclinical psychotic symptoms (Schubart, Van Gastel, Breetvelt, Beetz, Ophoff, Sommer, Kahn, & Boks, 2011). Furthermore, adolescents who use illicit drugs are more likely to demonstrate aggressive and delinquent behavior (Verdurmen, Monshouwer, Van Dorselaer, & Vollebergh, 2005), suffer from problems at school (Ter Bogt, Van Lieshout, Doornwaard, & Eijkemans, 2009), and use other risky products, such as tobacco and alcohol and hard drugs. The degree to which illicit drugs are addictive appears to vary by substance. An additional problem caused by illicit drug use is that it is closely connected to illegal and criminal environments.

Recent figures (Trimbos, 2011) indicate that cannabis consumption among Dutch adolescents (15 and 16 years of age) is decreasing, but is still high in comparison to the overall European level. In 2009, about a quarter of the Dutch population had used cannabis at some point in their lifetime (26%). The percentage of recent users in the 15- to 24-year-old age group was almost twice as high as in the 25- to 44-year-old age group and eight times higher than in the 45- to 64-year-old age group. In addition, European figures show that cannabis use is largely concentrated among young people (15–34 years old), with the highest incidence of

use last year occurring among 15- to 24-year-olds (European Monitoring Centre for Drugs and Drug Addiction, 2010).

Gambling

Due to the increasing accessibility and availability of gambling via the Internet, in addition to more traditional forums, gambling is one of the fastest-growing industries in the world (Monaghan, Derevensky, & Sklar, 2008). Gambling is practiced as a leisure activity in, for example, casinos, lotteries, private settings, or online. Depending on the national context, some of the gambling opportunities are legal and others are illegal.

Research has demonstrated that gambling can be an addictive activity (Jacobs, 1986). The addiction urges gamblers to continue playing, even if they cannot afford to. Obsessive or irresponsible gambling may cause severe problems, such as increased mood and personality disorders, suicide ideation and attempts, domestic violence, alcohol and drug abuse, health problems and juvenile crime (Magoon, Gupta, & Derevensky, 2005). Juvenile crimes include truancy, selling drugs, shoplifting and stealing money (Magoon et al., 2005). Problem gambling is usually defined by the harm that is caused to the gambler or his/her environment, rather than by the gambler's behaviors. Furthermore, gambling often precedes other risky behaviors, possibly serving as a gateway behavior (Magoon et al., 2005). People who begin gambling at an early age have an increased likelihood of engaging in pathological gambling in the future and participating in other problem behaviors (Magoon et al., 2005; Felsher, Derevensky, & Gupta, 2004). Research suggests that problem gamblers typically develop these behaviors during adolescence (Monaghan et al., 2008).

A recent survey among 1,659 Dutch participants showed that 59% of the interviewees had taken part in one or more gambling games (IVO, 2010). When categorizing these gamblers according to the Problem Gambling Severity Index (PGSI), it appears that 90.7% were considered non-problematic gamblers, 7.6% were low-risk gamblers, 1.4% were moderate-risk gamblers, and 0.4% could be classified as problem gamblers. Different types of gambling activities are associated with differing patterns of addictive behavior, but, in general, most problem gamblers are unmarried males between 30 and 50 years old, lower educated people, and non-western foreigners (De Bruin, Meijerman, Leenders, & Braam, 2006).

Detrimental media

Media products can also be considered risky products, because movies, television programs and video games often contain potentially harmful elements. The risk of media products is usually defined in relation to the media user's age. In particular, sexually explicit and violent media content is considered harmful to children and adolescents. Several studies found that violent and sexually explicit media content negatively influences the attitudes and behaviors of users (e.g., Hogben, 1998; Anderson & Bushman, 2001; Bushman & Anderson, 2001; Bushman & Huesmann, 2001; Earles, Alexander, Johnson, Liverpool & McGhee, 2002; Huesmann, 2007; Paik & Comstock, 1994; Konijn, Nije Bijvank & Bushman, 2007). Other studies, however, did not support the connection between this type of media and harmful effects, or only established small effects (e.g., Ferguson & Kilburn, 2010; Savage & Yancey, 2008; Sherry, 2001; Sherry, 2007). Furthermore, the US Supreme court recently ruled in favor of video games as protected speech, resulting in the rejection of age limits that are meant to protect minors.

There is no proof that detrimental media are addictive, but habituation and cultivation have been found to produce negative effects on users. The potential negative impact of harmful media content is twofold. Short-term effects manifest when violent media products teach viewers particular violent behaviors, provoke aggressive cognitions, cause arousal, or create an aggressive affective state (Anderson & Bushman, 2001; Huesmann, 2007; Krmar & Farrar, 2009; Williams, 2009). Long-term effects involve a systematic learning process, in which viewers learn aggressive behaviors the same way they learn other social behaviors, through direct experience and by observing others (cf. Social Learning Theory: Bandura, 1973). As a child learns to perceive, interpret, judge and respond to events in his or her physical and social environment, his or her knowledge structures become more complex, differentiated and difficult to change with each learning experience. Frequently witnessing harmful media content is a learning experience (Anderson & Bushman, 2001). When children are exposed to harmful media content on a regular basis, they will come to regard certain behavioral patterns as normal. Long-term exposure to violent media content makes young people less sensitive to strong emotional feelings; normally impressive situations are no longer impressive (Funk, Baldacci, Pasold, & Baumgardner, 2004; Huesmann, 2007). Young people who watch violent media content are less affected by violence, aggressive behaviors and repulsive events, leading to desensitization to cues that normally trigger empathic responses. As a result, they may exhibit aggressive behaviors (Osofsky, 1995; Eisenberg, 2000).

A US study showed that, by the time US school children leave elementary school, they will, on average, have witnessed more than 8,000 murders and 100,000 other acts of violence on television (Beckman, 1997). In 2008, almost a third (30%) of the Dutch population watched television for more than 20 hours a week (CBS, 2009). Within the 12- to 18-year-old age group, this percentage was 21%. Most of the adolescents (12-25 years old) spent 10 to 20 hours per week in front of the television. This is less than in previous years, but this decrease is mainly due to the increasing popularity of the Internet, which adolescents also use to play games (CBS, 2010). Nearly 80% of Dutch youth play games once or more per week (IVO, 2008), mostly using multiple game types (offline, browser and online gaming).

In conclusion, all of the risky products described above are potentially harmful to some extent and, in all cases, early onset of use is a strong predictor of problematic use. Hence, the use of these products may lead to habituation and dependence, as well as addictions, and these risks are especially great for adolescents. As discussed in this dissertation, in an attempt to decrease the dangers associated with these products, they are subject to special legislation in the Netherlands (as they also are in many other countries); age limits were introduced in order to reduce their availability to minors. The ensuing section will explore why minors are particularly vulnerable to the risks associated with the use of dangerous products.

ADOLESCENCE

It is beyond the scope of this dissertation to describe the full and exact process through which children develop into adolescents and then adults. However, in order to explain why adolescents may engage in risky behaviors and why they require protection, I will now discuss some of the most important developments that take place during adolescence.

Adolescence is the period between childhood and adulthood (roughly between the ages of 10 and 22) and is a time of major changes, including rapid physical growth, the onset of sexual maturation, the activation of new drives and motivations, and a wide array of social and affective changes and challenges (Forbes & Dahl, 2010). Recent developments in neuroscience (based on quantitative cross-sectional studies using structural magnetic resonance imaging (MRI), which provides

valuable information about the brain structure and its development) yielded major findings regarding brain development during adolescence. Unlike the adolescent body, which reaches adult size and morphology during puberty, the adolescent brain is still maturing during the entire period of adolescence (Holzer, Halfon, & Thoua, 2011). During adolescence, three overlapping developments, which influence each other, can be distinguished (Nelis & Van Sark, 2010): physical development (changes to the body due to the release of hormones and the development of the brain), psychosocial development (self-understanding and understanding others), and cognitive development (the development of intelligence and the ability to think and reason). Puberty (taking place during early or mid-adolescence, when physical development is mostly accomplished) usually ends by the age of 15 or 16. Cognitive and psychosocial development, however, are not yet finished and continue to develop into the early- to mid-twenties.

Physical development

Between the ages of 10 and 16, major physical changes take place. Changing hormonal levels activate the development of secondary sex characteristics, such as growth in height, growth of body hair, and the development of differentiating sexual characteristics. Furthermore, during adolescence, the genital system is being developed. Because of the production of large amounts of hormones, a child's physical appearance and mental situation change (for example, adolescents may experience an increase in energy, and boys may exhibit aggressive behavior). Because of the enormous speed with which these physical changes take place, the brain cannot always keep up.

Psychosocial development

In a social-emotional sense, adolescents want to fit in, but they will also gradually start experimenting in order to develop their personal, unique style. The use of risky products can be an expression of this behavior. Because the brain is not yet fully developed at this age, adolescents do not fully grasp the consequences of their actions. As a result, during adolescence, impulsive and risky choices may lead to increased incidence of unintentional injuries and violence, alcohol and drug abuse, unintended pregnancy, and contraction of sexually transmitted diseases (Casey, Jones, & Somerville, 2011). In addition, because they want to fit in, adolescents are very sensitive to outside influences (Nelis & Van Sark, 2010), and they frequently engage in sensation-seeking behaviors (one of the developmental contributors to risky behaviors). However, the development of self-regulation lags behind (Forbes & Dahl, 2010; Spear, 2000). The positive thrill associated with risky behavior may

be more influential in determining adolescent choices than their cognitive understanding of possible negative consequences. All of this explains (among other reasons) why adolescents may start experimenting with risky products. Or, as formulated by Magoon, Gupta and Derevensky (2005), “adolescence is a time of egocentrism and boundary testing of societal restrictions, including participation in risky acts”.

Cognitive development

For a long time, the assumption was that the development of the brain was set at a fairly early age, resulting in the completion of cognitive development at the time of adolescence. Relatively recent insights, however, have demonstrated that the adolescent brain is still subject to some major developments and is in a state of constant change between the tenth and twenty-fifth years of life. The process of brain development is complicated by the fact that different areas of the brain do not develop at the same time and speed. Besides the fact that all areas of the brain do not develop at a uniform speed, cognitive development also is not synchronous with physical and social-emotional development, leading to the sometimes illogical, irrational and intangible behavior that adolescents may exhibit. Furthermore, because the brain tends to grow from the back to the front, the prefrontal cortex (the part of the frontal lobe responsible for planning, organizing, [high-level] reasoning, decision-making, problem solving, abstract thinking and impulse control) develops last. The frontal lobes help curb the desire for thrills and risk-taking, but, because they are also one of the last areas of the brain to develop fully, this impulse control may be absent during adolescence.

In conclusion, during adolescence, a variety of physical, psychosocial and cognitive changes may cause young people to be more inclined to engage in experimentation with risky products. At the same time, these products are more harmful for them than for adults. Below, I argue that availability is one of the prominent factors influencing adolescent consumption of risky products.

AVAILABILITY OF RISKY PRODUCTS

Theoretical background

The consumption of risky products is not only a personal choice, but is also influenced by many other factors. A wide range of factors influence the onset and

escalation of risky behaviors by adolescent, including drinking and drug use (Derzon, 2000; Hawkins, Catalano, & Miller, 1992; NIAAA, 1997). Availability can be seen as an important predictor of adolescent consumption of risky products (Ólafsdóttir, 1997; Paschall, Grube, & Kypri, 2009; Popova et al., 2009; Schechter, 1986; Wald, Morawski, & Moskalewicz, 1986). Based on epidemiological research on alcohol consumption, the 'availability theory' was introduced by Bruun in 1975. The theory assumes a causal relationship between the availability of alcohol and the alcohol consumption levels in a given region and between the levels of alcohol consumption and the prevalence of problem drinking and its consequences.

Several other theories also address a broad range of constructs that influence early substance use. A review study by Petraitis, Flay, and Miller (1995) identified multiple multivariate theories in several domains, for example, cognitive affective theories, social learning theories, commitment and social attachment theories, theories on intrapersonal characteristics, and theories that integrate all of the aforementioned factors. The Theory of Triadic Influence (TTI) offers a comprehensive overview of the variables and processes that affect health behaviors, including the early onset and use of risky products such as alcohol, tobacco and drugs (Flay & Petraitis, 1994; Flay, Petraitis, & Hu, 1995; Petraitis, Flay, & Miller, 1995). In TTI, two dimensions are distinguished: the type of influence and the level of influence. Behaviors are seen as the result of three types of influence: intrapersonal and psychological characteristics (e.g., personality traits and behavioral skills), interpersonal and social influences (e.g., parental warmth, supervision, control and reinforcement), and sociocultural/attitudinal influences (e.g., personal values and cultural environments). As to the level of influence, a distinction is made between proximal (variables that are highly predictive of a given behavior, but focus only on the most immediate precursors of that behavior), distal (relatively indirect causes of a given behavior) and ultimate (broad and exogenous factors that gradually direct individuals toward a behavior) levels of influence (Petraitis et al., 1995). According to Petraitis et al. (1995), compared with proximal or distal influences, "ultimate influences are broader in scope, not as narrowly defined, and more deeply rooted in an adolescent's environment, personality, or biological make-up" (Petraitis et al., 1995, p81). The availability or accessibility of substances are examples of ultimate influences.

The availability aspect may have broad ramifications, as it may influence many other variables as well. For example, knowing that a product is easily available may affect one's self efficacy (it is not difficult for me to get the product) as well as

social norms (everyone else can get it as well). Delaying the onset of consumption can reduce consumption-related mortality and morbidity, as early initiation is associated with a greater incidence of negative consequences than delayed initiation. To give an example, a longitudinal study by Warner and White (2003) demonstrated that youth who drank alcohol at an early age were more likely to become problem drinkers than youth who began drinking later. In terms of tobacco, alcohol and other detrimental substances, availability, in general, is considered an important, if not the most important, predictor of adolescents' initial consumption, consumption patterns and consumption-related damage (e.g., Paschall, Grube, & Kypri, 2009; Popova et al., 2009; Pokorny, Jason, & Schoeny, 2003; Novak, Reardon, Raudenbush, & Buka, 2006; Henriksen, Feighery, Schleicher, Cowling, Kline, & Fortmann, 2008).

As stated earlier, consumption patterns are more than just personal choices; they are also co-determined by the environment in which people live. If products are easily available, consumption will generally be higher than when people's access to the products is limited. This applies to formal types of availability (e.g., the price of a product, hours of operation and location of outlets, or the attractiveness and diversity of the assortment in a store) and to informal and social types of availability (e.g., the presence of products in people's social network or the standards and values of peers concerning the use of the product). Following Van Hoof (2010), below I distinguish between four types of availability: (1) social availability, (2) physical availability, (3) economic availability, and (4) legal availability.

Social availability

The least formal type of availability is social availability. This refers to the prevailing norms and values regarding the use of risky products in a given social environment. These include parents' styles of upbringing, role behaviors, and the rules they establish for their children's consumption of risky products, as well as the behaviors of adolescents themselves in terms of social pressure, social norms, and role behaviors. With respect to the environment of adolescents, research has shown that underage individuals have easy access to some risky products in their homes (Williams & Mulhall, 2005) and that easy access leads to higher consumption rates. For example, research has demonstrated that the frequency with which adolescents gambled was related to both the frequency with which their parents gambled and parental gambling problems (Vachon, Vitaro, Wanner, & Tremblay, 2004). In terms of alcohol consumption, adolescents not only have easy

access to alcohol at home, some parents appear to actively supply alcohol to their underage children or facilitate their children's alcohol use in informal drinking places (Friese & Grube, 2008).

Physical availability

Research into the physical availability of risky products, especially alcohol and tobacco, mainly focuses on outlet density and hours of operation. Several cross-sectional studies have demonstrated that outlet density correlates positively with consumption. For example, higher outlet density corresponds with higher alcohol consumption in a given region (Chen, Gruenewald, & Remer, 2009; Kuntsche, Kuendig, & Gmel, 2008) and with increased incidences of assault, homicide, child abuse and neglect, and self-inflicted injury (Chikritzhs, Catalonao, Pascal, & Henrickson, 2007; Livingston, Chikritzhs, & Room, 2007). Other studies, however, have not supported these conclusions and have even found contradictory results (Gruenewald, Millar, Ponicki, & Brinkley, 2000). The local or national context, as well as different dependent variables used in the studies, might help to explain these divergent outcomes, and they should therefore be considered when interpreting the results (Heather & Stockwell, 2004). Studies on hours of operation achieved consistent results: Restrictions on the hours of operation were linked to a decrease in consumption, whereas longer hours of operation led to higher levels of consumption (Chikritzhs & Stockwell, 2002). Furthermore, because the Internet never closes, it is possible to gamble, play games or watch media images whenever one wants. Physical availability is closely related to the issue of *licensing*. Governments may decide whether or not risky products can be legally sold in their country, and they may also determine the types and number of outlets that are entitled to sell these products and the conditions under which they are allowed to do so.

Economic availability

By economic availability, I mean the costs (including price and tax regulations) associated with a particular risky product. Research has generally demonstrated that the price of risky products is negatively correlated to their consumption (Farrell, Manning, & Finch, 2003). Higher prices lead to lower consumption, and lower prices (for example, as a result of special promotions) increase consumption (Wechsler, Kuo, Lee, & Dowdall, 2000; Kuo, Wechsler, Greenberg, & Lee, 2003). Research has demonstrated that higher prices not only affect consumption levels, but also reduce product-related problems (e.g., drinking and driving) and product-

related crime (Markowitz & Grossman, 1998; Markowitz & Grossman, 2000; Van den Berg, Van Baal, Tariq, Schuit, De Wit, & Hoogenveen, 2008).

Legal availability

In addition to the physical, economic and social availability of risky products, governments or other parties may also focus on their legal availability. The legal availability includes official legislation measures and laws related to substance use focusing on the conditions under which these substances are sold (Van Hoof, 2010). This implies that all outlets are required to adhere to certain rules when they sell risky products to customers.

REDUCING AVAILABILITY

To control and influence the availability of risky products (in particular, physical, economic, and legal availability and, consequently, maybe also social availability), three types of regulations may be used, depending on the role of the parties involved (i.e. government vs. industry): self-regulation, co-regulation, and governmental legislation (Gosselt, Van Hoof, De Jong, Dorbeck-Jung, & Steehouder, 2008; Dorbeck-Jung, Oude Vrielink, Gosselt, Van Hoof, & De Jong, 2010). Co-regulation can be seen as a combination of the other two forms of regulation. Basing my discussion on Gosselt et al. (2008), in the next section I will elaborate on each type of regulation.

Legislation, self-regulation, and co-regulation

Self-regulation involves the regulations established within an industry. These goals are intended to enable members to achieve shared goals that are deemed important (Havinga, 2004). There is a long tradition of self-regulation in the private sector. The industry's own interest is prominent, but the goals of the regulation go beyond just making a profit. Self-regulation may prevent the introduction of governmental regulations or contribute to the industry's reputation, in line with a growing interest in corporate social responsibility. Self-regulation may increase customer confidence and create customer loyalty (Van Driel, 1989). The rise of self-regulation may also be explained by the failure of governmental bodies to enforce regulations and by the divide between the traditional hierarchical government and new developments in the 'civil society' (Pierre & Peters, 2000). Self-regulation activities play a significant role in Europe,

the United States, Australia, and Canada. Often, self-regulation is established as a result of governmental initiatives. Pure self-regulation, in which the initiative comes solely from the industry itself, is rather rare.

When the government is explicitly involved in self-regulation activities, this is termed co-regulation (Dorbeck-Jung et al., 2010). This means that the industry and the government cooperate to formulate the conditions of regulation. For example, legal rules prohibiting the exposure of minors to certain media are said to be extremely difficult to enforce. The difficulty of enforcement is one of the reasons why most countries entrust the protection of minors from harmful media to a regulatory system that combines private and public regulation at various regulatory levels (including international, regional and national legislation, self-regulation, funding, and distribution of information) (Dorbeck-Jung et al., 2010). In many European countries, different regulatory systems are used for television, movies, DVDs/videos, and games. The regulations on games are based on harmonized self-regulation at the European level, while other media (DVDs, movies and TV programs) are controlled by a combination of governmental and non-governmental regulatory activities at the national level. These kinds of regulations are often controversial because of the multiple interests that are at stake.

The last type of regulation is governmental legislation. In this case, a law is promulgated or enacted by a legislative or governing body. In addition, the government is responsible for maintaining the law and punishing violators. I will now discuss examples of legislative acts aimed at influencing the availability of risky products.

Reducing physical availability

Governmental legislation may be aimed at reducing the physical availability of risky products. These policies include limitations on the number and types of outlets allowed to sell these products, the opening hours of these outlets, the types of risky products sold, the physical characteristics of outlets, the range of other services or products that they provide, and/or the location of the outlets (Stockwell & Gruenewald, 2004). Such regulations are mainly executed by licensing (Stockwell & Gruenewald, 2004). Sales of some risky products (e.g., alcohol, marijuana) within a certain distance of schools may be prohibited. Restrictions on physical availability might lead to some risky products being absent, which means it cannot be obtained legally.

Reducing economic availability

To reduce minors' ability to buy risky products, the sales prices of these products must be raised. When the most risky products (alcohol, tobacco, drugs, gambling products) are sold legally, taxes are levied (Österberg, 2011). Legislation may be aimed at determining minimum levels of taxation and/or pricing. Governmental legislation regarding economic availability may also involve setting limitations on price discounts and advertisements of these products (Tian & Liu, 2011). Despite legislation on pricing and taxes, risky products may still be available at low prices in various ways. People may smuggle cheaper items across the border. For example, to obtain cheap alcoholic drinks, people sometimes brew or distill beverages at home. This type of illegal production, known as unrecorded alcohol (Lachenmeier, Taylor, & Rehm, 2011), is also risky to people's health (WHO, 2010).

Reducing legal availability

Many countries have introduced several restrictions on the sale of risky products to protect children and adolescents. An example of a measure designed to decrease the legal availability of these products involves the phenomenon of over-serving (Wallin, Gripenberg, & Andréasson, 2002), whereby it is illegal to serve alcohol to apparently intoxicated customers. Another widespread example of a measure designed to decrease the legal availability of risky products is the use of age limits, meant to protect children and adolescents from the harmful effects of risky products. In theory, reducing legal availability by means of age limits is the most effective measure for diminishing underage sales and, consequently, protecting minors from harmful products. In general, higher legal ages correspond to a decrease in consumption (Wagenaar & Toomey, 2002). Below, I will discuss the concept of age limits in more detail.

AGE LIMITS

Age limits serve to prevent young people's access and exposure to risky products and to delay the age at which young people may start consumption. Therefore, age limits, in general, have two distinct components: the threshold at which a risky product can be consumed and the threshold at which it can be purchased. However, not all countries address both areas; there may be differences between legal consumption age and legal purchasing age, or there may be different age limits according to outlet type. Therefore, a variety of different age limits and age

limit systems exist worldwide, and these systems also depend on the specific type of risky product. In many countries, the legal age for buying alcohol is 18 years old. In the United States, however, the buyer has to be at least 21, while in some European countries, including the Netherlands, alcohol can be obtained at the age of 16. In Great Britain, the existence of different legal ages for drinking alcohol and purchasing alcohol have resulted in a situation whereby it is illegal to give alcohol to a child less than 5 years of age, an individual must be 16 years old to consume alcohol in public with a meal and accompanied by an adult, and an individual must be 18 to consume alcohol in other situations. However, there is only one legal buying age (18 years old) in Great Britain. The age limits for buying and consuming tobacco sometimes also differ. In general, most countries use either 16 or 18 years old as the age limit. To protect minors from detrimental media images, media rating systems are used. Such systems are designed to inform parents about the products and protect children. Age pictograms (also known as evaluative ratings) show whether a media product's content is harmful for minors below a given age. Furthermore, the actual content may be specified with additional warning pictograms (descriptive ratings). Just as there are different ages at which individuals are allowed to drink alcohol or smoke tobacco worldwide, many countries have their own rating systems, with their own pictograms and their own regulations. Especially in the ratings of television programs, many differences can be observed, for example, regarding whether classifications are compulsory, the types of television networks involved, when the classification is shown, and restrictions in broadcasting times. Furthermore, most countries have their own system of coding media products, which may result in very different classifications for the same media product.

Additionally, there is a long tradition of age limits in the Netherlands. Based on governmental legislation, self-regulation or a combination of these methods, age limits were introduced to govern the sale of several types of risky products. Below, I will discuss the different age limits that currently apply in the Netherlands.

Alcohol and age limits

The first Dutch liquor law dates from 1881 and was aimed at regulating the trade in strong alcohol and curbing public drunkenness. In addition, the law mandated that children were not to be provided with alcohol and prescribed the maximum numbers of outlets per municipality. In 1904, the law was subject to some adjustments, including the regulation of surveillance on compliance with the law. In 1931, new adjustments were made as a result of the political and religious

climate. Then, in 1964, the Alcohol Licensing and Catering Act was introduced. This act underwent considerable changes in 2000. Sellers of alcohol were required to ascertain the age of the customer. The law prohibits Dutch retailers to sell alcoholic products to young customers and distinguishes between soft alcoholic beverages (less than 15% alcohol, including some distilled wines) and strong alcoholic beverages (15% alcohol or more). The legal age limits are *16 years* for soft alcoholic beverages and *18 years* for strong alcoholic beverages. Since 2000, retailers are obliged to ask for identification and verify the customer's age when young people try to buy alcohol. Furthermore, Dutch stores are required to carry signs or stickers that communicate the age limits. In 2011, some rather drastic changes to this law have been proposed. These changes include penalization of the underage customer as well as the seller, who was already punishable under the existing law of 2000. However, because the empirical studies discussed in the following chapters were executed before the proposal of these (potential) changes, the Alcohol Licensing and Catering Act from 2000 applies.

Tobacco and age limits

The Dutch Tobacco Law (1988) contains several measures designed to reduce tobacco use and protect non-smokers. This law states that it is illegal to sell tobacco products to a person who cannot provide proof that he or she has reached the age of *16 years*. This also applies to the sale of tobacco to a person over 16 years of age who is obviously intending to give the tobacco to a person who may be under 16. As in the case of alcohol sales, retailers are obliged to ask for identification and verify age when encountering a young customer. This obligation does not apply in those cases in which the customer is clearly older than 16. Furthermore, places where tobacco is sold must provide signs communicating the age limit. There are also rules that forbid any form of advertising, and the sale of tobacco products is reserved to a limited number of outlets. Sale by means of vending machines is only allowed when it is possible to lock the machine, and the machine is only unlocked when it has been determined that the buyer is at least 16 years old.

Illicit drugs and age limits

The Dutch Opium Act (1928), also known as the Narcotics Act, is a partly criminal law and states that, in principle, it is illegal to sell drugs. In 1976, the act changed considerably when a distinction was made between drugs presenting unacceptable risks and drugs that are considered less dangerous (like cannabis). Current Dutch drug policy has four major objectives. These include the prevention of drug use and the treatment of drug users; reduction of harm to users; reduction of public

nuisance caused by drug users (e.g., the disturbance of public order); and control of the production and trafficking of drugs (Trimbos, 2011). Due to this policy, which can be characterized as liberal (and is also known as a tolerance policy), a retail trade in cannabis is tolerated in numerous so-called 'coffee shops'. Coffee shops have to comply with specific rules. For example, one has to be at least *18 years* of age to enter such a coffee shop, and coffee shops are not allowed to advertise or sell hard drugs. Furthermore, they are not allowed to cause a public nuisance, to sell more than 5 grams to a customer or to keep a stock of 500 grams of cannabis or more (Trimbos, 2011).

Dutch drug policy has received much attention worldwide and many have judged it to be too liberal and tolerant (Engelsman, 1989). The drug policy of the Netherlands aims at separating the markets and social contexts of soft and hard drugs. Law-enforcement efforts are focused on the higher levels of the supply system. This policy seeks to avoid a situation in which cannabis consumers suffer more damage from the criminal system than from the use of the drug itself (Engelsman, 1989). Hard-drug usage is considered to be the major public health problem. Policy components addressing hard-drug use include easily accessible social assistance programs, methadone supply programs, other drug treatment facilities, and needle exchange programs (Leuw, 1991). Officially, cannabis remains a controlled substance in the Netherlands, and both possession and production of cannabis for personal use are still misdemeanors, punishable by fine. However, in practice, the possession of soft and/or other illegal drugs for individual use is rarely punished. The Dutch alternative is a pragmatic compromise between two extreme options: an intensified war on drugs and legalization (Engelsman, 1989). In contrast, most other countries operate according to the perspective that recreational drug use is detrimental to society and must therefore be outlawed.

Lately, the Dutch drug policy has been subject to a great deal of discussion, resulting in new policy that aimed at re-establishing coffee shops as small establishments, restricting the number of coffee shops according to the local situation, and participating in an integrated approach to fighting all forms of organized crime (Trimbos, 2011).

Gambling and age limits

To reduce the problems associated with gambling, the Gambling Law was introduced in 1964. This law serves three main purposes: to give gambling and gamblers a legal position, to protect customers, and to prevent gambling

addictions. Although the law distinguishes between several forms of gambling (e.g., lotteries, pull-tabs, Internet gambling, casino gambling, racetracks, scratch cards, gambling machines, card games and sports betting), a single age limit is set: in order to gamble, one must be at least *18 years* of age. This age limit is formulated in the articles 14d (instant lottery), 20 (sports lottery), 27e (lotto), 27j (casino), and 30g (gambling machines) of the Gambling Law. In contrast to tobacco and (current) alcohol laws, the minor is punishable when caught engaging in a gambling game before the age of 18. All suppliers of gambling activities are required to have a license that ensures a fair gambling game. Furthermore, not every location is approved for gambling activities because the location must be aimed at a public of 18 years and older.

Detrimental media and age limits

In the Netherlands, age rating and warning label systems are based on complex, hybrid regulatory systems that include combinations of public and private regulation at various regulatory levels (including international, regional and national legislation, self-regulation, funding and distribution of information). Dutch penal law (Article 240a) prohibits the distribution, display, rental, and sale of harmful media products to minors younger than *16 years* old. This provision is enforced by the criminal judge. Dutch Media Law (Articles 4.1 and 4.2) requires that television programs that can seriously harm minors younger than 16 years of age shall not be broadcast before a certain time (10 PM for 16-year-olds and 8 PM for 12-year-olds). In the case of movies, the Dutch Parliament ruled in 1999 that a legislative age restriction also applies to the age of *12 years* old. In 2004, the Parliament clarified that cinema owners are legally required to refuse customers who are too young according to the 12- and 16-year-old age limits. It emphasized that the same obligations apply to videos and DVDs. Two classification systems are active in the Netherlands, one for DVDs, movies and television and one for video games.

DVDs, movies and television

In 2001, the Dutch Institute for the Classification of Audiovisual Media (NICAM) launched age ratings and other standards. The main aims of this non-profit organization are to support the correct classification of and distribution of information about harmful media products in television broadcasts, media retailers, cinemas and libraries. Almost all branch associations of media providers are represented in the Board of this private organization. The regulatory activities of NICAM are embedded in co-regulation with the Dutch government. NICAM has

set standards for age ratings, media coding and labeling, consumer education, and instruction of personnel (in cinemas, stores and libraries). NICAM standards facilitate consumer complaints. Sanctions are provided when a special Complaints Board acknowledges complaints. The NICAM classification system, called *Kijkwijzer*, provides warning pictograms about the harmfulness of media products for children below certain ages (6, 9, 12, and 16 years) and provides information about their content by means of content warning pictograms.

Video games

In 2003, the Interactive Software Federation of Europe (ISFE) launched standards for the exposure of minors to games that are included in the Pan European Game Information (PEGI) code of conduct. This piece of self-regulation was developed based on national classification systems. In the Netherlands, NICAM runs PEGI. PEGI replaced some national age rating systems with a single system now used throughout most of Europe. This system is supported by the major console manufacturers, including Sony, Microsoft and Nintendo, as well as by publishers and developers of interactive games throughout Europe. The application of the system may differ by country. PEGI informs consumers about the suitability of games for players above certain ages (3+, 7+, 12+, 16+, and 18+) and provides information about the nature of these media products' potentially harmful content using content warning pictograms. Like the NICAM regulations, PEGI standards require age ratings and labels, distribution of information to consumers, and systems for dealing with complaints and sanctions. PEGI standards also touch upon the advertisement and promotion of games and corrective action and arbitration. Members are required to promote responsible purchasing practices where minors are concerned. If they do not label games according to the PEGI rules, they are refused a license. Oversight on games classification is provided partially by the NICAM and partially by the United Kingdom's Video Standards Council (VSC). In case of violation of the PEGI Code, the ISFE Complaints Board and its Enforcement Committee may suggest corrective action. They may impose sanctions, including fines and the suspension of products from the PEGI rating systems.

Based on the above, Table 1 provides an overview of all of the age limits that apply in the Netherlands, according to the type of risky product and the type of outlet where each is sold.

Table 1: Overview of Dutch age limits, by risky product and outlet.

Product	Age limit	Outlets
Alcohol		
-weak	16 years	Supermarkets, liquor stores, catering industry (e.g., bars/pubs, restaurants, festivals)
-strong	18 years	Liquor stores, bars/pubs
Tobacco	16 years	Tobacco stores, supermarkets, shops, gas stations, catering industry (e.g., bars/pubs, restaurants, festivals)
Illicit drugs	18 years	Coffee shops
Gambling	18 years	Supermarkets, tobacco stores, shops, gas stations, casinos, amusement halls
Media products		
-movie/dvd	6,9,12,16,18	Theatres, cinemas, television broadcasters, video/rental stores, department stores, toy stores, game shops, computer shops, libraries, CD/DVD stores
-game	3,7,12,16,18	Video/rental stores, department stores, toy stores, game shops, computer shops, libraries CD/DVD stores

Support for age limits

Age limits are employed as a policy measure worldwide. After age-limit policies and/or legislation are developed by policy-makers, the general public becomes involved. In order for age-limit regulations to be effective, they must be supported by and address the concerns of the general public. It is especially essential that the regulations reach the target audience. In the case of age limits intended to prevent underage consumption of risky substances, multiple target groups can be identified. While children or adolescents might be the direct target group, other target groups, such as parents/caregivers, peers, teachers, and vendors, are also relevant.

A survey of 1550 Dutch parents has demonstrated that a majority supports the idea that adolescents younger than 16 should not be able to buy alcoholic beverages (Van Hoof, Gosselt, & De Jong, 2010a). Adults seem to favor such measures more than younger age groups. A recent Dutch study by Van der Sar,

Brouwers, Van de Goor and Garretsen (2011) revealed that 16- to 22-year-olds are less positive about restrictive availability measures (and also educational measures) than are adults over 22 years old. Not surprisingly, an individual's own level of alcohol consumption seems to be the strongest predictor of his or her opinion of restrictive availability measures. Furthermore, retailers also seem to support the policy against selling alcohol to adolescents below the age of 16, although they encounter several problems in the execution of this policy (PON, 2009). In the context of tobacco sales, a majority of the population (both smokers and non-smokers) supports restricting measures (TNS Nipo, 2003). In addition, data are available about support for age limits in the sale and use of detrimental media. A 2009 survey has demonstrated that 92% of Dutch parents with children up to 16 years old follow the guidelines provided by age labels. Moreover, 96% of parents indicated that they think the labels are useful. Another study (Nikken, Jansz, & Schouwstra, 2007) demonstrated that parents want ratings to inform them of which videogames are harmful for their children and that the majority of the parents consider ratings very necessary (77% believe that age ratings are necessary and 78% want ratings to indicate potentially harmful content).

Effects of age limits

Age limits are considered an effective policy instrument to decrease the availability of risky products to people who, according to the specific age limit, are too young to buy or consume the product. Indeed, in general, legal ages correspond to a decrease in consumption. For example, Wagenaar and Toomey (2002)'s meta-analysis of research on the minimum legal drinking age found that the enforcement of a minimum legal drinking age decreased alcohol consumption and traffic crashes. An earlier review of 132 studies published between 1960 and 1999 also concluded that age limits can have positive effects on consumption (Wagenaar & Toomey, 2000). Another study by Wagenaar (1993) demonstrated that minimum legal drinking ages lead to a decrease in road fatalities, juvenile crime, assault, and drunkenness convictions.

In addition to this so-called threshold effect, there has been speculation regarding the possible occurrence of an opposite effect. There are two competing theories about the likely effects of age limits: the 'tainted fruit' theory and the 'forbidden fruit' theory (Bushman & Stack, 1996). The *tainted fruit theory* predicts that age limits will make restricted commodities less attractive, whereas the *forbidden fruit theory* predicts that the limits will make such commodities more attractive. This is known as the forbidden fruit effect, a reference to the Biblical story in which God

forbids Adam and Eve to eat the fruit from the tree of knowledge. This effect is connected with psychological theories such as reactance theory and commodity theory. Reactance theory assumes that people like the freedom to behave according to their own wishes. When this freedom is threatened, they experience psychological reactance, an unpleasant emotional state that motivates them to restore the threatened or lost freedom (Brehm, 1972; Brehm & Brehm, 1981; Bushman & Stack, 1996). Commodity theory predicts that any commodity that is perceived as unavailable, that cannot be obtained, or that can be obtained only with much effort will be valued more than commodities that can be obtained freely (Bushman & Stack, 1996). Therefore, in addition to the expected positive effects of age limits (the threshold effect), it is reasonable to assume that age limits can be associated with negative effects as well.

