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Shop Floor Compliance with Age Restrictions for Tobacco Sales: Remote Versus In-Store Age Verification

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Abstract To compare traditional in-store age verification with a newly developed remote age verification system, 100 cigarette purchase attempts were made by 15-year-old ''mystery shoppers.'' The remote system led to a strong increase in compliance (96% vs. 12%), reflecting more identification requests and more sale refusals when adolescents showed their identification cards. © 2010 Society for Adolescent Medicine. All rights reserved.

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To protect adolescents from health risks, most countries have adopted a system of age restrictions 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 restrictions, but there are concerns about compliance with these restrictions on the shop floor [1,2]. Dutch supermarket, liquor store, and hotel and catering industry managers claim to reach a 97% compliance rate with the legal age restrictions for alcohol sales [3], but ''mystery shopper'' research invariably shows considerably lower compliance rates, ranging from 0% to 30% [4–8].

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 restrictions. The effects of these interventions, however, are limited. 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 article, we describe a first study on the effects of remote age verification.

Methods

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

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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, $p < .001$).

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 restrictions. Although traditional purchase situations have the advantage of face-to-face judgment, cashiers frequently sold cigarettes 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

Table 1
Compliance with age restrictions in-store versus remote age verification

In-store age verification	# / ID (%) / CR (%)	Remote age verification	# / 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.

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.

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