The effectiveness of age limits

Based on the widespread implementation of age limits (they are used worldwide and for many different risky products), it is reasonable to infer that age limits are highly effective in reducing the availability of these products to minors. However, age limits are influenced by many factors that can potentially diminish their effectiveness. Although governments and healthcare organizations are concerned about the health risks associated with the consumption of these products, industries are driven by profit, and customers may prefer easy access and affordable prices. Whether minors succeed in obtaining age-restricted products depends on both the relevant legislation and the extent to which vendors comply with these age restrictions.

The system of age limits is a rather technical and mechanical system that involves many actors and factors that can possibly threaten its effectiveness. To be effective, the rules must be clear and generally known, gain widespread dissemination and acceptance within the industry (meaning that as many relevant actors as possible will join), and be supported by a system of maintenance and surveillance to deal with potential violations (e.g., an open complaints procedure and a system of penalization stressing the incidence and severity of sanctions) (Gosselt et al., 2008). Multiple parties are involved within the same industry; therefore, their different interests and conditions may not overlap. For example, the implementation of age limit regulations within cinemas involves different activities and considerations than those involved in implementing regulations in libraries. However, both institutions must comply with the same rules. Non-compliance by either party may influence the level of compliance of the other. If some parties

continue to sell restricted products, a channel of access will exist (Stead & Lancaster, 2008). Furthermore, the multiple age-limit systems that are active within the same national context often differ from each other in terms of rules, execution and maintenance. A vendor working in a supermarket has to deal with several age-restricted products, such as tobacco, alcohol, detrimental media and possibly also gambling products. Each product has its own age limit(s) and its own rules. However, this vendor is expected to know, understand and accept all rules and act accordingly.

According to the compliance literature, in general, whether an employee complies depends upon both the support for regulations demonstrated by the establishment management and on the individual's personal support for these regulations (Kagan & Scholtz, 1984). Furthermore, it is important that the party who must comply is able to follow the rules and is able and willing to comply (Howard-Pitney, Johnson, Altman, Hopkins, & Hammond, 1991; Griffiths, 1999, 2003; Havinga, 2006; Karlsson-Vinkhuyzen & Vihma 2009). However, at this point it is unknown whether and in what way these concepts also apply to the subject of age limits.

There is a great body of evidence indicating that compliance with age limits in stores is problematic worldwide (e.g., Britt, Toomey, Dunsmuir, & Wagenaar, 2006; Freisthler, Greunewald, Treno, & Lee, 2003; Preusser & Williams, 1992; Preusser, Williams, & Weinstein, 1994; Wagenaar, Toomey, & Erickson 2005; Wolfson, Toomey, Murray, Forster, Short, & Wagenaar, 1996; Willner, Hart, Binmore, Cavendish, & Dunphy, 2000). Whether age limits are obeyed within the Dutch context is unclear, but several studies indicate that Dutch compliance is also low. In terms of alcohol consumption, for example, several surveys have demonstrated that, on the one hand, alcohol vendors state that they comply with age limits, but, on the other hand, adolescents claim that alcohol is readily available (Bieleman, Kruize, & Zimmerman, 2010). In addition, European minors indicate that it is not difficult to obtain alcoholic beverages. Furthermore, of all the countries surveyed, Dutch minors claim to encounter the least difficulty: 94% of adolescents claimed that it is very easy to obtain alcohol (The Gallup Organization, 2008). However, precise compliance figures are not available.

To date, compliance literature has focused on determining the extent to which vendors and consumers comply with age limits and the factors that may influence compliance, such as establishment characteristics, vendor characteristics, buyer characteristics, and the characteristics of the purchase attempt itself (Britt et al.,

2006). In addition to determining compliance levels descriptively, it is valuable to address compliance from a more diagnostic perspective. To establish highly effective systems of age limits, it is important to know not only whether there is compliance but also why there is compliance or non-compliance and how age limits are viewed by the most prominent actors involved: the vendors working in outlets where risky products are sold. Diagnostic information focusing on levels of knowledge, ability and motivation helps us to uncover the strengths and weaknesses of the system in order to increase compliance. As mentioned before, most previous studies have noted that compliance is high or low, but until now, diagnostic information about compliance with age limits is, for the most part, lacking.

In addition to the compliance of the selling personnel, compliance by the public is also important. Their support and cooperation is needed in order to make age limits an effective (policy) instrument. Above, we have already seen that the public is reasonably supportive. However, during the actual moment of transaction, they also need to be cooperative when asked for age and/or identification. Refusal to cooperate (for example, by demonstrating aggressive behavior, using falsified ID documents, having someone else purchase the restricted products, or employing other strategies to avoid age verification) makes age verification problematic and may undermine the effectiveness of age limits. In addition, the government must maintain an active role after developing the rules. This role is mainly centered on enforcement of the rules. However, in the case of self-regulation, enforcement may be difficult because in those cases, the industry has to fine its own members.

In sum, age limits can produce a positive result (decreasing a product's availability), but have also been linked with a negative side effect (increasing a product's attractiveness). Therefore, in this dissertation, I will focus on the issue of compliance with the age limits (are age limits effective in their primary goal, namely, limiting underage sales?) but will also examine the possibility of a forbidden fruit effect. Then, I explore the attitudes and opinions expressed by a stakeholders group that has to deal with age limits on a daily basis: vendors of risky products. What do they think of age limits, and what are the problems and challenges they encounter when dealing with underage customers? Furthermore, I explore the effects of several interventions that were designed to increase compliance.

DISSERTATION OUTLINE

The ensuing seven chapters describe empirical studies that explore the concept of age limits from multiple points of view. The empirical chapters are divided into three parts: compliance with age limits, increasing compliance with age limits, and whether age limits actually increase risky products' appeal to young consumers.

Part 1: Compliance with age limits

As stated earlier, whether minors succeed in obtaining age-restricted products depends not only on the legislation but also on the extent to which vendors comply with these age restrictions. Hence, in order to test the effectiveness of age limits, the following three chapters describe vendors' compliance with different age limit systems. First, **chapter 2** analyzes a compliance study that examined the sale of alcohol to young people under the legal age limits of 16 and 18 years old. I devote special attention to the method that is most effective in testing actual compliance. Because age limits for alcohol consumption are based on governmental legislation, **chapter 3** investigates the effectiveness of age limits that rely for enforcement on self-regulation and co-regulation. Therefore, I discuss three studies that address compliance with age limits for potentially harmful media (study 1), support for these systems among vendors (study 2), and the reasons why vendors comply or not with age limits (study 3). International compliance studies generally highlight compliance in a relatively descriptive way; therefore, in **chapter 4**, I employ a qualitative interview study to gather diagnostic information on the reasons for both compliance and non-compliance.

Part 2: Increasing compliance with age limits

To increase compliance with age limits, policy makers and local governments may introduce many types of interventions. Often these include educational and training interventions (e.g., Wagenaar et al., 2005), raising the purchase age (e.g., Dumouchel, Williams, & Zador, 1987), intensified enforcement (e.g., Cummings, Hyland, Saunders-Martin, Perla, Coppola, & Pechacek, 1998), or combinations of these (e.g., the review study on tobacco sales by Stead & Lancaster, 2008). In three chapters in the second part of this dissertation, I address the effectiveness of several interventions that were introduced in the Netherlands by three different stakeholders in order to improve compliance. The first intervention, described in **chapter 5**, was developed by a private party and represents a technical solution that takes away the decision of whether or not to comply from the cashier and

focuses on the age verification process. Then, **chapter 6** discusses the effects of a national campaign, initiated by the sector organization of nearly all Dutch supermarkets, which emphasizes asking for the age and ID of young customers to secure compliance. Finally, **chapter 7** discusses a field experiment that was initiated by a local government, in which alcohol retailers received feedback on their own compliance level with age limits.

Part 3: Appealing effects of age limits

As noted earlier, literature on risky products reveals the possibility of an undesirable side effect of age limits; they may make risky commodities more appealing to young customers. Hence, the last empirical chapter of this dissertation (**chapter 8**) describes a large-scale experimental study on elementary and high school students designed to determine to what extent age limits make media products as DVDs and games more attractive to young people.

This dissertation ends with a general discussion (**chapter 9**), in which the findings from the empirical chapters are discussed. Then, based on these findings, I propose a conceptual model that describes the factors and processes that are relevant to the issue of age limits and can decisively influence the effectiveness of age limits.



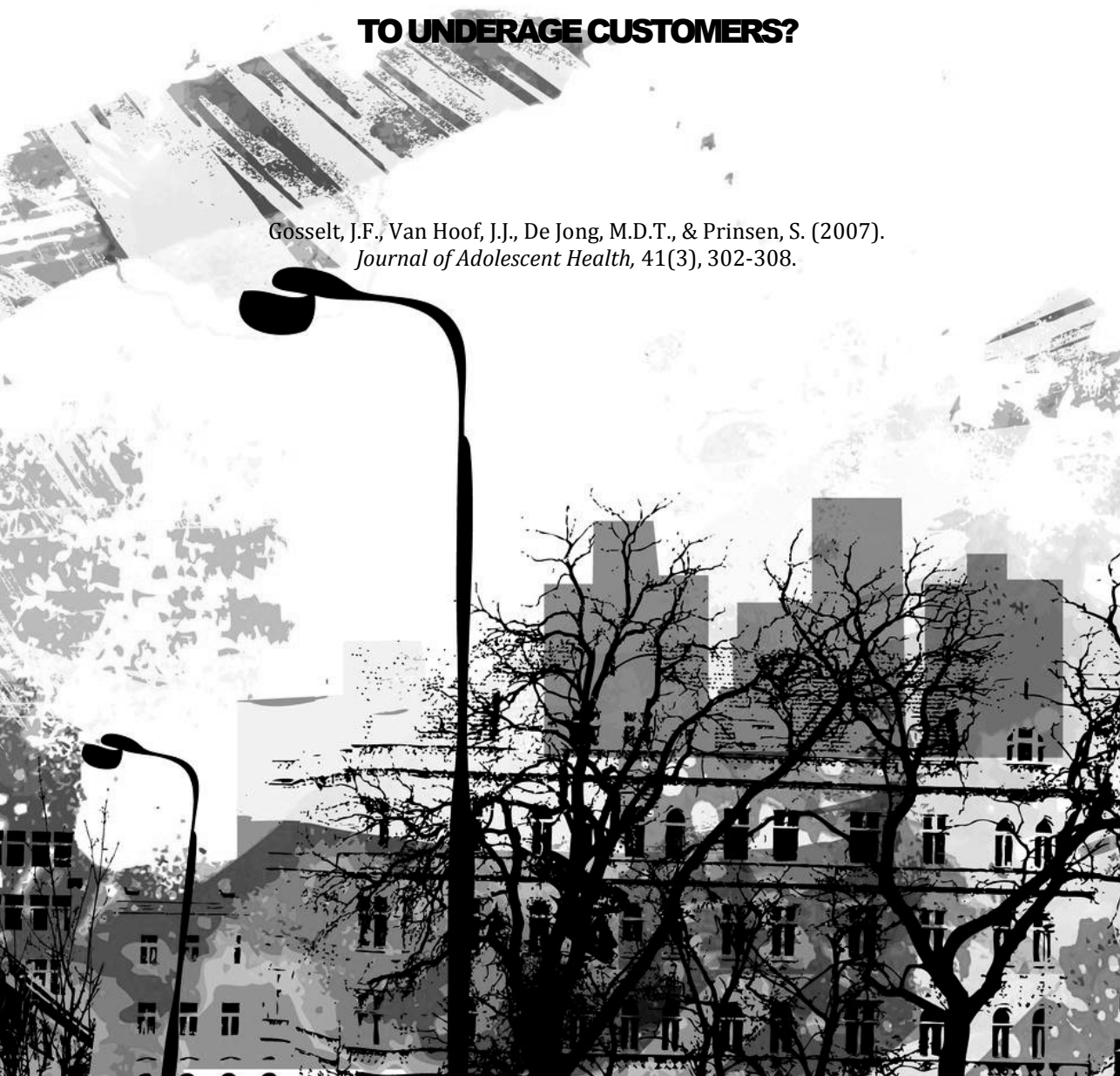
PART 1

**COMPLIANCE WITH
AGE LIMITS**

CHAPTER 2

MYSTERY SHOPPING & ALCOHOL SALES. DO SUPERMARKETS SELL ALCOHOL TO UNDERAGE CUSTOMERS?

Gosselt, J.F., Van Hoof, J.J., De Jong, M.D.T., & Prinsen, S. (2007).
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INTRODUCTION

Although the dangers of alcohol for adolescents are widely acknowledged, underage alcohol consumption is on the rise. Research in the Netherlands shows that 90% of the 15-year-old adolescents have had experience with drinking alcoholic beverages, and that 52% drink alcohol on a weekly basis (Monshouwer, Van Dorsselaer, Gorter, Verdurmen, & Vollebergh, 2004; Van de Pol & Duijser, 2003). Almost 20% of the male and 10% of the female 15-year-old adolescents drink more than ten glasses of alcohol on an average weekend day, and 63% of the 15-year-olds report to have been drunk at least once in their lives (Monshouwer et al., 2004).

Although many different factors may contribute to these high figures of underage alcohol consumption, easy access to alcohol is generally assumed to play a significant role (Forster, McGovern, Wagenaar, Wolfson, Perry, & Anstine, 1994; Wagenaar, Finnegan, Wolfson, Anstine, Williams, & Perry, 1993; Wagenaar, Toomey, Murray, Short, Wolfson, & Jones-Webb, 1995). In the United States, alcohol use and alcohol-related problems among youngsters increased when the legal drinking age was lowered in the 1970s (Wagenaar, 1983). When the legal age was raised to 21 in the late 1970s and early 1980s, a reduction of alcohol problems among youngsters was established (Dumouchel et al., 1987; George, Crowe, Abwender, & Skinner, 1989; O'Malley & Wagenaar, 1991). Similar findings were reported in studies into youth and smoking, where supply variables (actual or perceived access to tobacco products) invariably appeared to be an important predictor of underage tobacco use (Boyle, Claxton, & Forster, 1997; Flay, 1993; Robinson, Klesges, Zbikowski, & Glaser, 1997; Swan, Creeser, & Murray, 1990).

In the Netherlands, the Alcohol Licensing and Catering Act prohibits retailers to sell alcohol products to young customers. A distinction is made between soft alcoholic beverages (< 15% alcohol) and strong alcoholic drinks (> 15% alcohol). The legal age limits are 16 for soft alcoholic beverages and 18 for strong alcoholic drinks. Since 2000, retailers are obliged to ask for identification and verify the age when young people try to buy alcohol. Most Dutch stores carry signs or stickers about the age limits.

To evaluate the effectiveness of these legal prescriptions, a Dutch research agency periodically conducts surveys among managers of supermarkets, liquor stores and

the hotel and catering industry (Bieleman, Biesma, Kruize, & Snippe, 2004). Of the supermarkets, 99% of the managers reported to instruct their personnel about the age limits, and 91% actually checked whether their cashiers observed them. Of the liquor stores, all managers instructed their personnel, and 78% performed compliance checks. Moreover, 91% of the supermarket managers and 94% of the managers of liquor stores stated that no single offense regarding the age limits had occurred in their stores. In a survey among 13- to 17-year-old adolescents, however, the same research agency found very different results: underage respondents claimed to be successful in 90% of their buying attempts (Bieleman et al., 2004).

According to store managers, the Alcohol Licensing and Catering Act offers sufficient protection against underage alcohol sales; according to adolescents, alcohol is more or less freely available in the Netherlands. Explanations may be searched in two directions. Adolescents may use tricks to mislead store personnel (ask older-looking friends to buy alcohol, use falsified IDs) or report exaggerated success rates. Managers, on the other hand, may report socially desirable estimations of the practice in their stores.

To shed more light on the problem of underage alcohol sales, unobtrusive research approaches such as mystery shopping are indispensable. A company or institution is then visited by a trained accomplice, who pretends to be a 'normal' customer, but acts according to a script. Immediately after the visit, a detailed form is completed about the mystery shopper's experiences. Mystery shopping is frequently used to investigate the service quality of stores (Finn & Kayandé, 1999; Wilson, 2001) and the quality of medical care (Luck & Peabody, 2002; Madden, Quick, Ross-Degnan, & Kafle, 1997). In the United Kingdom and especially in the United States, this type of undercover research has also been used to investigate retailers' compliance with alcohol legislation. The success rates of US studies fluctuated between 26% and 97% and appeared to be strongly related to the degree of enforcement involved in the region (e.g., the use of fines or license suspensions) (Britt et al., 2006; Freisthler et al., 2003; Preusser & Williams, 1992; Preusser, Williams, & Weinstein, 1994; Wagenaar et al., 2005; Wolfson et al., 1996). The success rate in the only UK study was 83% (Willner, et al., 2000). These studies also identified variables that may affect the buying success of underage purchasers: the buyer's age and gender, location and type of outlet, and in-store signage.

In this chapter, we report on the development and first use of a mystery shopping protocol to investigate underage alcohol sales in Dutch supermarkets and liquor stores. We did this to gauge the overall situation in the Netherlands, which is characterized by a policy of age restrictions without substantial enforcement efforts. Authorities may punish stores that are caught in the act of selling alcohol to a minor, but the chances of doing this are slim without a mystery shopping approach. In this situation, much depends on the willingness of store personnel to verify the age of young customers, and act upon it.

We also addressed three specific hypotheses. First, we hypothesized that liquor stores are less susceptible to underage alcohol sales than supermarkets. Liquor store vendors are more knowledgeable about alcohol regulations than cashiers in supermarkets (Bieleman et al., 2004), and are also more suspicious of the possibility that underage customers may try to buy alcoholic beverages (Wolfson et al., 1996). Furthermore, the buying situation in liquor stores is more personal and less hasty than that in supermarkets. We investigated whether it would help to remove all alcohol beverages from supermarkets, and only sell them in specialized liquor stores.

Second, we hypothesized that the number of other customers waiting affects the success rate of the mystery shoppers, since age verification would cause unwanted delay. Busy-ness in the store is one of the obvious excuses store personnel may use for not verifying the age of young people who try to buy alcohol.

Third, as was also found by Willner et al. (2000), we hypothesized that female mystery shoppers are more successful than male mystery shoppers. This hypothesis is supported by a study by Merrill, Stanford, Lindsay, and Neiger (2000), who found that store clerks have more trouble identifying underage female customers than underage male customers.

Legal and ethical considerations

Since this was, to our knowledge, the first time this type of mystery research was used in the Netherlands, we carefully considered the legal and ethical implications. Legally, there was one major issue. Stores that sell alcohol to underage purchasers commit an offense and are therefore liable to penalty. Although underage mystery shoppers who try to buy alcohol are in principle not punishable under the Dutch liquor law of 2000, their buying attempt may be seen as a provocation of an offense. To solve this problem, we considered working with pseudo-underage

buyers (younger-looking mystery shoppers who have reached the legal age to buy alcohol), as some of the earlier undercover studies did (Britt et al., 2006; Freisthler et al., 2003; Wagenaar et al., 2005; Wolfson et al., 1996). However, we decided that this would weaken the persuasiveness of the results, as the stores would in fact act according to the law if they agreed to sell alcohol. We therefore chose to work with real underage mystery shoppers, but prescribed that they would abort their buying attempt after the cashier had recorded the amount at the cash register, which is an unambiguous sign of a selling intention.

Regarding the supermarkets and liquor stores involved, the main ethical issue was whether it would be justified to include them in the study without their prior consent. We found four important criteria in the literature to judge the appropriateness of undercover research approaches: (1) societal relevance of the research topic, (2) inadequacy of the more conventional research methods, (3) public nature of the events observed, and (4) avoidance of negative consequences for the research objects (Cassell, 1980; Dench, Iphofen, & Huws, 2004; Denzin & Erikson, 1982; ESOMAR, 2005; Hodges, 1988). Using these criteria, we concluded that a mystery shopping approach would be permissible here. First, underage drinking is seen as an important societal problem, and several studies confirm the high and increasing alcohol consumption among Dutch adolescents (Monshouwer et al., 2004; Van de Pol & Duijser, 2003). Second, the contradictory self-reports of store managers and adolescents underline the inadequacy of conventional research methods. Third, the interactions between customers and store personnel in supermarkets and liquor stores are public: other people may enter the stores whenever they want and are able to observe the transaction. Fourth, we avoided negative consequences for the stores and vendors included in two ways: (a) the mystery shoppers behaved like normal customers and did not demand too much time of the store personnel, and (b) we safeguarded the anonymity of all stores and vendors in the study.

Regarding the adolescents partaking in the research as mystery shoppers, two ethical considerations were relevant. First, we did not want our study to encourage them to use alcohol. We therefore only selected adolescents with some prior experience in buying and drinking alcohol, and also asked their parents for informed consent. Furthermore, the adolescents were personally debriefed about the dangers of alcohol. Second, we did not want the adolescents to be confronted with awkward situations, vendor aggression, or police interrogations during the store visits. The mystery shoppers therefore carried an official letter explaining the

research purpose of the buying attempt, and one of the researchers was close by to intervene should any trouble arise. No such situations occurred.

METHOD

Mystery shopping protocol

The mystery shoppers were picked up at their homes and transported by car to a pre-selected list of supermarkets and/or liquor stores in their living area. They were accompanied by two research assistants: a driver and a navigator/facilitator/observer. They were first given instructions about the script they had to follow. After arriving at a target store, the mystery shopper received 50 eurocents and entered the store alone. One of the research assistants waited inconspicuously near the entrance of the store, to observe the purchase attempt and be able to interfere should any problem arise.

The 15-year-old adolescents chose one alcoholic beverage—beer for male and premix drinks for female mystery shoppers (both containing 5% alcohol), in line with the preferences within this age group—and took it to the checkout. In the supermarkets, they also picked a small bag of potato chips; in the liquor stores, they only bought the drink. When approaching the checkout, the mystery shoppers memorized the number of pay-desks that were open and chose the most left-hand pay-desk. The mystery shoppers counted the number of customers in the line before them, and, once the store vendors started serving them, the number of customers behind them. Upon actually encountering the vendors, the mystery shoppers greeted them (“Hello”), and estimated their age. If they were asked whether the alcohol was for personal use, the mystery shoppers would answer affirmatively. If they were asked about their age, they would lie and claim that they were 16 years old. If they were asked for an ID, they would show their real ID.

If the store personnel refused to sell the alcohol, the mystery shoppers would not further insist and leave the store. If the store personnel was willing to sell the alcohol, which they signaled by recording the amount and/or mentioning the price, the mystery shoppers would act surprised and say that they did not have enough money with them. In the supermarkets, they would then only buy the potato chips; in the liquor stores, they would buy nothing. No real purchases of alcohol took place, but the unambiguous selling intentions were used as indications of real

alcohol sales, which is justified by a study of Cummings, Saunders-Martin, Clarke, and Perla (1996). After the store visit, the mystery shoppers joined the research assistants and immediately filled out an extensive checklist (Table 1).

The visits by the 17-year-old adolescents largely followed the protocol described above. The 17-year-olds only went to liquor stores, since strong alcoholic drinks are not available in Dutch supermarkets. One difference in the script involved the type alcohol: instead of soft alcoholic beverages, the mystery shoppers tried to buy a bottle of strong alcohol—rum for male and red vodka mix for female mystery shoppers (both containing approximately 40% alcohol). And, obviously, they lied that they were 18 instead of 17.

Recruitment of mystery shoppers

As mentioned before, we chose to work with adolescents who had not reached the legal age to buy alcohol. At the same time, we did not want the mystery shoppers to look older than their real age. Therefore, we contacted high school teachers in three Dutch regions (west, south, and north/east), and asked them to help us recruit mystery shoppers. We asked teachers because they have daily contact with adolescents, and thus must be able to select adolescents who look typical for their age groups. The teachers were also asked to judge whether the candidates could handle the task and had some prior experience with alcohol. A total of thirteen adolescents participated in the research; four for each region (one girl was replaced halfway because she turned 16 during the research period). The mystery shoppers received a compensation for partaking in the study.

Sample of supermarkets and liquor stores

The research was conducted in three regions, which were selected to represent the diversity of the Dutch society: the regions around Amsterdam (west), Enschede (north/east), and Eindhoven (south). For each region, we included both rural and urban areas in the sample, and we randomly selected 50 supermarkets and 50 liquor stores. All 150 supermarkets and 75 of the liquor stores were visited by 15-year-old mystery shoppers; the other 75 liquor stores were visited by 17-year-old mystery shoppers. All visits took place between December 2005 and February 2006, on weekdays between 9 AM and 5 PM (Table 1). The 15-year-old mystery shoppers performed 15 to 25 visits a day; the 17-year-old mystery shoppers 12 to 13.

RESULTS

Success rates of the mystery shoppers

A total of 86% of all purchase attempts proved to be successful. In the supermarkets, the success rate was 88%. In the liquor stores, a significant difference ($\chi^2=3.89$, $N=150$, $p<.05$) was found between the 15-year-old mystery shoppers who tried to buy a soft alcoholic beverage (77%) and the 17-year-old mystery shoppers who tried to buy strong alcohol (89%). The results partly support our first hypothesis, which assumed that liquor stores would be more cautious with underage customers than supermarkets. This hypothesis is confirmed for the 15-year-old adolescents ($\chi^2=4.33$, $N=225$, $p<.05$), although it must be noted that a success rate of 77% is still very high. The success rate of 17-year-olds buying strong alcohol did not differ from the rate of 15-year-olds in supermarkets. Table 1 gives an overview of the various store and visit characteristics and the corresponding success rates.

Vendor behaviors: asking for age and ID

For a more detailed view on the alcohol sales to underage customers, we analyzed to what extent the mystery shoppers were asked for their age and/or ID (Table 2) and how these vendor reactions affected the purchasers' success (Table 3). In the majority of the visits (72%), the vendors did not ask the mystery shoppers for their age or ID and sold the alcohol without any reservations. When vendors only asked for the mystery shoppers' age (4% of the visits), all purchase attempts succeeded. When vendors asked for an ID (12% of the visits), or first asked the mystery shoppers' age and then asked for their ID (12% of the visits), the overall success rate dropped to 36 and 43% respectively. The effective prevention of underage alcohol sales thus starts with store personnel's readiness to systematically ask for an ID of all young customers who try to buy alcohol; first or only asking for a customer's age does not significantly contribute to the prevention of underage alcohol sales.

Table 1: Characteristics of visits, stores, mystery shoppers, and vendors.

Region	Supermarkets (15)		Liquor stores (15)		Liquor stores (17)	
	N	SR* (%)	N	SR* (%)	N	SR* (%)
West	50	98	25	68	25	100
North/east	50	92	25	76	25	76
South	50	74	25	88	25	92

Day of the week							
Monday						12	50
Tuesday	50	74	25	92			
Wednesday	75	95					
Thursday	24	96	25	76	25	100	
Friday	1	100	25	64	38	95	
Time of the day							
8-10 AM	23	91			7	100	
10 AM-12 PM	40	80			24	92	
12-2 PM	44	93	27	78	28	100	
2-4 PM	28	86	28	79	11	73	
4-6 PM	15	93	20	75	5	40	
Municipality size							
5,000-10,000	2	100	2	50	2	0	
10,000-20,000	7	86			1	100	
20,000-50,000	18	94	4	75	5	100	
50,000-100,000	22	96	24	71	18	83	
100,000-250,000	63	76	33	79	27	89	
> 250,000	38	100	12	92	22	100	
Gender mystery shopper							
Male	75	81	37	70	37	78	
Female	75	95	38	84	38	100	
Total number of pay-desks							
1			67	75	65	89	
2			8	100	9	89	
3 or 4	92	92			1	100	
5-10	48	81					
> 10	10	80					
Number of pay-desks open							
1	49	86	70	76	72	90	
2	60	93	5	100	3	67	
3	24	83					
> 3	17	82					
Number of customers before							
0	26	89	47	79	53	89	
1	48	88	23	78	17	88	
2	45	89	3	33	4	100	
> 2	31	87	2	100	1	100	
Number of customers behind							
0	34	79	63	78	60	90	
1	43	91	10	80	10	80	
2	35	89	2	50	3	100	
> 2	38	92			2	100	
Gender of vendor							
Male	15	93	44	77	45	87	
Female	135	87	31	77	30	93	
Estimated age (yrs.) of vendor							
< 20	45	87	1	100			
20-25	27	96	7	86	7	100	
26-30	78	86	9	67	2	100	
31-35			8	50	4	100	
36-40			12	92	10	70	
41-45			9	78	24	92	
46-50			5	100	13	85	
> 50 years			24	75	15	93	

*SR=Success rate.

Although the ID checks had some preventive effect, it is remarkable that 39% of the buying attempts succeeded (= mean success rate for “ID check only” and “Age and ID check”) even when an ID was shown. In those cases, the vendors were willing to sell the alcohol even though they were presented with unambiguous information that the mystery shopper was too young to buy the alcohol.

Table 2: Vendor reactions to purchase attempts.

	Supermarket 15-year-old	Liquor store 15-year-old	Liquor store 17-year-old	Total
No intervention	113 (76%)	43 (58%)	60 (80%)	216 (72%)
Age check only	5 (3%)	5 (7%)	3 (4%)	13 (4%)
ID* check only	22 (15%)	10 (13%)	4 (5%)	36 (12%)
Age and ID check	10 (7%)	17 (23%)	8 (11%)	35 (12%)

*ID = identification.

Table 3: Success rate per type of vendor reaction.

	Supermarket 15-year-old	Liquor store 15-year-old	Liquor store 17-year-old	Total
No intervention	100%	100%	100%	100%
Age check only	100%	100%	100%	100%
ID* check only	37%	40%	25%	36%
Age and ID check	60%	35%	38%	43%

*ID = identification

Effects of busyness in the store and gender

To test the second hypothesis, assuming that busy-ness in the store would positively affect the adolescents’ buying success, we conducted a series of χ^2 tests. Busyness in the store was measured as the number of customers in line before and behind the mystery shoppers. We distinguished four categories (0, 1-2, 3-5, and >5 customers). No significant relation was found between busyness in the store and buying success ($\chi^2=3.811$, $df=3$, $p=.283$). We also did not find significant effects on vendors’ tendency to ask for mystery shoppers’ age ($\chi^2=1.103$, $df=3$, $p=.776$) or ID ($\chi^2=1.733$, $df=3$, $p=.630$). We therefore reject the second hypothesis.

Regarding the third hypothesis, we found that female mystery shoppers were significantly more successful than male mystery shoppers (93 vs. 78%; $\chi^2=14.722$,

df=1, $p<.001$). This is also reflected in vendors' tendency to ask for the mystery shoppers' age or ID. Male adolescents were significantly more often asked for their age (26 vs. 7%; $\chi^2=14.722$, df=1, $p<.001$) and their ID (38 vs. 9%; $\chi^2=34.873$, df=1, $p<.001$) than female adolescents. The third hypothesis is thus confirmed.

DISCUSSION

The results of our study show that Dutch supermarkets and liquor stores generally do not comply with legal age limits for alcohol sales. Underage adolescents can easily buy alcohol in supermarkets and liquor stores, and are rarely confronted with vendors asking for their age or ID. Female adolescents are more successful than male adolescents. If underage adolescents are asked how old they are, a simple lie suffices to be able to buy the alcohol; if they are asked for their ID, they still have a good chance to succeed. Busy-ness in the store is not of influence on vendors' nonchalance with age limits. These findings raise serious questions about youth alcohol policy in the Netherlands, and, more in generally, the use of age limits without sufficient attention for compliance.

A first issue concerns the measurement of compliance. Policymakers seem to rely on self-report data to monitor the effectiveness of the age limits. The results of our study indicate that the self-reports of store managers are by no means a valid indication of the degree to which stores observe the age limits. The self-reports of adolescents, on the other hand, appear to strongly correspond with the findings in this study. We would suggest that a mystery shopping approach is the most valid way of measuring compliance, and that adolescents' self-reports would be the second-best alternative. Self-reports of store managers or vendors tend to provide misleading feedback on compliance with age limits.

A second issue concerns the way compliance can be improved. One month before the start of our data collection, the PVAD (a national partnership of alcohol-selling retailers) had started an information campaign to inform and instruct vendors about the legal age limits. Since our data were collected at the height of the campaign activities, our findings raise serious doubts about the effectiveness of such information campaigns.

In the United States, three studies have focused on the effectiveness of other possible interventions. Forster, Murray, Wolfson, Blaine, Wagenaar, and Hennrikus (1998) showed that various kinds of enforcement are a fruitful way of reducing underage sales. Such an approach should not only focus on warnings and penalties in the case of an offense, but also on the actual and perceived chance of being caught (Montgomery, Long Foley, & Wolfson, 2006). Toomey, Wagenaar, Gehan, Killian, Murray, and Perry (2001) successfully used a training program aimed at the owners and managers of alcohol establishments, which started with a risk assessment and gradually developed into the facilitation of underage sales prevention. Wagenaar et al. (2005) compared the effects of a management training and enforcement checks, and found the (periodic) enforcement checks to be more effective. These interventions all boil down to a combination of enforcement strategies and communication. Communication will only be effective if the store managers wholeheartedly endorse the necessity to comply with the legal age limits. Enforcement checks will only be effective when store managers are aware of them, and are periodically informed about their results and consequences.

Three ID-related problems appear to inhibit stores to effectively prevent underage alcohol sales. The first problem involves the prevailing interpretation of the legal age limits. A precondition for effective age limits is that vendors get accustomed to verifying the age of a broader range of young-looking customers. Merrill et al. (2000), for instance, concluded that, in order to effectively observe a 21 years age limit, store clerks should ask the IDs of all customers estimated below 27 years. This awareness is currently lacking in the supermarkets and liquor stores. A second problem is that people are not used to being asked for an ID in a supermarket or liquor store. An information campaign focusing exclusively on store personnel will therefore not suffice; customers must also be prepared for such a change in store policy. A third problem concerns the Dutch ID documents themselves: we found evidence in the mystery shoppers' verbal accounts that vendors had trouble inferring customers' ages on the basis of birth dates on an ID.

In all, the results of our study suggest that legal age limits without facilitation of the vendors and without enforcement strategies will not suffice to prevent underage alcohol sales. Furthermore, our study demonstrates the usefulness of mystery shopping to monitor the effectiveness of alcohol restrictive policies.

CHAPTER 3

MEDIA RATING SYSTEMS: DO THEY WORK? SHOP FLOOR COMPLIANCE WITH AGE RESTRICTIONS IN THE NETHERLANDS

Gosselt, J.F., Van Hoof, J.J., & De Jong, M.D.T. (2011).
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INTRODUCTION

By the time US schoolchildren leave elementary school, they will, on average, have witnessed more than 8,000 murders and 100,000 other acts of violence on television (Beckman, 1997). If they also have access to video games or movies, these figures will even be considerably higher. Violence is often present in movies, television programs and video games; furthermore, such movies, programs and games seem to be particularly popular among children and adolescents (Buchman & Funk, 1996). Although representatives of the television and gaming industry often disagree, research has shown that regular exposure to media violence and other harmful media content can have detrimental effects on children and adolescents. Many studies have found a relationship between children's exposure to harmful media content and the development of undesirable attitudes and behaviors, violent behaviors in particular (Anderson & Bushman, 2001; Bushman & Anderson, 2001; Bushman & Huesmann, 2001; Paik & Comstock, 1994; Huesmann, 2007; Earles, Alexander, Johnson, Liverpool, & McGhee, 2002; Hogben, 1998). Reviews of the research on the relationship between media violence and aggression report average effect sizes ranging from $r = .11$ (Hogben, 1998) to $r = .31$ (Paik & Comstock, 1994). Huesmann (2007) argues that research over the past half-century shows that exposure to media violence increases the risks of violent behaviors on the viewers' part, just as growing up in an environment of real violence does.

The negative impact of harmful media content can be twofold. Short-term effects manifest when violent media products teach viewers particular violent behaviors, prime aggressive cognitions, cause arousal, or create an aggressive affective state (Anderson & Bushman, 2001; Huesmann, 2007; Krackmar & Farrar, 2009; Williams, 2009). Long-term effects involve a systematic learning process, in which viewers learn aggressive behaviors the same way they learn other social behaviors through direct experience and by observing others (cf. Social Learning Theory: Bandura, 1973). As humans learn to perceive, interpret, judge and respond to events in their physical and social environment, the knowledge structures of a child become more complex, differentiated and difficult to change with each learning experience. Frequently witnessing harmful media content is a learning experience (Anderson & Bushman, 2001). When children are exposed to harmful media content on a regular basis certain behavioral patterns will be regarded as normal. Long-term exposure to violent media content makes young people less sensitive to strong

emotional feelings; normally impressive situations are no longer impressive (Funk et al., 2004; Huesmann, 2007). Young people who watch violent media content are less affected by violence, aggressive behaviors and repulsive events, which leads to a desensitization to cues that normally trigger empathic responses. As a result, aggressive behaviors may surface (Osofsky, 1995; Eisenberg, 2000).

Minors spend a lot of their spare time watching television and movies or playing video games, and it is not likely that this is going to change soon. Therefore, it is important that they can consume media products in a safe and responsible way. Media rating systems (also known as age classification systems, warning label systems, or restrictive ratings) can serve as an effective tool in restricting access and exposure to harmful media. Such systems, which at this time are used in at least 52 countries worldwide, are designed to inform parents about and protect children from violent or otherwise harmful media content. Age pictograms show whether a media product's content is harmful for minors below a given age. Furthermore, in various systems, the actual content is specified with additional warning pictograms. Both the age limit labels and the warning labels can be placed on covers, packing materials, posters, and other advertising materials, and they can be shown at the start of a movie or television program. The goal of media rating systems is to provide individuals (especially parents) with appropriate information about media products so that they can make informed decisions regarding the media consumption of their household (Gentile, Humphrey, & Walsh, 2005).

Many countries have their own rating systems with their own pictograms and their own regulations. Especially in the context of television programs, many differences can be found, for example regarding the compulsoriness of the classifications (e.g., an age limit system exists in Argentina but is not compulsory), the types of television networks involved (e.g., in Australia government-owned television networks are sometimes not bound by the same regulations as their commercial counterparts), when the classification is shown (e.g., during the entire duration of a program in France, once an hour in Canada, and at the beginning of the program in most other countries), and the restrictions regarding the time of broadcasting (e.g., programs rated as 15+ may only be broadcast after 9 PM in Australia, whereas this time applies for programs rated 14+ in Brazil and South Africa).

There are also differences in the appearance of classifications. Classifications are often shown as a number in a small box in a particular color, by means of lettering

(e.g., 'TV-PG' in the United States), or by means of a verbal announcement beforehand. In Iceland, the channel's logo in the top-right corner is colored either yellow (12 years) or red (16 years). Furthermore, most countries have their own system of coding media products, which may result in very different classifications per country. For example, the motion picture 'X-Men Origins: Wolverine' (released in 2009) was rated 'PG-13' (Parents Strongly Cautioned, some material may be inappropriate for children under 13) in the United States, '12A' in Great Britain (no one younger than 12 may see a '12A' film in a cinema unless accompanied by an adult, and films classified '12A' are not recommended for a child below 12), '16' in Germany and Austria, '11' in Denmark and 'for all ages' in France.























Rating systems may have different functions for different groups in society (Bushman & Stack, 1996). The entertainment industry may use the systems to prevent governmental censorship policies, show that they are socially responsible, and/or protect their reputation. Parents may use them to monitor and decide which media products their children can be exposed to. Minors may use them to select programs that appeal to their interests.

Age rating and warning label systems are based on complex regulatory systems that include combinations of public and private regulation at various regulatory levels (amongst which international, regional and national legislation, self-regulation, funding and distribution of information). In many European countries, different regulatory systems have been established for television, movies, DVDs/videos, and games. The regulations on games are based on harmonized self-regulation at the European level, while the other media (DVDs, movies and TV programs) are controlled by combining governmental and non-governmental regulatory activities at the national level. The background of European legislation is the United Nations Convention on the Rights of the Child and the EU Audiovisual Media Services Directive (2007/65/EC).

In the Netherlands, two systems of media ratings co-exist (see Table 1). In 1999, Kijkwijzer was introduced by the entertainment industry in response to government pressure. The system provides information about the harmfulness of movies, television programs and DVDs for several age groups (cf. Valkenburg, Beentjes, Nikken & Tan, 2002). Two years later, the Interactive Software Federation of Europe (ISFE) introduced PEGI, a similar (European) system, specifically aimed at video games. This piece of self-regulation was developed based on national classification systems. Regulations require media providers to

label media products according to the classification rules. National media and penal laws prohibit the display, rental and sale of harmful media to minors and, in 2004, the Dutch Parliament clarified that the owners of cinemas are legally required to refuse unqualified customers according to the 12- and 16-year-old age limits. It was emphasized that the same obligations apply to videos and DVDs.

Table 1: Pictograms of the classification systems Kijkwijzer and PEGI*.

Kijkwijzer						
Age-limits						
Content warning labels						
PEGI						
Age-limits						
Content warning labels						

* Pictograms are owned by NICAM and ISFE, copyright 2011.

Like the NICAM regulations, PEGI standards require age rating and labeling, information distribution, complaints procedures, and sanctions. PEGI standards also refer to the advertising and the promotion of games, as well as to corrective action and arbitration. Members are required to promote responsible purchasing practices where minors are concerned.

Besides informing parents, teachers and children about the content of audiovisual products, the two systems help the entertainment industry to comply with the Dutch Media Law and the Penal Law, which state that children under the age of 16 must be protected against harmful media content. Kijkwijzer provides warnings about the harmfulness of media products for children below certain ages (6, 9, 12, and 16 years); PEGI informs consumers about the suitability of games for players above certain ages (3+, 7+, 12+, 16+, and 18+). Both systems also provide information about the nature of media products' potentially harmful content using content warning pictograms. For Kijkwijzer, these pictograms represent violence, fear, sexuality, discrimination, drug and alcohol abuse, and profane language. PEGI also has warning pictograms for these types of content (although not all pictograms are similar to the ones used by Kijkwijzer), complemented by a

pictogram for gambling. In both systems, the classifications of media products are given by trained coders on the basis of scientifically developed criteria (Valkenburg et al., 2002).

Initially, both Kijkwijzer and PEGI required vendors explicitly to ask for identification whenever they had any doubts whether buyers had not reached the age to legally buy media products. At present, however, after changes in the regulations, no specific actions are prescribed to promote age or ID verification. Control is provided by various activities of quality assessment, oversight and complaint regulation. In case of violation, corrective action may take place. One can only file a complaint regarding incorrect classifications or wrong broadcasting times. Complaints about the illegal sale of media products to minors should be filed on the base of the Dutch Penal Law. From an own analysis by the Dutch Ministry of Justice we know that in the period 1999-2006 approximately 10 to 20 criminal cases were filed every year, almost all concerning the provision of sexuality-related images to minors (Gosselt et al., 2008). Although representatives of the entertainment industry are, in principle, free to decide whether or not they want to join Kijkwijzer or PEGI, the decision not to do so may have adverse consequences in practice.

Kijkwijzer and PEGI are both maintained by the (Dutch) entertainment industry—i.e., television broadcasting stations, cinemas, video and DVD rental companies, libraries, department stores, toy stores, CD/DVD stores and game shops. The success of classification systems depends on whether the public accepts the systems, whether the media classifications are valid, and whether the industry is willing to comply with the guidelines.

From a 2009 survey we know that, in sum, 92% of the Dutch parents with children up to 16 years use Kijkwijzer. Almost half do this frequently or regularly; 8% never use Kijkwijzer. In 2008, the percentage of non-users was 14%, so acceptance is growing. Moreover, 96% indicate that they think Kijkwijzer is a useful warning system. Acceptance for PEGI appears to be somewhat lower. When considering the PEGI age rating symbols, almost half of all Dutch parents surveyed in 2008 said they find the current system either extremely useful or very useful. Another study by Nikken, Jansz and Schouwstra (2007) showed that parents want to be informed by ratings of harmful videogames for their children and that the majority of the parents think it is very necessary to have ratings (77% feel an age rating is necessary and 78% wants a rating with respect to possibly harmful content).

Regarding the validity of the systems, we refer to an article from Valkenburg et al. (2002) that introduces Kijkwijzer, the choices that were made and principles underlying Kijkwijzer (the age categories, the content categories, coding procedure, and conditions that need to be met). The same Kijkwijzer classification was used to develop the PEGI system. To be short, we can say that much effort and expertise have been dedicated to the introduction and implementation of both systems.

In this chapter, we will focus on the important aspect of compliance. Welfare, culture and technological developments have made it increasingly difficult for parents to control the media products their children use. The Dutch government assigns some of the responsibility to the entertainment industry. Retailers are obliged to follow the law when selling or renting media products to minors. Potentially harmful media products may not be sold or rented to minors who have not reached the pre-scribed age. Three studies were designed to reveal the extent to which retailers comply with the age limits communicated by Kijkwijzer and PEGI. In the first study, actual compliance was measured using a mystery shopping approach. In the second study, vendors' overall support for the two systems was investigated using mystery calls. In the final study, a survey was conducted to examine the determinants of vendors' compliance with the age limits. The following research questions were formulated:

RQ1: What is the actual compliance with the age limits of Kijkwijzer and PEGI?

RQ2: What is the support among vendors for Kijkwijzer and PEGI?

RQ3: Which factors influence compliance with Kijkwijzer and PEGI?

STUDY 1: COMPLIANCE WITH AGE LIMITS

To investigate actual compliance, unobtrusive research approaches such as mystery shopping are indispensable. This method has often been used to investigate retailers' compliance with alcohol or tobacco legislation (e.g., Willner et al., 2000; Wagenaar et al., 2005; Gosselt, Van Hoof, De Jong, & Prinsen, 2007). In a mystery shopping study, companies or organizations are visited by trained accomplices who pretend to be normal customers but act according to a script and record the events and/or their evaluations. Immediately after the visit, a detailed

form is completed. We used the protocols of earlier studies to design our research protocol.

Method

In the first study, we examined to what extent the entertainment industry complies with the age limits imposed by the two media rating systems. Systems like Kijkwijzer and PEGI imply that no media products (DVDs, games or cinema tickets) may be sold to children and adolescents who are too young according to the age limit. Adolescents aged 11 or 15 years tried to buy media products for which they were too young according to the age limit (12 or 16 years). The age limits of 12 and 16 years were chosen because of their legal status. For several reasons, we did not focus on the age limits below 12 years old. Intrinsically, it is argued in the literature that 12 years is an important cut-off point since children undergo radical changes between the ages of 10 and 12 (Valkenburg et al., 2002). Furthermore, it is assumed that by the time children reach age 11 they have developed an interest in violent media products and are able to recognize them. And of course, it is not very likely that children below the 9 or 6 year limit buy or rent media products without parental supervision.

Mystery shoppers

Per region an 11-year-old boy and girl and a 15-year-old boy and girl were selected, making a total of 16 mystery shoppers. The participating minors were selected by elementary and high school teachers. The teachers were instructed to select children and adolescents who could handle the task and looked typical for their age. The representativeness of the participants for their age group was checked in an age-verification test involving 80 members of the general public (varying in age between 16 and 83 years old). The respondents were given a deck of photos of minors between the ages of 7 and 17 years old, including photos of all the mystery shoppers. The respondents were asked to sort the photos from young to old and, after that, estimate the age of each minor. In general, respondents tended to overestimate the age of the minor children and adolescents: the actual mean age was 13.0, whereas the estimated mean age was 13.4. The results of the verification test confirmed the mystery shoppers' age. The mean estimated age of the participating 11-year-old girls was 11.85 (SD=1.94), and the mean estimated age of the 11-year old boys was 11.31 (SD=1.7). Concerning the 15-year-old participants, the mean estimated ages were 15.74 (girls, SD=1.28) and 15.4 (boys, SD=1.77). From the minors that participated, no adaptation of their normal, daily appearance was desired.

Visits

The research was conducted in four regions, which were selected to represent the diversity of the Dutch society: the regions around Amsterdam (west), Groningen (north) Enschede (east), and Eindhoven (south). For each region, we included both rural and urban areas in the sample, and we randomly selected several suppliers of audiovisual products, namely, department stores (n=96), toy stores (n=96), CD/DVD stores (n=48), game shops (n=48), DVD rental companies (48 buying attempts and 48 hiring attempts), libraries (n=48), and cinemas (n=96). In total, mystery shoppers made 528 purchase attempts. A visiting scheme was developed to represent all (combinations of) relevant variables proportionally in the sample. Eventually, each region represented 25% of the sample, and the percentage of boys and girls was the same (50%) in all four regions. The 11-year-old mystery shoppers tried to buy or rent products with the age limits 12 years (n=176) and 16 years (n=176); the 15-year-old mystery shoppers tried to buy or rent products with the age limit 16 years (n=176).

Protocol

The mystery shoppers were picked up at their homes and transported by car to a pre-selected list of stores in their living area. They were accompanied by two research assistants: a driver and a navigator/facilitator/observer. They were first instructed about the script that they had to follow. After arriving at a target store, first a research assistant entered the store. The research assistant proceeded to the store's DVD or game section and randomly selected a DVD or game with a particular age limit. This DVD or game was marked using a small yellow sign. The research assistant left the DVD or game section and waited inconspicuously near the checkout of the store. After a few minutes, the mystery shopper entered the store. He or she picked up the preselected DVD or game and took it to the counter. When approaching the checkout, the mystery shopper memorized the number of pay-desks that were open and chose the pay-desk farthest to the left. The mystery shopper counted the number of customers in the line before him or her and, once the store vendor started the check-out procedure, the number of customers waiting behind him or her. Upon the actual encounter with the vendor, the mystery shopper said hello and tried to estimate the vendor's age. If the mystery shopper was asked about his or her age, he or she would answer truthfully. If the mystery shopper was asked for an ID, he or she would show a real ID. If the vendor refused to sell or rent the DVD or game, the mystery shopper would not further insist and leave the store. If the vendor was willing to sell or rent the DVD or game, which he or she signaled by recording the amount and/or mentioning the price, the mystery

shopper would act surprised and say that he or she did not bring enough money. No real purchases took place, but the unambiguous selling intentions were used as the indications of real sales, as is justified by a study by Cummings et al. (1996). After the store visit, the mystery shopper joined the research assistants and immediately filled out an extensive checklist, containing all the above-mentioned variables on shop floor compliance. In cinemas, a similar protocol was used, except instead of trying to buy a DVD or game, the mystery shopper not only bought a movie ticket but also tried to enter the room where the movie was shown. This is because cinemas have, in principle, two possible moments of forbidding children and adolescents to watch a movie. The mystery shopper then pretended to feel ill and left the room as soon as the pre-movie advertisements started.

After all visits, a debriefing with the mystery shoppers took place in which their experiences were discussed. The mystery shoppers' parents were also present at the debriefing sessions.

Results

The results of the mystery shop study show that it was quite easy for minors to obtain a DVD, game or cinema ticket for which they were too young (Table 2). The overall compliance rate was only 14%; 86% of all purchase attempts were successful. A two-way frequency analysis was performed to develop a hierarchical linear model of outlet type (8 types) and condition (3) in compliance with the age limits. The model had a likelihood ratio $\chi^2(16)=9.17$, $p=.91$, indicating a good fit between the observed frequencies and the expected frequencies generated by the model. Significant differences were found between the outlet types; compliance was higher in cinemas compared to game shops ($p=.016$), toy stores ($p=.000$), libraries ($p=.006$) and department stores ($p=.000$). Further, compliance in department stores was significantly lower compared to CD/DVD stores ($p=.001$), video stores (rental: *Fisher's Exact Test*: $p=.003$; sale: *Fisher's Exact Test*: $p=.007$). Also there were differences between the three conditions. When the distance between the age limit and the mystery shoppers' age was larger, vendors' compliance increased significantly. Eleven year olds who tried to buy a 16+ product were less successful than their counterparts who tried to buy a 12+ product (30.7% vs. 6.8%; $\chi^2=34.09$, $df=1$, $p=.000$) and 16+ products were less frequently sold to 11 year olds compared to 15 year old adolescents (30.7% vs. 4.0%; $\chi^2=43.80$, $df=1$, $p=.000$). No difference was found between the conditions '11-year old buys 12+' and '15-year old buys 16+'. Further, compliance differed on type of product: compliance was significantly higher when buying a cinema ticket

compared to a DVD (28.1% vs. 9.0%; $\chi^2=22.73$, $df=1$, $p=.000$), or a game (28.1% vs. 14.5%; $\chi^2=6.36$, $df=1$, $p=.012$). No significant differences in compliance were found between female (45.2%) and male (54.8%) buyers ($\chi^2=.78$, $df=1$, $p=.377$).

Table 2: Compliance with age limits (percentages, frequencies and the standardized residuals).

	11-year-olds 12+ product (N=176)			11-year-olds 16+ product (N=176)			15-year-olds 16+ product (N=176)			Compliance	
	%	N	Std. Res.	%	N	Std. Res.	%	N	Std. Res.	%	N
	Cinemas (N=96)	0	0	1.406	69	22	-1.563	16	5	.581	28
CD/DVD stores (N=48)	25	4	-.205	25	4	-.205	6	1	.445	19	9
Rental companies (rent) (N=48)	0	0	.688	56	9	-1.101	0	0	.688	19	9
Rental companies (sale) (N=48)	13	2	.145	38	6	-.658	0	0	.617	17	8
Game shops (N=48)	0	0	.397	25	4	-.497	6	1	.154	10	5
Toy stores (N=96)	13	4	-.214	13	4	-.214	0	0	.453	8	8
Libraries (N=48)	6	1	.078	19	3	-.367	0	0	.320	8	4
Department stores (N=96)	3	1	.000	6	2	-.169	0	0	.174	3	3
Compliance	7	12		31	54		4	7		14	73

In the majority of the visits (89%), the mystery shoppers could buy or rent the products without any intervention (no questions about their age or their ID). If an intervention took place (11%), the mystery shoppers sometimes could still obtain the DVD, game or cinema ticket. Asking about the mystery shoppers' age had a preventive effect in 34 of the 45 cases. Asking for their ID resulted in a refusal in three of the nine cases. Out of all of the visits, only three involved a combination of both interventions; in all three cases, the media product was eventually not sold or rented.

Based on earlier compliance studies (e.g., Willner et al., 2000; Wagenaar et al., 2005; Gosselt et al., 2007), characteristics about the store and the vendor were recorded for each attempt. These characteristics included the day of the visit, the total number of pay-desks in the store, the number of pay-desks that were open during the visit, the number of customers in front of the mystery shopper at the pay-desk ($M=1.1$), the number of customers behind the mystery shopper at the pay-desk ($M=.71$), whether or not the mystery shopper knew the vendor personally (this was never the case), the gender of the vendor (38% male; 62% female), and the estimated age of the vendor ($M=30.2$ years; range 15-60). All of these variables were incorporated as independent variables in a logistic regression analysis and only main effects were considered. This regression model ($\chi^2=401.97$, Nagelkerke $R^2=.052$) showed that none of these variables had a significant influence on the compliance, which may be attributed to the low overall score of compliance.

STUDY 2: SUPPORT FOR THE AGE LIMIT SYSTEMS

In the second study, we investigated the support for the two media rating systems among vendors. This study focused on the vendors' advice function: how do they respond to the classification of media products when they are explicitly asked for advice? To this end, we used a "mystery call" approach in which concerned 'parents' asked about the suitability of a game or movie for their child. Compared to the first study, three important barriers to compliance were eliminated here: (1) the vendors were explicitly confronted with the age limit of the media product, so that there was no way that they could have overlooked or forgotten to consider the age limit, (2) the vendors were explicitly given the age of the minor, so that the problem of correctly estimating minors' age was excluded, and (3) the parent scenarios did not contain a conflict of interest with the vendor, so that they were not subjected to any form of social pressure.

Method

Calls

Similar to the first study, three situations were included in this study: parents asking for advice concerning an 11-year-old child and a DVD/game/cinema ticket with a 12 years age limit, an 11-year-old child and a 16 years age limit, and a 15-year-old child and a 16 age limit. The list of stores included was based on the

stores that participated in study 1. From the list with 528 visits, a random selection of 52 stores per condition was made. Eventually, 149 telephone conversations took place; seven of the selected stores appeared to be telephonically inaccessible. In total, 99 telephone calls were made concerning a DVD, 39 calls concerning a game and 11 calls concerning a cinema.

Procedure

Vendors of several suppliers of media products were telephoned by research assistants. In these phone calls, the research assistants pretended to be a concerned father (75 calls by a male research assistant) or mother (74 calls by a female research assistant). The research assistants asked the vendors for advice with regard to the age limits that they saw on a DVD, game or cinema ticket. The following question was asked to store vendors:

'Some time ago, I bought/rented the DVD/game [title] at your store and now my son/daughter of 11/15 years of age wants to see/play it with some of his/her classmates. But I just noticed a pictogram that says '12/16 years'. Can I let them watch/play the DVD/game nevertheless?'

And in the cinema condition:

'My son/daughter is 11/15 years old and wants to go to the movie [title] with some classmates. But I just noticed that this movie is found suitable for children of 12/16 years and older only. Can I let them watch the movie nevertheless?'

When a vendor initially did not want to give an advice, the 'parent' would say that s/he was not familiar with the rating systems and the particular movie/game and therefore needed some kind of advice. There was no hint of parental approval in the script, and in both scripts, the 'parent' did not only have to decide for his/her own child but also for some classmates (to avoid that a vendor would argue that the advice is dependent on specific characteristics of the child). To make sure that the actual title was available in the store, the same titles were used as the ones of the purchase attempts in the first study.

Results

The vendors' answers were grouped into four categories (yes, no, no advice, decision of the parents). The categorization of responses was based on the agreement of two coders. In total, 52 vendors (35%) advised that, in spite of the age pictogram, the minors could watch the movie or play the game. Exactly the same number of vendors recommended the parent not to expose their child to the movie or game. Three vendors (2%) did not want to give advice (even after

repeated requests) and 42 vendors (28%) argued that the parents had to decide for themselves.

In addition to their advice, the vendors were also asked for an explanation. Explanations for letting the child watch the movie or play the game (52) included: the vendors' own experience with the media product (28), qualifications of the age classification systems (12), and obvious misinterpretations like 'The pictograms represent the difficulty of a game' (3). Explanations given by vendors who advised the parents not to expose their child to the movie or game (52) included: the age classification pictogram (27), the content of the movie or game (16), and judgments like 'Children will not understand the humor' (1). Thus, of the 52 vendors (35%) who made recommendations in accordance with the classification systems, only 27 (18%) explicitly based their advice on the age limits.

Table 3: Answers given by the vendors (in percentages).

	Can my child watch/play this movie/game?			Parents' choice
	Yes	No	No answer	
Script				
11 years-class. 12 years	50	24	4	22
11 years-class. 16 years	18	59	0	24
15 years-class. 16 years	38	21	2	40
Outlet type				
Cinemas (N=11)	0	91	9	0
CD/DVD stores (N=17)	41	24	6	29
Rental comp. (N=29)	48	35	0	17
Game shops (N=19)	58	5	0	37
Toy stores (N=32)	41	28	0	31
Libraries (N=13)	8	23	0	69
Department st. (N=28)	21	54	4	21
Total	35	35	2	28

Multinomial logistic regression was performed to establish which characteristics distinguish the three types of answers (because there were only three cases in which no advice was given, the last two answers ('no advise' and 'decision of the parents') were combined; the three types of answers consisted of 'Yes'/'No'/'No

answer'). Out of the eight possible predictors—gender of 'parent', gender of child, product type (DVD/game/cinema ticket), outlet type, gender of vendor, condition (11-year-old child and a 12 years age limit / 11-year-old child and a 16 years age limit, and 15-year-old child and a 16 years age limit), age of the child, and age limit—included in the in the analysis, two were shown to distinguish the different types of answers, namely outlet type ($\chi^2=45.43$, $df=12$, $p=.000$) and condition ($\chi^2=31.52$, $df=4$, $p=.000$). Again, vendors were significantly more flexible when the distance between the age limit and the minors' age was relatively small; when this distance was larger, vendors tended to comply more with the age limit systems. Asking for advice concerning eleven year old children and a 16+ product resulted in more No-answers compared to eleven year olds and a 12+ product ($\chi^2=15.28$, $df=2$, $p=.000$) and more vendors told the parent not to show 16+ products to 11 year olds compared to 15 year old adolescents ($\chi^2=14.92$, $df=1$, $p=.001$). No difference was found between the conditions '11-year old child and age limit 12' and '15-year old child and age limit 16'. Chi-square tests revealed that there were no differences between male and female sale vendors regarding their answers ($\chi^2=6.05$, $df=3$, $p=.109$) or between recommendations for a male or female child ($\chi^2=1.14$, $df=3$, $p=.768$).

In short, vendors seemed to consider their own knowledge concerning the content of movies or games to be of equal importance to the age limits. Furthermore, many vendors tended to assign the responsibility for deciding whether or not it would be wise to expose children to a movie or game to the parents, even though the parents had explicitly asked them for help and compliance with the age limits would not lead to a potential conflict with a customer.

STUDY 3: DETERMINANTS OF COMPLIANCE

From the results of the first two studies, it became clear that the rates of compliance with the media rating systems were problematic. In the third study, possible reasons for this low compliance were investigated using a survey of vendors.

Method

Data were collected by administering a written questionnaire to 114 vendors in four regions of the Netherlands. The vendors were visited by a researcher and

confidentiality was assured. After an introduction, the researcher asked the vendor(s) to fill in the questionnaire alone after which the researcher left the store. Some time later, the researcher returned to collect the questionnaire.

Participants

All respondents were vendors of libraries, video and DVD rental companies, cinemas, department stores, toy stores, CD/DVD stores and game shops. The vendors' ranged in age from 17 to 58 years old ($M=30.2$); 48% were female, and 52% was male. Approximately a quarter (27%) of the vendors had children themselves; 9% of the vendors had children in the age group of 10-16 years.

Questionnaire

The questionnaire consisted of three parts (A-C). Part A was about the vendors' knowledge of the two media rating systems. Using three open-ended questions ('What is Kijkwijzer?', 'What is PEGI?' and 'On which products can you find Kijkwijzer and PEGI pictograms?') and 21 closed questions (about the meaning of the pictograms and the background of the systems), the vendors' knowledge of the classification systems was tested.

Part B of the questionnaire consisted of 76 questions on the vendors' opinions about the media rating systems. All questions were formulated as assertions, to which the vendors had to react on five-point Likert scales (1=strongly disagree, 5=strongly agree). Ten constructs were included, which were partially based on the 'Table of Eleven', a Dutch government instrument designed to investigate factors associated with people's compliance with rules (Law Enforcement Expertise Centre of the Dutch Ministry of Justice, 2004).

Compliance with the rules (12-item scale; Cronbach's $\alpha=.69$). This dependent variable was measured with assertions such as 'I do not sell a DVD or game containing an age limit of 16 years and older to adolescents who are just 15 years old,' and 'In our store we comply with the age limits of Kijkwijzer and PEGI.'

Familiarity with and clarity of the rules (9-item scale; $\alpha=.71$). Unfamiliarity with the rules may result in unintentionally violating them. This lack of clarity or the complexity of the rules may lead to unintentional mistakes or feelings of justification of non-compliance. Examples of items are 'I know the rules of Kijkwijzer and PEGI,' and 'The rules of Kijkwijzer and PEGI are too complicated.'

Personal acceptance of the systems (12-item scale; $\alpha=.79$). Acceptance relates to the perceived reasonableness of the rules. Acceptance may also relate to the implications of the rules and the manner in which the rules are implemented. Examples of items are: 'When adolescents cannot buy or rent a certain DVD or game in our store, they will be able to buy or rent it in another store,' and 'I think the warning symbols on DVDs and games are, in general, overdone.'

Organizational acceptance of the systems (5-item scale; $\alpha=.88$). This variable deals with the (perceived) overall attitude towards the media rating systems within the store. Examples of assertions are: 'In our store, Kijkwijzer and PEGI are not taken very seriously,' and 'Our store supports the guidelines of Kijkwijzer and PEGI.'

Perceived responsibility (2-item scale; $\alpha=.74$). Another issue is the extent to which vendors think they are responsible themselves. This was measured with the following items: 'I think that we as vendors are responsible for the DVDs and games that children and adolescents buy,' and 'I think that both individual stores and store chains are responsible for the DVDs and games that adolescents buy.'

Practical feasibility (8-item scale; $\alpha=.70$). This construct involves the practical issues related to the media rating systems for vendors. Examples of items are: 'I find it hard to estimate the age of children or adolescents,' and 'As a vendor I may encounter problems when I ask for an ID.'

Perceived legal basis (5-item scale; $\alpha=.83$). This variable involves the extent to which vendors are aware of a legal basis for complying with the Kijkwijzer and PEGI classifications. This construct contained items like: 'Stores are punishable by law when a DVD or game with the age limit 16 years is sold to an adolescent of 15 years old,' and 'Kijkwijzer and PEGI are irrelevant to the vendor; they are recommendations to parents.'

Costs and benefits of compliance (5-item scale; $\alpha=.70$). This construct concerned all economic and intangible advantages and disadvantages of compliance behavior. They can be expressed in terms of time, money, and effort. Examples of items are: 'Being strict when selling DVDs and games to adolescents is bad for business,' and 'Complying with the regulations of Kijkwijzer and PEGI can be good for the reputation of our store.'

Attitude towards norms (6-item scale; $\alpha=.61$). This variable focuses on the extent to which vendors are generally inclined to comply with regulations, and their overall respect for authority. Examples of items were: 'I find that I should comply with regulations,' and 'I find that I should comply with regulations only when this is beneficial for our store.'

Perceived internal and external surveillance (12-item scale; $\alpha=.76$). Internal surveillance refers to control by colleagues or supervisors. External surveillance refers to control by (governmental or nongovernmental) authorities. Examples of items are: 'When our store does not comply with the regulations of Kijkwijzer and PEGI, chances are that this might be discovered,' and 'The chance that an inspector visits our shop is small.'

The questionnaire ended with part C, in which the vendors were asked by means of an open-ended question whether they complied with the systems, and why (not).














Results

Knowledge of the systems

The results of part A of the survey show that the vendors had more knowledge of Kijkwijzer than of PEGI. Seventeen vendors (15%) did not answer the question "What is Kijkwijzer?" The vendors who did answer generally gave adequate descriptions of this system. Fifty-three vendors (46%) did not answer the question 'What is PEGI?' Here, relatively more wrong answers were given. Remarkably, many vendors spoke in terms of 'information,' 'advice,' and 'recommendation,' and not of 'regulations' or 'rules.' The vendors seemed to consider the age limits merely as information that did not imply any obligations in sale situations. Moreover, the results showed that vendors did not always know the meaning of the pictograms, and that it was not entirely clear to them on which media products they could expect age limits. For example: 83% of all vendors knew that Kijkwijzer pictograms can be found on TV programs, but 57% of the vendors wrongfully thought that Kijkwijzer pictograms can be seen on games as well, whereas only 50% were aware of the fact that PEGI pictograms can be found on game covers. The legal basis of the age limits also caused problems: vendors often did not know that the 12 years age limit also had legal status. The majority of vendors (66%) knew that the age and warning labels are assigned by the audiovisual industry, whereas others thought that scientists (22%) or parents (12%) do this. Many

vendors (80%) are well informed about all the existing warning labels. Also, we asked about the meaning of these warning labels. Table 4 shows the results.

Table 4: Meaning of the pictograms according to vendors (correct answers in percentages).

	Violence	Fear	Sexuality	Discrimination	Drugs/alcohol	Profane language	Gambling
Kijkwijzer							
% correct	99%	92%	98%	83%	76%	97%	
PEGI							
% correct	95%	92%	67%	57%	97%	95%	87%

As can be seen, there is more knowledge of the Kijkwijzer-pictograms compared to the PEGI-pictograms. The Kijkwijzer-pictogram for discrimination was confused with the prevention of threat in a program (16%) and the PEGI-pictogram for discrimination was frequently confused (40%) with the recommendation that parents should watch with their child. The PEGI-pictogram for sex was confused with love (31%).

In general, vendors were familiar with both systems and largely knew what they were about, but still had some misunderstandings. The average score of the vendors on the 21 closed questions in part A was 16.1 (SD=2.6).

Support for the systems

As can be seen in Table 5, vendors generally judged neutral about their compliance with the rules. At any case, many vendors seem to be aware that they do not always comply with the Kijkwijzer and PEGI guidelines. They also had a neutral judgment about their familiarity with the two media rating systems. Their scores on this construct appeared to correlate only weakly with their overall score on the knowledge questions in part A of the questionnaire ($r = .30, p < .005$).

The vendors were more positive about their own attitudes towards norms, the legal basis for the two media rating systems, the acceptance of the two systems

(both organizational and personal), the costs and benefits of compliance, and the feasibility of complying with the age limits.

More negative scores were found regarding the vendors' perceptions about their own responsibility (they did not consider themselves or the store responsible for the purchases of children and adolescents; parents and the adolescents or children themselves were considered to be responsible) and the surveillance (they did not expect much internal or external surveillance).

Table 5: Mean scores of the constructs and correlation analysis.

	M	SD	Compliance	Familiarity	Personal Acceptance	Organizational acceptance	Responsibility	Feasibility	Legal basis	Costs/benefits	Attitude towards norms	Surveillance
Compliance	3.2	.63	1.0									
Familiarity	3.2	.54	.321**	1.0								
Personal acceptance	3.4	.48	.510**	.386**	1.0							
Organizational acceptance	3.5	.73	.528**	.574**	.417**	1.0						
Responsibility	2.7	.91	.282**	.179	.367**	.298**	1.0					
Feasibility	3.3	.57	.115	.314**	.013	.064	-.115	1.0				
Legal basis	3.5	.75	.722**	.339**	.400**	.465**	.287**	.315**	1.0			
Costs/benefits	3.4	.59	.481**	.320**	.439**	.565**	.252**	.189*	.452**	1.0		
Attitude towards norms	3.7	.54	.494**	.420**	.488*	.569**	.243**	.290**	.485**	.408**	1.0	
Surveillance	2.8	.62	.469**	.501**	.319**	.627**	.304**	.006	.286**	.403**	.382**	1.0

** $p < .01$

* $p < .05$

Determinants of compliance

When vendors were asked directly why they would not comply with the media rating systems, they often mentioned practical barriers (e.g., the possibility of conflicts with customers and the difficulty of assessing the real age of children and adolescents).

The results of a hierarchic regression analysis (Table 6) showed that three factors are related to vendors' self-reported degree of compliance ($R^2=.63$, $F=15.426$, $df=13.96$). The first factor is their personal acceptance of the systems ($B=.196$, $t=2.503$, $p<.05$). The individual perceptions of vendors, more than the perceptions on the level of the store, may affect their willingness to comply with the rules. A second important factor involves the perceived legal basis for the age limits ($B=.587$, $t=7.468$, $p<.05$). The willingness of vendors to comply increases when they are aware that there is a legal basis for the systems. The third factor is the perceived degree of (external) surveillance ($B=.258$, $t=2.503$, $p<.05$). Compliance increases when vendors are aware of the possibility of internal and external monitoring activities.

Table 6: Regression analysis: influence on compliance.

	Model 1		Model 2	
	β^*	t	B	T
Gender of vendor	-.106	-1.098	-.034	-.504
Age of sale vendor	-.120	-1.178	.049	.723
Have children 10-16 years old (yes or no)	-.047	-.462	.006	.101
Score knowledge questions			.049	.712
Familiarity			-.128	-1.470
Personal acceptance			.196	2.503*
Organizational acceptance			.087	.891
Perceived responsibility			-.064	-.958
Practical feasibility			-.068	-.915
Perceived legal basis			.587	7.468*
Costs/benefits of compliance			.051	.666
Attitude towards norms			.030	.725
Perceived internal and external surveillance			.258	2.503*
Adjusted R^2	.01		.63	
F	1.287		15.246*	
Df	3.106		13.96	

* $p<.05$

DISCUSSION

Given the impact of harmful media content on children and adolescents and the effects on society as a whole, it is important that children and adolescents can watch television and play games in a responsible and safe way. Media rating systems are a possible solution. They can empower parents and decrease the risk of harm to children and adolescents. In this chapter, the effectiveness in the daily practice of two media rating systems was examined in three studies.

Compliance with age limit systems within the target industry is essential for the functioning of these systems. Research question 1 was about the actual compliance with the age limit systems Kijkwijzer and PEGI. The mystery shopping study reported here (study 1) revealed that the level of compliance is low. It is easy for minors to obtain a DVD, game or cinema ticket for which they are (according to the age limit) too young. A possible explanation of this lack of compliance would be that the vendors estimated the mystery shoppers older than they were. Misjudgments of buyers' ages may indeed have been a factor in the low compliance rates (Merrill et al., 2000). However, the age verification test confirmed the mystery shoppers' age, which at the very least should cause serious doubts among vendors whether they had reached the requisite age. Furthermore, it is not reasonable to assume that such misjudgments played a role when 11-year-old children tried to buy 16+ media products, and even in that case we still found a non-compliance of 69%. More plausible explanations of the lack of compliance would therefore lie in the area of vendors' knowledge of and support for the systems.

When testing the vendors' support (research question 2), the mystery calls (study 2) showed that vendors did not convincingly use the systems' age limits as the basis for their advice to parents. Given the social importance involved in protecting minors against harmful media content, it is necessary that vendors play a more active role.

Research question 3 involved the factors that influence compliance. To explore the reasons for low compliance, a survey (study 3) was conducted to map the vendors' attitudes towards the systems. The results suggest that vendors may not consider the media rating systems as regulations, but as some kind of information and/or recommendations for parents. Their lack of engagement resulted in an indifferent

attitude with respect to the age limits, which does not aid in preventing minors from accessing harmful media content. Information on the harmfulness of a movie or a game is available, but the question is whether this information is (sufficiently) used.

Much money and effort has been spent on media rating systems. Much research has been devoted to the potentially harmful effects that some media may have on minors and to the development and validation of media rating systems. The systems' most vulnerable point appears to be the actual moment of purchase. Stores and individual vendors do not seem to be aware of the necessity to comply with regulations. They do not have sufficient knowledge about the meaning of all the pictograms and the legal basis of both systems. Vendors do not perceive current surveillance practices to be strong enough to enforce compliance with the age limits. In their perception, there is no risk involved in selling or renting a DVD or game to minors who have not reached the required age. It would probably even seem strange when they refuse to sell or rent a DVD or game to a minor.

Given these considerations, the effectiveness of age limit systems relies on the willingness of individual vendors to take the age limits seriously, in spite of the economic benefits of selling the audiovisual product. From the third study, it became clear that three factors influence compliance: personal acceptance of the systems, the legal basis for the age limits and the perceived degree of (external) surveillance. In particular, legality and perceived surveillance appear to be problematic. Vendors do not perceive there to be any real chance that someone will check whether or not they comply with the age limits. As a result, no feedback will emerge on the actual functioning of the age limit systems. Also, the legal basis is not always clear. As is the case in many other countries, the development and implementation of the Kijkwijzer and PEGI classification systems was prompted by the threat of government intervention. Now that these systems are in use, it seems that the entertainment industry feels that it has fulfilled its obligations and that no more should be expected from the industry. A limitation of the third study is that the reliability of the construct 'attitudes towards norms' was low, so the conclusion that this factor does not significantly contribute to the explanation of self-reported compliance should be treated with caution.

At this moment in the Netherlands, two separate systems are used to classify media products. This is a situation that can also be found in other countries. One universal system for media ratings would be ideal (cf. Gentile et al., 2005). This

would prevent confusion between the two systems and would make it easier to bring the media ratings to the attention of vendors, parents, and minors.

Practical implications

The research in this chapter was commissioned by the Dutch Ministry of Justice. The ministry wanted to know whether media ratings are an effective tool to protect minors against harmful media content. For the first time, the compliance with the rating systems was investigated. The results of our study show that the availability of a media rating system by no means guarantees the protection of minors against harmful media. The actual compliance on the shop floor appears to be a crucial factor. In spite of self-reported compliance and a positive attitude from the vendors towards the classification systems, the actual rates of compliance are poor. The findings of our study make us aware that it is very easy for minors to expose themselves to harmful media content. The implementation of a media rating system therefore should be accompanied by well-considered plans to facilitate and/or enforce the compliance with the age limits at transaction moments (buying or renting a DVD or game, or buying a ticket for the cinema).

The results also indicate that three factors are important for vendors in their decision whether or not to comply with the media rating systems: their personal acceptance of the systems, their perceptions of the legal basis for the age limits, and the perceived degree of surveillance. It is important to not only inform vendors about the existence of the media rating systems and the meaning of the symbols but also provide information about the importance and validity of the systems and their legal backgrounds (e.g., the legal basis of the age limits). For example, studies into the effects of training personnel on the relevance and functioning of the regulations that prohibits the sale of alcohol to minors and prevent over-serving to obviously intoxicated guests show some positive results (Toomey et al., 2001; Wagenaar et al., 2005). Training programs (focusing on the need and usefulness of the rating systems), and ways to challenge and refuse possibly under-aged customers may have a positive effect on compliance (Willner et al., 2000). Furthermore, it appears to be important to develop a valid and visible system of external surveillance, which affects the vendors' perceived risk of being caught for non-compliance, but also underlines the legal basis and the importance of complying with the age limits. From compliance studies on alcohol sales to minors we know that enforcement checks can increase compliance (Wagenaar et al., 2005; Preusser, Williams, & Weinstein, 1994; Lewis, Paine-Andrews, Fawcett, Francisco, Richter, Copple, & Copple, 1996; Scribner & Cohen, 2001). However,

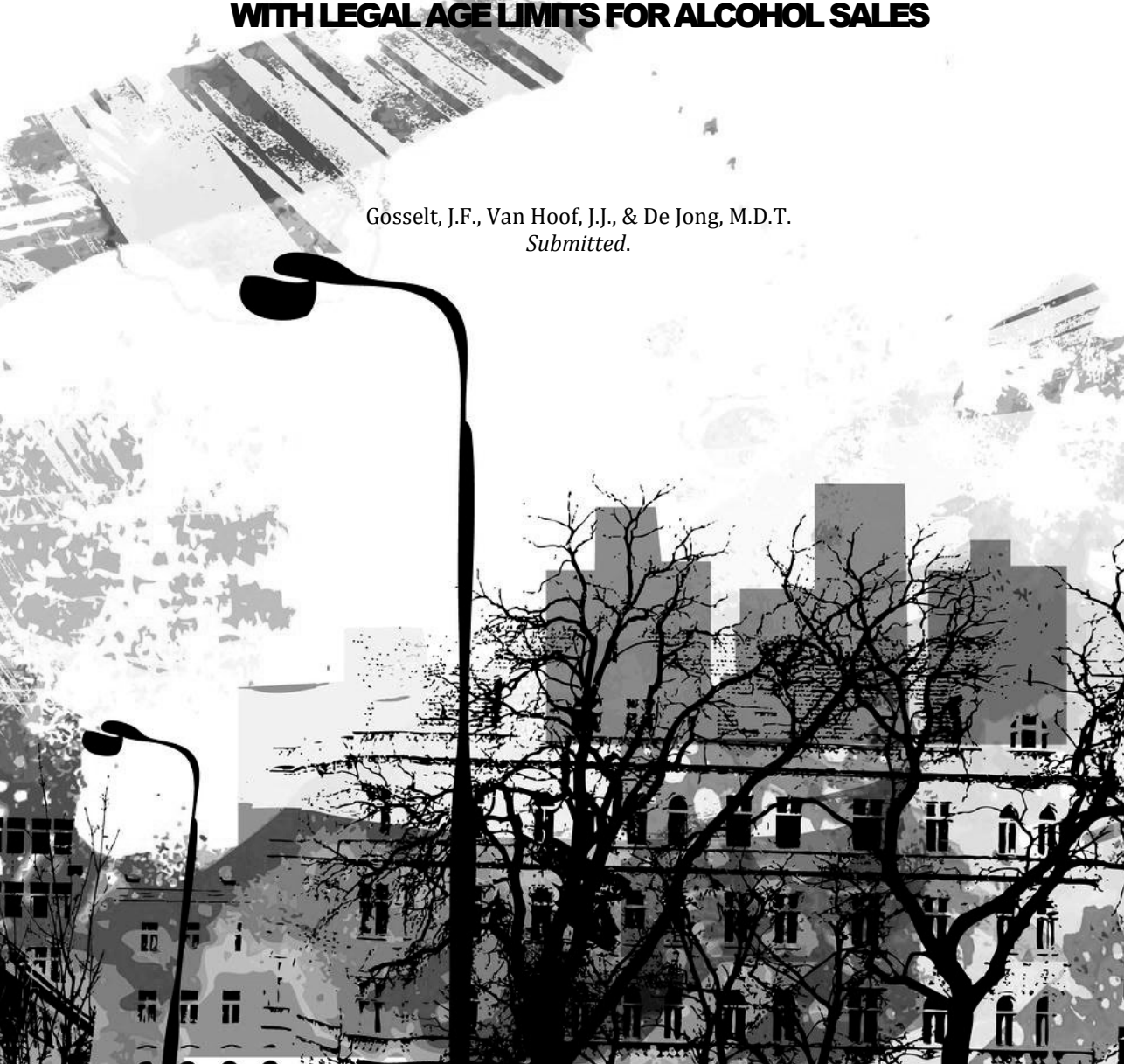
training programs and enforcement checks will only be effective if the vendors realize the necessity to comply with the legal age limits and enforcement checks will only be effective when vendors are aware of them and are periodically informed about their results and consequences (Gosselt et al., 2007).

To our knowledge, this is the first time that actual compliance with media rating systems was investigated. Media rating systems are an important first step towards protecting minors against harmful media contents; without actual attention for the issue of compliance, however, their contribution will be limited.

CHAPTER 4

**WHY SHOULD I COMPLY?
SELLERS' ACCOUNTS FOR (NON-)COMPLIANCE
WITH LEGAL AGE LIMITS FOR ALCOHOL SALES**

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Submitted.



INTRODUCTION

Reducing adolescents' consumption of risky substances such as alcohol, tobacco and illicit drugs is an important challenge for national and local governments, politicians, policy makers, health professionals and academics. The age at which people start using risky products appears to be predictive of their consumption levels and related problems in later years (Hingson, Edwards, Heeren, & Rosenbloom, 2009). Delaying the onset of consumption can reduce consumption related mortality and morbidity. Both for alcohol and for other detrimental substances, availability is generally considered to be an important, if not the most important, predictor of adolescents' initial consumption and consumption patterns, along with the consumption-related damage that they cause (e.g., Paschall, Grube, & Kypri, 2009; Popova, Giesbrecht, Bekmuradov, & Patra, 2009; Pokorny, Jason, & Schoeny, 2003; Novak, Reardon, Raudenbush, & Buka, 2006; Henriksen, Feighery, Schleicher, Cowling, Kline, & Fortmann, 2008).

Although delaying the onset of consumption is associated with positive effects, modern societies make these substances widely available. In an attempt to decrease the availability of these substances, many countries have introduced special rules in the form of age limits. Such regulations prohibit the sale of substances to customers below a certain age, which should result in an overall reduction in the commercial availability of these products for adolescents.

Compliance with age limits

Whether minors succeed in obtaining age-restricted products depends not only on the legislation but also on the extent to which vendors comply with these age restrictions in their daily practices within their stores. Compliance studies conducted worldwide (e.g., Britt, Toomey, Dunsmuir, & Wagenaar, 2006; Grube, 1997; Perry, Williams, Komro, Veblen-Mortenson, Stigler, Munson, Farbakhsh, Jones, & Foster, 2002; Romano, Duailibi, Pinsky, & Laranjeira, 2007; Van Hoof, Moll, Constantinescu, 2009; Willner, Hart, Binmore, Cavensish, & Dunphy, 2000; Gosselt et al., 2007) show that compliance is actually low, although differences in compliance rates between countries exist (Forster, Murray, Wolfson, & Wagenaar, 1995; Willner et al., 2000; Dieth, 2005). Several studies also identified context factors that may influence compliance with age limits, such as characteristics of the general establishment (e.g., type of license, location of the establishment), the interior of the premises (e.g., busyness, signs in the store), vendor characteristics

(e.g., gender, age), buyer characteristics (e.g., gender, educational level), and characteristics associated with the purchase attempt itself (e.g., time of visit) (Britt, Toomey, Dunsmuir, & Wagenaar, 2006).

The effects of several interventions aimed at improving compliance were tested using pre- and post-intervention assessments, for example for educational and training interventions (Wagenaar, Toomey, & Erickson, 2005), raising the purchase age (Dumouchel, Williams, & Zador, 1987), intensifying enforcement (e.g., Cummings, Hyland, Saunders-Martin, Perla, Coppola, & Pechacek, 1998), personal feedback on shop-floor compliance (Van Hoof, Gosselt, & De Jong, 2010), mass media campaigns (Gosselt, Van Hoof, Baas, & De Jong, 2011), or technical solutions (Krevor, Capitman, Oblak, Cannon, & Ruwe, 2003; Van Hoof, Gosselt, & De Jong, 2010b).

To date, the compliance literature has mainly focused on determining the extent to which vendors and consumers comply with age limits and the factors that may influence compliance, such as establishment characteristics, vendor characteristics, buyer characteristics, and the characteristics of the purchase attempt itself (Britt, Toomey, Dunsmuir, & Wagenaar, 2006). To further our insights on compliance with age restrictions, it seems useful to also consider compliance from a more diagnostic perspective. To establish highly effective systems of age limits, it is important to know not only whether there is compliance but also why there is compliance or non-compliance, along with the way in which age limits are viewed by the most prominent actors involved: the vendors working in outlets where risky products are sold. Diagnostic information helps us to uncover the strengths and weaknesses of the system in order to increase compliance.

Compliance with rules

In the fields of the environment, food safety, occupational health and safety, and financial services, the question of how to influence the acceptance of and compliance with rules is a prominent one (Black & Baldwin, 2010; Mellett, Curtin, Hennessey, & O'Hogan, 2011; Nodora, Martz, Ashbeck, Jacobs, Thompson, & Martínez, 2011; Ribner, Hall, Steinberg, Bornstein, Beasley, Duffell, De Gennaro, & Garner, 2011). In the case of the availability of detrimental substances, factors that may be conditional on an industry level include sufficient overlap of private interests with public interests, the existence of pressures to comply, a small number of actors in a highly organized and homogeneous sector, and the degree of

social responsibility within the sector (Dorbeck-Jung, Oude Vrielink, Gosselt, Van Hoof, & De Jong, 2010). Poor performance of certain (groups of) actors and of the whole regulatory system can be counterproductive in regulatory practice (Dorbeck-Jung et al., 2010; Gunningham 1995; Halpern 2008).

Whether the industry complies with the rules may be affected by the supportiveness of the outlet management (e.g., Howard-Pitney, Johnson, Altman, Hopkins, & Hammond, 1991) and by the personal support from vendors for these rules. Three conditions are important: the people who must comply should have sufficient knowledge of the rules and should be able and willing to comply with the rules (Griffiths, 1999, 2003; Havinga, 2006; Karlsson-Vinkhuyzen & Vihma 2009). First, the regulated parties must know and understand the rules. Clear and uniform communication about the rules is therefore essential. Second, it is important that the parties are able to follow the rules. For example, resistance to the rules that vendors may encounter in practice (e.g., a situation in which minors threaten the staff of a store after a refusal) may diminish the ability to follow the rules. Third, the regulated parties have to be willing and motivated to comply. Here, their attitudes toward compliance are important (Havinga, 2006; Kagan & Scholz, 1984; Braithwaite, 1995; Gunningham, Kagan, & Thornton, 2002; Baldwin & Black 2008), while the motivation may also be related to the prominence of sanctions and/or enforcement (Vogel, 2009).

In the domain of detrimental media (e.g., games or movies with violent content), we quantitatively examined the determinants of vendors' compliance with age limits, resulting in three factors that appeared to be related to vendors' self-reported degree of compliance not to sell detrimental media to customers who are too young according to an age classification (Gosselt, Van Hoof, & De Jong, 2011; see chapter 3). The first factor is their personal acceptance of the systems. The individual perceptions of vendors, more than the perceptions on the level of the store, may affect their willingness to comply with the rules. A second important factor involves the perceived legal basis for the age restrictions. The willingness of vendors to comply increases when they are aware that there is a legal basis for the system. The third factor is the perceived degree of (external) surveillance. Compliance increases when vendors are aware of the possibility of internal and external monitoring activities. It is conceivable that the factors that were important for detrimental media do not reflect the issues that are relevant in other contexts (for example, due to different regulations or different detrimental

consequences after consumption). In the current study, we explore compliance-related issues in the context of alcohol sales.

The Dutch situation on alcohol sales and age limits

As in many other countries, in the Netherlands, age limits have been implemented for several risky products such as alcohol, tobacco, detrimental media, gambling products and marijuana. For alcohol, two age limits are used: 16 years of age for soft alcoholic beverages (<15% alcohol, and some distilled wines, such as port and sherry), and 18 years of age for strong alcoholic beverages (>15% alcohol). Sales personnel in supermarkets, liquor stores, and the catering industry are obliged to ask for someone's identification if there "could be any doubt about the age of the potential customer." It is also forbidden to sell alcohol to someone who is older than 16 years (or in the case of strong alcohol, older than 18 years) when the liquor is apparently intended for a person who may be under 16 or 18 years of age (this is also known as secondary purchasing). In those cases, the age of the second person must also be verified. Because sales personnel are the single party responsible for compliance, they are crucial for a proper functioning of the age limit regulations. In a recent study, 100% of the interviewed sales personnel in supermarkets, 99% of the personnel in liquor stores and 93% of the vendors in bars claim to comply with the age limit for alcohol sales (Bieleman, Kruize, & Zimmerman, 2010). Decoy compliance studies, conducted during a four-year period and consisting of hundreds of underage mystery shopping alcohol purchase attempts, however, showed an average Dutch compliance level of 15% (Gosselt, Van Hoof, Baas, & De Jong, 2011).

In this study, we qualitatively explore the factors that may affect compliance with the age limits in the context of the Dutch alcohol legislation. Interviews were conducted with managers of different types of alcohol outlets to gain diagnostic insight into compliance-related issues in the daily practice of the shop floor.

METHOD

To learn what alcohol vendors experience in their daily practice and how they speak about age limits from the perspectives of their own values and experiences, we interviewed 106 store managers on compliance-related issues. The interviews reported here were part of a larger study (Van Hoof, Gosselt, Baas, & De Jong,

2011) that took place within one region in the Netherlands, consisting of nine municipalities that contained approximately 350 alcohol outlets in total.

In that study, we first conducted underage purchase attempts to determine compliance with the 16-year age restriction for alcohol sales. Thus, 146 alcohol outlets (37 supermarkets, 26 liquor stores, 46 cafeterias (privately owned fast-food restaurants) and 37 bars) were visited by four underage adolescents (15-year-olds who looked 'average') who tried to buy a soft alcoholic beverage, following a script. The adolescents were recruited by their own high-school teachers, and informed parental consent was obtained. The protocol was approved by the Ethical Commission of the Faculty of Behavioral Sciences of the University of Twente and was largely based on the Dutch standard, as developed by Gosselt, Van Hoof, De Jong, and Prinsen (2007). Then, in interviews, we examined the effects of an intervention that consisted of feedback on the store's own compliance (see chapter 7), and questions were asked concerning compliance-related issues in general. The current article focuses on the latter part of the interview.

The interviews

After the under-aged purchase attempts, all alcohol outlets visited were contacted by telephone and asked to participate in a telephone interview. After a short explanation of the research, 106 of the 146 alcohol outlets agreed to an interview. The other 40 outlets were not reachable by phone (some supermarket chains only offer central company help desks), or the owner did not speak sufficient Dutch or English to conduct an interview. Because of the delicate nature of the topic and some of the questions, we assured absolute confidentiality and anonymity.

Procedure

The interviewers first made sure that they were speaking with the store owner or manager. The interview began with a short introduction regarding the mystery-shopping research. The interview scheme was open ended, which allowed participants to set forth their own views and experiences. Three general questions on compliance were asked: (1) Do you, or did you, undertake any action to prevent the sale of alcohol to minors? (2) What are the main reasons to comply or not with the law that prohibits the sale of alcohol to minors? and (3) What would help to improve compliance?

Data analysis

Following the cross-sectional code and retrieve principle (Mason, 2002), a qualitative analysis of the interviews by two coders who were extensively trained was organized to uncover the main topics and categories mentioned by the participants across the entire data set. After becoming familiar with the material, the coders identified recurring themes and ideas, which led to a general framework. Then, all variables were carefully defined in a codebook that could be referenced at any time. Substantial coding practice took place to ensure that coders understood what qualified as evidence of each variable. Satisfactory intercoder reliability was achieved, after which the actual coding began. Twenty-eight percent of the total sample of interviews was analyzed by two coders and the remaining interviews by one coder. This open coding, in which all speech was coded, generated 1,492 codes spread over 33 categories (some of them with different subcategories). Transcripts were uploaded into Atlas.ti, creating an overview of how the participants thematically structure their thoughts about and experiences with the subjects under study.

Coding

For all variables, the Cohen's kappa was found to be acceptably high. The first 9 codes cover the measures that are taken by the interviewees to prevent underage sales. The initial kappa for the measures-codes was .76. After extensive discussion and several adjustments in the codebook, the (unweighted) kappa increased to .93. Then, 19 categories cover the compliance related issues that were put forward by the interviewees. Further, *don't know* answers and answers that state that compliance is *no issue* within the store were coded as well. These 21 categories on the compliance-related issues reached a Cohen's kappa of .85. We multicode all utterances in these 21 categories with one (or more) of the following three main categories that we identified, under which all answers on compliance could be classified: (1) reason(s) for compliance, (2) reason(s) for non-compliance, and (3) solution(s). These three main categories reached full agreement (Cohen's kappa = 1.0).

RESULTS

Below, we will first discuss the results of the underage purchase attempts, followed by the measures alcohol outlet managers report taking in order to avoid

alcohol sales to minors. Second, we will focus on the reasons they give for compliance or non-compliance, along with the solutions they propose.

Actual compliance with alcohol legislation

The overall compliance was 18.5%, indicating a low compliance rate within this region, although it is in line with other compliance studies conducted in the Netherlands. Compliance was highest in liquor stores (54%), followed by supermarkets (19%), bars (16%) and cafeterias (0%). In the majority (96 times) of all visits, no intervention (asking for age and/or ID) took place.

Measures to prevent underage alcohol sales

Multiple measures were reported to prevent underage sales, 123 measures in total. There are only a few outlets (n=18) that do not take any type of measures to assure compliance with the rules. Vendors working in cafeterias, in particular, indicated that no actions were needed, as they would encounter young customers in their establishment only occasionally (or not at all), because no alcohol is sold (which is not the case, as we did buy alcohol before), or because vendors purport to know (the age of) their clientele. In general and within all outlet types, most vendors focus on asking for the age of an (under age) buyer or for some type of identification. Identification either is needed for all customers (occasionally, because the personnel are required to do so), or only when a customer looks younger than a certain age (whereby varying age limits are enacted, ranging from 16 to 40 years of age). Some interviewees said that age-verification activities occur only from time to time and not on a consistent basis. Then, in most cases, not being able to show an ID means that no transaction will take place, according to these vendors. Despite all of the measures that vendors purported to take, the underage purchase attempts show that compliance is low nonetheless. In 96 of the 106 visits, the age of the young customers was not verified at all. Table 1 gives an overview of all of the measures mentioned by vendors, according to outlet type, that should lead to age verification.

To encourage vendors to verify customers' ages, the outlet personnel typically receive training (n=54). Especially within supermarkets and liquor stores, cashiers receive training on the rules/legislation on age restrictions. This training is performed primarily when a new employee starts; however, within some stores, this training has a more structural nature (for example, by means of monthly/weekly updates or special 'cash-register evenings'). Different forms of training exist: for example, in some stores, the vendors receive training from a

colleague, while in other stores, training occurs by means of instructional DVDs, instructional letters, reminders, or aid systems on this subject. In supermarkets, some vendors said that the personnel could earn a certificate after an (online) course on age limits. For the most part, training or information sessions are initiated by the head office. Further, personnel is sometimes made aware of compliance issues by (camera) surveillance or by underage purchase attempts commissioned by the management.

Table 1: Current measures taken to prevent underage sales in supermarkets (sup), liquor stores (liq), cafeterias (caf) and bars (bar).

Measure	Outlet type				Total
	Sup	Liq	Caf	Bar	
# interviews	29	24	32	21	106
Training own personnel	25	20	6	3	54
Information to the public	3	8	6	2	19
Setting higher age limit(s)	0	8	2	4	14
Internal support systems	4	4	0	3	11
Limiting secondary purchasing	2	3	0	2	7
Bouncers	0	0	0	5	5
Paying attention to other cues	0	1	2	0	3
Other actions	2	2	2	4	10
Total	36	46	18	23	123
Nothing (no need)	1	1	11	5	18

Note: One outlet may have taken more than one measure.

In addition to training the personnel, managers use several other measures to enable, force and remind the personnel to execute their tasks and obligations, for example, by providing information that is aimed at the public (n=19). Liquor stores and cafeterias often use signs in the store, posters, stickers, websites, self-made notes, and/or letters informing the (young) public about the alcohol legislation and the fact that identification must be shown. This information is placed near the cash register or at the entrance of the store. Further, some of the stores employ a higher age limit standard than that prescribed by law (n=14). Signs then communicate that anybody below the age of 20 (in supermarkets) or 25 (in liquor stores) must show ID. In bars, higher age limits are sometimes noted at the entrance. Additional support systems are sometimes used (n=11), including a conversion table to help

the cashier calculate the customer's age based on his/her date of birth, a cash-register system that beeps whenever an age-restricted item is scanned (e.g., alcohol, tobacco, gambling products), colored arm bands or stamps in bars that note the buyer's age, and a document that depicts images of all legal forms of identification. In one sports bar, all members' names are provided on a digital membership list noting the customer's age. To decrease secondary purchasing, some vendors (n=7) indicate that the personnel is instructed to detect secondary purchasing (for example, refusing a sale to a group of young people when only one is old enough legally) and to decline sales in cases where a young customer claims that the alcohol is for his/her parent(s). Five interviewees mentioned the presence of bouncers (personnel stationed at the front door to verify the age of customers before they enter the premises), and three vendors noted other cues that might indicate that the buyer is underage (such as whether he/she was riding a scooter, which are typically used by persons under 18 years of age). Other measures implemented (n=10) include having the sales personnel sign a contract stating that they are familiar with all rules concerning age restrictions, conducting breathalyzer tests on underage customers, and, in bars, making soft drinks cheaper than alcoholic beverages.

In sum, vendors use several measures to secure age verification of young customers. These measures are intended to decrease underage sales, but the underage purchase attempts demonstrate that the measures are not sufficient to prevent young customers from illegally buying alcohol.

Compliance with the rules and solutions to increase compliance

In the second part of the interview, the reasons for compliance and non-compliance were addressed, along with the vendors' proposed solutions. Nineteen categories were identified of compliance-related issues mentioned by the interviewees. Table 2 gives an overview of the frequency of utterances for each coding, classified under *Knowledge*, *Ability*, *Motivation* or *Other*. Apart from six interviewees who indicated that compliance with age legislation is not a problem for their businesses, the number of quotations presented in Table 2 gives reason to believe that age limits are an important topic for vendors of alcohol.

First, we will describe the reasons that vendors give for complying with the rules not to sell alcohol to persons who, according to law, are underage. Then, we discuss the arguments vendors give for non-compliance, and finally, the solutions that were proposed are discussed.

Table 2: Reasons for compliance (Com) and non-compliance (NonC), and solutions (Sol).

	Answer		
	Com	NonC	Sol
Knowledge			
(Knowledge of) rules	1	7	14
Ability			
Secondary purchasing	0	39	2
Estimating buyer's age	0	22	9
Fear to intervene	0	20	5
Aggression	0	23	1
Reluctance to ask	0	9	6
Relationship to buyer	0	10	2
Busyness / time	0	12	0
Unwillingness to ask again	0	9	1
Use of fake ID's	0	5	3
<i>Total</i>	<i>0</i>	<i>149</i>	<i>29</i>
Motivation			
Intrinsic support	71	9	13
Responsibility	8	38	33
Blaming others	0	22	8
Law-abiding nature	22	0	2
Financial reasons	17	2	1
Reputation	3	0	0
Surveillance	0	5	4
Integrated approach	0	0	4
<i>Total</i>	<i>121</i>	<i>76</i>	<i>65</i>
Other	3	21	24
Total	125	253	132
No issue	0	6	0
Don't know / no answer*	6	13	17

*No answer was given on the question regarding why one would comply or not.

Why comply: reported reasons for complying with age limits (n=125)

The most prominent reason to comply with the alcohol legislation relates to motivational arguments (n=121), such as intrinsic support for this specific law (n=71). Support is a result of concerns about the physical and mental health (i.e., brain damage) of minors, alcohol abuse (e.g., intoxication, experimentation with other substances), and nuisance (e.g., vandalism, public order). There is also concern about the current consumption pattern ("*Nowadays, young people already drink too much and too often*" and "*Nowadays, they start at a much younger age*"). Others state that they want to prevent young people from drinking too much; however, "[...] *a beverage now and then is OK.*" Some did not specify why they support this law, instead arguing "[...] *not to sell because the law dictates us to do so.*" This reason overlaps with the law-abiding reason, which was also frequently mentioned (n=22): "*You are supposed to comply with the law*" and "*Rules are rules.*" Many vendors refer to their own children and, when doing so, relate consumption to availability: "*I have children myself, and I don't want them to start at an early age.*" The most mentioned financial reason (n=17) to comply is, not surprisingly, to avoid fines. Responsibility arguments (n=8) represent a feeling of social responsibility and a role-model function: "*Apparently, parents and the kids no longer are able to control themselves [...].*" Only three vendors mention the reputation argument: "[...] *it can give us a bad name.*" Surveillance was not mentioned at all. Thus, in general, vendors seem motivated to prevent or discourage (first) use and for that reason, do not sell to underage customers.

Concerning the knowledge of the rules (n=1), one interviewee said that the personnel is well informed about compliance issues. Other reasons (n=3) that were mentioned relate to the public nuisance associated with alcohol consumption.

Why sell: reasons for non-compliance (n=253)

Aside from the thirteen interviewees who reported no reasons for non-compliance, most answers related to ability (n=149), as can be seen in Table 2. Secondary purchasing (n=39) is the most prevalent problem reported, which influences ability. Non-compliance results because older friends are deployed ("*[...] It is difficult when, after refusal, a young customer sends in a friend that buys him/her the alcohol. In those cases, we cannot do anything but sell the alcohol*"), or even parents ("*What complicates compliance is when [...] parents buy alcohol for their child*"). This argument is not valid because, according to the law, in these cases, the age of both customers should be verified. Thus, next to ability, knowledge is not optimal either. A second problem affecting ability that vendors mentioned includes the

aggression argument (n=23). Young clients that become aggressive, intimidating, annoying or violent may lead to non-compliance: “[...] it is kind of intimidating to ask for one’s age. This regularly leads to aggressive youngsters and problems. [...] Of course, it is inexcusable that this affects compliance, but it does make it difficult.” Aggression mainly occurs after refusal of sale or when the customer is old enough but must show his/her identification nevertheless. Third, estimating the age of the customer (n=22) is considered to be difficult. The young age of the sales personnel is often explicitly regarded as an additional complicating factor. Estimating the age is regarded difficult because children nowadays look older (especially girls), some use makeup to look older, they may lie about their age, and they are allowed to go out sooner. These vendors do not mention proper age verification as the only solution. Also, being afraid of intervening (n=20) may result in non-compliance. In all of these cases, the young age of cashiers plays an important role (“*What complicates compliance is that cashiers are very young, and when they have to ask customers, who are the same age, for ID, they find this threatening*”). Another issue that was raised is busyness within a store (n=12), especially in places where most of the clientele is of a young age. Sixth, age verification and/or refusal of sale is said to be difficult when the vendor and buyer know one another personally. Especially when personnel are young, there is a chance that they will encounter underage friends at the register (n=10). For older personnel this may also play a role because “*you don’t want to ask people you already personally know for identification. That is unpleasant and therefore something we don’t do.*” Following this line of reasoning, nine vendors stated that it is uncomfortable to repeatedly ask for identification: “*You don’t want to ask people you know for identification over and over again; that is really annoying.*” Furthermore, 9 vendors indicated that intervening in general is quite unpleasant as “*you might insult someone who is old enough*” and “*it is unpleasant that, every time, we have to act like a police officer.*” Five vendors mentioned the use of false identification cards that make age verification problematic. Underage customers’ use of false identification cards may result in illegal sales without the vendor’s knowledge.

After the ability aspects, the motivational dimension (n=76) seems to be important in the decisions of vendors not to comply with the rules. Vendors (n=38) do not think that they are (solely) responsible when it comes to underage alcohol consumption. The role of the parents was mentioned explicitly: “*I think also the parents are responsible. Outlets may make all the efforts they can; parents still are responsible for their child.*” Some vendors mentioned the parents’ irresponsible behavior (parents that buy the liquor for their own child), while others posited

that the adolescent is also responsible, both in terms of their own health as well as in a legal respect: *“An important bottleneck is that the one that buys the alcohol is not punishable.”* In addition to the parents and minors themselves, 22 interviewees also found that other vendors are responsible for violations of the rules (i.e., blaming others): *“If they cannot buy it here, they will succeed elsewhere.”* Neighborhood supermarkets and bars in particular were thought not to act in accordance with the law because of *“their young personnel”* and *“their low prices.”* Also, non-commercial private drinking places (so called “barracks”) and young friends are to blame (see “secondary purchasing”). Nine vendors questioned the necessity of rules that should protect minors: *“I wonder how bad alcohol actually is for minors, as others also buy them the alcohol,” “We shouldn’t stimulate underage alcohol consumption, but on the other hand, we also should not forbid it. [...] It’s better to let them get used to alcohol than when they go wild later,”* or *“I find it disturbing that as a bar, you are judged on when you accidentally sell to a minor once. Even when you show that you are very busy with this whole legislation, it doesn’t matter.”* Five reasons vendors gave for not complying with age limits are related to the lack of internal and external control, and two vendors mentioned financial reasons, given that they lose profits when they refuse a sale.

Furthermore, compliance was said to be problematic because of knowledge of the rules (n=7). There are two age limits, and sales personnel are obligated to verify someone’s age (by identification card) if there “could be any doubt about the age of the potential customer.” The rules are considered *“vague.”* Additionally, the vendors expressed confusion about the existence of strong liquors that contain less alcohol and, therefore, legally should be regarded as soft alcoholic beverages. Furthermore, temporary employees were said not to possess sufficient knowledge of the rules. Interviewees also stated that the information supplied by managers should be improved.

Other reasons that were mentioned (n=21) involve adolescents going out at a much younger age than they used to; adolescents who think that *“they are allowed to buy everything, not knowing that we get in trouble”*; that despite all of the vendors’ efforts, it will always be possible for a youngster to obtain an alcoholic beverage; and, especially, that the personnel are not sufficiently attentive: *“A bottleneck is that the employees are the ones who have to actually do it.”*

In sum, the arguments mentioned here suggest that not all vendors wholeheartedly support the age limits. Furthermore, many of the arguments used

here represent shifting responsibility, blaming others and defending their own low compliance rates.

Solutions (n=132)

After asking vendors to elaborate upon the problems they encounter, we asked them what they see as possible solutions for a higher compliance rate. There were 17 vendors who did not suggest any type of solution that could enhance compliance. Of the vendors that did offer solutions, most focused on motivational aspects (n=65), shifting responsibility to parents and/or adolescents and calling for an awareness campaign to increase compliance (n=33). Thirteen responses related to the intrinsic support for an age limit system, especially for the age limits that are currently being used. Vendors propose to introduce one age limit that will apply to both weak and strong alcoholic beverages: *“That distinction is really ridiculous. Twenty beers will also get you drunk, even more so than three Bacardi cokes.”* The interviewees also emphasized the importance of surveillance and that the possibility of fines should be communicated (surveillance: n=4), especially to other stores (blaming: n=8). Customers should be made to show ID, and vendors and the public should become accustomed to the idea that everyone (below a certain age) must always show an ID when buying a risky product. Four vendors stated that more collaboration is needed between all of the relevant actors, such as police, the municipality, vendors, schools, and parents (i.e., an integrated approach). Related to law-abiding, two vendors stated that the only solution is simply to obey the law.

Regarding solutions concerning ability (n=29), some interviewees suggested permitting a maximum number of adolescents in the store to avoid secondary purchasing. They also recommended the issue of special alcohol cards to ease age verification and further training of cashiers to diminish their fear to intervene.

Interviewees also suggested providing more information and education about the risks of early alcohol consumption to increase knowledge (knowledge of rules: n=14). This information should be aimed at adolescents and/or parents in the form of school programs, national campaigns or in-store education.

Other solutions (n=24) that were mentioned mainly involve (continuing) the verification of age and/or ID (*“You just keep asking”*), limiting the temptations of alcohol (advertising bans), and eliminating alcopops.

In sum, the solutions mentioned seem to suggest a shifting of responsibility to parents, adolescents, or other vendors. Only a few vendors suggested solutions that directly affect their own daily practice, such as measures of intensified surveillance.

DISCUSSION

The prevention of alcohol-related health problems among youngsters has become of increasing concern in many countries. To reduce underage consumption, the literature shows that it is important to decrease availability. Therefore, worldwide, many governments have implemented age limits to prevent underage purchases of substances that are considered to be detrimental for the physical or mental health of minors. The literature also shows that such limits, set out in regulations (which often differ between countries and even between products) are effective only when compliance with these rules is sufficient.

In this study, managers of supermarkets, liquor stores, cafeterias and bars listed a broad range of measures they purport to take within their store in order to comply with the legal age limits on alcohol sales. Within the 106 stores, 54 stores have trained personnel, 19 stores give information to the public, 14 stores increased the legal age limit within their store, 11 stores use additional internal support systems, 7 stores actively try to limit secondary purchasing, 5 bars employ bouncers, 3 stores pay attention to other cues that may reveal that the customer is too young, and 10 stores use other actions. Only 18 of the 106 interviewed store managers (mainly from cafeterias) do not take any measures to improve compliance with age limits. Despite all of the claimed measures, however, compliance is only 18.5% on average. Furthermore, some of the actions seem to be simple excuses. Informing the public about the rules may increase awareness among the public. However, this may also indicate shifting responsibility away from the verification obligation that vendors have. In all, training personnel, employing higher age limits, using internal support systems, hiring bouncers and taking other actions apparently do not lead to sufficient compliance levels. Within the region where the study took place, approximately 350 alcohol outlets are active. If an underage buyer is refused in one alcohol outlet, it will only take him/her a short time to find a second outlet that will sell him/her alcohol. Additionally, when we take into account that young people learn which outlets do not comply, availability will reach 100%.

The open interviews with the vendors resulted in nineteen categories that cover several issues related to (non-)compliance with age limits for alcohol sales. In the introduction, we identified three general determinants of compliance. According to compliance literature, the parties must first know and understand the rules. Vendors said little regarding self-reported knowledge of the rules. However, during most interviews, the age limits that are active were mentioned, and many vendors who we interviewed also explicitly mentioned the age-verification activities and the harmful effects of underage alcohol consumption. In some cases, however, vendors are not properly informed about the rules in terms of, for example, secondary purchasing. Some vendors say that because some rules are 'vague,' compliance is difficult. They suggest that there should be one age limit in the future. Without sufficient knowledge of the rules, it is impossible to act according to the rules.

Second, vendors must be capable of following the rules. Vendors mostly mentioned practical barriers that make compliance difficult. These include customers who become aggressive when they are asked to show ID or who are refused alcohol, personnel who are afraid to intervene, and the buyers who use fake IDs. Many of the practical reasons given, however, can be regarded as invalid arguments, as they show that vendors use excuses to exempt themselves from the obligation to refuse underage sales. The secondary-purchasing issue, which is mentioned many times, is not a valid compliance argument for two reasons: currently, there is little need for secondary purchasing because compliance is low, and contrary to what some vendors seem to think, they are not allowed to sell alcohol to someone who is legally old enough when the alcohol is meant for someone who is too young to purchase according to the law. Problems with estimating the age of a customer can be resolved by simply asking for identification. Busyness within a store, a buyer who is an acquaintance, and unwillingness to ask for identification (multiple times) are not valid arguments and suggest a lack of motivation.

Motivation is the third determinant of compliance: vendors must be willing to comply with the rules. Based on the interview results, the motivation to comply currently seems to be rather low. The most prominent reason to comply with the rules is based on intrinsic support for the rules and a vendor's law-abiding nature. Intrinsic support results from concerns about the harmful effects associated with early alcohol consumption. Some vendors, however, question the need for rules that decrease the availability of alcohol to minors. Next to intrinsic support, a law-abiding nature ("rules are rules") plays a role among the considerations to comply.

However, vendors' sense of responsibility can be considered low. Vendors do not believe that they are solely responsible for the purchases of young customers. This belief leads them to blame others, including parents, the young buyer or his/her friends. Other alcohol outlets are also to be blamed, as they may not comply with the law. Avoiding fines was occasionally mentioned as a reason to comply with the law, while several vendors mentioned a loss of income as a reason for non-compliance. Surprisingly, reputational arguments were rarely mentioned. Working together with other parties (i.e., integrated approach) does not appear to play a prominent role in the motivations from vendors to comply. Moreover, there were very few responses regarding the surveillance aspects, indicating that vendors do not perceive any real chance of being caught for non-compliance.

Although rules are meant to protect people against all types of risks, it seems difficult to convince different actors of their necessity. Although governments and healthcare organizations are concerned about the health risks associated with the (early) consumption of alcohol, industries are driven by profit, and customers may prefer easy access and affordable prices. In the case of age limits, support from the industry is especially important. In the best-case scenario, they will follow the guidelines and rules with minimal use of energy and resources. Voluntary compliance is preferred. Involvement with the topic and motivations are also important. Generally, two approaches are possible in changing the behavior of vendors of risky products: confronting them with the positive and negative consequences of their current compliance behavior or supplying them with information on the negative consequences of non-compliance and/or positive consequences of compliance. Compliance with rules depends on knowledge of the rules and the ability and motivation to follow the rules. The ability aspect seems to be especially problematic. However, many of the reasons that were given can be regarded as invalid arguments, as they show that vendors offer excuses exempting themselves from the obligation to refuse underage sales. Vendors purport to employ several measures to ease age verification, but the actual compliance figures show that this is not enough. Further, the motivation to actively comply with the age limits seems to be lacking, as vendors feel that parents, children or even other vendors are more responsible or to blame. Surprisingly, reputational issues do not seem to play a role here. This lack of motivation results in an indifferent attitude with respect to the age limits. Next to increasing knowledge and ability, it is therefore important to raise the awareness of the importance of the regulations and make all parties involved aware of their legal and/or contractual status. This

strategy is aimed at reducing ambiguities and increasing people's motivation to comply.

Furthermore, the surveillance aspect was rarely mentioned, indicating that vendors do not receive any feedback regarding their compliance. The instrument 'Table of Eleven,' developed by the Dutch Ministry of Justice, analyzes compliance using eleven dimensions that explain the degree of compliance with laws and legislation (Law Enforcement Expertise Centre of the Dutch Ministry of Justice, 2004). Two groups of dimensions are distinguished: spontaneous compliance dimensions and maintaining dimensions. *Spontaneous compliance* depends on knowledge of the rules, costs and benefits, degree of acceptance, a law-abiding nature of the target group, and non-governmental control activities. These categories indeed show overlap with the utterances that we encountered in our interviews. Very little was said, however, concerning the compliance-maintenance dimension. *Maintaining compliance* is defined as all activities that promote the compliance with laws and legislation, and it mainly depends on the detection and punishment of offences (e.g., sanctions). It is important to connect possible violations of the regulations to negative consequences. Therefore, it appears to be important to develop a valid and visible system of external surveillance, which not only affects the vendors' perceived risk of being caught for non-compliance but also underlines the legal basis and the importance of complying with the age limits.

The data reported here were derived from qualitative interviews, and thus, certain methodological decisions, as well as their influence on reliability and validity, are relevant to address. Regarding representational generalization, we interviewed vendors working within four different types of outlets that sell alcohol: supermarkets, liquor stores, cafeterias, and bars. Although these categories cover most of the selling points available within the Netherlands, due to practical considerations, we did not include some other outlets within the sample, such as sporting canteens. However, the four types of outlets that were included represent the places that are most frequently visited by minors to obtain alcohol. Of course, minors can (and will) obtain alcohol within their social environment, such as through parents or friends, although in this study, we focused on the issue of compliance with age limits; therefore, only the official channels are relevant. Second, once we were able to interview vendors, we did not ask for any type of demographic information that could possibly identify the vendor concerned. In our view, keeping the interviewees rather anonymous would ensure more reliable answers and could decrease socially desirable responses. However, it would be

interesting to learn more about the answers given in relation to, for example, the age, gender, and employment position of the interviewee. Regarding inferential generalization, as mentioned earlier, next to alcohol, there are many different products provided with age limits. Many differences exist regarding the specific regulations for each of these substances, and subsequently, many differences exist regarding the operationalization per country (e.g., different age limits, different levels of surveillance, degree and height of sanctions). Therefore, the conclusions drawn here do not necessarily apply to other risky substances or to other countries.

Age limits are promising interventions to decrease underage sales and, consequently, decrease the negative effects that come with underage alcohol consumption. Without compliance with age limits, however, the effectiveness of age limits is limited.

ACKNOWLEDGEMENTS

We thank the youth alcohol prevention program ‘Samen aan de slag, tegen riskant alcoholgebruik van jongeren in de Gooi en Vechtstreek’ [Working together against youth alcohol abuse in the Gooi and Vechtstreek region] (representing 9 municipalities) for facilitating this research.



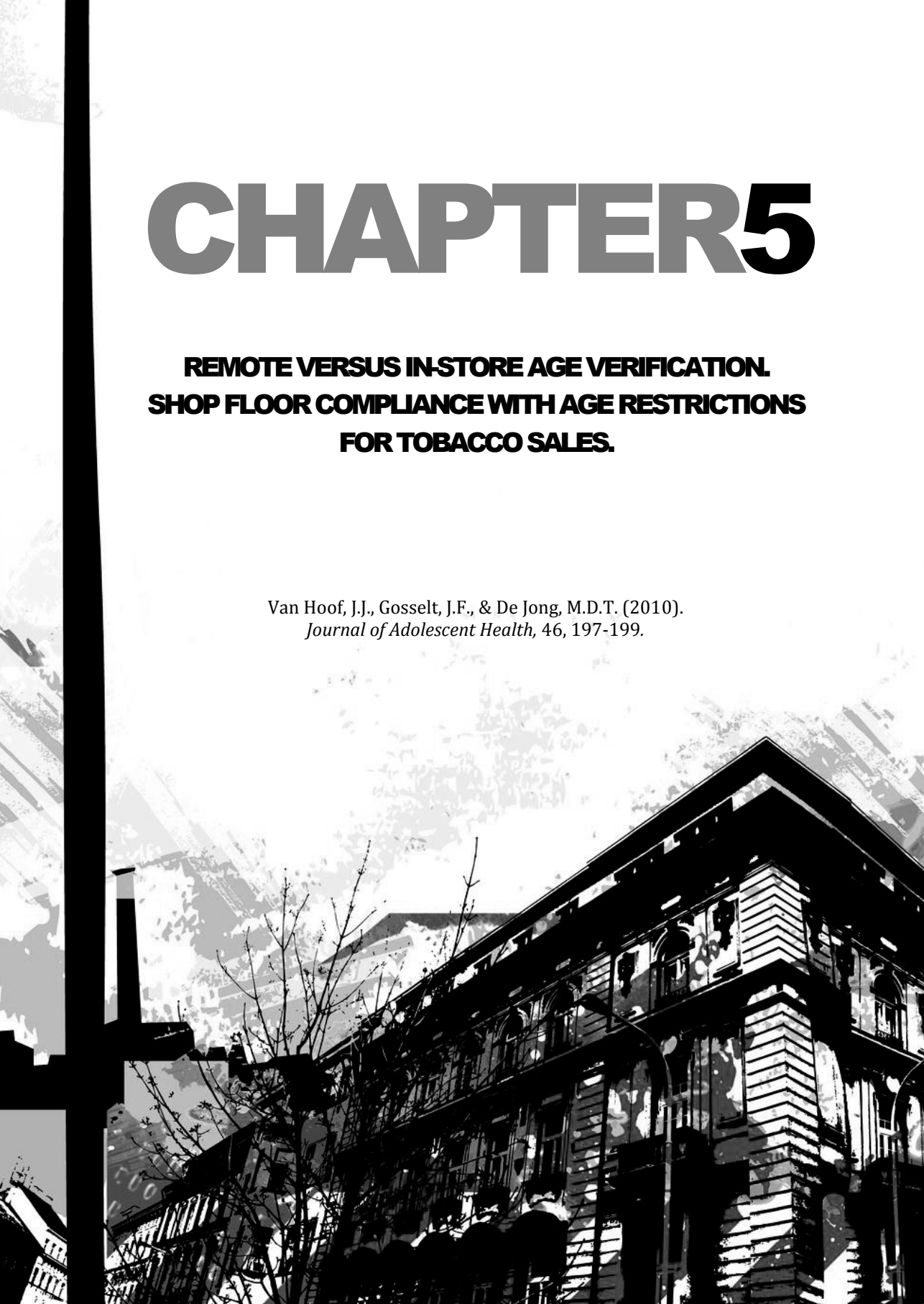
PART 2

**INCREASING
COMPLIANCE
WITH AGE LIMITS**

CHAPTER 5

REMOTE VERSUS IN-STORE AGE VERIFICATION. SHOP FLOOR COMPLIANCE WITH AGE RESTRICTIONS FOR TOBACCO SALES.

Van Hoof, J.J., Gosselt, J.F., & De Jong, M.D.T. (2010).
Journal of Adolescent Health, 46, 197-199.



INTRODUCTION

To protect adolescents from health risks, most countries have adopted a system of age limits for the sale of risky products like tobacco and alcohol. In the Netherlands, customers must be at least 16 years old to buy tobacco products or weaker alcoholic beverages (<15% alcohol) and 18 to buy stronger alcoholic beverages (>15% alcohol). There is no dispute about the usefulness of such age limits, but there are concerns about compliance with these restrictions on the shop floor (Wagenaar, Toomey, & Erickson, 2005; Britt, Toomey, & Dunsmuir, 2006). Dutch supermarket, liquor store, and hotel and catering industry managers claim to reach a 97% compliance rate with the legal age limits for alcohol sales (Bieleman, Kruize, Nienhuis, 2006), but “mystery shopper” research invariably shows considerably lower compliance rates, ranging from 0% to 30% (Gosselt, Van Hoof, De Jong, & Prinsen, 2007; Gosselt, Van Hoof, & De Jong, 2007; Van Hoof & Baas, 2009; Van Hoof, Mulder, Gosselt, Van Poppel, & De Jong, 2008; Van Hoof, Van Poppel, Mulder, & Baas, 2008).

Several interventions to increase compliance have been developed. On the level of stores or store chains, managers inform and train employees, supply aid in facilitating age verification, or create special counters for risky products. Technological innovations include the introduction of cashier systems that beep whenever risky products are scanned. On the national level, public information campaigns inform people about the requirement to show identification when buying risky products, and the Food and Consumer Product Safety Authority monitors whether stores comply with the legal age limits. A crucial factor in the system is that age verification still depends on individual cashiers on the shop floor.

A Dutch firm (Hollandsche Exploitatie Maatschappij) recently developed a remote age verification system. When customers want to purchase risky products, a live video connection is made with a remote control center, and the cashier can only finish the payment after receiving an authorization from trained judges at the remote center. At the time of this study, five pilot installations were placed in cigarette vending machines in five shopping centers. In this chapter, we describe a first study on the effects of remote age verification.

METHOD

To compare remote and in-store age verification, we conducted a mystery shopping study. Ten adolescents made 100 tobacco purchase attempts, 50 using the five pilot cigarette vending machines with remote age verification and 50 in traditional store situations. A visiting scheme was created so that none of the mystery shoppers would be judged more than once by the same age verification employee. The age verification company supplied working hours for all staff members and did not inform its employees about the research. The research period was kept confidential.

Selection of stores

We included all five shopping centers with a pilot remote age verification system and made 10 purchase attempts (one for each mystery shopper) per vending machine. The shopping centers were located in five different cities in the northern, central, and southern areas of the Netherlands. In the same five cities, we also made 50 purchase attempts in five different in-store vending situations: (1) customers get cigarettes themselves and check out at a supermarket counter, (2) customers must ask the cashier for cigarettes at a regular supermarket counter, (3) customers must ask a vendor for cigarettes at a special supermarket desk, (4) customers purchase cigarettes in a bar using an “age coin” (a coin required to start the tobacco machine, which is handed over by an employee), and (5) customers purchase cigarettes in a specialized tobacco store. Each store was only visited once.

Mystery shoppers

We contacted high school teachers to help us recruit typical 15-year-old adolescents as mystery shoppers for our study. Interested adolescents applied to participate by e-mail. Eventually, we selected 10 adolescents (five girls and five boys) based on their physical characteristics (length, weight, and appearance), motivation, and parental consent. The mystery shoppers were trained before the study took place. They received compensation for participating.

Mystery shopping protocol

When using the vending machines, a mystery shopper individually approached the machine, chose a box of cigarettes, and tried to pay. If the cigarettes were given out, the mystery shopper left. If the age verification procedure started, the mystery

shopper took position in front of camera. If the purchase was approved, the mystery shopper took out the cigarettes and left. If the mystery shopper was asked for identification, he or she placed his or her real identification card (ID) in front of a second camera and took the cigarettes if the purchase was approved, or took out a deposit ticket and left if the purchase was not approved.

In the traditional purchase attempts, a mystery shopper entered the store, chose or asked for a box of Marlboro cigarettes or an age coin, and tried to pay. If the cashier approved the purchase, the mystery shopper left. If the cashier asked for his/her age, the mystery shopper lied, saying that he or she was 16 years old. If the cashier asked for identification, the mystery shopper showed his or her real ID. The mystery shopper either left the shop with the cigarettes or left the shop without them. After each visit, the mystery shopper filled out a brief checklist. All purchased cigarettes were discarded.

RESULTS

Table 1 shows the results of the comparison. The compliance rate differed considerably between the remote age verification and the traditional purchase situations (96% vs. 12%, $\chi^2 = 71.014$, $p < .001$). The compliance rates can be further examined by considering requests for ID. Two underlying mechanisms were found. First, the use of remote age verification resulted in significantly more ID requests (96% vs. 26%, $\chi^2 = 55.008$, $p < .001$). Second, if mystery shoppers were required to show their ID, the use of remote age verification led to significantly more refusals (98% vs. 46%, *Fisher's exact test*, $p < .001$).

Table 1: Compliance with age limits in-store versus remote age verification.

In-store age verification	# / ID (%) / CR (%)	Remote age verif.	# / ID (%) / CR (%)
Supermarket (self-service)	10/3 (30%) / 3(30%)	Vending machines	50/49(98%) / 48(96%)
Supermarket (ask cashier)	10/4 (40%) / 1(10%)		
Supermarket (special desk)	10/4 (40%) / 1(10%)		
Bar (age coin)	10/2 (20%) / 1(10%)		
Tobacco store	10/0 (0%) / 0(0%)		
Total	50/13 (26%) / 6(12%)	Total	50/49(98%) / 48(96%)

= number of purchase attempts; ID = number of identification requests; CR = compliance rate.

The remote age verification system failed on only two visits within this study. During one of these, an older woman accidentally turned up between the mystery shopper and the camera precisely at the age verification moment. Based on the woman's face, the mystery shopper was not asked for identification, and the sale was approved. In the other purchase attempt, the age verification employee apparently misinterpreted the shown ID.

DISCUSSION

This study provides a first indication of the benefits of remote age verification for the sale of risky products. Results showed that the adoption of a remote age verification system led to a drastic improvement of the shop floor compliance with age limits. Although traditional purchase situations have the advantage of face-to-face judgment, cashiers frequently sold tobacco to the underage mystery shoppers, whereas the remote verification personnel almost never authorized their purchase attempts.

Our findings can be attributed to three explanations. First, the remote age verification system has a priming effect, as is underlined by the differences in the number of ID requests. Cashiers have many different tasks, such as scanning products, counting money, and interacting with customers, which make age verification an extra activity. The remote verification system automatically signals when age verification is required, and the remote age verification employees have only one task.

The other two explanations pertain to the differences in employees' behavior after mystery shoppers had shown ID. Remote age verification employees may be expected to have more expertise and practice in judging the age of adolescents and in reading and interpreting IDs (e.g., determining someone's age using date of birth). Furthermore, remote age verification removes the social pressure from the decision of whether to sell. It may be difficult for cashiers to refuse to sell cigarettes to customers, especially when they are close in age.

In all, our study supports the usefulness of separating the tasks of age verification and other sales activities on the shop floor. It would be interesting to extend the

study of this intervention to other types of counters (such as over-the-counter sales) and risky products.

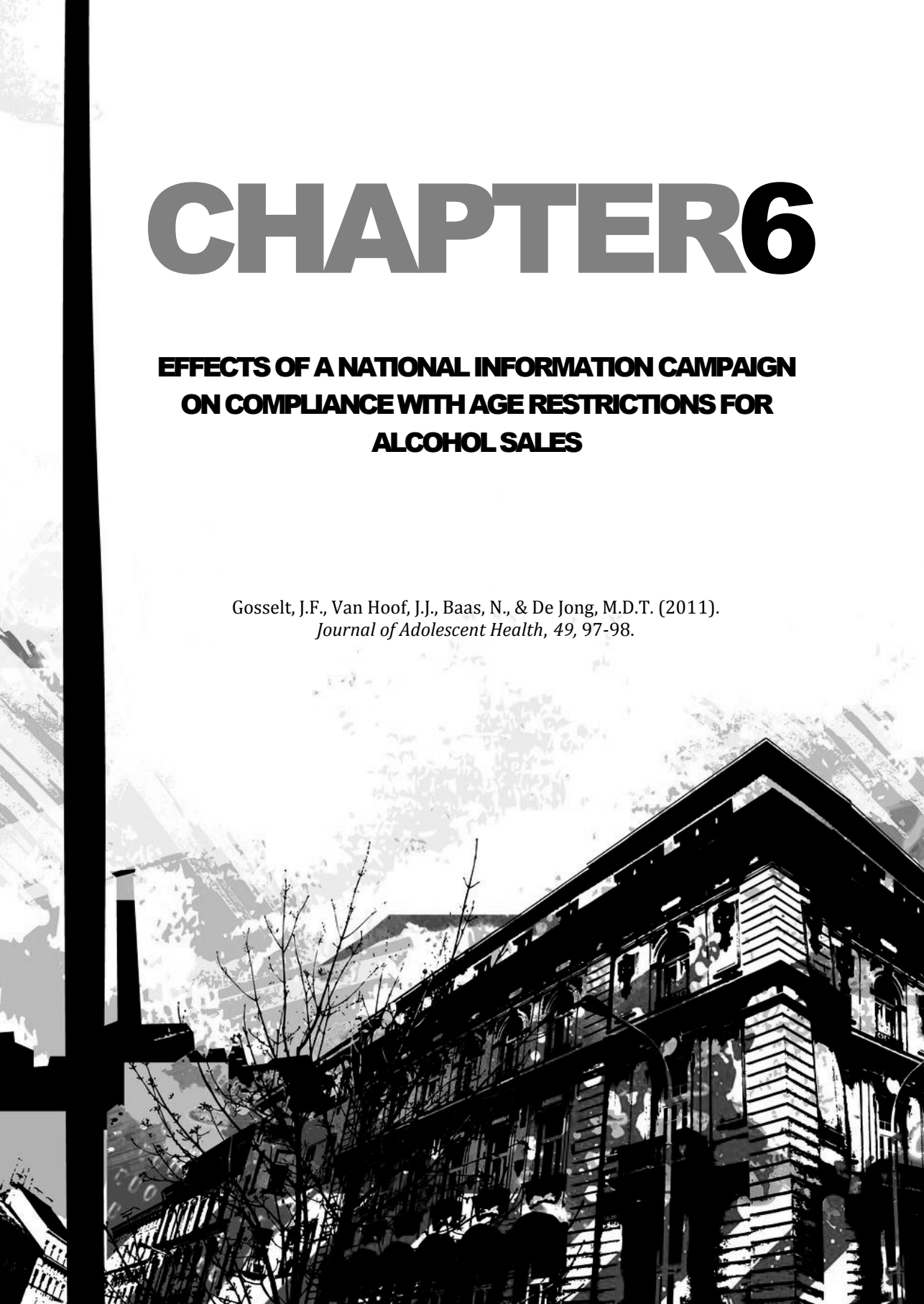
ACKNOWLEDGEMENTS

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CHAPTER 6

EFFECTS OF A NATIONAL INFORMATION CAMPAIGN ON COMPLIANCE WITH AGE RESTRICTIONS FOR ALCOHOL SALES

Gosselt, J.F., Van Hoof, J.J., Baas, N., & De Jong, M.D.T. (2011).
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INTRODUCTION

In many countries, the selling of risky products like tobacco and alcohol is restricted to people above certain ages. Age limits may be imposed by law or self-regulation. In the Netherlands, customers must be at least 16 to buy low alcohol-containing beverages (<15% alcohol). However, shop floor compliance levels with such age limits appear to be very low (Gosselt et al., 2007; Dorbeck-Jung et al., 2010; Gosselt, Van Hoof, & De Jong, 2011).

Many initiatives have been taken to improve compliance. A drastic but very successful intervention is remote age verification (chapter 5). In this chapter we investigate the effects of a less far-reaching intervention using mass media. To improve compliance rates in supermarkets, the sector organization of all Dutch supermarkets, the Dutch Food Retail Association (CBL), held the national campaign “Under 20? Show Your ID!” Starting in March 2009, all customers under 20 should be asked for their ID if they wanted to buy alcohol or tobacco in Dutch supermarkets. For the general public, the campaign consisted of television spots, a website, and in-store information materials (stickers, posters, customer divider bars, and flyers). The CBL also sent all supermarkets instruction videos on age limits, and information materials for cashiers (brochures and cash register stickers).

The campaign drew attention to the importance of age limits for alcohol and tobacco sales, and explicitly prescribed a verification age (under 20), which replaced the ambiguous “verify when in doubt” guideline. The campaign addressed both parties involved in alcohol purchases: Cashiers were urged to ask for an ID, and young customers were informed that they would be asked for an ID when purchasing alcohol or tobacco products. By also informing customers to show their ID, instead of only instructing cashiers to ask for customers’ ID, the campaign represented a partial shift in responsibilities. We investigated the effectiveness of this intervention at the peak of the campaign: about one month after its introduction.

METHOD

To measure compliance, a 'mystery shopping' approach (or 'decoy operation') was used. Six 15 year-old adolescents made alcohol purchase attempts in 105 supermarkets in three regions in the Netherlands (west, east and north). Because it was not possible to use a pretest-posttest design or control group, we calculated a baseline compliance level (based on previous studies) to compare the compliance level with. This study was approved by the Ethical Commission of the Faculty of Behavioral Sciences of the University of Twente.

Selection of supermarkets

In each region, 35 small and large supermarkets in both small and large municipalities were visited. We chose three regions in which no local alcohol campaign initiatives were running, and randomly selected supermarkets to visit.

Mystery shoppers

To recruit mystery shoppers, we contacted high school teachers, who selected typical 15-year-old adolescents for the study. Interested adolescents applied to participate by e-mail. Subsequently, we selected six adolescents (three girls and three boys) based on their physical characteristics (length, weight and appearance), motivation, and parental consent. The mystery shoppers were trained before the visits, and received compensation for participating.

Protocol

In the supermarkets, the mystery shoppers took a can of beer and a snack and tried to check out at a pay desk. If cashiers asked about their age, the mystery shoppers were instructed to lie and say that they were 16 years old. If cashiers asked for an ID, the mystery shoppers gave their real ID (which indicated that they were underage). If the alcohol was sold, the mystery shoppers pretended they forgot to bring money and left, so that no actual purchase of alcohol took place. Immediately after each visit a checklist was filled in.

Pre-intervention compliance

To estimate the effects of the "Under 20? Show Your ID!" campaign, we compared the compliance level found with a pre-intervention compliance level based on earlier research. In the previous years (December 2005 - February 2009) we had conducted several compliance studies in Dutch supermarkets. These studies

involved both pre-intervention (zero-measurement) and effect studies in many regions, covering about a quarter of all Dutch municipalities. We calculated a pre-intervention compliance level using all zero-measurements ($n=458$), in which we used exactly the same protocol as in the current study. Only zero-measurements were included because effect studies may reflect the effects of local or regional interventions.

RESULTS

In 26 out of 105 purchase attempts (24.8%), the mystery shoppers were refused to buy alcohol. The average pre-intervention compliance level was 14.9%. The compliance level after the campaign appeared to be significantly higher than the baseline compliance level ($\chi^2=6.037, p<.05$).

Table 1 provides a more detailed overview of the cashiers' behavior. We analyzed whether the campaign's primary goal—cashiers asking for an ID—was achieved. Although all mystery shoppers were clearly under 20, only in 47% of all visits cashiers asked for their ID. If cashiers asked for an ID, the chances of being able to buy alcohol were almost 50%, despite the use of real IDs that indicated that all mystery shoppers were underage.

Table 1. Asking for age, identification document, or both.

Interventions	Number of visits	Compliance	Non-Compliance
None	54 (51%)	0	54
Ask ID	30 (29%)	15	15
Ask age	2 (2%)	1	1
Ask age & ID	19 (18%)	10	9
Total	105 (100%)	26 (24.8%)	79 (75.2%)

DISCUSSION

Our results show that the national campaign only had a small effect on shop floor compliance with the age limits for alcohol sales. Overall compliance increased from 14.9% to 24.8%, which is a statistically significant difference. However, even at the peak of the campaign more than 75% of the purchase attempts succeeded. Based on previous research, without repeated interventions, compliance levels may be expected to shrink back to previous levels when the campaign ends (Wagenaar et al., 2005).

Possible explanations for the lack of substantial effects might lie in the execution of the campaign materials (the materials seem to stress the responsibility of buyers instead of cashiers), the ambiguous role of the sender, and the difficulty of reaching (often part-time) cashiers in the supermarkets. Nevertheless, the results raise serious doubts about the effectiveness of general and non-compulsory interventions to improve shop compliance with legal age limits. More specific (providing feedback about compliance to stores), structural (the aforementioned remote age-verification system), or compulsory interventions (based on enforcement) may be needed to really make a difference.

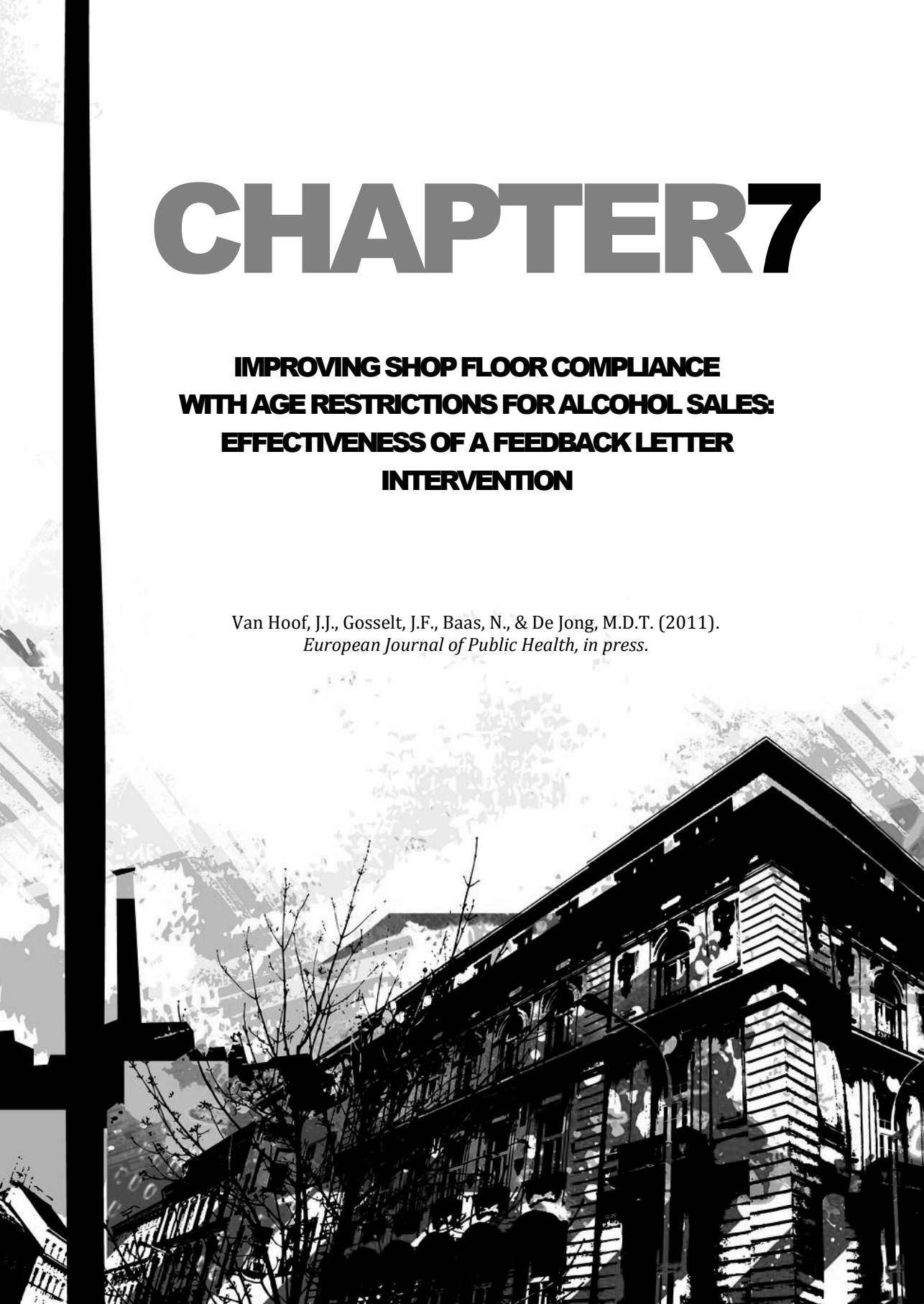
ACKNOWLEDGEMENTS

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CHAPTER 7

IMPROVING SHOP FLOOR COMPLIANCE WITH AGE RESTRICTIONS FOR ALCOHOL SALES: EFFECTIVENESS OF A FEEDBACK LETTER INTERVENTION

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INTRODUCTION

Alcohol consumption is often associated with positive effects like relaxation and partying, but it is well known that it also may have very negative consequences. Excessive alcohol use may cause health problems such as liver and heart diseases, strokes, intoxication, and mental health problems, as well as societal problems such as crime, rape, (traffic) accidents, and violence (Brown et al., 2000; Ellickson, Tucker, & Klein, 2003; Macdonald, Cherpitel, Borges, DeSouza, Giesbrecht, & Stockwell, 2005; Sindelar et al., 2004; Stickley, Leinsalu, Andreev, Razvodovsky, Vågerö, & McKee, 2007; Tapert, Cheung, Brown, Frank, Paulus, Schweinsburg, Meloy, & Brown, 2003; Warner & White, 2003).

In many countries (including the Netherlands), alcohol is the most widely abused substance among adolescents (Hibell, Andersson, Bjarnason, Ahlström, Balakireva, Kokkeve, & Morgan, 2004; Johnston, O'Malley, Bachman, & Schulenberg, 2006; Van Laar, Cruys, Verdurmen, Van Ooyen-Houben, & Meijer, 2008). In addition to the problems listed above, adolescents who consume alcohol may engage in unprotected sex, be hospitalised with alcohol intoxication, underperform in school, and develop permanent brain damage or addiction later in their lives (Ellickson et al., 2003; Macdonald et al., 2005; Sindelar et al., 2004; Tapert et al., 2003; Sen, 2002; Miller, Naimi, Brewer, & Jones, 2007; Centers for Disease Control and Prevention, 2009; Van Hoof, Van der Lely, Van Dalen, & Rodrigues Pereira, 2010).

Alcohol availability is considered an important predictor of adolescent alcohol consumption, drinking patterns, and alcohol-related damage (Paschall, Grube, & Kypri, 2009; Popova, Giesbrecht, Bekmuradov, & Patra, 2009). Availability includes economic (pricing), physical (opening hours and outlet density), social (peer drinking and parenting), and legal (age limits) aspects.

Social availability issues arise mainly in the private domain (e.g., at home or with friends), and are considered private (parental) responsibility in the Netherlands. There is, for instance, no regulation on providing alcohol to underage youth. Parenting style and social norms might be influenced by governmental health campaigns, societal norms in general, or specific educational programs.

Economic, physical and legal availability, however, can be influenced by governmental laws and regulations. With respect to economic and physical

availability, in the Netherlands, regulations exist regarding taxation, minimum sales prices, the use of discounts, opening hours for both on-premise and off-premise alcohol sales points, and the licensing of alcohol sales. These regulations influence alcohol consumption in general (including adolescent consumption), but regulations related to legal availability are theoretically most effective on reducing underage alcohol consumption.

As in many countries, the Netherlands has age limits for alcohol sales. This legislation states that it is not legal to sell beverages containing low alcohol levels (<15%, including some distilled wines like port and sherry) to persons younger than 16, or beverages containing high alcohol levels (>15%) to persons below 18. Sales personnel in supermarkets, liquor stores, and the catering industry are obliged to verify customers' age (by ID) if there could be any doubt about their age. Of course, the role of the sales personnel is crucial for proper functioning of the age limit regulations.

In a study of Willner et al. (2000), alcohol vendors were asked about problems they experienced with their compliance with age limits for alcohol sales. Only 12.5% of the sales personnel admitted having problems with underage adolescents attempting to purchase alcohol. When young people are asked or when actual compliance is investigated using mystery shopper (decoy) research, a completely different conclusion must be drawn: purchasing alcohol is very easy for adolescents (Willner et al., 2000; Britt et al., 2006; Freisthler et al., 2003; Preusser, & Williams, 1992; Preusser, Williams, & Weinstein, 1994; Wagenaar et al., 2005; Wolfson et al., 1996).

In the Netherlands, the difference between the reports of shop floor personnel and empirical findings about compliance is even greater. In a recent study, 100% of the sales personnel interviewed in supermarkets claimed to comply with the legal age limits. For liquor stores and the catering industry, the percentages were 99% and 93%, respectively (Bieleman et al., 2010). However, mystery shopping research with hundreds of underage alcohol purchases consistently results in compliance levels between 0 and 30% (Gosselt, Van Hoof, & De Jong, 2007; Van Hoof, & Baas, 2006; Van Hoof, Mulder, Gosselt, Van Poppel, De Jong, 2008; Van Hoof, Van Poppel, Mulder, & Baas, 2008).

Since compliance with legal age limits is important in reducing adolescents' alcohol consumption, it is worthwhile to investigate interventions that might increase

compliance. Research shows that information-based interventions that should raise awareness, such as information campaigns and training programs, may increase compliance (Willner et al., 2000; Wagenaar et al., 2005). However, more drastic interventions, like increased enforcement and police interventions, lead to higher compliance rates (Preusser et al., 1994; Wagenaar et al., 2005; Lewis, Paine-Andrews, Fawcett, Francisco, Richter, Copple, & Copple, 1996; Scribner, & Cohen, 2001).

In this study, we investigated the effect of a combination of the abovementioned types of interventions. We measured the compliance of alcohol outlets in a mystery shopping study with underage adolescents trying to buy alcohol, and subsequently informed half of the outlets about their performance in a feedback letter. In a second round of alcohol purchase attempts, we measured the effects of the intervention. Furthermore, we contacted all alcohol outlets that had been visited and interviewed the manager on how the intervention letter was handled within their organization. This enabled us to analyze whether positive letters (compliance) were treated differently than negative ones (illegal sales), and whether differences in the handling of the letters were related to compliance.

METHOD

Procedure and research design

The research consisted of three data collection rounds (two waves of underage mystery shopping to determine compliance rates, followed by interview sessions), with an intervention between the two mystery shopping waves (see Figure 1). The study was approved by the Ethical Commission of the Faculty of Behavioral Sciences of the University of Twente.

In the first mystery shopping wave (the zero-measurement), 146 alcohol outlets were visited by 15-year-old adolescents who attempted to purchase beverages containing low levels of alcohol. After analyzing the level of compliance, we randomly split the group of outlets in two, with strata defined by alcohol outlet type, mystery shopping result, and street address. This resulted in an experimental group with 72 outlets (compliance 18.1%) and a control group with 74 outlets (compliance 18.9%); both groups carrying the same number of outlets for each outlet type (maximum 1 more or less). We then sent 72 of the visited alcohol

outlets a feedback letter containing a summary of our research, the result of the purchase attempt within the specific outlet (13 cases of compliance, and 59 cases of non-compliance), and an information brochure.

Ten days after the intervention (so all letters are received and read and shop owners were in the position to share the contents with their personnel), we visited the alcohol outlets again (138 out of 146; due to closure of 8 outlets) in a second mystery shopping wave (with exactly the same protocol and the same mystery shoppers and visits on the same day of the week) to investigate the effects of the intervention letter. After this second wave of visits, we sent the same feedback letter to the second half of the alcohol outlets (n=74).

The third stage of the research consisted of a qualitative round in which we interviewed (by phone) 106 of the 146 alcohol outlets to investigate the way they handled the feedback letter. The other 40 outlets were not reachable by phone, or the owner did not speak sufficient Dutch or English for an interview.

Figure 1: Research design.

	Exp. group (N=72)	$\overline{X_{1a}}$ (N=13)	O ₂	O ₃
O ₁	Compliance=18.1%	$\overline{X_{1b}}$ (N=59)	(N=68)	(N=55)
(N=146)	Control group (N=74)		O ₂	O ₃
	Compliance=18.9%		(N=70)	$\overline{X_{1a}}$ (N=14) $\overline{X_{1b}}$ (N=60)
				(N=51)

O₁ = mystery shopping wave 1 (zero-measurement)

O₂ = mystery shopping wave 2 (effects intervention)

O₃ = interviews (by phone)

X_{1a} = intervention positive letter (compliance *O₁*)

X_{1b} = intervention negative letter (non-compliance *O₁*)

Selection of alcohol outlets

Taking into account the influences of opening hours (e.g., bars) and seasons (e.g., the specific opening times for beach pavilions), as well as the likelihood that an outlet could be visited by a 15-year-old adolescent, we randomly selected 146 alcohol outlets (out of about 350 outlets in total), in which a underage purchase attempt can be carried out without any notice. The sample consisted of the four most relevant types of alcohol outlets (46 cafeterias, 37 supermarkets, 37 bars, and 26 liquor stores).

Mystery shoppers

Based on national data on youth heights and weights, photographs, and availability, we selected four adolescents (two boys and two girls). Parents whose children participated were asked for their consent. The mystery shoppers received financial compensation.

Mystery shopping protocol

In their alcohol purchase attempts, the 15-year-old mystery shoppers followed a protocol that was based on the Dutch standard, as developed and used by Gosselt et al. (2007). In supermarkets, liquor stores, and cafeterias, the mystery shopper visited the shop alone; in bars, two mystery shoppers (a boy and a girl) visited the location together. Within these outlets, if a vendor should sell to one mystery shopper and refuses to the other under aged mystery shopper, this is considered as non-compliance (this never happened). All alcoholic beverages that were purchased were discarded after the research.

Intervention

After the first mystery shopping wave, half of the alcohol outlets (the experimental group) were sent a feedback letter consisting of three parts: (1) a summary of the overall compliance, (2) feedback on their own performance, and (3) an information brochure on age limits by the Dutch Food and Consumer Product Safety Authority (VWA). The letters were sent to the specific outlet address and printed on the stationary of the local youth alcohol prevention program.

Two different letters were sent. A *positive letter* was sent to outlets that complied with the age limits. It contained the message that an underage mystery shopper was not able to buy alcohol in their outlet. A compliment was made, together with an expression of expectation and confidence that this policy would be continued. A *negative letter* was sent to outlets that had sold alcohol to the mystery shoppers. It contained the message that a 15-year-old had been able to purchase alcohol in their outlet. The letter also contained a warning that non-compliance may lead to fines or even closing. Finally, the letter expressed the hope that the outlet's policy would change in the near future and referred to the brochure for tips and tricks to improve compliance. In both letters, the time frame of the conducted mystery shopping purchase attempt was not made specific, to avoid possible consequences for individual vendors.

Telephone interviews

The interviews started with a short introduction regarding the conducted mystery shopping research and the intervention letters that were sent. First, the interviewers asked if the manager remembered receiving the letter. If so, they asked (1) what the manager had done with the letter; (2) whether any measures had been taken with respect to underage alcohol sales; (3) whether the manager had received any other communication regarding underage alcohol sales; and (4) whether the manager had taken any measures in the past to increase compliance.

Interview coding

All answers were analyzed using a pre-defined coding scheme. Ten interviews were independently coded by two coders. The Cohen's kappa (unweighted) varied from 0.71 to 1.00, which corresponds to sufficient levels of inter-coder reliability. The differences between the coders were discussed, and the coding scheme was further fine-tuned. One researcher coded the remaining 96 interviews.

RESULTS

Effect of the feedback letter on compliance

Because groups were created based on the mystery shopping results, the compliance rate in both groups was the same: 18.1% for the experimental group and 18.9% for the control group ($\chi^2(1, N=146)=.018, p=.893$). These results reflect the average Dutch compliance rate, also because in line with other compliance studies in the Dutch context, no other factors regarding the stores (e.g., busyness in the store) were of any influence on compliance (Gosselt et al., 2007).

In both groups, approximately 30% of the sales personnel asked for an ID before selling or refusing alcohol ($\chi^2(1, N=146)=.220, p=.639$). After the feedback letter had been sent to the 72 shops in the experimental group (13 positive letters and 59 negative letters), we performed the second mystery shopping wave in the same shops (minus eight shops that had been closed).

In the experimental group, the compliance significantly increased after the intervention letter, from 18.1% to 32.4% ($\chi^2(1, N=140)=3.81, p=.04$). In the control group, the compliance level decreased, although the difference was only marginally significant ($\chi^2(1, N=144)=3.22, p=.06$). In both the experimental group

($\chi^2(1, N=140)=7.21$, $p=.01$: 45.7% vs. 28.4%) and the control group ($\chi^2(1, N=144)=4.65$, $p=.02$: 54.4% vs. 31.9%), sales personnel asked more often for an ID in the second mystery shopping wave. Within the experimental group, we also compared compliance rates for the positive and negative letters ($n=68$). For the negative letters ($n=56$) the compliance rate in wave 2 was 35.7%, for the positive letters ($n=12$) the compliance rate in wave 2 was only 16.7%.

Table 1: Compliance rates and asking for ID in the two mystery shopping waves.

	#		Compliance		Ask ID	
	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2
Control	N = 74	N = 70	18.9% (14)	8.6% (6)	28.4% (21)*	45.7% (32)*
Exp.	N = 72	N = 68	18.1% (13)*	32.4% (22)*	31.9% (23)*	54.4% (37)*
Total	N = 146	N = 138	18.5% (27)	20.3% (28)	30.1% (44)	50.0%(69)

* Significant Chi-Square test values $p < .05$ between wave 1 and wave 2 compliance. Compliance in both waves was only the case once in the control condition and twice in the experimental condition.

Handling of the feedback letter in the alcohol outlets

In total, 106 interviews were conducted, 24 of which were with personnel from outlets that had received a positive intervention letter and 82 with personnel from outlets that had received a negative intervention letter. As can be seen in Table 2, 81% of the interviewees confirmed they had received the letter. Approximately 70% of the shop owners claimed they took some action after reading the letter. Most of these actions involved discussing the results with their personnel, and in the case of a positive letter, making compliments. The letter was copied and shared with the personnel in 55% of the cases with a negative feedback letter, and in 71% of the cases with a positive letter.

Eleven managers stated that additional actions were taken in their shops. These actions included displaying signs communicating the age limits for purchasing alcohol and offering alcohol information brochures at the counters. Some managers said that the feedback letter would be used for the training of new sales personnel. One outlet indicated to have increased the age limit to 20 years. Fifteen outlets used the VWA brochure to improve ($n=13$) or continue ($n=2$) compliance. Some supermarket owners told us they had communicated the results of the

mystery shopping research, including their own results, to their chain headquarters. Other supermarket owners stated they had received information about the mystery shopping results from their headquarters (via a newsletter).

Table 2: Intervention handling, sorted by type of intervention: positive letter (compliance) versus negative letter (non-compliance).

	Total N = 106	Positive letter N = 24	Negative letter N = 82
Did you receive the letter?			
Yes	86 (81%)	20 (83%)	66 (80%)
No	14 (13%)	3 (13%)	11 (13%)
Don't know	6 (6%)	1 (4%)	5 (6%)
Actions taken after receiving letter			
Read, no further actions	10 (9%)	3 (13%)	7 (9%)
Read, inform personnel	62 (58%)	17 (71%)	45 (55%)
Read, actions taken	11 (10%)	0 (0%)	11 (13%)
Don't know	23 (22%)	4 (17%)	19 (23%)
Discussed letter with personnel			
No	9 (8%)	3 (13%)	6 (7%)
Yes, with all of them	57 (54%)	14 (58%)	43 (52%)
Yes, sales personnel	12 (11%)	3 (13%)	9 (11%)
Yes, managers only	5 (5%)	0 (0%)	5 (6%)
Don't know	23 (22%)	4 (17%)	19 (23%)
Action with VWA brochure			
No	59 (56%)	18 (75%)	41 (50%)
Yes	15 (14%)	2 (8%)	13 (16%)
Don't know	32 (30%)	4 (17%)	28 (34%)
Other information received regarding the sales of alcohol to minors			
No	65 (61%)	14 (58%)	51 (62%)
Yes, from own company	19 (18%)	7 (30%)	12 (15%)
Yes, another source	17 (16%)	3 (13%)	14 (17%)
Don't know	5 (5%)	0 (0%)	5 (6%)

Feedback letter handling effects in the experimental condition

In the experimental group we were able to re-visit 68 out of the initial 72 alcohol outlets, after which we conducted interviews with 55 of the shop owners. Two

interviews were not used in the analysis since the shops were not visited in the second wave of mystery shopping.

Table 3: Experimental group feedback letter handling, sorted on compliance in the second mystery shopping wave.

	Total N = 53	Compliance N = 21	Non-compliance N = 32
Did you receive the letter?			
Yes	46 (87%)	20 (95%)	26 (81%)
No	5 (9%)	1 (5%)	4 (13%)
Don't know	2 (4%)	0 (0%)	2 (6%)
Actions taken after receiving letter			
Read, no further actions	5 (9%)	3 (14%)	2 (6%)
Read, inform personnel	34 (64%)	15 (71%)	19 (59%)
Read, actions taken	4 (8%)	1 (5%)	3 (9%)
Don't know	10 (19%)	2 (10%)	8 (25%)
Discussed letter with personnel			
No	5 (9%)	2 (10%)	3 (9%)
Yes, with all of them	31 (58%)	13 (62%)	18 (56%)
Yes, sales personnel	4 (8%)	2 (10%)	2 (6%)
Yes, managers only	3 (11%)	1 (5%)	2 (6%)
Don't know	10 (19%)	3 (14%)	7 (22%)
Action with VWA brochure			
No	32 (60%)	13 (62%)	19 (59%)
Yes	5 (9%)	2 (10%)	3 (9%)
Don't know	16 (30%)	6 (28%)	10 (31%)
Information otherwise received about alcohol sales to minors			
No	31 (58%)	9 (43%)	22 (69%)
Yes, from own company	7 (13%)	3 (14%)	4 (13%)
Yes, another source	10 (19%)	6 (29%)	4 (13%)
Don't know	5 (9%)	3 (14%)	2 (6%)

As shown in Table 3, within the 53 interviews, there were a few differences between outlets that complied in the second wave versus those that did not. Seven managers did not remember receiving the intervention letter. Out of those, six outlets also sold alcohol to an underage adolescent after the intervention. In the outlets that complied in the second wave, the letter appears to have been discussed

more with personnel than in the outlets that sold alcohol in the second wave. It also appears that relatively many of the outlets that complied in the second wave had received information on alcohol sales from other sources as well.

DISCUSSION

Both positive and negative feedback letters were reported to have been received four out of five times, but were handled differently. Positive and negative letters were discussed with the personnel equally, but the original positive letters themselves were shared with the personnel more often than negative letters (mainly by depicting a copy in the personnel's canteen). When the negative letters were discussed, less often copies were shared. On the other hand, a change in personnel behavior may be desired when negative letters are received, and therefore the compliance findings may need to be discussed. However, the compliance measured in the second mystery shopping wave did not differ between the positive and the negative letter. Also, some managers told us that they had been informed about the research and the use of underage mystery shoppers by colleagues. This occurred mainly in the social entertainment industry, in which different bars are in contact with each other.

Overall, the rate of compliance was approximately 20%. This implies that 15-year-old adolescents will be able to purchase an alcoholic beverage without much difficulty. When they visit ten randomly selected shops, they will walk out with eight beverages. Even after receiving the feedback letter and the announcement that a second mystery shopping research would be conducted in the near future, compliance only increased to 32%.

During the second wave the sales personnel asked more for IDs in both groups, but compliance only increased in the experimental group. The increase of asking for IDs in both groups may have been caused by several campaigns that were implemented during our research, in which sales personnel were instructed to ask for IDs. From the study reported in chapter 6, focusing on the effects of this campaign, we learned that such campaigns do improve the initial behaviors of sales personnel (like asking for an ID) but do not necessarily increase actual compliance. Within our mystery shopping studies, our underage mystery shoppers did show their own ID if asked, which shows a date-of-birth for a 15-

year-old. Apparently, showing IDs to sales personnel does not necessarily lead to compliance, maybe because it is difficult to calculate a date-of-birth to an age, or maybe because it is not convenient to say 'no'. The feedback letter, in contrast to such campaigns, apparently did affect the actual compliance.

Our study shows that compliance rates can be influenced positively, but it must be admitted that we only reached a maximum of 32% compliance. Obviously, this raises the question to what ultimate level compliance can be increased and which efforts are necessary to achieve this. More research is needed to investigate to what level compliance can be influenced, for how long (since we only examined the short term results a longer term study for follow up after a few months may give insight into long term effects), and at which financial costs.

One supermarket chain took the letter seriously after some of their (freelance) supermarket owners had communicated the details and results of the mystery shopping research to their headquarters. Other outlets were simply informed about the research and, presumably, about the importance of compliance with respect to age limits for the purchase of alcohol. It is possible that supermarkets not only within the research region were informed, but that the research intervention reached a greater area.

In the Netherlands, we have conducted mystery shopping research to investigate shop floor compliance with age limits since 2006, and the highest compliance rate ever found was 50% (Gosselt et al., 2007; Van Hoof et al., 2006; Van Hoof et al., 2008; Van Hoof et al., 2008). This includes all types of alcohol outlets: supermarkets, sports canteens, cafeterias, bars, youth centers, and liquor stores. Youth alcohol consumption causes alcohol intoxication treatment in hospitals several times a week in the Netherlands. Research shows that underage intoxicated youth admitted in hospitals with alcohol intoxication, had obtained their alcohol in commercial places in about half of the cases, mainly in supermarkets and bars (Van Hoof et al., 2010). If compliance were higher, underage youth would be less able to consume alcohol excessively, alcohol intoxication would decrease, and many of the negative consequences would also disappear.

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PART 3

**APPEALING EFFECTS
OF AGE LIMITS**

CHAPTER 8

EFFECTS OF MEDIA RATINGS ON CHILDREN AND ADOLESCENTS: A LITMUS TEST OF THE FORBIDDEN FRUIT EFFECT

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INTRODUCTION

To protect children and adolescents from the risks associated with exposure to various products, most countries have introduced age limits for the sale of risky products like tobacco and alcohol. Media products can also be considered to be risky products, as movies, television programs and video games often contain potentially harmful elements. Selling these products to children who are too young is illegal in the Netherlands. However, mature movies, television programs and games seem to be popular among children and adolescents (Buchman & Funk, 1996; Nikken & Jansz, 2007). Media rating systems aim to prevent potentially negative effects of harmful media on children and adolescents. Media ratings (also known as age classification systems, warning label systems, or restrictive ratings) are meant to provide minors, their parents or caregivers, and retailers with appropriate, reliable and valid information concerning the content of media products and in that way serve as a tool restricting minors' access and exposure to potentially harmful media.

Much has been said and published about the effects that detrimental media may have on the viewer, especially on violence and aggression. On the one side there is research that indicates that the effects are non-existent or low (e.g., Ferguson & Kilburn, 2010; Savage & Yancey, 2008; Sherry, 2001; Sherry, 2007). Other studies, however, did find a relationship between children's exposure to harmful (e.g., violent) media content and the development of undesirable attitudes and behaviors, violent behaviors in particular (e.g., Anderson & Bushman, 2001; Bushman & Anderson, 2001; Bushman & Huesmann, 2001; Earles et al., 2002; Hogben, 1998; Huesmann, 2007; Paik & Comstock, 1994; Konijn et al., 2006).

Media ratings are used throughout the world, and many countries have their own rating systems with their own pictograms and their own regulations. In general, age pictograms show whether a media product's content is potentially harmful for minors below a given age (also known as evaluative ratings). In addition, the media product's actual content is often specified with warning pictograms (descriptive ratings). Both the age limit labels and the warning labels can be placed on covers, packaging, posters, and other advertising materials, and can be shown at the start of or during a movie, television program, or game. The goal of media rating systems is to provide individuals (especially parents and retailers) with appropriate information about media products so that they can make informed

decisions regarding the media consumption of children and adolescents (Gentile et al., 2005).

Although media rating systems are meant to protect children and adolescents from harmful content, several researchers also mention the possibility of an undesirable side effect: age limits and warning pictograms may make the potentially harmful media products more appealing to (young) viewers. This is known as the *forbidden fruit effect*, a reference to the Biblical story in which God forbids Adam and Eve to eat the fruit from the tree of knowledge. This effect is connected with psychological theories such as reactance theory and commodity theory. Reactance theory assumes that people like the freedom to behave according to their own wishes. When this freedom is threatened, they experience psychological reactance, an unpleasant emotional state that motivates them to restore the threatened or lost freedom (Brehm, 1972; Brehm & Brehm, 1981; Bushman & Stack, 1996). Simmons (1992) demonstrated this in a study in which a group of participants were informed that a particular music album (out of nine) was declared legally obscene in Great Britain. Compared to a control group, these participants ranked this particular album significantly higher on attractiveness. Commodity theory predicts that any commodity (in our case: a movie, television program, or game) that is perceived as unavailable (e.g., by means of age limits for specific categories), that cannot be obtained, or that can be obtained only with much effort will be valued more than commodities that can be obtained freely (Bushman & Stack, 1996).

Research, particularly in the United States, suggests that age limits and warning pictograms may indeed have a forbidden fruit effect on children and adolescents (Bushman, 2006; Bushman & Cantor, 2003; Bushman & Stack, 1996). An overview by Bushman and Cantor (2003) shows that high age limits and content warnings have a forbidden fruit effect on children and adolescents (from 8 to 17 years), who find such products more attractive. However, when children are younger than eight years old, a so-called tainted fruit effect may occur: too high age limits and content warnings decrease the attractiveness of media for them. In sum, the attractiveness decreased until the age of 8, increased until about age 22, and then decreased. Differences were found for male and female participants: the average effect size among male participants was .25, whereas the average effect size among female participants was only .003. Bushman and Cantor (2003) included studies on television programs, movies, games and music in their meta-analysis. They do not report significant differences between types of media products.

Various methods have been used to establish the occurrence of forbidden fruit effects. An early Belgian study compared audience size and viewers' appreciation of movies broadcast with and without sexual content advisories (Herman & Leyens, 1977). Consumer surveys have been conducted in which adults were asked whether ratings would affect their own viewing behavior ("Television programs and movies sometimes have announcements that they contain mature subject matter. When you see such an announcement, are you more or less likely to watch the program?", Ingold, 1999) or the choices that they made regarding their children's exposure to media productions (Wurtzel & Surlin, 1978), or where children had to indicate which program they were most likely to watch (Sneegas & Plank, 1998).

The strongest form of evidence, however, is based on experimental research designs. Several experimental studies have been designed to investigate the occurrence of a forbidden (or tainted) fruit effect (Austin, 1980; Bahk, 1998; Bushman, 2006; Bushman & Stack, 1996; Cantor & Harrison, 1997; Cantor, Harrison, & Nathanson, 1998; Christenson, 1992; Nije Bijvank, Konijn, Bushman, & Roelofsma, 2008; Simmons, 1992). Table 1 provides an overview of experimental studies that were incorporated in Bushman and Cantor's (2003) meta-analysis, supplemented with more recent studies on this topic. Special attention is paid to the experimental materials used.

As can be seen in Table 1, all recent experiments found a forbidden fruit effect associated with media rating systems. The practical relevance of most of these findings, however, is threatened by the characteristics of the experimental materials used. In general, the stimuli used concerning the characteristics of the media products were relatively poor (brief verbal descriptions of the products), whereas the stimuli concerning the age limits and content warnings were often strongly emphasized (e.g., "The labels were printed in bold, uppercase font and were enclosed in asterisks," Bushman & Stack, 1996; Bushman, 2006; and "This is the only album declared legally obscene in Great Britain," Simmons, 1992). In the case of television booklets, the relatively brief descriptions of the television programs may be realistic. In the case of other media products, however, such materials do not correspond to real-life situations, in which people are confronted with rich illustrations on covers and product descriptions and considerably less prominent pictograms. Christenson (1992) did include actual music album covers and used normal-sized classification labels. Instead of forbidden fruit effect, the

“Parental Advisory – Explicit Lyrics” labels on the album covers caused a tainted fruit effect.

Table 1: Overview of earlier experiments on the forbidden fruit effect.

Author(s), year of publication	Media product (s)	Country, number of respondents, age and gender	Product information stimuli	Media rating stimuli	Evidence forbidden fruit effect
Austin, 1980	Movies	USA, N=65, 15-18 yrs., 40m/25f	Four movies with fictitious titles. Verbal descriptions in 175-word synopses	Set off in a line of its own, the film’s rating was noted (e.g., “This picture has been rated R/PG/G/X”)	No
Simmons, 1992	Music albums	UK, N=65, college students	Nine rock albums. List of album titles	One-sentence announcement (“This is the only album declared legally obscene in Great Britain.”)	Yes
Christenson, 1992	Music albums	USA, N=145, 11-15 yrs	One hard rock and one pop album. Album covers	Study 1: A “Parental Advisory – Explicit Lyrics” label. Study 2: More emphasis (“You’ll notice this song has a sticker on it - the words are Parental advisory: explicit lyrics.”)	No
Bushman & Stack, 1996	Television movies	USA, N=360, college students, 180m/180f.	Twelve fictitious movies. One-paragraph descriptions	“To increase the salience of the warning labels we had them printed in uppercase letters and enclosed asterisks.”	Yes
Cantor & Harrison, 1997	Television Programs	USA, N=297, 5-14 yrs.	Television booklets with one-sentence descriptions of programs	Motion Picture Association of America (MPAA) ratings (e.g., “PG-13: Parents Strongly Cautioned”)	Yes for boys; no for girls
Cantor, Harrison & Nathanson, 1998	Television programs	USA, N=374, 5-15 yrs.	Television booklets with one sentence descriptions of programs	Various rating systems	Only for one rating system (MPAA)
Bahk, 1998	Movie guide	USA, N=105, M=21.6 yrs., 44m/61f.	Twelve movies. One-paragraph descriptions	MPAA ratings plus separate verbal indications of sexual content.	Yes
Bushman, 2006	Television movies	USA, N=900, 9-77 yrs., 450m/450f.	Twelve fictitious movies. One-paragraph descriptions	“The labels were printed in bold, uppercase font and were enclosed in asterisks”	Yes
Nije Bijvank, Konijn, Bushman & Roelofsma, 2008	Games	Netherlands, N=310, 7-17 yrs., 157m/153f.	Twelve video games. One-paragraph descriptions	PEGI age pictograms and <i>Kijkwijzer</i> warning pictograms	Yes

The results do not suggest that national contexts play an important role: the only divergence in results can be found among the American studies. The first experimental study by Austin (1980) did not find a forbidden fruit effect. The other study that did not find such an effect (Christenson, 1992) was the only one using realistic stimulus materials. The only experimental study about the forbidden fruit effect in the Netherlands reported that both age labels and violent-content labels increased the attractiveness of videogames for children and adolescents (Nije Bijvank et al., 2008).

Christenson's (1992) study involved music albums. To further explore the occurrence of forbidden or tainted fruit effects in media products like DVDs and games, a more realistic research design is necessary than the ones used in previous studies involving such media products. The research described in this chapter involves complete DVD and game covers and actual age and warning pictograms. As such, it can be considered to be a litmus test for the forbidden fruit effect: is it something that is likely to occur in daily life, or is it something that can only be found in artificial contexts with materials that do not resemble the media products children and adolescents encounter? On the basis of the earlier studies on the forbidden fruit effect and on the basis of reactance theory and commodity theory we hypothesize that age limits and warning pictograms make potentially harmful media products more appealing to (young) viewers. Furthermore, we expect media ratings to have a stronger effect on older children than on younger children.

H1: Age limits and warning pictograms make potentially harmful media products more appealing to (young) viewers.

H2: Media ratings have a stronger effect on older children than on younger children.

METHOD

An experimental study was designed to investigate whether media rating pictograms make DVDs and games more appealing to children and adolescents. For this experiment, we used the age and warning pictograms that are commonly used in the Netherlands. Two systems were used: a Dutch media-rating system focusing on movies, television programs and DVDs (called Kijkwijzer; cf. Valkenburg, Beentjes, Nikken, & Tan, 2002), and a European system specifically aimed at (video) games (called PEGI; Pan European Game Information).

Context of the Dutch media rating systems

In many European countries, different regulatory systems have been established for television, movies, DVDs/videos, and games. The regulations on games are based on harmonized self-regulation at the European level, while the other media products (DVDs, movies and television programs) are controlled by combined governmental and non-governmental regulatory activities at the national level. The background of European legislation is the United Nations Convention on the Rights of the Child and the EU Audiovisual Media Services Directive (2007/65/EC).





















In 2001, Kijkwijzer was introduced. Kijkwijzer is a system of co-regulation between the Dutch government and the Dutch entertainment industry. Two years later, the Interactive Software Federation of Europe (ISFE) introduced PEGI, a similar (European) system, specifically aimed at video games. This piece of self-regulation was based on national classification systems. Although representatives of the entertainment industry are, in principle, free to decide whether or not they want to join Kijkwijzer or PEGI, the decision not to do so may have adverse consequences in practice. For public broadcasters, however, using Kijkwijzer is compulsory under the Dutch Media Law. In both systems, classifications are assigned to media products by trained coders on the basis of scientifically developed criteria (Valkenburg et al., 2002). Kijkwijzer and PEGI are both maintained by the (Dutch) entertainment industry. PEGI and Kijkwijzer are the only two media rating systems in the Netherlands, which means that all Dutch games are rated using PEGI only, and all Dutch DVDs are rated using Kijkwijzer only.

Design

In a randomized independent-groups experiment, 322 elementary school students and 335 high school students were exposed to ten covers of DVDs or games. In a 4 (age pictogram: no age pictogram/all ages pictogram/12 years/16 years) x 2 (warning pictograms: present/absent) x 2 (age categories: 9-11/13-15) x 2 (media products: DVDs/games) design, participants were asked to judge the attractiveness of media products. To this end, they were shown the covers of existing DVDs or games in actual size on a laptop screen. Four of the covers were shown without any pictograms (and served as fillers). The remaining six covers formed the experimental material. Participants in both age categories were randomly assigned to either the DVD or game condition. They were then randomly assigned to one of the eight experimental groups. These eight groups were based on the presence or absence of an age pictogram (no age limit, 'all ages', '12 years'

and ‘16 years’) and on the presence or absence of a combination of three warning pictograms (violence, sexuality, and abusive language).

Table 2: Experimental design.

Group	Age pictogram	Warning pictograms	Participants 9-11 years	Participants 13-15 years
DVD-condition				
1		-	21	21
2			18	22
3		-	21	21
4			22	22
5		-	18	22
6			20	20
7	-	-	19	22
8	-		20	18
Total			159	168
Game-condition				
1		-	22	18
2			20	22
3		-	21	21
4			21	21
5		-	20	23
6			20	22
7	-	-	19	20
8	-		20	20
Total			163	167

We used a combination of three warning labels to emphasize the mature content of the media products, to avoid the possible connotations of one specific warning label, and because of the prevalence and importance to children and parents of these three labels in the Dutch situation. Combinations of age labels and several warning labels are not uncommon in the Dutch situation. Table 2 shows the design for the DVD-condition (using the Kijkwijzer-pictograms) and game-condition (using the European PEGI-pictograms). As can be seen, somewhat different pictograms are used for DVDs and games in the Netherlands. Several studies show that the familiarity with and understanding of the pictograms among children and adolescents is generally high (NICAM, 2006; Nielsen Games, 2008; Van Grinsven, 2009).

Experimental material: the DVDs and games

In the experiment, participants were exposed to the covers of existing DVDs and games on a computer screen. To reduce potential bias, the DVDs and games included had to meet three requirements. First, the DVDs and games had to be relatively unfamiliar to the participants. If participants were already familiar with a DVD or game, their judgments regarding the attractiveness would probably be based on their (previous) experiences, or on the recommendations of others. They might even remember the age limit and/or warning pictograms assigned to it. Second, the DVDs and games had to be realistically connected with a broad range of age limits so that the manipulations were credible in all conditions in the eyes of the participants. Third, the covers of the DVDs and games had to be attractive to children and adolescents to a reasonable level.

To meet these three conditions, a preliminary study was conducted with 17 elementary school students (9-11 years) and 46 high school students (13-15 years). The number of boys and girls in this study was almost equal. Participants in the preliminary study were exposed to the covers of 25 DVDs and 25 games (without age limits and warning pictograms), followed by three questions: (1) Do you know this DVD/game? (yes/no), (2) For which age category would you estimate this DVD/game to be appropriate? (DVDs: all ages/6 years/12 years/16 years; games: all ages/3+/7+/12+/16+/18+) and (3) How eager are you to watch this DVD/ play this game? (on a five-point scale ranging from 'not eager at all' to 'very eager'). The initial selection of 25 DVDs and 25 games was based on our own estimations of the unfamiliarity, the ambiguity of the age limits, and the attractiveness of each product. Table 3 shows the characteristics of the 10 DVDs and 10 games that were eventually selected for the experiment.

Table 3: Scores of the pre-test on suitability of the experimental material.

		Percentage unknown	Number of different age limits	Mean attractiveness score (SD)	Function in experiment
DVD	A	98	4	1.98 (1.25)	Experimental
	B	92	4	2.24 (1.19)	Experimental
	C	91	4	2.44 (1.39)	Experimental
	D	91	4	1.92 (1.17)	Experimental
	E	92	4	2.10 (1.38)	Experimental
	F	91	4	2.39 (1.31)	Experimental
	G	86	4	2.27 (1.34)	Filler
	H	89	4	2.76 (1.32)	Filler
	I	87	4	2.87 (1.63)	Filler
	J	89	4	2.10 (1.32)	Filler
Game	A	89	5	1.58 (1.03)	Experimental
	B	91	5	2.13 (1.36)	Experimental
	C	87	3	1.95 (1.11)	Experimental
	D	91	5	1.76 (1.17)	Experimental
	E	91	6	2.02 (1.31)	Experimental
	F	86	6	1.57 (1.13)	Experimental
	G	84	6	1.73 (1.15)	Filler
	H	79	6	2.33 (1.61)	Filler
	I	84	6	2.05 (1.29)	Filler
	J	79	5	2.13 (1.43)	Filler

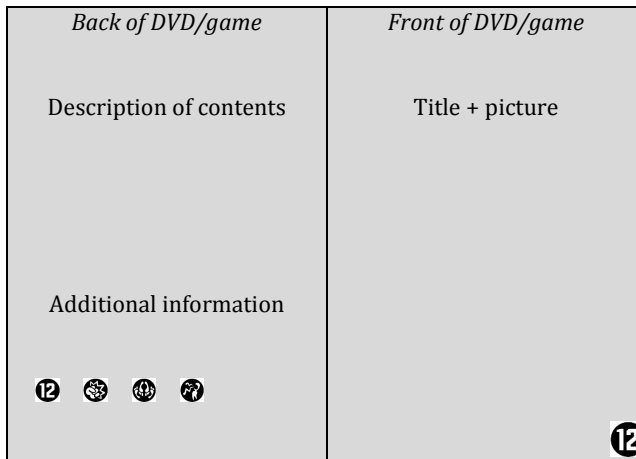
Note: Attractiveness scores were measured on a five-point scale (How eager are you to watch this DVD/ play this game? 1 = not eager at all; 5 = very eager).

As can be seen, all DVDs and games that were selected in the end were relatively unfamiliar and were not univocally connected with one particular age limit. Finally, the attractiveness scores of the DVDs and games were largely comparable.

The participants' unfamiliarity with the DVD and games included in the experiment was also verified afterwards using one question at the end of the experiment. Seventy-eight percent of the participants indicated that they did not know any of the DVDs or games they saw in the experiment. The remaining participants only mentioned one of the DVDs or games, which, in the majority of the cases, proved to be the ones that were used as fillers or the DVD or game that was used as an example at the start of the experiment. The twelve participants

who indicated that they knew one or more of the experimental DVDs or games were removed from the sample. The pictograms were shown in a normal size and placed on the standard places on the covers of the DVDs and games (see Figure 1).

Figure 1: Layout of the experimental material: DVD/game cover with age limit '12 years' and warning labels for violence, sexuality and abusive language.



Research instrument

After the cover of a DVD or game was shown, the respondents had to answer four questions on a ten-point scale: (1) How eager are you to watch this DVD/ play this game? (not eager at all - very eager), (2) How boring does this DVD/game seem to you? (not boring at all - very boring; this item was recoded in the analysis), (3) How nice does this DVD/game seem to you? (not nice at all - very nice) and (4) Which grade, ranging from 1 to 10, would you give this DVD/game? For the entire sample these four questions proved to form reliable scales, with Cronbach's alpha's varying from .88 to .90.

In addition, data were collected concerning two possibly relevant personal characteristics of the participants: reactance and sensation seeking. Reactance is the tendency of participants to exhibit a rebellious attitude: choosing a DVD or game with a high age limit or with extreme contents may be an expression of this attitude. The questions concerning reactance were based on two existing scales (Hong & Page, 1989; Konijn et al., 2007), but the formulation of the questions was

geared to the young research population. Examples of the items are: “I find it exciting to do things that I am not supposed to do” and “I feel angry when people tell me what to do”. The questions had the form of five-point Likert scales (strongly disagree – strongly agree). The scale consisted of eight items and had a Cronbach’s alpha of .65. Sensation seeking concerns the preference of participants for tension, for example by choosing a DVD or game with a high age limit or warning pictograms. The questions concerning sensation seeking were based on the Brief Sensation Seeking Scale (Hoyle, Stephenson, Palmgreen, Puzles Lorch, & Lewis Donohew; 2002), complemented with two items from Konijn et al. (2007). Examples of the items used are: “Sometimes I do exciting things, even if they are dangerous” and “I get restless when I stay home for too long”. This scale consisted of ten items and was reliable (Cronbach’s alpha = .79).

Procedure

The experiment was conducted at several elementary schools and high schools in the Netherlands. The test materials were programmed using *Authorware* on ten laptop computers. Participants individually participated in the experiment. To this end, they received a personal code and were assigned to one of the laptops. Based on their personal code, every participant was randomly assigned one condition by the computer program. These conditions were defined by (1) the choice between DVDs and games, (2) one of the four categories of age limits, and (3) the presence or absence of warning pictograms. After a short introduction of the research and a practice screen, the participants were shown ten DVDs or ten games in random order. First, the cover appeared on the screen for ten seconds. Then four screens followed with the four questions concerning the attractiveness of the DVD or game just below the cover. At the end of the session the questions concerning reactance and sensation seeking followed, as well as some background questions. The study was presented to the participants as a study into the preferences of children for DVDs or games. Each session lasted approximately ten minutes.

Participants

The participants were students from multiple elementary schools (322 participants, aged 9-11 years) and multiple high schools (335 participants, aged 13-15 years). The two different age categories were chosen because the effects of age and content warning pictograms might be different according to the participants’ age (Bushman & Cantor, 2003). Of the high school participants, 41% followed lower secondary professional education, 34% higher general secondary education, and 25% pre-university education. No differentiation in educational

levels among elementary school participants was possible, as differentiation in educational levels only starts in high school. The proportion of boys to girls was reasonably in balance (313 boys and 344 girls).

RESULTS

To map the effects of the age and warning pictograms, the average attractiveness scores were calculated for the six manipulated DVD covers and the six manipulated game covers. In the analysis, these average attractiveness scores formed the dependent variable. Regarding the age limits, we distinguished three categories: (1) the absence of an age limit, (2) an age limit that indicated that the participant was old enough for the media product, and (3) an age limit indicating that the participant was too young for the media product. We included this variable in our analysis as an independent variable. The other independent variables were the participants' gender, age category, the medium type (DVD or game) and the presence or absence of content warning pictograms. The participants' scores on the reactance and sensation seeking scales were used as covariates in the analysis. Main effects as well as two-way interactions were considered. Based on the average effect size found in samples of children and adolescents (.21, cf. Bushman & Cantor, 2003), using an alpha of .05, our post hoc power analysis proved to be satisfactory (.999) (Erdfelder, Faul, & Buchner; 1996). Even for the smallest effect size reported by Bushman & Cantor (2003) (.13), the power of our design proved to be sufficient (.854). Table 4 shows the ANCOVA results.

Our most important finding is that the age and content warning pictograms did not make the media products more appealing to the participants. Concerning the age pictograms, no significant differences were found between the three conditions (no age pictogram: $M=6.00$, participant old enough: $M=6.02$; participant too young: $M=6.01$). Concerning the warning pictograms, there appeared to be a tendency ($p=.058$), but in the opposite direction: DVDs and games without warning pictograms received, on average, higher scores ($M=6.08$) than those with warning pictograms ($M=5.94$). The DVDs included in our study were considered to be more attractive than the games ($M=6.31$ vs. $M=5.71$). Preferences for either DVDs or games differed significantly between girls and boys (girls were relatively more positive about DVDs, and boys relatively more positive about games), and between elementary school students and high school students (elementary school students

were relatively more positive about games, and high school students relatively more positive about DVDs).

Table 4: ANCOVA results for the attractiveness of the manipulated DVDs and games.

	Df	F	Significance
Age pictogram	2,656	.330	.719
Warning pictogram	1,656	3.603	.058
Reactance	1,656	5.772	.017
Sensation-seeking	1,656	11.483	.001
DVD or game	1,656	3.882	.049
Gender	1,656	.993	.319
Age category	1,656	.420	.517
Warning pictogram x age category	1,656	4.707	.030
Reactance x sensation seeking	1,656	5.853	.016
Age category x sensation seeking	1,656	7.566	.006
DVD or game x gender	1,656	31.113	.000
DVD or game x age category	1,656	14.739	.000

Note: Only the significant two-way interactions are included in this table.

Subsequent analyses focused on the functioning of the age pictograms and content warnings within the two age categories. Elementary school students (9-11 years old) were exposed to DVD or game covers without age pictograms, DVDs or games that were suitable for their age ('all ages'), DVDs or games classified as appropriate for minors slightly above their age ('12 years') and DVDs and games classified as far above their age ('16 years'). No significant differences were found between the four conditions (no age pictogram: $M=6.23$; participant old enough ('all ages'): $M=6.35$; participant slightly too young ('12 years'): $M=6.26$; participant far too young ('16 years'): $M=6.30$; $F(3,321)=.125$, $p=.945$). The content warning pictograms appeared to make the media products significantly less appealing to the elementary school participants (present: $M=6.12$; absent: $M=6.45$; $F(1,321)=5.583$, $p<.05$).

High school students (13-15 years old) were exposed to DVD or game covers without age pictograms, DVDs or games that were suitable for their age ('all ages' and '12 years'), and DVDs or games classified as above their age ('16 years'). In this analysis, we also included the educational level of the participants. Again, media

products' age limits had no significant effect on their attractiveness (no age pictogram: $M=5.66$; participant old enough ('all ages'): $M=5.31$; participant old enough ('12 years'): $M=5.77$; participant too young ('16 years'): $M=5.60$; $F(3,333)=2.248$, $p=.083$). The content warning pictograms did not significantly affect the attractiveness of media products either (present: $M=5.61$; absent: $M=5.56$; $F(1,333)=.127$, $p=.722$). No significant interaction effects were found between participants' educational level and age pictograms ($F(6,333)=.757$, $p=.605$) or content warning pictograms ($F(2,333)=.348$, $p=.706$).

The literature on the forbidden fruit effect suggests that the occurrence of this effect is related to adolescents' reactance and sensation seeking scores. Our final analysis therefore focused on a subset of participants with relatively high scores on both variables. Using a median split ($Mdn=2.5$ on reactance, and $Mdn=3.1$ on sensation seeking), we selected only those participants who had stronger tendencies towards reactance and sensation-seeking ($n=270$), and repeated our first analysis (except for the covariates). Even within this group of participants, no effects were found of age pictograms (no age limit: $M=6.16$; participant old enough: $M=6.08$; participant too young: $M=6.15$; $F(2,269)=.260$, $p=.771$) or content warning pictograms (present: $M=6.09$; absent: $M=6.17$; $F(1,269)=.047$, $p=.829$).

DISCUSSION

Media rating systems are designed to provide information concerning the content of media products and, by doing so, to serve as a potentially important tool for restricting minors' access and exposure to risky products such as harmful media. Several stakeholder groups may be identified: parents or caregivers, retailers, and minors. Parents or caregivers may use these systems to make informed decisions regarding the exposure of their children to media products. Research indeed shows that parents highly appreciate these systems and find them useful in assessing to what extent media products may be suitable for their children (Nikken, Jansz, & Schouwstra, 2007). Media ratings also help retailers to comply with national laws or regulations. The systems function as a means to determine which media products can responsibly and legally be shown, sold, or rented to younger audiences. Research shows that there is still much to be gained in this respect: retailers of media products generally do not comply with age limits when selling or renting media products to minors (Gosselt, Van Hoof, & De Jong, 2011;

see chapter 3). Still, the existence of a broadly accepted media rating system can be considered to be a precondition for retailers to be able to act responsibly when showing, selling or renting media products to minors.

The third stakeholder group is the minors themselves. Media rating systems might help minors decide whether or not they want to watch a certain movie or program or play a certain game. In general, however, it seems to be too optimistic to assume that minors will regulate their own media consumption using age limits. Earlier studies have reported undesirable side effects of media ratings on minors: age limits and warning pictograms may make potentially harmful media products more appealing for children and adolescents. A possible flaw in these earlier studies is the artificial nature of the stimulus materials used. Compared to those earlier studies, we used experimental materials with richer product information, which is more realistic in the case of media products like DVDs and games, to verify the existence of a forbidden fruit effect and found no evidence for such an effect. In the more realistic setting of our experiment, age and content warning pictograms did not appear to make potentially harmful media products more attractive to children and adolescents. This would mean that age limit systems can fulfil their functions for the other two stakeholder groups without undesirable side effects on minors.

The results of earlier research do not suggest that national contexts play an important role. In all recent studies using a similar design, a forbidden fruit effect was found. This also applies to the studies conducted in the Netherlands and the UK. The results of our study largely contradict those of earlier studies, including the study by Nije Bijvank et al. (2008), which was conducted in the same national context and with the same classification systems (Kijkwijzer and PEGI). This may be attributed to the differences in the experimental materials used. In our study, participants were exposed to richer visual and verbal stimuli about the media products themselves (a normal cover of the DVD or game), with less emphasis on the classifications (placed in normal size and position on the covers). The materials that we used correspond to the normal way of presenting media ratings in the Netherlands. It is conceivable that the forbidden fruit effect found in earlier studies is caused by the unfavorable combination of poor information about the media products and a strong emphasis on the classifications.

The results of our study are inconsistent with both reactance theory and commodity theory. According to these theories restricting a person's freedom of

choice will motivate this person to try to restore the freedom. The underlying psychological mechanisms of the forbidden fruit hypothesis may still be valid, but the actual placement of the pictograms on DVDs and games may be too insignificant to trigger such reactions in real life. Apparently the respondents did not experience any loss of freedom, nor did they perceive the DVDs and games as unavailable commodities because of the ratings on the covers.

This corresponds to two possible explanations, which call for follow-up research. First, the effects that the pictograms could have had on minors may have been counteracted by the richer (visual and verbal) information on the DVD and game covers. Participants may have seen and processed the pictograms, but the information conveyed in these images did not add much to the much richer information on the rest of the cover. It would therefore be interesting to further explore the balance between the richness of media product information and the emphasis on the pictograms in forbidden fruit experiments. Second, participants may not have noticed the pictograms on the DVD and game covers. It would therefore be interesting to combine a similar experimental design with eye-tracking data, which provides additional information about the extent to which participants notice and pay attention to the pictograms. Some of our results, however, support the assumption that the children and adolescents in our study at least paid some attention to the pictograms. After all, the elementary school students' appreciation of DVDs and games was negatively influenced by the presence of warning pictograms.

It is important to note that our study, like all other experimental studies on the forbidden fruit effect, has some limitations that must be taken into account. First, our study is solely based on individual assessments, whereas it is conceivable that the age limits and content warning pictograms also play a role in the way children and adolescents talk with each other about DVDs and games. Second, even though our stimulus materials were realistic, participants may have looked at the covers differently because they were not presented in their natural context (a store, library or video store), but in an artificial test setting using a computer presentation. Further, our study specifically focused on covers of DVDs and games. The balance between media product information and ratings may be different in the case of for instance a television program listing. Our findings therefore do not necessarily apply to the effects of media ratings in television guides or other outlets. It would be interesting to devote future research to that particular area. Third, only two media rating systems and one national context were involved in

our study. The nature, size and placement of the pictograms, the extent to which media rating systems are disseminated and adopted in society, the perceived strictness of the media rating systems, and the extent to which minors have experience with potentially harmful media may differ between nations and may affect the results of an experiment such as this one. Fourth, our study is restricted to the effects of a particular combination of warning pictograms (violence, sexuality, and abusive language). Future research could focus on the effects of individual pictograms or different combinations. Lastly, as our pretest revealed, the attractiveness of the DVDs and games used in our study was moderate. It would be interesting to vary the attractiveness of medium products and then investigate the interaction between the attractiveness of the product and the occurrence of a forbidden fruit effect.

In all, the study reported in this chapter leads to the conclusion that the pictograms of media rating systems do not necessarily make media products more attractive to children and adolescents. The findings of our study call for new directions in the research into the forbidden fruit effect: rather than investigating the general mechanism of the forbidden fruit effect, which has been confirmed by many earlier studies, future research should address the conditions under which the forbidden fruit effect is likely to occur.

CHAPTER 9

GENERAL DISCUSSION

Parts of this chapter are based on:
Gosselt, J.F., Van Hoof, J.J., & De Jong, M.D.T. (2011).
Adolescents and risky products: licensing and supply practices.
Encyclopedia of Addictive Behaviors, in press.

FINDINGS PER CHAPTER

Because availability is an important predictor of adolescents' use of risky products, societies seek ways to control and influence availability. One such way is the use of age limits, which communicate the barrier to use of the risky product in question. In the final chapter of this dissertation, first the main findings of the empirical chapters are discussed. Based on these findings, at the end of this chapter, a conceptual model is proposed that presents the factors and processes that are considered essential to the effectiveness of age limits. The chapter ends with a discussion of the limitations of the studies reported in this dissertation and directions for future research.

Part 1: Compliance with age limits

In the first three empirical chapters (chapters 2 through 4), the compliance levels associated with different age limit systems are investigated, as are factors that may influence compliance.

Chapter 2

In chapter 2, a study is described that addresses actual compliance with age limits associated with alcohol. Using a mystery shopping approach for the first time in the Netherlands, underage confederates conducted 300 purchase attempts (150 visits by 15-year-old teenagers who tried to buy soft alcoholic beverages in supermarkets, 75 visits by 15-year-old teenagers who tried to buy soft alcoholic beverages in liquor stores, and 75 visits by 17-year-old teenagers who tried to buy strong alcoholic beverages in liquor stores). Using this design, both age limits that apply to alcohol were tested: *16 years* for soft alcoholic beverages and *18 years* for strong alcoholic beverages. Furthermore, while developing a Dutch mystery shopping protocol, we carefully considered the legal and ethical implications relevant to this particular research method. The results show that Dutch supermarkets and liquor stores generally do not comply with the two legal age limits for alcohol sales, with total compliance at only 14%. Underage adolescents can easily buy alcohol and are rarely confronted with any kind of intervention that may prevent underage sales. If they are asked for their age, a simple lie suffices to allow them to buy the alcohol; if they are asked for their ID, they still have a good chance to succeed. Furthermore, female adolescents appeared to be more successful than male adolescents, and none of the characteristics within and outside the alcohol outlets had an influence on vendors' compliance.

These findings raise serious questions about the youth alcohol policy in the Netherlands and, more generally, the use of age limits without sufficient attention to compliance. Furthermore, this study shows that the mystery shopping format is an excellent approach for monitoring actual compliance. Previously, policymakers relied on self-reported survey data to monitor the effectiveness of age limits.

Chapter 3

The age limits used for games and movies (media ratings) are examples of self-regulation and co-regulation, whereas alcohol age limits are based on governmental legislation. In chapter 3, the effectiveness in daily practice of two media rating systems (Kijkwijzer and PEGI) is examined in three studies.

The first empirical study concerned the compliance level with age limits for games and movies. Based on the alcohol protocol described in chapter 2, a protocol was developed that could be used to address compliance within a media context. In total, underage mystery shoppers made 528 purchase attempts in department stores (n=96), toy stores (n=96), CD/DVD stores (n=48), game shops (n=48), DVD rental companies (48 buying attempts and 48 hiring attempts), libraries (n=48), and cinemas (n=96). The results revealed that the level of compliance is low in the domain of detrimental media as well. Minors can easily obtain a DVD, game or cinema ticket for which they are (according to the age classification) too young: total compliance was only 14%, which is equal to compliance with alcohol age limits (chapter 2). Differences in compliance were found between outlet types and based on the distance between the specific age limit and the mystery shoppers' age. Compliance was significantly higher when buying a cinema ticket than a DVD or game. No significant differences in compliance were found between female and male buyers. As in chapter 2, during a majority of the visits, the mystery shoppers were able to buy or rent the products without any intervention, and none of the outlet characteristics had an influence on compliance.

In the second study, the support for the two media rating systems among vendors was investigated. This study focused on the vendors' advice function: how do they respond to the classification of media products when they are explicitly asked for advice? To this end, we used a "mystery call" approach in which concerned "parents" asked about the suitability of a game or movie for their child during a total of 149 telephone calls. The results show that vendors do not convincingly use the systems' age limits as the basis for their advice to parents, as more than two-thirds of the vendors advised that, despite the age limit, minors could watch the

movie or play the game. In concurrence with the compliance study, both outlet type and the distance between the specific age limit and the mystery shoppers' age were predictors: vendors were significantly more flexible when the distance between the age limit and the minors' age was relatively small.

The third study reported in chapter 3 examined the factors that influence (self-reported) compliance. To explore the reasons for low compliance, a survey was conducted to investigate vendors' attitudes towards the systems. Data were collected by administering a written questionnaire to 114 vendors in four regions of the Netherlands. The results suggest that vendors may not consider the media rating systems as (legally based) regulations, but instead as some kind of information and/or recommendations for parents. Hierarchic regression analysis shows that three factors influence vendors' self-reported degree of compliance: their personal acceptance of the systems, the perceived legal basis for the age limits, and the perceived degree of (external) surveillance.

Chapter 4

Following discussion of the low rates of compliance with age limits in chapters 2 and 3, chapter 4 reports on a study that assessed the reasons for (non-)compliance by investigating vendors' perceptions of and experiences with underage sales. The data were obtained from 106 open interviews after attempted alcohol purchases by underage individuals. To gain diagnostic information, questions were asked about the measures that vendors currently take to avoid underage alcohol sales, as well as the sellers' reasons for non-compliance and compliance with the legal age limits for alcohol sales. Analysis of these answers showed that several measures have been taken to prevent underage sales, including training sessions for personnel, information aimed at the public, and several additional supportive systems meant to ease age-verification activities. Furthermore, open coding resulted in 19 themes, representing both valid and invalid arguments, that vendors mentioned as the topics that impact their compliance decisions. The ability aspect seems especially problematic. However, many of the reasons that were given can be classified as invalid arguments because they show that sellers use excuses to exempt themselves from the obligation to refuse underage sales. Furthermore, the motivation to comply actively with the age limits seems to be lacking, as vendors feel that parents, children, or even other vendors are more responsible or worthy of blame.

Part 2: Increasing compliance with age limits

The following three chapters describe studies that focus on the effects of interventions aimed at increasing compliance with age limits: a technical intervention designed by a private party that takes the decision to comply away from the cashier (chapter 5), a national campaign initiated by the industry that seeks to raise awareness of the importance of asking for the age and ID of adolescents (chapter 6), and a local field experiment investigating the impact of an intervention in which individual outlets received feedback on their compliance with age limits for alcohol sales (chapter 7).

Chapter 5

The study reported in chapter 5 provides a first indication of the benefits of remote age verification for the sale of risky products. With remote age verification, when customers want to purchase risky products, a live video connection is made with a remote control center. The cashier can only finish the payment after receiving an authorization from trained judges at the remote center. Under this system, the cashier no longer makes the decision to comply. Results showed that traditional purchase situations for tobacco had a 12% compliance rate, a somewhat lower percentage in comparison to alcohol and media sales (chapters 2 and 3). Remote age verification led to a substantial improvement in shop floor compliance with age limits. When they were confronted with remote verification personnel, adolescents were refused sales in 96% of all visits. Although traditional purchase situations have the advantage of face-to-face judgment, cashiers frequently sold tobacco products to the underage mystery shoppers, whereas the remote verification personnel almost never authorized such purchase attempts.

Chapter 6

Chapter 6 describes a study on the effects of a national campaign aimed at drawing attention to the importance of age limits for alcohol and tobacco sales. This campaign explicitly prescribed a verification age (under 20 years), which replaced the ambiguous “verify when in doubt” guideline. The campaign addressed both parties involved in alcohol purchases: cashiers and young customers. The results show that the campaign had a small effect on shop floor compliance with the age limits for alcohol sales. Overall compliance increased from 14.9% (representing a pre-intervention compliance level based on 458 purchase attempts conducted before the national campaign was introduced) to 24.8%. However, even at the peak of the campaign, more than 75% of the purchase attempts succeeded.

Without repeated interventions, compliance levels may be expected to fall back to previous levels after the campaign ends.

Chapter 7

In chapter 7, the effects of feedback on compliance are reported. First, compliance was measured in 146 alcohol outlets (cafeterias, supermarkets, bars, and liquor stores) in one region in the Netherlands using 15-year-old mystery shoppers. About half ($n=72$) of the outlets received an intervention letter (the experimental group). After this intervention, compliance was assessed again ($n=138$). Then, the same letter was sent to the control group, and all the outlets were interviewed regarding their handling of the intervention letter ($n=106$). In the experimental group, the compliance significantly increased from 18% to 32%, whereas the compliance level decreased, with a marginally significant difference, in the control group. Within the experimental group, the compliance rate in wave 2 was 36% after a negative letter ($n=56$) and 17% after a positive letter ($n=12$). However, positive letters were shared with personnel more frequently than were negative letters.

Part 3: Appealing effects of age limits

Chapter 8

The final empirical chapter examines an adverse phenomenon associated with age limits, namely a possibly appealing effect on children and adolescents. Media ratings serve to inform parents and vendors about, and protect minors from, violent or otherwise harmful media content. Earlier studies on the so-called forbidden fruit effect reported that media ratings had undesirable side effects on minors: age limits and warning pictograms may make potentially harmful media products more appealing to children and adolescents. A possible flaw in these earlier studies is the artificial nature of the stimulus materials used. Compared to those earlier studies, experimental materials with richer product information were used, a more realistic approach in the case of media products like DVDs and games, in order to verify the existence of a forbidden fruit effect. In a randomized independent-groups experiment, 322 elementary school students and 335 high school students were exposed to ten covers of DVDs or games. In a 4 (age pictogram: no age pictogram/all ages pictogram/12 years/16 years) by 2 (warning pictograms: present/absent) by 2 (age categories: 9-11/13-15 years) by 2 (media products: DVDs/games) design, participants were asked to judge the attractiveness of media products. The results show that age limits and content

warning pictograms do not appear to make potentially harmful media products more attractive to children and adolescents.

THE EFFECTIVENESS OF AGE LIMITS

Compliance with age limits in the Netherlands

After establishing the rules, it is important to monitor whether all regulated parties actually comply with the rules. The empirical studies reported in this dissertation show that compliance with age limits in the Netherlands is problematic. In many cases, young customers are still able to obtain the desired products, despite the regulations. The success rates fluctuate and appear to be related to the specific product in question. Based on numerous compliance studies that were conducted in previous years in many regions of the Netherlands, in chapter 6, a pre-intervention compliance level ($n=458$) was calculated using all zero-measurements, leading to the conclusion that compliance with the alcohol legislation that prohibits the sale of soft alcoholic beverages to minors is 15%. Compliance with legislation that prohibits the sale of strong alcoholic beverages is somewhat lower (11%; see chapter 2). Compliance with tobacco legislation is 12% (chapter 5), and compliance with legislation related to the domain of detrimental media is 14% (chapter 3: movies and DVDs: 9%; games: 15%).

Table 1: Level of compliance with age limits within the Netherlands*

Product	Age limit	Compliance	Visits (N)	Chapter
Alcohol				
-soft	16 years	15%	458	6
-strong	18 years	11%	75	2
Tobacco	16 years	12%	50	5
Media products				
-movie/dvd	6,9,12,16,18 years	9%	397	3
-game	3,7,12,16,18 years	15%	131	3

* Percentages presented in this table represent pre-intervention measurements.

Low compliance with age limits is not an exclusively Dutch problem. Worldwide, the results of many studies indicate that compliance with regulations aimed at restricting people's access to risky products is problematic in other countries as

well (Grube, 1997; Willner et al., 2000, Perry, Williams, Komro, Veblen-Mortenson, Stigler, Munson, Farbaksh, Jones, & Foster, 2002; Britt et al., 2006; Romano, Duailibi, Pinsky, & Laranjeira, 2007).

Towards a conceptual model to explain compliance with age limits

Because compliance is important in reducing the consumption of risk-associated products and given the fact that compliance levels are generally low, explanations and strategies to improve compliance must be sought. Based on the empirical chapters of this dissertation, I distinguish between several factors and processes that are essential in improving compliance. Three phases are identified in which several factors may interact with each other: *rule setting*, *the transaction moment* and *after sales*.

Rule setting

Within this dissertation, four types of availability are identified: social, physical, economic, and legal availability. To reduce these types of availability and, as a consequence, curb people's use of risky products, the government and/or the industry may set rules that should regulate the sale of potentially detrimental products. To control and influence legal availability, three main types of regulations may be used, depending on the role of the parties involved (i.e., government vs. industry): *governmental legislation*, *self-regulation*, and *co-regulation*. Initiated by either party, *age limits* may be introduced.

A first and essential condition is *support* for the rules from all of the relevant parties. Several target groups can be identified: children and adolescents, peers, parents/caregivers and teachers (*the public*), vendors and industry representatives (*the industry* and/or *retail*), and policy makers (*the government*). As reported in chapter 1, multiple studies show that the self-reported support for the age limits in the Netherlands is reasonable, but not optimal, and that the support differs depending upon the type of risky product. Within the industry, factors relevant for rule acceptance include sufficient overlap of private interests with public interests, the existence of specific pressures to comply with rules, a small number of actors in a highly organized and homogeneous sector, and a high degree of social responsibility within the industry (Dorbeck-Jung et al., 2010).

Public and private interests may overlap when the public and the industry cite similar goals, when the industry acknowledges reputational advantages, and, in the case of self-regulation or co-regulation, when they have an interest in forestalling

legislation. In addition, compliance with rules depends on the pressures placed on companies to comply. In the cases of self-regulation and co-regulation, compliance performance must be assessed by the individual industry. According to sellers, the chance of being caught for non-compliance is relatively small because the surveillance activities are not very prominent (see chapters 3 and 4). Furthermore, a relatively small number of actors and a relatively high degree of homogeneity and organizational capacity in a given industry are required for the establishment and maintenance of self-regulation. Finally, social responsibility is indicated by trade associations' activities and by a strong business community with a generalized concern for taking the rules seriously. The involvement of organizations in societal issues like responsible sales is also referred to as corporate social responsibility. It can be a natural result of the ideological beliefs of the organization but can also, through media, be compelled by the public and actually manifest itself in behavior or actions that seem inconsistent with organizations' core activities. Today, corporate social responsibility is no longer conceived solely as a moral responsibility of an organization for greater social good but also as a strategic resource to be used to improve performance. The results of the survey (chapter 3) and the interviews with sellers (chapter 4), however, show that reputational aspects currently do not seem to play a role in compliance considerations.

Transaction moment

After rules are developed by government, industry, or both, the general public becomes involved. After risky products are made to seem like some type of *forbidden fruit*, minors may judge risky products that are subject to age limits as more attractive. The study reported in chapter 8 examined the existence of a *forbidden fruit* effect on detrimental media products. The study results suggest that age limits (in the context of media products) do not necessarily make risky products more attractive to children and adolescents.

Compliance, the idea that the regulated parties obey established rules, depends on whether those parties are *able* and *willing* to comply. In order to be able and willing to comply, the regulated parties first must *know and understand* the rules (Gosselt et al., 2008). The studies described in chapters 3 and 4 show that *knowledge* of the rules is not always optimal. Without (sufficient) knowledge of the rules, parties cannot act according to the rules. Furthermore, the willingness to comply depends on two factors: the attitudes towards the regulations (intrinsic motivation) and their estimations of the consequences of violations (extrinsic

motivation). The results of the survey of vendors about media rating systems (see chapter 3) suggest that vendors may not consider the systems as regulations but rather as information and/or recommendations for parents. In addition, the mystery call study described in chapter 3 shows that even when there are no negative consequences attached when vendors comply with the age limits (for either vendor or parent), the compliance was low. In the survey, sellers further state that they do not feel responsible for the purchases of young people. The interviews reported in chapter 4 show that the motivation to comply with the age limits is lacking because vendors feel that parents, children or even other vendors are more responsible or blameworthy. This lack of *motivation* results in an indifferent attitude toward the age limits, which does not help prevent minors from accessing harmful media content. Furthermore, the survey in chapter 3 shows that three factors are important predictors of compliance: (1) a salesperson's personal acceptance of the system, (2) the perceived legal basis for the age limits, and (3) the perceived degree of (external) surveillance. In the case of media ratings in the Netherlands, legality and perceived surveillance seem problematic. Besides poor levels of knowledge and motivation, vendors do not believe that someone will check on their compliance with age limits. As a result, no feedback will emerge on the actual functioning of the age limit systems.

In order to be *able* to comply with age limits, the vendor must actually verify the customer's age. The age-verifying activities are a vulnerable point in the transaction process. During the interviews (chapter 4), sellers mostly mentioned practical barriers that make compliance difficult, such as aggression after refusal, fear of intervening and the existence of false IDs. In addition, some invalid arguments are brought up by sellers, such as secondary purchasing, difficulties with addressing the age of a (young) customer, the level of traffic in the store, young sales personnel, and the perception of age verification as an unpleasant activity. Crucially, in an age limit system, age verification generally depends on individuals, such as (often young) store personnel. All of our compliance studies revealed that in many cases, the customer's age was not verified at all, even when young customers looking typical of their age were involved. In all these cases, the seller should have felt (some) doubt about the young customer's age. Furthermore, even when the age was verified, this did not necessarily lead to (more) compliance. Merely asking for a young person's age had little or no effect, and even when the young customer was asked to show his/her identification card, compliance was not assured.

Three problems associated with age verification can be identified. The first problem concerns the prevailing interpretation of the legal age limits. As a precondition for effective age limit enforcement, vendors must become accustomed to verifying the age of a broader range of young-looking customers. Merrill et al. (2000), for instance, concluded that, in order to effectively observe an age limit of 21 years, store clerks should ask for the IDs of all customers estimated below 27 years of age. This awareness is currently lacking in the stores that sell potentially risky products. The public is not accustomed to being asked for an ID when buying such a product, which constitutes a second problem. Customers need to be prepared for the fact that they may be asked for identification. A third problem concerns the ID documents themselves, especially the determination of the customer's age. In many of the compliance studies, we found evidence in the mystery shoppers' verbal accounts that vendors had trouble determining customers' ages on the basis of birth dates on an ID. This finding was supported by the interviews with sellers (chapter 4), in which some indicate that age verification can be difficult.

Low compliance rates indicate that incentives to continue sales seem to outweigh the incentives to comply with age limits. To overcome the problem, several procedures that focus on increasing the knowledge and ability of the sales personnel should assist sellers during transactions. From interviews with sellers (chapter 4), we learned about several stores that have implemented such programs, such as training sessions for personnel on the rules and legislation pertaining to age limits, information aimed at the public, conversion tables placed nearby the cashier that help determine the buyer's age, a cash system that beeps whenever an age-restricted item is scanned, colored arm bandages or stamps in bars that identify the buyers' age, a document that shows all legal IDs, and a (digital) membership list that allows the customer's age to be verified easily. Previously, however, all of these steps have not had a significant positive effect on compliance rates.

Remote age verification is a promising intervention to assist personnel. Results of a compliance study, described in chapter 5, showed that the adoption of a remote age verification system led to a drastic improvement in the shop floor compliance with age limits. The effects may be attributed to three mechanisms. First, the remote age-verification system has a priming effect increasing the awareness of age limits, as is underlined by the increased number of ID requests. Cashiers have many different tasks, such as scanning products, counting money, and interacting

with customers, that make age verification an extra activity. The remote verification system automatically signals when age verification is required, and the remote age-verification employees have only one task. In addition, remote age-verification employees may be expected to have more expertise and practice in judging the age of adolescents and reading and interpreting IDs (i.e., determining someone's age using the date of birth). Furthermore, remote age verification removes the social pressure from the decision of whether to sell a product to an individual. Cashiers may find it difficult to refuse to sell to customers, especially when they are close in age, but the remote system eliminates this concern.

In addition to increasing *knowledge* and *ability* by facilitating retailers' work, increased awareness of the importance of age limit regulations can ensure that all parties involved are aware of their (legal and/or contractual) status. This strategy is aimed at reducing ambiguities and convincing people to abide by age limits, as well as increasing their *motivation* to comply.

Industries or the government may choose to focus on informing and educating retailers and the public using methods such as campaign materials or training programs for personnel. However, as the compliance study in chapter 6 (on the effectiveness of campaign material initiated by the industry itself) showed, an exclusive focus on information is insufficient to ensure compliance with rules. Possible explanations for the lack of substantial effects may lie in the implementation of campaign materials (the materials seem to stress the responsibility of buyers instead of cashiers), the ambiguous role of the sender (namely the industry), and the difficulty of reaching (often part-time) cashiers.

Nonetheless, studies into the effects of training personnel on the relevance and functioning of the regulations that prohibit the sale of alcohol to minors and prevent over-serving to obviously intoxicated guests have shown some positive results (Toomey et al., 2001; Wagenaar et al., 2005). Toomey et al. (2001) successfully used a training program aimed at the owners and managers of alcohol establishments, which started with a risk assessment and gradually developed into the facilitation of underage sales prevention.

In all, training programs (focusing on the need for and usefulness of age limits) and ways to challenge and refuse possibly under-aged customers (skills that are needed to prevent underage sales) may have a positive effect on compliance (Willner et al., 2000) because both ability and motivation aspects are addressed.

Nevertheless, the results of our studies raise some doubts about the effectiveness of general and non-compulsory interventions that should increase awareness, leading to a subsequent improvement in shop compliance with legal age limits.

After sales

Compliance checks on legislation have been conducted in many countries. Despite the large number of studies, specific predictors of compliance with legislation are not clear. In general, literature on compliance states that compliance depends upon the following factors: knowledge of the regulation, the cost-benefit ratio, the degree of acceptance of the regulations, the loyalty and obedience of the regulated parties, informal monitoring, informal report probability, monitoring probability, detection probability, selectivity of the inspector, the likelihood of sanctions, and the severity of sanctions. Initiatives in the Netherlands initiated by the industry and local projects (mainly on alcohol) achieved only a (temporary) increase in compliance of 0-20% (see chapters 5 and 6).

Besides creating awareness and facilitating vendors, more specific, structural, or compulsory interventions may be needed to make a significant difference. Such interventions take on the form of feedback regarding compliance-related issues.

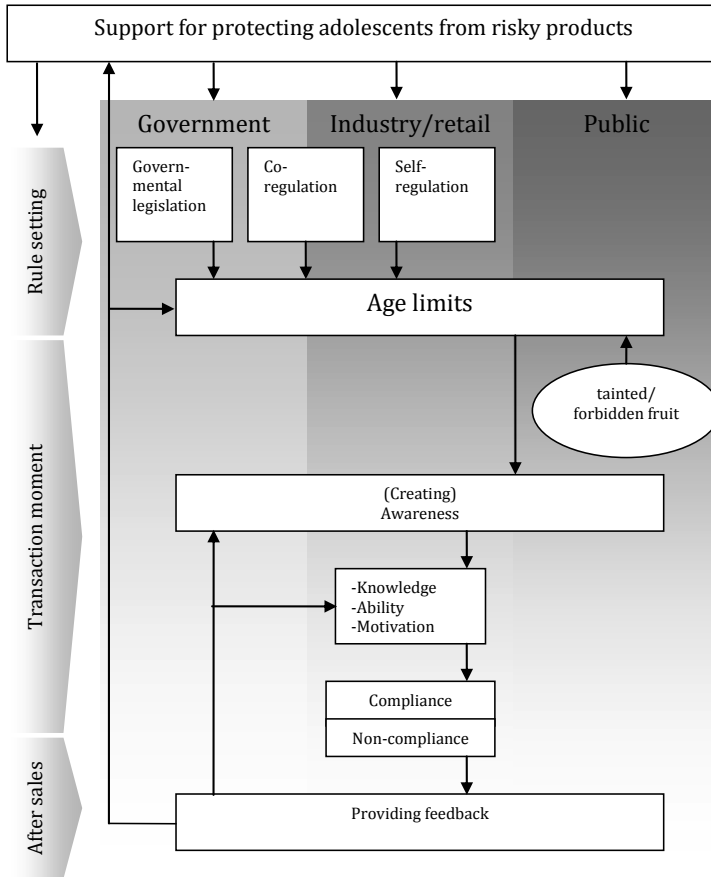
Possible violations of the regulations must be clearly associated with negative consequences. Therefore, a valid and visible system of external surveillance, which affects the vendors' perceived risk of being caught for non-compliance but also underlines the legal basis and the importance of complying with the age limits, must be developed. Various kinds of enforcement are fruitful ways of reducing sales of risky products, especially if they not only include warnings and penalties in the case of violations but also focus on the actual and perceived chance of being caught, so that enforcement checks can increase compliance (Forster et al., 1998; Montgomery et al., 2006; Wagenaar et al., 2005; Preusser et al., 1994; Lewis, Paine-Andrews, Fawcett, Francisco, Richter, Copple, & Copple, 1996; Scribner & Cohen, 2001). Recent discussions on enforcement strategies in the Netherlands include the possibility of punishing not only the seller of products but also the buyer. In the case of self-regulation and co-regulation, compliance performance must be assessed by the individual industry. Thus, in cases of non-compliance, the industry must impose sanctions on its own members. As a result, compliance and control activities within the industry itself may be hard to execute.

Other parties in society may also play a role in increasing compliance and giving feedback. When a vendor violates certain rules, many regulatory systems offer the public the opportunity to file complaints. Complaints boards may then impose fines when the obligations set forth in the statutes are violated. Any process for the general public to complain must be made public, and the complaint procedure must be made easy and transparent (Gosselt et al., 2008).

Research may also contribute to compliance by giving policy makers, industry representatives, vendors and/or the general public feedback on actual compliance levels. Such feedback may then increase awareness of the problems that are associated with age limits. Surveys are not a valid research option, not only because social desirability bias introduces the potential for inaccurate responses but also because making correct judgments about one's behavior in ambiguous situations is particularly problematic. For example, despite the fact that compliance levels with age limits to sell alcohol are consistently very low in the Netherlands, more than 90% of the store managers reported in surveys that no single violation of age limits would occur in their stores. Instead, mystery shopping has proven to be a far more reliable approach for investigating actual compliance levels. Outlets are then visited by trained research assistants, who pretend to be 'regular' customers but act according to a script. Immediately after the visit, a detailed form about the mystery shopper's experiences is completed. Mystery shopping is frequently used to investigate the service quality of stores and the quality of medical care. In an increasing number of countries and regions, this type of undercover research has also been used to investigate retailers' compliance with age limits or other kinds of legislation, providing essential and interesting research findings.

The results of the empirical studies suggest that age limits need facilitation of the vendors and enforcement strategies to increase the knowledge, ability and motivation of the selling personnel in order to comply with these limits. Without these interventions, age limits alone are insufficient to prevent underage sales. Based on the empirical studies in this dissertation, the following model, which gives an overview of the relevant factors that may influence the effectiveness of age limits, is proposed.

Figure 1: Conceptual model of compliance with age limits for risky products.



In sum, facilitating vendors and enforcement checks on vendors will only be effective if the vendors recognize the necessity of complying with legal age limits, and enforcement checks will only be effective when vendors are aware of them and are periodically informed about their results and consequences. In addition to improving awareness, more specific (providing feedback about compliance to stores), structural (the aforementioned remote age-verification system), or compulsory interventions (based on enforcement) may be required to make a significant difference.

LIMITATIONS AND FUTURE RESEARCH

In this dissertation, the issue of age limits was examined on several levels: (1) the actual compliance with age limits, (2) interventions meant to increase compliance, and (3) the appealing effect of age limits. In order to gain a better understanding of the issue of age limits, directions for additional research are suggested below.

Measuring compliance

Until a few years ago, the actual compliance with age limits within the Netherlands was not clear. Although some studies had examined this topic, their results were contradictory and therefore questionable. When 90% of the sellers say they do not sell, while 90% of the adolescents say that they do, conventional methods are apparently insufficient. A mystery shopping approach proved to be a good method for assessing actual compliance. In this dissertation, the compliance rates for the sale of alcohol, tobacco and detrimental media products were tested. The compliance rates proved to be comparable. In addition to alcohol, tobacco and detrimental media, certain other products also have age restrictions. Differences exist in the specific regulations according to product, and subsequently, the regulatory implications per country (e.g., different age limits, different levels of surveillance, degree and height of sanctions, etc.) as well as differences in the level of support from several stakeholders and differences regarding the harmful effects associated with a particular product mean that the compliance rates reported for alcohol, tobacco and detrimental media are not necessarily comparable with those for other risky substances or with compliance rates in other countries. Whether minors can easily make illegal purchases in the gambling industry and coffee shops is not clear. Future research might investigate whether these industries differ in their compliance and, if so, how such differences can be explained. Nevertheless, measuring actual compliance by means of a mystery shopping approach provides accurate and valuable information to government, industry and the public about the effectiveness of the rules that were set.

The compliance rates reported in the empirical chapters primarily represent figures that are based on a one time visit only, meaning that within the entire population, a sample of stores was visited once by underaged mystery shoppers in order to calculate a compliance rate that is representative for the industry involved. Although, one-time visits provide valuable insight into overall

compliance, multiple visits might ensure more reliable data and greater accuracy in the compliance level and its development within an individual store.

Some variables were found to be predictive of compliance. One of these includes the type of outlet (for example, cinemas perform better than game shops, toy stores, and libraries, whereas liquor stores perform better than supermarkets). We did not address the reasons for these differences between outlets, although it can be argued that stores that predominantly sell risky products (cinemas and liquor stores) may be more inclined to comply, for example, due to more knowledge about the product, the possible negative consequences for a minor after consumption, and the rules regarding sales. However, for these stores, compliance may mean a relatively greater loss of income in comparison to outlets where, in addition to risky products, many other products are also sold (e.g., supermarkets). Furthermore, alcohol sales depend upon the gender of the underage customer, whereas male and female mystery shoppers were sold detrimental media to an equal extent. Many other factors may influence compliance as well, such as cultural aspects (the tolerance policy for illegal drugs in the Netherlands compared to the “war on drugs” in many other countries, or the very restrictive alcohol legislation in Scandinavian countries compared to a less strict Dutch system), educational aspects (concerning the vendor, adolescent or even parent), and marketing activities (e.g., advertising, price promotions). Although the diagnostic study reported in chapter 4 provides valuable information, more (qualitative) research on the variables that influence compliance is required, particularly research focusing on why differences exist (between countries, between industries, between outlets within the same industry, between vendors within the same outlet, and between buyers) and what variables can be influenced in order to address and develop possible interventions that may increase compliance.

The overall compliance rates reported in this dissertation should be interpreted carefully. A compliance rate of 30% within a particular industry, for example, does not indicate that in 30% of the cases, it is not possible to buy a risky product. The chances of a successful buying attempt may be increased by trying to purchase at another register within the same store, returning to the location at another time, or visiting another store nearby. An adolescent who wants to obtain a particular risky product likely knows where to go to, based on either personal experience or the experiences of others, such as friends.

Increasing compliance

In spite of self-reported compliance and a self-reported positive attitude from the vendors towards the age-limit systems, the actual rates of compliance are poor. Furthermore, the empirical studies suggest that establishing rules designed to prevent underage sales are considered sufficient effort to protect minors. Actual behavior in accordance with the rules does not appear to be a major concern within the industry. This was also confirmed by the sellers' opinions that the primary responsibility lies with parents and children themselves. After applying all of these issues to age-limit compliance, generally, two possible approaches may change the behavior of sellers of risky products: confronting them with the positive and negative consequences of their current compliance behavior or supplying them with information on the negative consequences of non-compliance and/or positive consequences of compliance. Raising awareness and giving feedback are considered effective measures to increase compliance. A combination of both measures, as reported in chapter 7, seem promising in improving the knowledge, ability and motivation of vendors to comply. However, the effects are small, and additional research is required on the effectiveness of combining awareness and feedback strategies, as well as on the duration of such effects.

According to compliance literature, in order to ensure compliance within the industry, some factors are essential, such as the overlap of private interests with public interests and a high degree of social responsibility. The results of our studies show that private interests are valued more than the protection of minors against risky products. Additionally, from the quantitative survey and qualitative interviews with sales employees, we learned that reputational aspects do not seem to play a very significant role in the considerations of compliance. In-depth interviews with sales personnel may provide insight into the reasons as to what extent and why this is the case and also whether reputational considerations do play a role in the domain of the other risky products that were identified.

Age verification

As shown in the compliance studies, most underage buyers were able to obtain a risky product without being asked about their age or identification. According to the rules, all buyers should be asked for identification so that the age of a young customer can be properly ascertained. Awareness of this obligation, however, is insufficient. But even in the cases where an intervention took place, compliance did not increase significantly. Asking for age had little effect; showing a real ID card also did not result in a refusal in all cases. Apparently, showing IDs to vendors does

not necessarily lead to compliance. This may stem from the difficulty of calculating age from a date of birth or because saying “no” may be inconvenient. Future research might focus on ways to ensure accurate compliance after age verification takes place. The study described in chapter 5 supports the usefulness of separating the tasks of age verification and other sales activities on the shop floor. Extending this intervention to other types of counters (such as over-the-counter sales) and other risky products would prove interesting.

Perspectives from children, adolescents and (their) parents

The study reported in chapter 4 investigated the opinions, attitudes and experiences of one relevant group of stakeholders, namely, those selling risky products. In addition to their perspectives, however, investigating the attitudes of other parties involved would also be interesting. According to sellers, one of the reasons for their difficulty in complying with the rules lies in the behavior of young customers when they are asked for identification or when the sale is refused. As stated earlier, the experiences of sellers and adolescents do not overlap when it comes to actual compliance. Thus, conceivably, experiences may also differ here. How do adolescents perceive the execution of age limits in the daily practice? Do they use strategies to avoid refusal? Does violent behavior after refusal occur? Parents’ opinions would also be interesting to investigate. According to sellers, parents are primarily responsible for the purchases their children make. Is this something parents agree with, or do they hold the industry responsible for the purchases and product consumption of their child?

One age limit versus multiple age limits

Some risky products incorporated in this dissertation only have one age limit (gambling products, illicit drugs, tobacco), whereas alcohol has two age limits, and two separate systems are also used to classify media products, both with multiple age limits. This situation can also be found in other countries. More age limits for the same product category may decrease knowledge and ability to comply. Furthermore, for audiovisual products, one universal system for media ratings would be ideal (cf. Gentile et al., 2005) because this would prevent confusion between the two systems and would make it easier to bring the media ratings to the attention of vendors, parents, and minors.

The appealing effect of age limits

To explore the existence of a forbidden fruit effect within the current Dutch context, an experiment showed that no forbidden fruit effect exists in terms of age

limits on DVDs and games. However, this does not indicate that no such an effect exists at all. To investigate the occurrence of an appealing effect of age limits, only the covers of DVDs and videogames were manipulated, meaning that no conclusions could be drawn about the occurrence of the forbidden fruit effect with regard to television programs, movies posters, and TV booklets. Additionally, the experimental study does not tell us anything about age limits as forbidden fruits with respect to gambling products or other risky products, for example.

The lack of evidence for a forbidden fruit effect may be attributed to the rich information the receiver is exposed to when being exposed to a cover of a DVD or a game, while less emphasis is placed on the classifications. To investigate the balance between the richness of media product information and the emphasis on the pictograms, more experimental studies on this matter are required.

Finally, although some of our results support the idea that our respondents did notice the pictograms presented on the covers, replicating our experimental study with the support of eye-tracking data would provide additional information on the extent to which participants notice and pay attention to the pictograms and the way they process the stimulus materials.

CONCLUSIONS

As argued in the first chapter, the availability of risky products is a strong predictor of their consumption. To decrease consumption, it seems that it is important to decrease social, physical, economic, and legal availability. To control and influence availability, three types of regulations may be used, depending on the role of the parties involved: legislation, self-regulation, and co-regulation. After setting the rules, it is important to monitor whether all parties actually comply with the rules at the moment of the transaction. Rule compliance depends on whether those parties are able and willing to comply. The regulated parties must know and understand the rules and be able to act accordingly. Furthermore, their willingness to comply depends on their attitudes towards the regulations (intrinsic motivation) and their estimations of the consequences of violations (extrinsic motivation). Results of our studies indicate that compliance with regulations aimed at restricting young people's access to risky products is problematic in the Netherlands, as is the case in other countries as well. Because compliance is

important for reducing the consumption of risk-associated products and given the fact that compliance levels are generally low, explanations to improve compliance must be sought. Based on the empirical chapters of this dissertation, I distinguish between raising awareness and providing feedback as the essential instruments in increasing knowledge, ability and motivation and subsequently improving compliance. Interventions all boil down to a combination of enforcement strategies and communication. Communication will only be effective if sellers wholeheartedly endorse the necessity to comply. Enforcement checks will only be effective when store managers are aware of them and are periodically informed about their results and consequences.

Age limits are an important first step towards protecting adolescents against risky products. Without actual attention to the issue of compliance, however, their contribution will remain limited.

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SAMENVATTING

(SUMMARY IN DUTCH)

**OFF LIMITS. DE EFFECTIVITEIT VAN LEEFTIJDGRENZEN OM DE VERKOOP
VAN RISICOPRODUCTEN AAN JONGEREN TE VERLAGEN**

Leeftijdsgrenzen zijn bedoeld om de beschikbaarheid van schadelijke producten (zoals alcohol, tabak, drugs, gokproducten en schadelijke media) voor jongeren te beperken. Uit de literatuur blijkt namelijk dat de beschikbaarheid van dit soort producten een belangrijke voorspeller is van het gebruik ervan.

Het proefschrift beslaat zeven empirische hoofdstukken over jongeren en leeftijdsgrenzen, voorafgegaan door een introductiehoofdstuk en afgesloten met een discussiehoofdstuk. In de eerste empirische hoofdstukken (hoofdstuk 2 tot en met 4) worden studies beschreven die zich richten op de naleving van leeftijdsgrenzen. De volgende drie hoofdstukken (hoofdstuk 5 tot en met 7) behandelen studies naar de effecten van interventies die erop gericht zijn de naleving van leeftijdsgrenzen te verhogen. Het laatste empirische hoofdstuk (hoofdstuk 8) belicht een ander fenomeen rondom leeftijdsgrenzen, namelijk de mogelijk aantrekkende werking op de jonge ontvanger.

Hoofdstuk 1

Wereldwijd is er consensus dat het gebruik van alcohol, tabak, drugs, gokproducten en schadelijke mediaproducten negatieve effecten heeft op de fysieke dan wel mentale gezondheid van jongeren. Vier algemene ontwikkelingen spelen hierbij een rol. Voor alle producten geldt dat gewenning en verslaving een risicofactor zijn. Gebruikers kunnen gewend raken aan de consumptie van deze producten of er zelfs fysiek of mentaal verslaafd aan raken. Daarnaast blijkt dat vroegtijdig gebruik (dus gebruik op jonge leeftijd) een sterke voorspeller is van (problematisch) gebruik tijdens het latere leven. Ook kan het gebruik van het ene product leiden tot het gebruik van andere schadelijke producten. Hoewel de producten schadelijk kunnen zijn voor zowel volwassenen als jongeren, blijkt de schadelijkheid extra groot te zijn voor jongeren. Dit heeft te maken met drie ontwikkelingen die plaatsvinden gedurende de adolescentiefase: de fysieke ontwikkeling (lichamelijke veranderingen), de psychosociale ontwikkeling (de ontwikkeling van de eigen identiteit), en de cognitieve ontwikkeling (de ontwikkeling van het brein en intelligentie). Als gevolg van deze ontwikkelingen, die deels tegelijkertijd plaatsvinden, maar niet tegelijk eindigen (de cognitieve ontwikkeling loopt door tot ongeveer het 23^e levensjaar), zijn jongeren meer geneigd te experimenteren met risicoproducten, terwijl ze extra schadelijk zijn

voor deze leeftijdsgroep. Ter illustratie: het gebruik van alcohol op jonge leeftijd (om de eigen identiteit vorm te geven) vindt plaats zonder dat de gevolgen daarvan voor een jongere duidelijk zijn, terwijl vroegtijdig gebruik bovendien de ontwikkeling van hersenen aantast.

Ingegeven door diverse theorieën en een grote hoeveelheid empirische studies veronderstel ik in dit proefschrift dat de beschikbaarheid van risicoproducten een belangrijke voorspeller is van het gebruik ervan. Om de beschikbaarheid te beperken kunnen overheden, al dan niet in samenwerking met de betreffende branche, besluiten beperkende maatregelen in te stellen. Een voorbeeld hiervan zijn leeftijdsgrenzen. Leeftijdsgrenzen zijn bedoeld om de toegang tot, en de blootstelling aan risicoproducten te voorkomen om zo de startleeftijd van het gebruik te verhogen.

Wereldwijd maken veel landen inmiddels gebruik van leeftijdsgrenzen. Door verschillen in het verplichtende karakter, de wettelijke basis, de initiatiefnemer(s), het type product, de mate van handhaving, de consumptie- en aankoopleeftijd en diverse andere factoren zijn de leeftijdsgrenzen op het niveau van uitvoering tussen landen echter nauwelijks vergelijkbaar.

Diverse studies geven aanleiding te veronderstellen dat leeftijdsgrenzen inderdaad kunnen leiden tot een verlaging van de consumptie van risicoproducten. Echter, hoewel overheden en gezondheidsorganisaties zich zorgen maken over de schadelijke gevolgen van gebruik van bepaalde producten lijkt de betrokken industrie voornamelijk geïnteresseerd in het zoveel mogelijk verkopen van deze producten, en heeft het publiek baat bij eenvoudige toegang en aantrekkelijke prijzen. Daarnaast bestaat er binnen de literatuur discussie over een negatief effect van leeftijdsgrenzen. Gebaseerd op diverse theorieën die veronderstellen dat beperkende maatregelen leiden tot recalcitrant gedrag en een opwaardering van het product in kwestie, zouden leeftijdsgrenzen kunnen zorgen voor een aantrekkende werking van het risicoproduct.

Hoofdstuk 2

Het eerste empirische onderzoek waarover in dit proefschrift wordt gerapporteerd gaat in op de naleving van leeftijdsgrenzen binnen het domein van de verkoop van zwakke en sterke alcohol aan jongeren jonger dan respectievelijk 16 en 18 jaar. Aangezien vragenlijstonderzoek onder verkopers enerzijds en jongeren anderzijds een tegenstrijdig beeld oplevert van de naleving van de leeftijdsgrenzen

(verkopers zeggen zich bijna altijd aan de wet te houden maar jongeren geven aan weinig moeite te ondervinden bij de aankoop van alcohol, terwijl ze volgens de leeftijdsgrens wettelijk gezien te jong zijn), lijkt een andere onderzoeksmethode meer geschikt om de daadwerkelijke naleving te bepalen. Daartoe zijn, gebruikmakend van de onderzoeksmethode *mysteryshopping*, 300 supermarkten en slijterijen bezocht door minderjarige jongeren die probeerden alcohol aan te schaffen, terwijl zij nog niet de wettelijke leeftijd van 16 dan wel 18 jaar hadden bereikt. Mysteryshopping werd tot dan toe veelvuldig ingezet om de kwaliteit van dienstverlening te toetsen, maar was in Nederland nog niet eerder ingezet om de naleving van wetgeving vast te stellen. Gebaseerd op diverse buitenlandse studies is een onderzoeksprotocol ontwikkeld voor de Nederlandse situatie, waarbij ook specifieke aandacht was voor de ethische en juridische aspecten die vergezeld gaan met deze methode, met name ten aanzien van de participerende jongeren en de bezochte verkooppunten. Uit de resultaten blijkt dat het voor jongeren niet moeilijk is om aan alcohol te komen. Gemiddeld is de naleving 14%. In 86% van de gevallen waren zij in staat de alcohol aan te kopen. Bovendien vonden er tijdens de diverse aankoopogingen weinig interventies (vragen naar leeftijd en/of ID) plaats. Wanneer er wel sprake was van een interventie, leidde dit niet in alle gevallen tot correcte naleving. Vrouwelijke mysteryshoppers konden de alcohol vaker aankopen dan mannelijke mysteryshoppers. Andere variabelen die tijdens de bezoeken werden gedocumenteerd (zoals drukte in het verkooppunt, tijdstip van bezoek, leeftijd van de verkoper) bleken niet van invloed te zijn op de naleving.

Hoofdstuk 3

De leeftijdsgrenzen voor alcohol zijn een voorbeeld van wettelijke leeftijdsgrenzen, geïnitieerd door de overheid. De leeftijdsgrenzen die bestaan voor de audiovisuele media (in de vorm van Kijkwijzer en PEGI) zijn daarentegen ontstaan in een actieve samenwerking tussen de audiovisuele branche en de Nederlandse overheid. Door middel van leeftijdspictogrammen op onder andere DVD's, games en televisieprogramma's wordt de kijker geattendeerd op de geldende leeftijdsgrens en wordt bovendien de inhoud gespecificeerd aan de hand van waarschuwingspictogrammen. In hoofdstuk 3 worden drie studies beschreven die ingaan op de naleving van de leeftijdsgrenzen (studie 1), de steun voor Kijkwijzer en PEGI onder verkopers (studie 2) en de redenen voor het (niet-) naleven van de leeftijdsgrenzen door verkopers van audiovisuele media.

Op basis van een aangepaste versie van het in hoofdstuk 2 beschreven onderzoeksprotocol hebben minderjarige jongeren geprobeerd een audiovisueel

product aan te schaffen waarvoor ze volgens de leeftijdsgrens te jong waren. Daartoe hebben 11-jarige en 15-jarige mysteryshoppers in totaal 528 pogingen gedaan om audiovisuele producten (DVD's, games en bioscoopkaartjes) te kopen of te huren met de leeftijdsclassificaties van respectievelijk 12 jaar en 16 jaar (waarbij de 11-jarigen producten probeerden te kopen of te huren met de leeftijdsclassificatie 12 jaar en 16 jaar en 15-jarigen producten probeerden te kopen of te huren met de leeftijdsclassificatie 16 jaar). De deelnemende jongeren waren geselecteerd door eigen docenten en een leeftijdsverificatietest met 80 respondenten bevestigde de gepercipieerde leeftijd van de mysteryshoppers. Er zijn verschillende soorten aanbieders van audiovisuele media bezocht, namelijk warenhuizen, speelgoedwinkels, cd/dvd-winkels, gameshops, videotheken, bibliotheken en bioscopen. De totale naleving bleek identiek aan de naleving met de alcoholwetgeving: 14%. Verschillen werden gevonden tussen type verkooppunt en afstand tussen de leeftijd van de jongere en de geldende leeftijdsgrens. De naleving was hoger wanneer het ging om bioscoopkaartjes in vergelijking met DVD's of games. In lijn met hoofdstuk 2, waren diverse variabelen ten aanzien van de bezoeken niet van invloed op de uiteindelijke naleving.

In de tweede studie werd de steun voor Kijkwijzer en PEGI in kaart gebracht aan de hand van zogenoemde *mysterycalls*: onderzoekers deden zich voor als bezorgde ouder en probeerden in 149 telefoongesprekken bij verkopers advies in te winnen over de geschiktheid van een DVD, game of bioscoopkaartje. Advies werd gevraagd naar aanleiding van de aanwezigheid van leeftijdsclassificaties op een DVD, game of bioscoopfilm. De ouders wilden in deze gevallen weten of ze hun kind met een gerust hart een te hoog geclassificeerde DVD, bioscoopfilm of game konden laten kijken of spelen. Ook hier gold: het kind was te jong volgens de leeftijdsgrens die stond vermeld op het audiovisuele product. Slechts 35% van de telefoongesprekken eindigde in een advies conform de Kijkwijzer- of PEGI-classificaties. Van deze negatieve adviezen werd slechts iets meer dan de helft expliciet gebaseerd op de Kijkwijzer- of PEGI-leeftijdsclassificatie. In de overige gevallen werd advies gegeven op grond van andere overwegingen. Ook hier bleken het type verkooppunt en de afstand tussen de leeftijd van het kind en de geldende leeftijdsgrens van invloed op het gegeven advies.

In een derde studie is met schriftelijke vragenlijsten achterhaald hoe het komt dat verkopers zich niet houden aan de leeftijdsclassificaties van Kijkwijzer en PEGI. Het onderzoek is afgenomen onder 114 medewerkers van bibliotheken, videotheken, winkels en bioscopen. In de schriftelijke vragenlijst zijn de verkopers

bevraagd over (1) hun kennis over de systemen Kijkwijzer en PEGI, (2) het draagvlak voor beide systemen en (3) de redenen om de leeftijdsclassificaties van Kijkwijzer en/of PEGI wel of niet na te leven. De resultaten van dit onderzoek wezen uit dat de verkopers meer kennis van Kijkwijzer hadden dan van PEGI. Ook bleek dat zij niet de betekenis van alle waarschuwingspictogrammen kenden. Verder bleek uit het vragenlijstonderzoek dat verkopers zich niet persoonlijk verantwoordelijk voelden voor de aankopen van jongeren. Winkels en winkelketens achtten zij daarvoor evenmin verantwoordelijk. De verkopers vonden vooral de ouders van de jongeren en, in mindere mate, de jongeren zelf verantwoordelijk. Verkopers vonden het soms lastig om de leeftijd van een jongere te schatten en de leeftijd te controleren. Uit het onderzoek kwamen drie factoren naar voren die van invloed zijn op de (zelfgerapporteerde) naleving van de leeftijdsgrenzen. In de eerste plaats is dat de persoonlijke acceptatie van de systemen door de verkoper. De individuele opvattingen van verkopers, en niet de opvattingen die binnen een bepaald verkooppunt gelden, zijn van invloed op de bereidheid van verkopers om zich te houden aan de leeftijdsrestricties. In de tweede plaats is dat de inschatting van de wettelijke grondslag voor de leeftijdsbeperkingen. De bereidheid van verkopers om zich aan de leeftijdsgrenzen te houden is groter wanneer ze weten dat daar een wettelijke grondslag voor is. In de derde plaats is ook de controle van invloed. Verkopers houden zich beter aan de leeftijdsrestricties als ze serieus rekening houden met (externe) controles op de naleving.

Hoofdstuk 4

Daadwerkelijke naleving met wetgeving en voorspellers van naleving zijn onderwerp van onderzoek geweest in eerdere studies, maar een diagnostisch perspectief ontbreekt vooralsnog. Om leeftijdsgrenzen tot een effectief instrument te ontwikkelen is het belangrijk niet alleen te weten wat het niveau van naleving is, maar ook waarom er naleving is en hoe dit instrument wordt gewaardeerd door de actoren die hier dagelijks mee moeten werken: verkopers van leeftijdsgebonden producten. Om de redenen van naleving en niet-naleving te achterhalen zijn kwalitatieve interviews afgenomen bij 106 verkopers van alcohol. Voorafgaand aan deze interviews zijn de verkooppunten waar deze verkopers werkzaam waren, onderworpen aan een mysteryshoponderzoek. Na geconfronteerd te zijn met de eigen naleving is aan de verkopers gevraagd (1) welke maatregelen zij nemen om de verkoop van alcohol aan minderjarigen tegen te gaan; (2) wat de redenen zijn om de regels aangaande de verkoop van alcohol aan jongeren wel of niet na te leven; en (3) welke oplossingen zij zien om de naleving te verbeteren. Uit de

resultaten blijkt dat er diverse maatregelen worden genomen om verkoop aan minderjarigen tegen te gaan. Trainen van het personeel, informeren van het publiek en het inzetten van eigen hulpmiddelen (zoals omreken Tabellen en het hanteren van hogere leeftijdsgrenzen) lijken weinig vruchten af te werpen. Verkopers geven diverse redenen aan voor het wel naleven van de leeftijdsgrenzen, waaronder de bescherming van jongeren en een normgetrouwe opstelling. De eigen reputatie of de reputatie van de eigen branche en (de kans op en hoogte van) sancties lijken geen rol te spelen. Redenen om niet na te leven zijn onder andere angst om te interveniëren, mogelijke agressie van de koper en het gebruik van valse identiteitsdocumenten. Er worden echter vooral ongeldige argumenten gebruikt om niet-naleving te verantwoorden. Zo blijken onder andere wederverstrekking, problemen bij het schatten van de leeftijd van jongeren, het veronderstelde verkoopbeleid van andere verkooppunten en een verminderd gevoel van verantwoordelijkheid redenen te zijn voor het niet naleven van de leeftijdsgrenzen.

Hoofdstuk 5

Nu is vastgesteld dat de naleving van de leeftijdsgrenzen problematisch is, volgen in de hoofdstukken 5 tot en met 7 drie studies die zich richten op interventies die mogelijk een positieve invloed uitoefenen op de naleving. Specifieke aandacht is daarbij voor het transactiemoment: het moment waarop de industrie en de consument bij elkaar komen. In hoofdstuk 5 wordt een onderzoek beschreven waarin de beslissing om wel of niet na te leven wordt weggenomen bij de individuele verkoper: leeftijdsverificatie vindt plaats op afstand. Door middel van een live cameraverbinding die automatisch tot stand komt wanneer er een leeftijdsgerelateerd item wordt gescand, wordt de leeftijd van de koper in een extern controlecentrum geschat, waarna de (jonge) koper zich eventueel dient te legitimeren. Deze manier van leeftijdsvaststelling blijkt tot een significante verbetering van de naleving te leiden. Waar in de traditionele verkoopvormen de naleving blijft steken op 12%, stijgt deze in het geval van leeftijdsverificatie op afstand naar 96%.

Hoofdstuk 6

De tweede interventie die is onderzocht betreft een nationale campagne die erop was gericht de bewustwording van leeftijdsverificatie te verhogen. Door de inzet van diverse campagnematerialen voor het publiek, zowel binnen het verkooppunt (stickers, posters), als daarbuiten (televisiespots en een website), en voor verkoopmedewerkers (instructievideo's en ander instructiemateriaal) pogde de

brancheorganisatie van de Nederlandse supermarkten de bewustwording ten aanzien van leeftijdsverificatie te verhogen. Hiermee werden beide partijen die betrokken zijn bij het transactiemoment geattendeerd op hun verplichting: iedereen jonger dan 20 jaar zou zijn of haar ID voortaan moeten tonen. Met andere woorden: verkopers worden eraan herinnerd dat ze de leeftijd dienen te verifiëren, terwijl de koper erop wordt geattendeerd dat om identificatie gevraagd zal/kan worden. Deze campagne, waarbij de verantwoordelijkheid gedeeltelijk werd verschoven van de verkoper naar de koper, had enig effect op de naleving: deze steeg van 15% naar 25%.

Hoofdstuk 7

De laatste interventie is ontwikkeld in samenwerking met een lokale overheid. Hierbij werd getracht de naleving positief te beïnvloeden door het geven van gerichte feedback op de eigen nalevingsresultaten aan de verkooppunten. Allereerst zijn 146 verkooppunten bezocht, waarbij 15-jarige jongeren probeerden alcohol aan te schaffen. De naleving bleek 19% te zijn. Vervolgens werd de groep van 146 verkooppunten gesplitst in een experimentele groep (72 verkooppunten) en een controlegroep (74 verkooppunten), beiden met een nagenoeg identiek nalevingsniveau (respectievelijk 18,1% en 18,9%). De verkooppunten in de experimentele conditie ontvingen een brief waarin het resultaat van het mysteryshoponderzoek werd gecommuniceerd (13 keer een positieve brief als gevolg van correcte naleving en 59 keer een negatieve brief als gevolg van niet-naleving). Na deze brief zijn alle 146 verkooppunten opnieuw bezocht om het effect van deze feedback te onderzoeken. In de experimentele groep bleek de naleving na de brief significant te zijn gestegen naar 32%. In de controlegroep was de naleving daarentegen onveranderd. Na deze tweede ronde van mysteryshoppen is de brief alsnog gestuurd naar de verkooppunten in de controlegroep.

Hierna zijn alle verkooppunten gebeld en heeft met 106 eigenaren een interview plaatsgevonden. Om het effect van de interventie(brief) nader te onderzoeken is door middel van enkele interviewvragen nagegaan hoe de interventiebrief is behandeld binnen de betreffende organisatie. In het algemeen geven de verkopers aan dat ze de brief hebben ontvangen en dat ze de inhoud hebben gedeeld met de verkopers op de winkelvloer. Daarnaast blijkt dat wanneer er op een serieuze wijze wordt omgegaan met de brief (en dus met het onderwerp) dit van positieve invloed kan zijn op de naleving.

Hoofdstuk 8

In dit hoofdstuk wordt een mogelijk ongewenst neveneffect van leeftijdsgrenzen onderzocht. Leeftijdsgrenzen dienen jongeren te beschermen tegen de mogelijk schadelijke gevolgen van diverse producten, maar in de literatuur wordt ook gezinspeeld op de mogelijkheid van een ongewenste bijwerking van leeftijdsgrenzen: ze zouden een aantrekkende werking kunnen hebben op jongeren. In een experiment is onderzocht of er een aantrekkende werking uitgaat van de pictogrammen van Kijkwijzer en PEGI. In deze studie kregen 322 basisschoolleerlingen en 335 middelbare scholieren tien covers van DVD's of games te zien. De jongeren werd gevraagd de aantrekkelijkheid van de DVD's en games te beoordelen. Vier van de tien DVD's of games werden zonder pictogrammen aangeboden (en fungeerden dus als fillers). De overige zes DVD's of games vormden het experimentele materiaal. Proefpersonen werden random ingedeeld bij het DVD- of het gameonderzoek. In twee leeftijdscategorieën (9-11 jaar en 13-15 jaar) werden ze vervolgens random toegewezen aan acht groepen. Deze groepen werden gevormd door de aan- of afwezigheid van een leeftijdspictogram (geen classificatie, alle leeftijden, 12 jaar en 16 jaar) en door de aan- of afwezigheid van een combinatie van drie waarschuwingspictogrammen (geweld, seksualiteit en grof taalgebruik). Uit de resultaten blijkt dat er in de huidige situatie geen aantrekkende werking uitgaat van de Kijkwijzer- en PEGI-pictogrammen. Wel kwam naar voren dat jongeren enige aandacht schenken aan de pictogrammen. Zo werd de waardering van de basisschoolleerlingen negatief beïnvloed door de waarschuwingspictogrammen en gaven de middelbare scholieren de voorkeur aan DVD's en games met de classificatie 12 jaar boven DVD's en games voor alle leeftijden.

Hoofdstuk 9

Uit de nalevingsstudies die zijn beschreven in dit proefschrift komt naar voren dat in Nederland de naleving van de leeftijdsgrenzen problematisch is. Direct gevolg hiervan is dat risicoproducten nog steeds eenvoudig beschikbaar zijn voor jongeren. Op basis van de hiervoor beschreven studies worden drie fases onderscheiden waarbinnen de diverse (f)actoren interacteren: het opstellen van de regels, het transactiemoment en de after-sales.

Opstellen van regels

Om de beschikbaarheid van risicoproducten te beperken zijn drie typen regulering mogelijk: wetgeving vanuit de overheid, zelfregulering vanuit de branche of een combinatie van beide. Geïnitieerd door de een dan wel de ander kan men overgaan

tot de invoering van leeftijdsgrenzen. Binnen de industrie blijken enkele factoren van invloed te zijn op een succesvolle implementatie. Hieronder vallen: enige mate van overlap tussen het eigen en het publieke belang, enige vorm van druk om de regels na te leven, een relatief klein aantal actoren en een hoge mate van sociale en maatschappelijke verantwoordelijkheid. De resultaten van het vragenlijst-onderzoek onder verkopers (hoofdstuk 3) en de interviews met verkopers (hoofdstuk 4) laten zien dat reputatie geen rol lijkt te spelen in de afweging om wel of niet na te leven. Verder is het in deze fase van belang dat er vanuit de diverse actoren (de overheid, de industrie en het publiek) draagvlak bestaat voor de regels. In hoofdstuk 1 zijn diverse onderzoeksresultaten besproken die aangeven dat er een redelijke mate van draagvlak is voor de bescherming van jongeren door middel van leeftijdsgrenzen.

Transactiemoment

Nadat de regels zijn opgesteld komt het publiek in beeld. Vanuit de studie uit hoofdstuk 8 weten we dat leeftijdsgrenzen, binnen het domein van de audiovisuele media, niet noodzakelijkerwijs risicoproducten aantrekkelijker maken. Het zwakke punt lijkt te liggen bij het daadwerkelijke transactiemoment; daar waar de leeftijdsverificatie plaats zou moeten vinden. Uit de diverse studies blijkt dat dit vaak niet gebeurt. En zelfs wanneer er wel verificatie plaatsvindt, leidt dit niet altijd tot correcte naleving. Het daadwerkelijk vaststellen van de leeftijd van de koper lijkt bij zowel de verkoper als de koper iets ongewoons, iets vreemds te zijn. Bovendien lijken de ID-documenten zelf voor de nodige verwarring en misinterpretaties te zorgen.

De keuze om wel of niet na te leven blijkt afhankelijk te zijn van drie factoren: kennen, kunnen en willen. Verkopers dienen op de hoogte zijn van de relevante regels, moeten de regels kunnen toepassen en daarnaast gemotiveerd zijn om dat ook daadwerkelijk te doen. De studies uit de hoofdstukken 3 en 4 maken duidelijk dat de kennis van de regels niet altijd optimaal is. Om te kunnen naleven is het allereerst van belang dat de leeftijd van de klant wordt vastgesteld. Verkopers geven aan dat agressie, angst en valse ID-kaarten redenen zijn waarom niet wordt nageleefd, maar geven daarnaast ook ongeldige argumenten zoals wederverstrekking, drukte in het verkooppunt en problemen bij het vaststellen van de leeftijd van een jonge klant. Tot slot blijkt de motivatie om na te leven laag, aangezien verkopers zichzelf niet (alleen) verantwoordelijk voelen voor de verkoop van risicoproducten aan jongeren. Bovendien is de gepercipieerde kans op sancties laag.

Om deze factoren op een positieve manier te beïnvloeden is bewustwording nodig. Bewustwording als het gaat om de geldende regels (kennen), om de uitvoering van de regels door aandacht voor facilitering en training van het verkopend personeel (kunnen), en om het hoe en waarom van de regels om zo het draagvlak te vergroten (willen).

Aftersales

Naast een verhoogde mate van bewustwording lijkt feedback van belang. Het publiek kan feedback geven door het indienen van een klacht in die gevallen dat de regels niet worden nageleefd. Een andere vorm van feedback is mogelijk in de vorm van controles en sanctionering. Deze vorm kan van directe invloed zijn op de naleving, maar kan eveneens een rol vervullen in het onderstrepen van de wettelijke basis van de geldende leeftijdsgrens en het belang van de leeftijdsgrens. Tot slot is feedback mogelijk in de vorm van onderzoek. Onderzoek, en dan met name nalevingsonderzoek in de vorm van mysteryshopping, geeft de overheid, de industrie en het publiek waardevolle informatie over hoe het is gesteld met de naleving, en dus de effectiviteit, van leeftijdsgrenzen.

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Voor dat wat echt belangrijk is.

The potentially negative effects of drinking alcohol, smoking tobacco, using illicit drugs, gambling, and exposure to violent or otherwise detrimental movies or games are widely acknowledged. Risks may involve harm to people's mental or physical health and/or their social well-being. These risks may be especially valid for specific groups in society. Societies generally aim to protect children and adolescents from risky products. Availability can be seen as an important predictor of adolescent consumption of risky products. In order to reduce underage sales, in many countries so-called age limits have been introduced. Age limits serve to prevent young people's access and exposure to risky products and to delay the age at which young people may start consumption. In addition to their presumed preventive effect, there has been speculation regarding the possible occurrence of an opposite effect. The forbidden fruit theory suggests that age limits may make restricted commodities more attractive.

The studies presented in this dissertation focus on the issue of compliance with age limits and the effects of various interventions that were designed to increase compliance with age limits. Furthermore, the possibility of a forbidden fruit effect was examined.

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